



**NATIONAL CORE  
INDICATORS**  
NASDDDS & HSRI

# **Does Area Median Income Predict Obesity Rates Among U.S. Adults with Intellectual and Developmental Disabilities?**

**Presentation at the 2018 AAIDD Annual Meeting  
St. Louis, MO  
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## TECH & SCIENCE

# AMERICA'S OBESITY EPIDEMIC HITS THE POOR THE HARDEST

BY **ARISTOS GEORGIU** ON 4/5/18 AT 6:54 AM

Southern California

Median Income \$193,000, Obesity Rate: 22%

Angelina County, TX

Median Income \$44,185, Obesity Rate: 40%

## **Obesity and place: Chronic disease in the 500 largest U.S. cities**

Fitzpatrick, Kevin M. et al.

*Obesity Research & Clinical Practice*, 2018

DOI: <https://doi.org/10.1016/j.orcp.2018.02.005>

# Area Income and Obesity

- In the general population, significantly higher rates of obesity in low-income areas (Lovasi, 2009; Estabrooks, Lee, & Gyurcsik, 2003)
  - “Food deserts”
    - higher density of fast food restaurants
  - Lack of recreational resources
  - Inaccessible environments
  - Higher crime rates
- Dietary habits and physical activity behaviors (Eagle, Sheetz, & Gurm, 2012).

## Gap in Research

- The relationship between area income and obesity among adults with IDD is unclear
  - General population health research often omitted community-living people with IDD
  - IDD research typically did not include geographical variables beyond the urban/rural binary
- Adults with intellectual and developmental disabilities (IDD) have higher rates of obesity (Yamaki, 2005; Rimmer, et. al, 2010)
  - 34.6% adults with ID were obese vs. 20.6% U.S. general population

# Research Questions

What are the obesity rates among adults who used intellectual disability/developmental disability services in the U.S. in 2016-17?



To what degree is area median income correlated with obesity rate? Do this correlation differ by rural/urban designation?



To what degree can area median income predict obesity rates among adults with IDD who live within the area?

# Data

Data from the latest National Core Indicators (NCI) Adult Consumer Survey 2016-17

Collected from 36 states and Washington DC from July 2016 to June 2017

Adults (18+) who lived in the same residence for over 5 years

N=



# The National Core Indicators™: a quality and outcomes survey

NASDDDS, HSRI & State DD Directors

- Multi-state collaboration, launched in 1997 in 6 participating states – now in 46 states (plus DC) and 22 sub-state areas
- Random sampling
- Public reporting
- Person-centered
- Reliable and valid

**GOAL:** Measure performance of public systems for people with intellectual and developmental disabilities by examining **outcomes**.

**DOMAINS:** employment, community inclusion, choice, rights, health, safety, relationships, service satisfaction etc.





# NCI Adult Consumer Survey (ACS)

- **Minimum of 400 interviews** per year (participating states).
- **Random sample of adults who receive services** regardless of setting.
- State-to-state comparison of results possible within a **95% statistical confidence level** (5% margin of error)
- States may **oversample** in order to secure valid stratified intrastate results (e.g., for inter-regional comparisons)
- Statistical methods are employed to **control for differences** in consumer characteristics across the states.
- **National and state level data reports are publicly available**

# NCI Adult Consumer Survey (ACS)

**Standard survey/interview instrument.** States may not modify the basic project instrument and administration protocols. A state may expand the instrument to address additional topics.

**Face-to-face interview** with individuals plus the collection of **background information** (health conditions) from records.

Obtains information directly from adults with developmental disabilities concerning the extent to which the services they receive result in valued outcomes in support of **system-wide quality improvement activities**.

# Key variables

## Independent

- Area median income
  - pre-calculated based on five-digit zip codes. Zip codes come from state developmental disabilities departments' administrative records.

