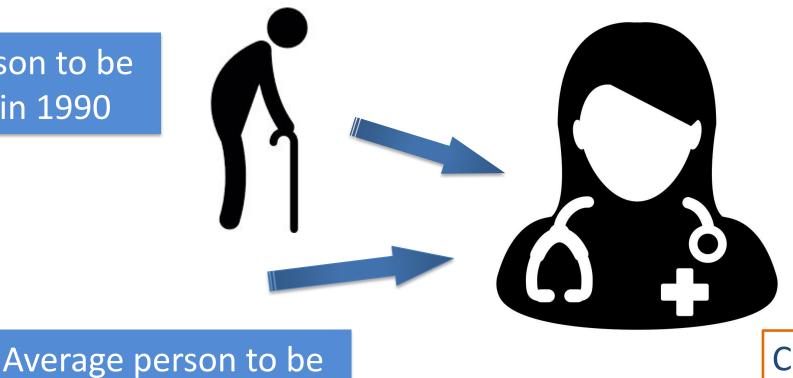
Dietary trends among children across financial classes

Data: 1999 - 2011 Prakash Dontaraju Project: March, 2018

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]

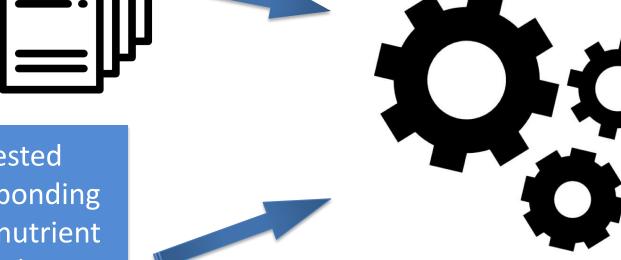
Workflow

Extracted Demographic data from each child



diagnosed in 2010



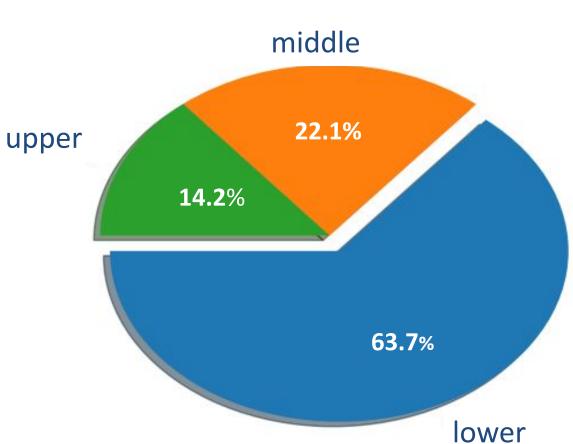


Identified children <13 years

Deleted records with missing entries (not many)

