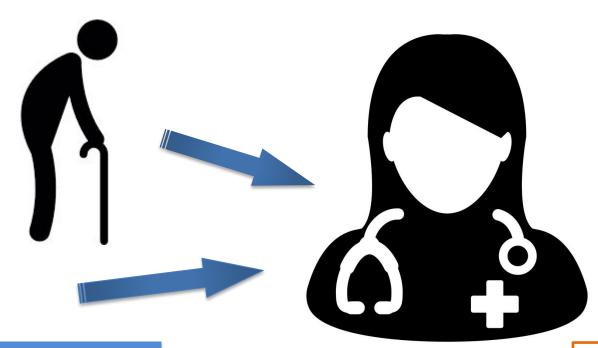
# Dietary trends among children from various financial classes

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# Incidence of Diabetes

Average person to be diagnosed in 1990



Average age of diagnosis has come down 20 years in the last 2 decades

Alarming rise in cases among children

Classified

children into

three classes

based on the

income of the

threshold ratio

household -

Income to

poverty

(ipr)

Can we find diet intake trends amongst children across classes which may affect health when they become adults?

### Changes in lifestyle

- Lack of physical activity
- Irregular sleeping patterns
- Imbalanced Diet
  - Macronutrients
  - Micronutrients

#### Dietary Data:

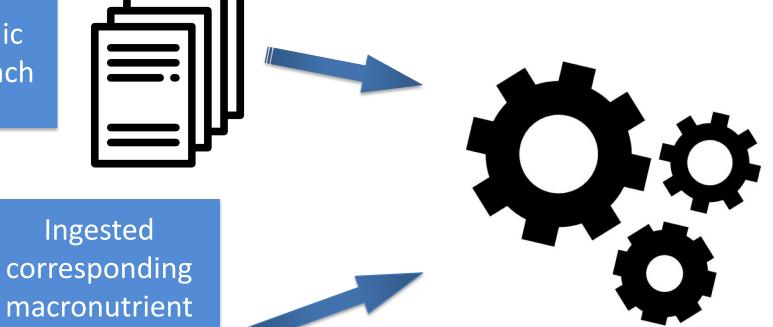
National Health and Nutrition Examination Survey (NHANES) over 12 years [1999-2011]

## Workflow

Average person to be

diagnosed in 2010

Extracted
Demographic
data from each
child

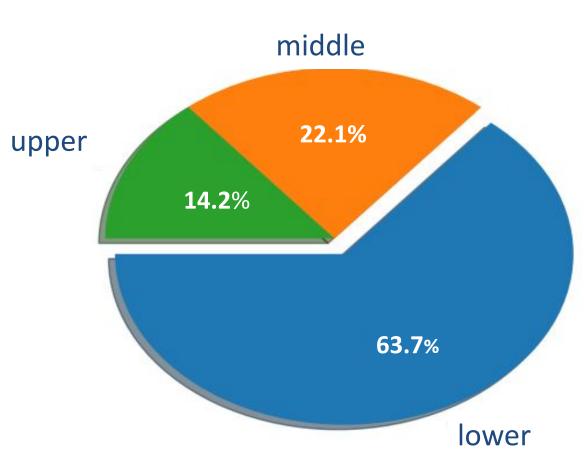


Identified children <13 years

Deleted records with missing entries (not many)