## Dependent

- Obesity status (1=Obese, 0=Not obese)
  - Using BMI=30 kg/m<sup>2</sup> as the cutoff

## Covariates

- Demographic
- Other

# Zipcodes and Area Median Income

MedianZIP  
2006-2010

- Developed by Michigan Population Studies Center at University of Michigan
- Lookup table

# How Area Median Income was Calculated

Step 1: Enter 5-digit Zip Code, e.g. 02140

Step 2: Lookup Table

Step 3: Categorize Area Median Income

	A	B	C	D
1	Zip	Median	Mean	Pop
2	01001	56,663	66,688	16,445
3	01002	49,853	75,063	28,069
4	01003	28,462	35,121	8,491
5	01005	75,423	82,442	4,798
6	01007	79,076	85,802	12,962
7	01008	63,980	78,391	1,244
8	01009	51,452	66,737	889
9	01010	75,625	80,919	3,340

1 = "\$0-\$9,999"  
2 = "\$10,000-\$19,999"  
3 = "\$20,000-\$29,999"  
4 = "\$30,000-\$39,999"  
5 = "\$40,000-\$49,999"  
6 = "\$50,000-\$59,999"  
7 = "\$60,000-\$69,999"  
8 = "\$70,000-\$79,999"  
9 = "\$80,000-\$89,999"  
10 = "\$90,000-\$99,999"  
11 = "\$100,000-\$109,999"

# BMI Calculated using Height and Weight variables

- **Body mass index:**

- divide weight in pounds by height in inches squared;
- then multiply the result by a conversion factor of 703.

The formula is: **BMI** = weight in pounds / [height in inches x height in inches] x 703

BMI	Weight Status
Below 18.5	Underweight
18.5 - 24.9	Normal or Healthy Weight
25.0 - 29.9	Overweight
30.0 and Above	Obese

# Statistical Analysis

## Bivariate analyses: Pearson Correlation

- Body Mass Index vs. area median income
- By urban/rural status

## Logistic regression

- Covariates: age, gender, race/ethnicity, geographical region, health status, prescription medication, residential settings, level of independence, access to transportation, and quality of life

# Results

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Bivariate analyses showed that Body Mass Index, a measure of obesity, is overall negatively correlated with area median income, but the correlation varied by urban/rural status

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Regression analyses showed that higher area median household income levels predicted lower odds of obesity, accounting for demographic and personal factors

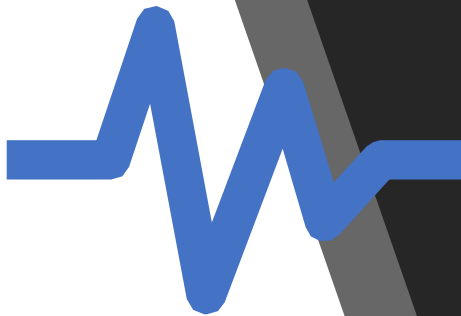


# Discussion

# Next Steps: Physical Activity

Regular physical activity prevents certain chronic conditions and promotes health and well-being

- Low levels of PA among population of adults with ID (Stanish, et al (2006))
- Low levels of PA among population of adults with ID related to obesity
  - In 1997-2000, rate of obesity was 34.6% in adults with ID and 20.6% in general population (Yamaki, 2005)
- Low levels of PA and obesity are related to chronic conditions (Heller, et. Al.)
  - Cardiovascular disease risk factors (Draheim, et al. 2002)
  - High blood pressure and diabetes
- Mental health
  - Low self-esteem, depression and fatigue



## Next Steps: World Health Organization recommendations

How can overweight and obesity be reduced?

Overweight and obesity, as well as their related noncommunicable diseases, are largely preventable. Supportive environments and communities are fundamental in shaping people's choices, by making the choice of healthier foods and regular physical activity the easiest choice (the choice that is the most accessible, available and affordable), and therefore preventing overweight and obesity.

At the individual level, people can:

- limit energy intake from total fats and sugars;
- increase consumption of fruit and vegetables, as well as legumes, whole grains and nuts; and
- engage in regular physical activity (60 minutes a day for children and 150 minutes spread through the week for adults).

Individual responsibility can only have its full effect where people have access to a healthy lifestyle. Therefore, at the societal level it is important to support individuals in following the recommendations above, through sustained implementation of evidence based and population based policies that make regular physical activity and healthier dietary choices available, affordable and easily accessible to everyone, particularly to the poorest individuals. An example of such a policy is a tax on sugar sweetened beverages.

The food industry can play a significant role in promoting healthy diets by:

- reducing the fat, sugar and salt content of processed foods;
- ensuring that healthy and nutritious choices are available and affordable to all consumers;
- restricting marketing of foods high in sugars, salt and fats, especially those foods aimed at children and teenagers; and
- ensuring the availability of healthy food choices and supporting regular physical activity practice in the workplace.

# Limitations

- Same Area Median Income  $\neq$  same zip code, confounding factors
- Does not take into consideration the private resources available in the neighborhood (gyms, tracks, etc.)

# References

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