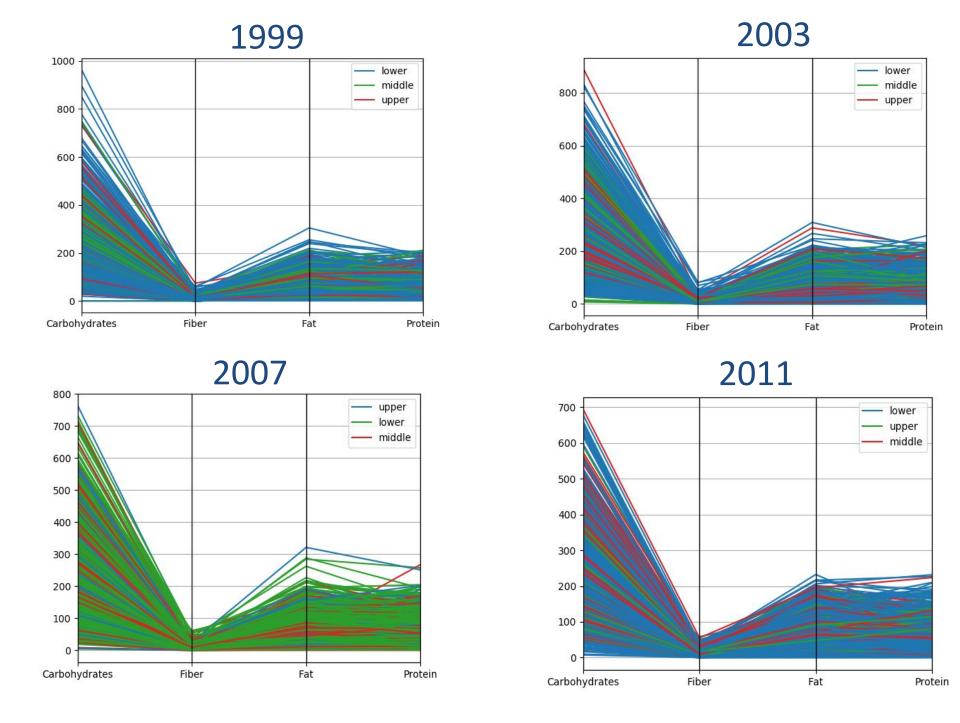
Converted strings to features

Class Wise Children Distribution



Clustering and Trend Analysis

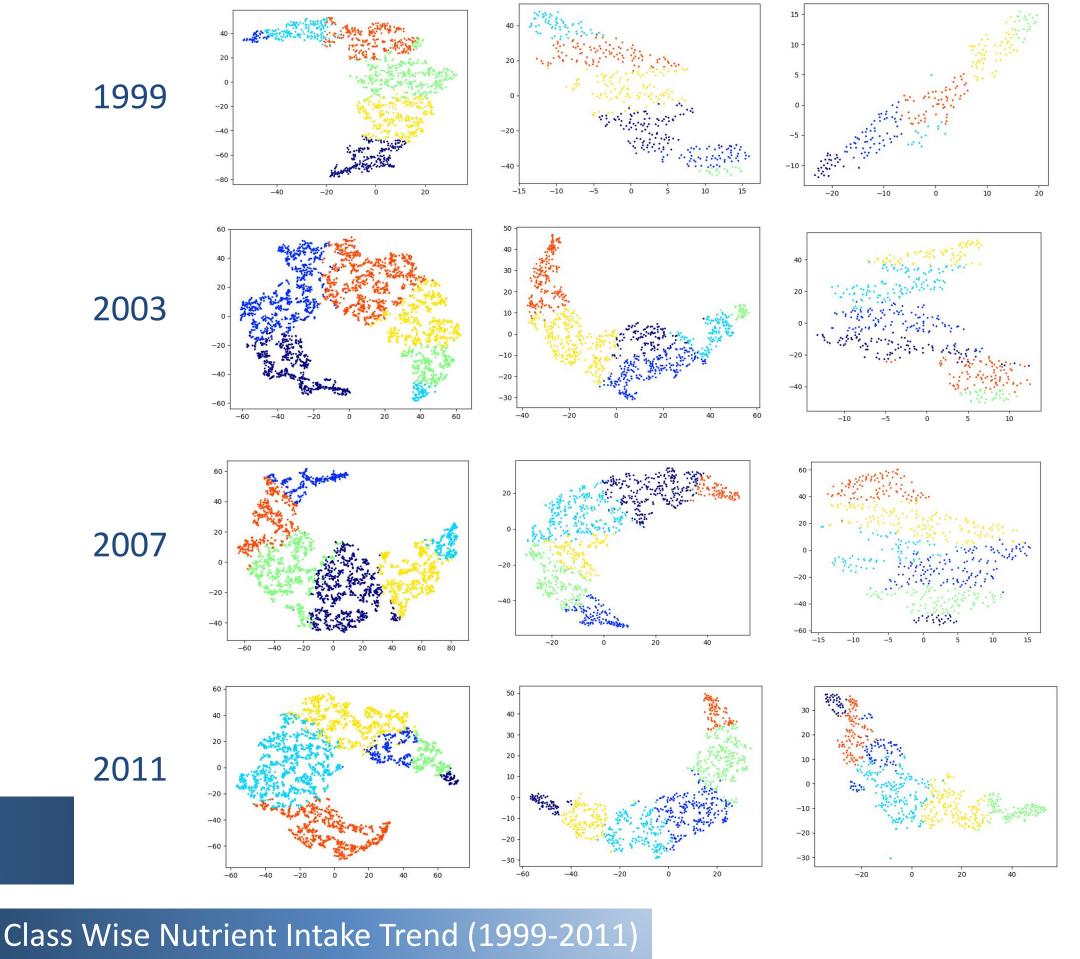
Representation of per day nutrient intake in (g) across classes



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

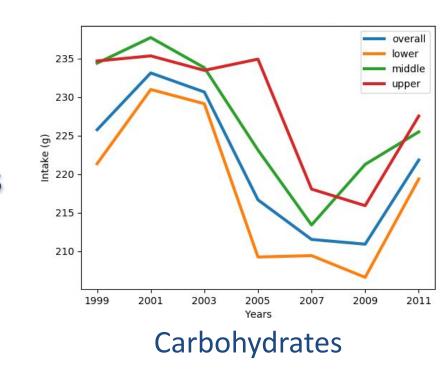
Clustering using K-Means

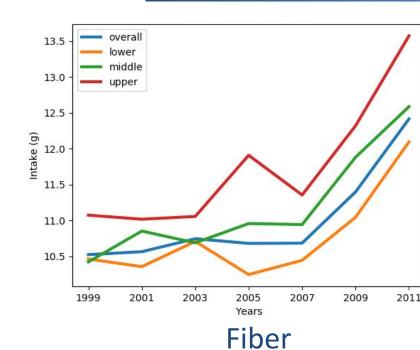
- K yields the least within set sum of squares error (WSSSE) \rightarrow 6
- Distance metric → Euclidean
- 6 clusters correspond the 6 sections of ipr values ranging from $1 \rightarrow 6$
- Clusters generated are 2D depictions of 4D information

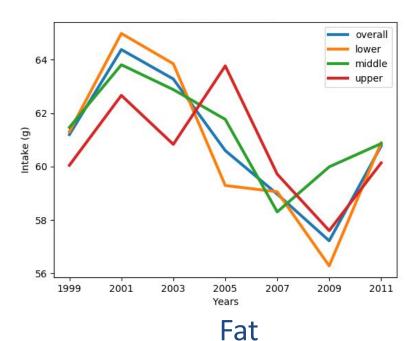


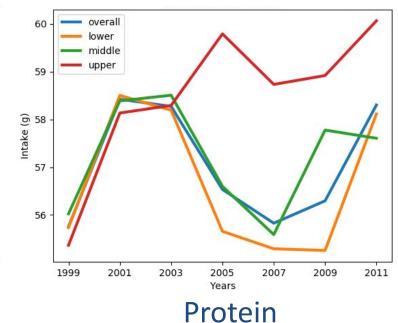
Few Insights

- 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









- 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 classes 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 high quality food and education.