DIET AND EXERCISE DISPARITIES
BY CONSUMER SEGMENT
IN SAN DIEGO COUNTY


County of San Diego Health and Human Services Agency, Community Health Statistics Unit
Our work supports the *Live Well San Diego* vision by informing programs that provide key community services and that promote positive life choices for all residents.
San Diego County is the 2nd most populous in California and the 5th most populous in the United States.

San Diego has:

- Close to 3.2 million residents.
- 4,526 square miles, larger than Rhode Island & Delaware combined.
- 16 military installations.
- 18 Cities & 18 federally recognized Indian reservations.
- Majority minority population (no one race/ethnicity ≥ 50%)

Makes looking at population health a challenge.
OUR GEOGRAPHIES

IN THE FOLLOWING ANALYSES:

41 communities (aggregated census tracts) in 6 administrative Regions

- Reflect population demographics, lifestyles, urbanicity across County
- Allow consistent analysis of demographic & health data over time
Challenge:

- Heavy burden of chronic disease (diabetes, heart disease/stroke, cancer, respiratory disease)
- Related to 3 behavioral factors: poor diet, lack of exercise & smoking
- San Diego County communities vary widely in these disease rates

Today:

Exploration of spatial relationships of diet and exercise behaviors associated with diabetes medical encounter rates

- Use of small area, non-traditional consumer marketing data to inform discussion of income-associated nutritional choices
  - Market segmentation – identifies customer base
  - Market potential – estimates consumer spending
CONSUMER MARKETING DATA (ESRI, 2014)

- Census tract-level market segmentation & market potential databases
- Provide population-based, census tract level estimates of adult consumer spending behaviors
- Advantages: Small geographies, inexpensive, annually updated
- Limitations: Weighted estimates used for targeting consumers, not for assessing population health, can only correlate with health outcomes

Used to supplement, but not replace traditional health data sources
DIABETES BURDEN BY COMMUNITY IN SAN DIEGO COUNTY (2013)

TOP
2013 medical encounter rates
• Higher rates in the southwest & east
• Lower rates along the central coast

BOTTOM
• Hot spot analyses show clusters of high & low rates
• Similar for both ED discharge & hospitalization

Demographics-
Cold spot: Lower diversity, higher income
Hot spot: More diverse, lower income

What do we know about these areas with regards to health, health behaviors?

ED Discharge
County Mean: 146/100,000
Hospitalization
County Mean: 140/100,000

Red: Hot spot (high rates concentrated in the area)
Blue: Cold spot (low rates)
Note: other communities may have high/low rates – just not in a “cluster”
CALIFORNIA HEALTH INTERVIEW SURVEY (CHIS)

Largest State survey of health behaviors
Zipcode-level estimates show health, behavior disparities

Hot/Cold Spot Area Zip Codes (2014), % of Adults 18+

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Cold Spot Area</th>
<th>Hot Spot Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>95% CI</td>
</tr>
<tr>
<td>Ever diagnosed with diabetes</td>
<td>6.5%</td>
<td>5.8-7.2%</td>
</tr>
<tr>
<td>Obese (BMI ≥ 30)</td>
<td>17.5%</td>
<td>16.0-19.0%</td>
</tr>
<tr>
<td>Obese (BMI ≥30) - Latino</td>
<td>25.7%</td>
<td>23.6-27.9%</td>
</tr>
<tr>
<td>Low-income food insecurity</td>
<td>2.1%</td>
<td>1.6-2.5%</td>
</tr>
<tr>
<td>Sugar drink consumption 1+/day</td>
<td>11.1%</td>
<td>9.3-12.9%</td>
</tr>
<tr>
<td>Walked ≥ 150 min. (week)</td>
<td>38.0%</td>
<td>35.2-40.8%</td>
</tr>
</tbody>
</table>

Higher diabetes prevalence, obesity, food insecurity, soda consumption, less walking in Hot Spot

Limitations
- Questions not asked every year, every population
- Few questions about diet at zip code level, differs from county-level survey

