



ADTA 5340.003 Discovery and Learning with Big Data

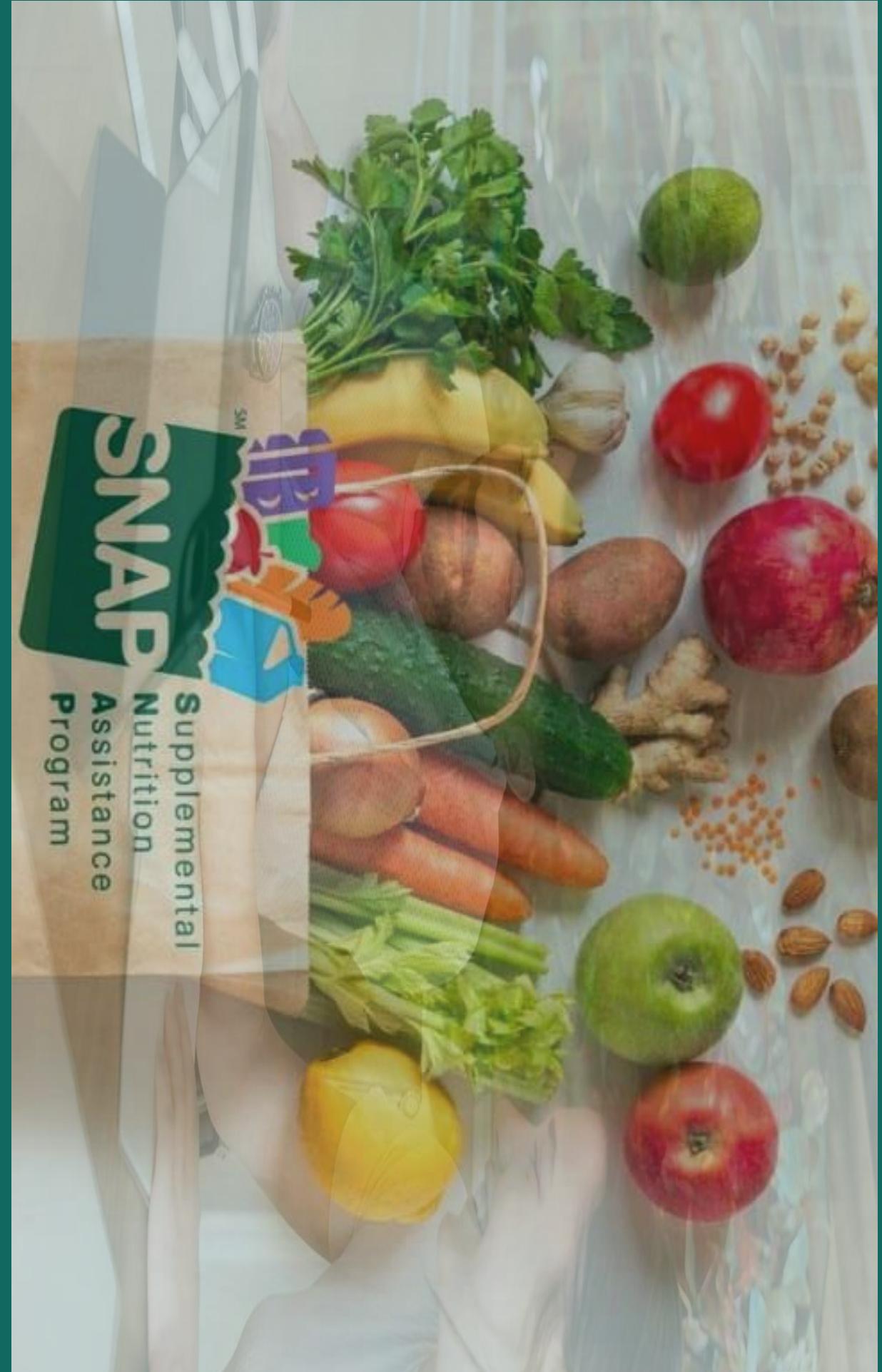
# SNAP-Up

Elevating Families Out of Poverty  
Through Innovative Policy



# Overview

- Introduction
- Problem Statement
- Business Understanding
- What is SNAP?
- How can ML help?
- Data Understanding & Data Plan
- Machine Learning Models
- Strategy
- Conclusion & Recommendation
- Our Team





# Introduction

The American Community Survey (ACS) stands as an important program conducted by the United States Census Bureau, delivering valuable insights about the nation's population and housing characteristics. Our team, comprising four dedicated members, has undertaken the task of integrating the wealth of data provided by the ACS to address critical questions surrounding the distribution of SNAP benefits and socioeconomic disparities across different geographic areas. Food and Nutrition Service (FNS) under the United States Department of Agriculture works with several industries to run Supplemental Nutrition Assistance Program (SNAP).





# Problem Statement

Food and Nutrition Service under Department of Agriculture (USDA) handles the SNAP eligibility and distribution among low-income households.