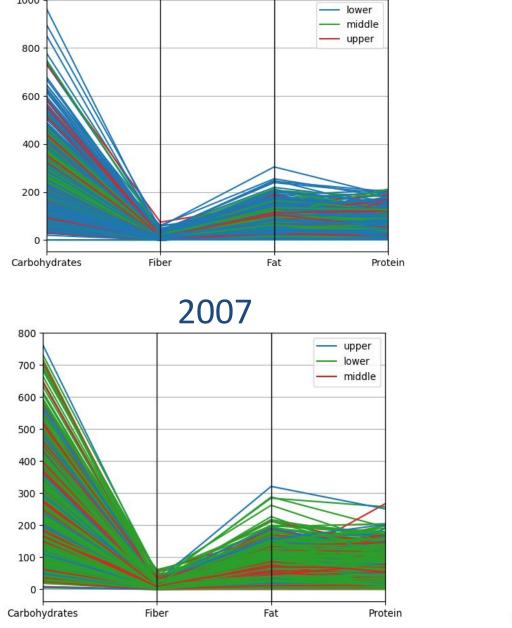
Converted strings to features

#### Class Wise Children Distribution



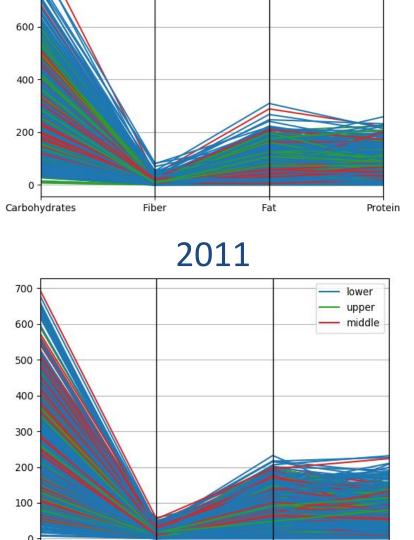
# Clustering and Trend Analysis

Representation of per day nutrient intake in (g) across classes



intake

1999

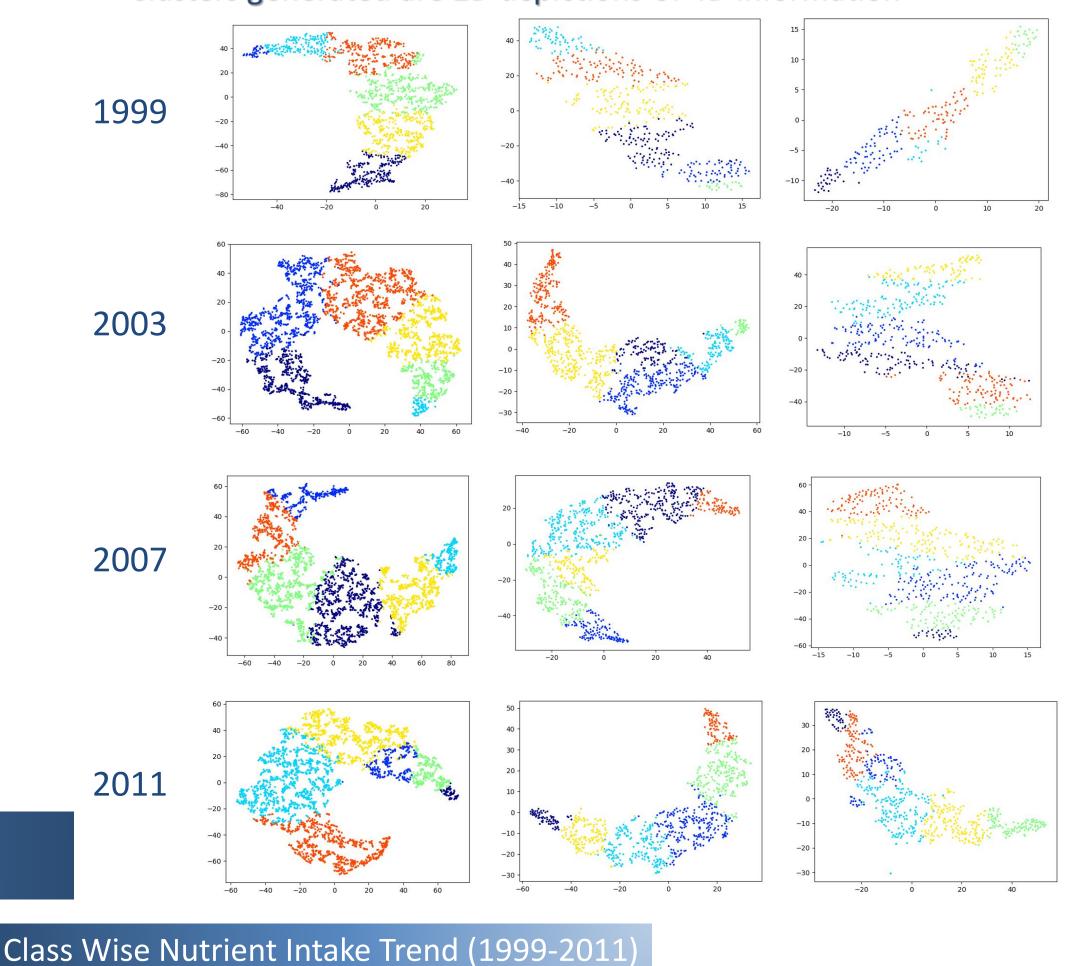


2003

- Carbohydrate consumption → significantly high
- Fiber consumption → extremely low
- Average carb consumption per day has been decreasing over the years

## Clustering using K-Means

- K yields the least within set sum of squares error (WSSSE) → 6
- Distance metric → Euclidean
- 6 clusters correspond the 6 sections of ipr values ranging from  $1 \rightarrow 6$
- Clusters generated are 2D depictions of 4D information

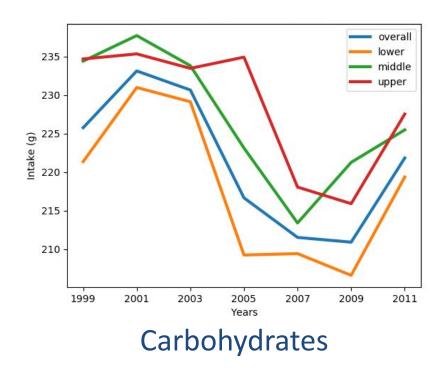


# Few Insights

Food intake irrespective of financial class is carbohydrate dominant

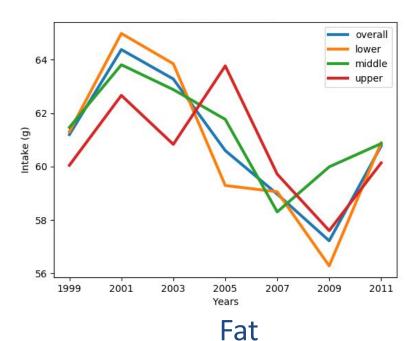
 High carb intake may be due to the increase in junk and soda intake among children.

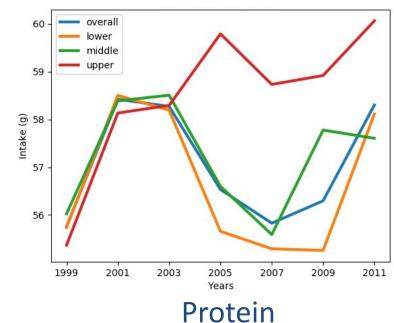
The overall mean dietary intake is close to lower financial class behavior because they form the majority in the dataset



13.5 overall lower middle upper 12.5 11.5 11.0 10.5 1999 2001 2003 2005 2007 2009 2011 Years

Fiber





- Upper financial classes consume higher quantities of macronutrients
- They outperform other classes especially in fiber and protein intake
- This may be due to greater diet awareness and also a superior educational background.
- Lower financial class fall behind other classes in overall macronutrient consumption and have the highest possibility of diabetes diagnosis
- This may unfortunately be due to lack of access to healthy food and quality education