Difficult to build a detailed profile of diet/nutrition or exercise routine
Proprietary cluster-based market segmentation

Based on idea that similar people naturally group together

U.S. neighborhoods classified by shared characteristics (lifestyle, demographics, behavior)

14 LifeModes: Consumers grouped by shared experience (wealth, age group, diversity, etc.)

67 Segments: Distinct sub-markets within LifeModes

Example:
LifeMode: wealthy consumers
Segments: wealthy-suburban-retirees or affluent-urban-double-income families

Used by businesses to find & target consumers
MARKET SEGMENTATION IN DIABETES COLD SPOT

LifeMode 1 Affluent Estates

- Established wealth—educated, well-traveled married couples
- Accustomed to "more": less than 10% of all households, with 20% of household income
- Homeowners (almost 90%), with mortgages (70%)
- Married couple families with children ranging from grade school to college
- Expect quality; invest in time-saving services
- Participate actively in their communities
- Active in sports and enthusiastic travelers

Consumers in this area:
- Wealthy, high net worth
- Disposable income
- Urban/suburban mix
- Educated/white collar jobs
MARKET SEGMENTATION IN DIABETES HOT SPOT

Consumers in this area:
- Hispanic, immigrants
- Primarily urban renters
- Lower income, education
- Younger families
- Blue collar workers

LifeMode 13 Next Wave
- Urban denizens, young, diverse, hard-working families
- Extremely diverse with a Hispanic majority, the highest among LifeMode groups
- A large share are foreign born and speak only their native language
- Young, or multigenerational, families with children are typical
- Most are renters in older multi-unit structures, built in the 1960s or earlier
- Hard-working with long commutes to jobs, often utilizing public transit to commute to work

Clear & substantial differences between the 2 areas
Segmentation data adds detail on what residents are like to demographic profile
MARKET POTENTIAL DATABASE (ESRI, 2014)

• Based on national consumer spending/product use survey
• Estimates likely demand for goods & services
• Estimates proportion (%) of adults who do behavior/buy product/use service.
• Detailed data on food choices, dietary behaviors

Use with market segmentation data to identify communities where more people make healthy/unhealthy choices

Informs programs addressing questions of health and nutritional equity
Community Behaviors

- Most try to eat healthy (84%) & follow regular exercise routine (62%)
- 1 of 2 exercise 3+ h/ week
- 1 of 3 control diet, exercise at home
- Many check ingredients before buying food (60%)
  - Influenced most by fat, calorie & sugar content (10-13%)
- Too many (39%) eat fast food frequently
### Food Choice Market Potential