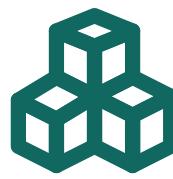
We are aiming to propose different policies which could be implemented to enhance employment opportunities and build financial stability within these families.



*These policies will be intending to lift/bring these families above poverty line while utilizing optimized snap benefits and will be determined using machine learning algorithms..*

# Business Understanding

## Current Scenario



FNS analyzes and distributes the SNAP benefits to the low-income households. Each year the benefits are reviewed and optimized.

## Challenges Faced



Some of the native lands have many low-income households compared to other, affecting economic state of the region.

## Objectives



To suggest policies which would empower these families and lead to better future, while utilizing SNAP's optimized benefits.

## Innovation



Proposing the idea to federal government which would help them organize funds efficiently.

## Strategy



Utilizing Machine Learning Model to understand which regions are lacking in various factors such as Education, employment etc.

## Call to action



The funds should get properly distributed for suggested policies, since its one-time-investment to empower the nation and build brighter future.

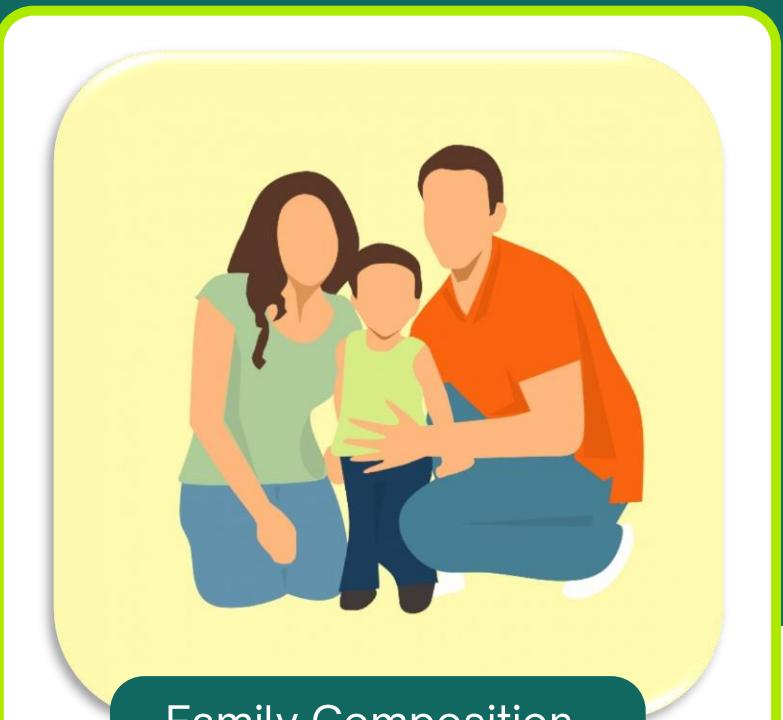
# What is SNAP eligibility?



## Income Limit

For a household of one: \$1,055 per month or \$12,660 per year

For each additional person, add: \$369 per month or \$4,428 per year



## Family Composition

Number of individuals living in the household and their relationship to one another



## Asset Limit

For each household \$2,250 or less in countable resources And with elderly or disabled person , the asset limit is \$3,500 or less.



## Work Requirements

Able-bodied adults without dependents (ABAWDs) aged 18 to 49 may be subject to work requirements.

# How can Machine Learning help here?

Machine learning model can learn and analyze different patterns of data collected from American Community Survey (ACS).

01



Analyze the data

02



Extract important features

03



Determine the regions with high below poverty families

04



Clustering states with similar economic condition

# Data Understanding

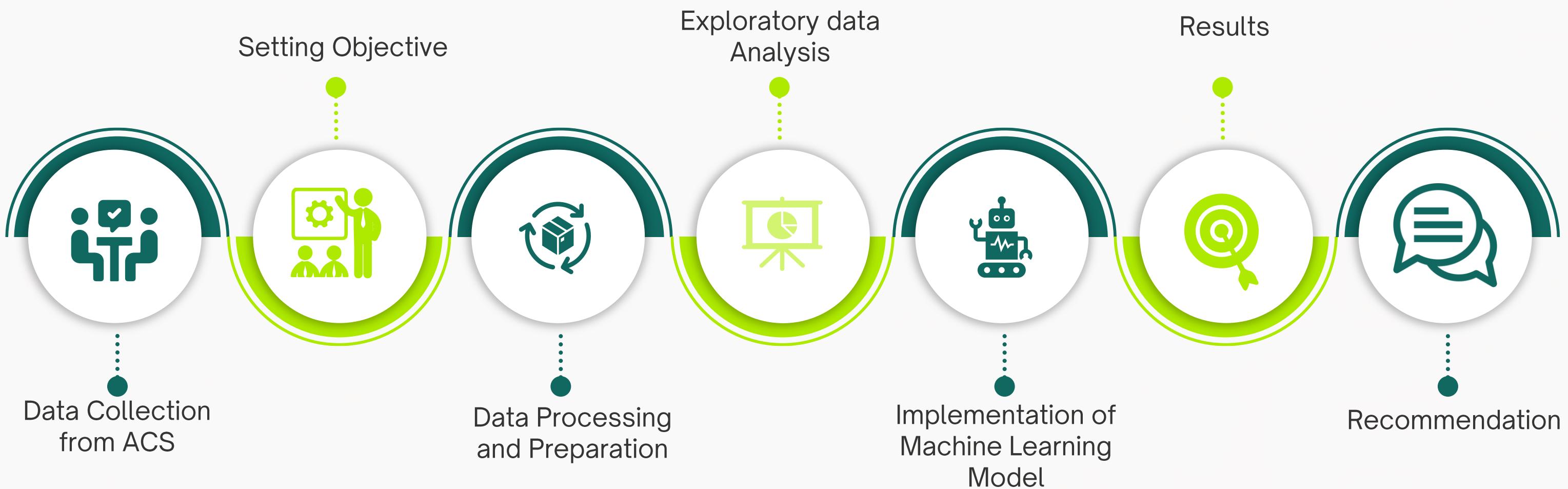
Machine learning model can learn and analyze different patterns of data collected from American Community Survey (ACS).