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used fresh milk in last 6 mos</td>
<td>89.6</td>
<td>8.2</td>
</tr>
<tr>
<td>Used fresh fruit/vegetables in last 6 mos</td>
<td>87.6</td>
<td>10.2</td>
</tr>
<tr>
<td>Used canned tuna in last 6 mos</td>
<td>65.0</td>
<td>10.6</td>
</tr>
<tr>
<td>Used yogurt in last 6 mos</td>
<td>64.9</td>
<td>15.8</td>
</tr>
<tr>
<td>Used frozen vegetables in last 6 mos</td>
<td>64.1</td>
<td>17.3</td>
</tr>
<tr>
<td>Used orange juice (not frozen) in last 6 mos</td>
<td>57.9</td>
<td>10.2</td>
</tr>
<tr>
<td>Used fish/seafood (fresh or frozen) in last 6 mo</td>
<td>56.8</td>
<td>8.1</td>
</tr>
<tr>
<td>Used canned or jarred vegetables in last 6 mos</td>
<td>53.8</td>
<td>19.5</td>
</tr>
<tr>
<td>Used packaged fresh salad in last 6 mos</td>
<td>50.1</td>
<td>16.3</td>
</tr>
<tr>
<td>Used wheat bread in last 6 mos</td>
<td>49.6</td>
<td>8.8</td>
</tr>
<tr>
<td>Used canned or jarred fruit in last 6 mos</td>
<td>48.6</td>
<td>17.6</td>
</tr>
<tr>
<td>Used cottage cheese in last 6 mos</td>
<td>36.2</td>
<td>17.6</td>
</tr>
<tr>
<td>Drank diet cola in last 6 mos</td>
<td>35.6</td>
<td>10.7</td>
</tr>
<tr>
<td>Used multi-grain bread in last 6 mos</td>
<td>31.4</td>
<td>13.9</td>
</tr>
<tr>
<td>Used artificial sweetener in last 6 mos</td>
<td>26.9</td>
<td>10.3</td>
</tr>
<tr>
<td>Used tomato/vegetable juice in last 6 mos</td>
<td>24.3</td>
<td>11.8</td>
</tr>
<tr>
<td>Used frozen orange juice in last 6 mos</td>
<td>19.0</td>
<td>11.9</td>
</tr>
<tr>
<td>Drank diet non-cola soft drink in last 6 mos</td>
<td>18.1</td>
<td>6.9</td>
</tr>
<tr>
<td>Used egg alternatives in last 6 mos</td>
<td>16.4</td>
<td>14.7</td>
</tr>
<tr>
<td>Used soy milk in last 6 mos</td>
<td>13.4</td>
<td>9.1</td>
</tr>
<tr>
<td>Used reduced calorie/light bread in last 6 mos</td>
<td>12.7</td>
<td>5.6</td>
</tr>
<tr>
<td>Used vegetarian frozen burger in last 6 mos</td>
<td>11.2</td>
<td>10.4</td>
</tr>
<tr>
<td>Used oat bread in last 6 mos</td>
<td>6.8</td>
<td>1.9</td>
</tr>
<tr>
<td>Used bran bread in last 6 mos</td>
<td>5.4</td>
<td>3.3</td>
</tr>
<tr>
<td>Used frankfurters/hot dogs in last 6 mos</td>
<td>64.4</td>
<td>21.8</td>
</tr>
<tr>
<td>Used cookies (ready-to-eat) in last 6 mos</td>
<td>62.5</td>
<td>16.0</td>
</tr>
<tr>
<td>Used corn/tortilla/other chips/cheese snacks/6 mo</td>
<td>61.9</td>
<td>15.4</td>
</tr>
<tr>
<td>Used bacon/breakfast strips in last 6 mos</td>
<td>59.6</td>
<td>19.0</td>
</tr>
<tr>
<td>Used sausage in last 6 mos</td>
<td>51.2</td>
<td>22.5</td>
</tr>
<tr>
<td>Drank cola (regular) in last 6 mos</td>
<td>43.9</td>
<td>19.7</td>
</tr>
<tr>
<td>Drank non-cola soft drink (regular) in last 6 mo</td>
<td>40.2</td>
<td>9.2</td>
</tr>
<tr>
<td>Used white bread in last 6 mos</td>
<td>38.1</td>
<td>15.0</td>
</tr>
<tr>
<td>Used doughnuts (ready-to-eat) in last 6 mos</td>
<td>35.4</td>
<td>9.8</td>
</tr>
<tr>
<td>Used sweet rolls/pastries (ready-to-eat) last 6 mo</td>
<td>25.7</td>
<td>15.9</td>
</tr>
<tr>
<td>Used frozen snack (not yogurt/ice cream) last 6 mo</td>
<td>23.0</td>
<td>9.7</td>
</tr>
<tr>
<td>Used frozen hot snack in last 6 mos</td>
<td>21.4</td>
<td>8.4</td>
</tr>
<tr>
<td>Used frozen dessert in last 6 mos</td>
<td>19.8</td>
<td>9.3</td>
</tr>
<tr>
<td>Used frozen yogurt in last 6 mos</td>
<td>12.3</td>
<td>6.0</td>
</tr>
</tbody>
</table>

**Limitation:** “Used in last 6 months”

Many food choice variables

Fresh Milk (90%), fresh fruits/vegetables (88%) frequently used healthy items

Frozen (64%) & canned (54%) vegetables & salad (50%) also widely used

Hot dogs, cookies, chips & bacon most frequently used unhealthy items
EXERCISE SPATIAL DISTRIBUTION

- Diabetes Hot Spot: communities with fewer adults who routinely exercise, exercise ≥ 3h weekly, exercise at home 2x weekly

- Cold spot: opposite behaviors
Significant clustering

- Diabetes Hot Spot: communities with fewer adults who try to eat healthy, fewer check ingredients before buying, more frequent fast food consumption
- Cold spot: opposite behaviors
- Similar pattern for other diet intent variables

Eat healthy  
Check ingredients  
Fast food 9+ times/month
Food choices have spatial patterns similar to diet intent

Healthy/unhealthy food choices cluster

- Fresh fruit/veg. & frozen similar
- Regular & diet cola have opposite clustering patterns
- Combination of choices: canned veg. & hot dogs

Unhealthy choices cluster in diabetes Hot Spot
LifeModes dominating the 2 clusters very different (wealthy/low diversity & low income/high diversity)

2 LifeModes (Affluent Estates, Next Wave) present in both clusters

Within each LifeMode, 2 Segments also appear in both clusters

**Affluent Estates Segments**

- **Exurbanites (Median Age: 50; Median HH Income: $98,000)**
  - Attentive to ingredients, prefer natural or organic products.
  - Gardening & home improvement are priorities
  - Financially active with wide-ranging investments
  - Prefer luxury cars or SUVs.

- **Savvy Suburbanites (Median Age 44; Median HH income $104,000)**
  - Residents prefer family-oriented vehicles.
  - Foodies: prefer natural or organic products.
  - Financially active, informed investors.
  - Physically fit, pursue a number of sports

**Next Wave Segments**

- **High Rise Renters (Median Age 31; Median HH income $21,000)**
  - High density, diversity, linguistic isolation, and foreign-born population.
  - Travel far for employment, usually in service jobs & use public transportation.
  - Many are primary caregivers to elderly family members.
  - Shop at Target more often than Walmart.

- **International Marketplace (Median Age 32; Median HH income $41,000)**
  - Almost 40% of residents are foreign-born; 25% linguistically isolated.
  - Young, Hispanic families who rent apartments. No investments.
  - Shop for groceries at warehouse/club stores, as well as specialty markets.
  - Activities include going to the beach, playing soccer, and going out for fast food.
Beyond hot spot analysis: comparing dietary choices in matched Segments by cluster location.

Is there variation by Segment in the Hot Spot versus the Cold Spot?

**Method: Difference in Product Use in Hot Spot compared to Cold Spot, by Segment**

<table>
<thead>
<tr>
<th>Diet Intent</th>
<th>Affluent Estates</th>
<th>Next Wave</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exurbanites</td>
<td>Savvy Suburbanites</td>
</tr>
<tr>
<td>Presently controlling diet</td>
<td>Cold: 41.2</td>
<td>Cold: 39.4</td>
</tr>
<tr>
<td></td>
<td>Hot: 41.5</td>
<td>Hot: 35.8</td>
</tr>
<tr>
<td></td>
<td>% Diff: 0.7%</td>
<td>% Diff: -9.3%</td>
</tr>
<tr>
<td>Diet control to maintain weight</td>
<td>Cold: 15.8</td>
<td>Cold: 10.8</td>
</tr>
<tr>
<td></td>
<td>Hot: 15.8</td>
<td>Hot: 9.1</td>
</tr>
<tr>
<td></td>
<td>% Diff: 0.6%</td>
<td>% Diff: -10.3%</td>
</tr>
<tr>
<td>Diet control for physical fitness</td>
<td>Cold: 14.6</td>
<td>Cold: 12.5</td>
</tr>
<tr>
<td></td>
<td>Hot: 14.5</td>
<td>Hot: 12.1</td>
</tr>
<tr>
<td></td>
<td>% Diff: -0.8%</td>
<td>% Diff: -3.9%</td>
</tr>
<tr>
<td>Diet control for weight loss</td>
<td>Cold: 14.6</td>
<td>Cold: 12.5</td>
</tr>
<tr>
<td></td>
<td>Hot: 15.0</td>
<td>Hot: 12.1</td>
</tr>
<tr>
<td></td>
<td>% Diff: 2.3%</td>
<td>% Diff: -4.9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diet Intent</th>
<th>Next Wave</th>
<th>International Marketplace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presently controlling diet</td>
<td>High Rise Renters: 39.4</td>
<td>36.0</td>
</tr>
<tr>
<td>Diet control to maintain weight</td>
<td>Cold: 40.3</td>
<td>Hot: 35.8</td>
</tr>
<tr>
<td>Diet control for physical fitness</td>
<td>Cold: 13.5</td>
<td>Hot: 12.4</td>
</tr>
<tr>
<td>Diet control for weight loss</td>
<td>Cold: 12.6</td>
<td>Hot: 12.1</td>
</tr>
</tbody>
</table>

**Trends:**
- **Affluent Estates** Segments differ little by location.
- **Next Wave** Segments differ by location for many variables (esp. **High Rise Renters**).

**Next Wave** Segments in Hot Spot much less likely than those in Cold Spot to control diet to maintain weight, physical fitness or weight loss.
EXERCISE BEHAVIORS BY SEGMENT

- Drop in exercise-mediated diet control
- Less exercise amount by High Rise Renters
- Regular exercise routine unchanged by Segment

Next Wave Segments – lower exercise by all locations
**DIET BEHAVIORS BY SEGMENT**

*Difference in Product Use in Hot Spot compared to Cold Spot, by Segment*

- **Exurbanites**
  - Try Freq try eat healthy: -1.4%
  - Usu Freq chk ingred: -2.0%
  - Buy foods labeled as high protein: -0.6%
  - Buy foods labeled as low calorie: -3.7%
  - Buy foods labeled as low fat: -2.8%
  - Buy foods labeled as sugar free: -0.2%

- **Savvy Suburbanites**
  - Try Freq try eat healthy: -1.9%
  - Usu Freq chk ingred: -3.5%
  - Buy foods labeled as high protein: -2.0%
  - Buy foods labeled as low calorie: -1.1%
  - Buy foods labeled as low fat: 11.3%
  - Buy foods labeled as sugar free: 16.8%

- **High Rise Renters**
  - Try Freq try eat healthy: -0.6%
  - Usu Freq chk ingred: -0.7%
  - Buy foods labeled as high protein: -1.1%
  - Buy foods labeled as low calorie: -2.9%
  - Buy foods labeled as low fat: -1.0%
  - Buy foods labeled as sugar free: -32.9%

- **International Marketplace**
  - Try Freq try eat healthy: 0.4%
  - Usu Freq chk ingred: -15.4%
  - Buy foods labeled as high protein: -2.9%
  - Buy foods labeled as low calorie: -1.8%
  - Buy foods labeled as low fat: -8.2%
  - Buy foods labeled as sugar free: -0.2%

---

**Hot Spot compared to Cold Spot**

- Eating healthy, checking ingredients same between clusters for all Segments
- *High Rise Renters* less likely to purchase high protein, low calorie, low fat products
- *International Marketplace* lower purchase of high protein products
FOOD CHOICES BY SEGMENT

Fast food / soda consumption

**Affluent Estates** Segments – little/no difference by location

**Next Wave** Segments
- No difference in frequent fast food
- Decreased fast food snacking
- Increased cola consumption

Fruits & Vegetables

**Affluent Estates**: little/no difference by location

**Next Wave**: Lower use of packaged salad, frozen veg. by **High Rise Renters**
Diet, food choices & exercise patterns vary across San Diego County

Healthy choices co-localize with higher income, lower rates of diabetes medical outcome

- Market segmentation: adds detail to what we know about communities
- Market potential: shows trends in the healthy behavior choices
- Comparing similar markets suggests local influences on diet & exercise that supplement large-area health behavior survey findings

Provides actionable insight into behaviors key to population health
FOR MORE INFORMATION:

Isabel.Corcos@sdcounty.ca.gov