**Data Source:** American Community Survey (ACS)

**Dimension:** 562 \* 59

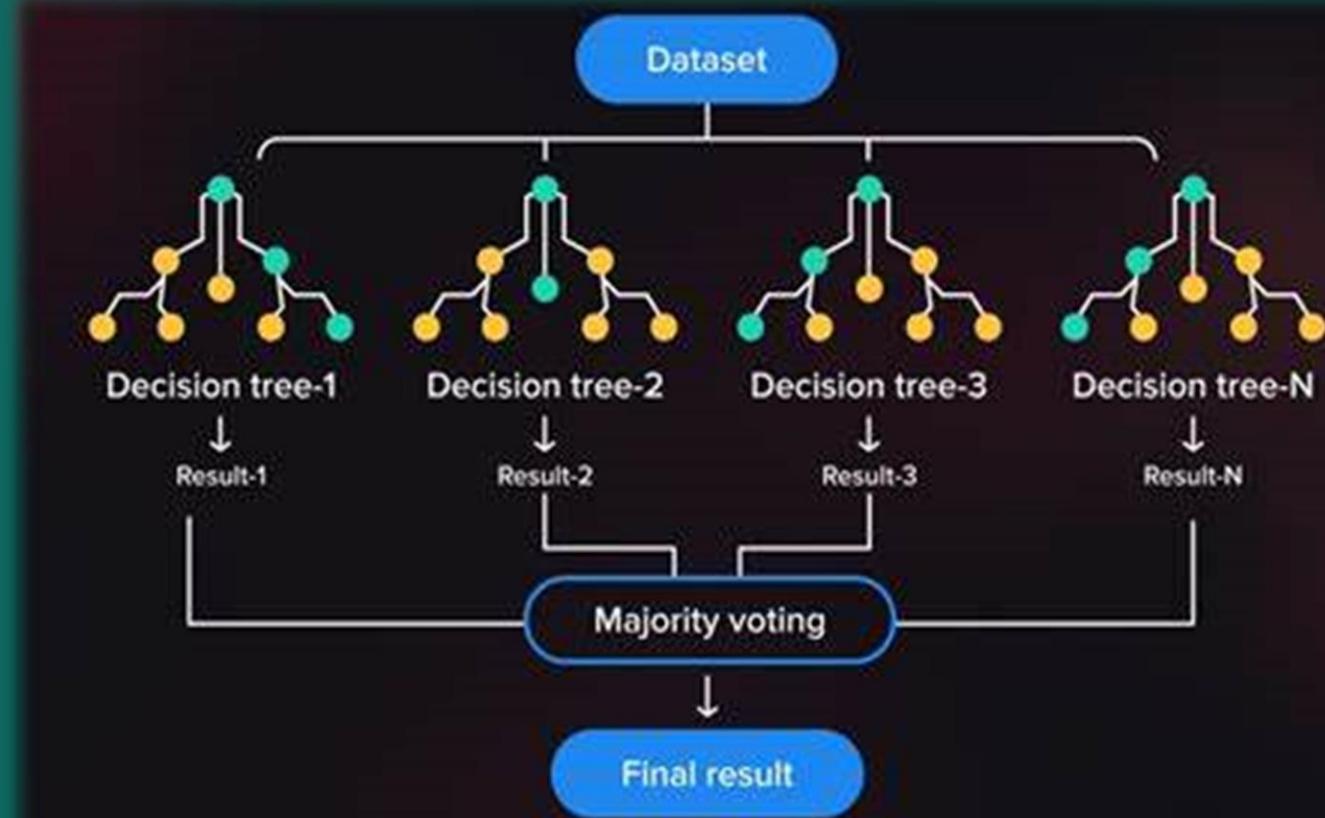
**Features:** Types Of Earnings, House-Hold Makeup , Income, Gender, Education , Poverty, Employment, Race, Age

# Data Plan

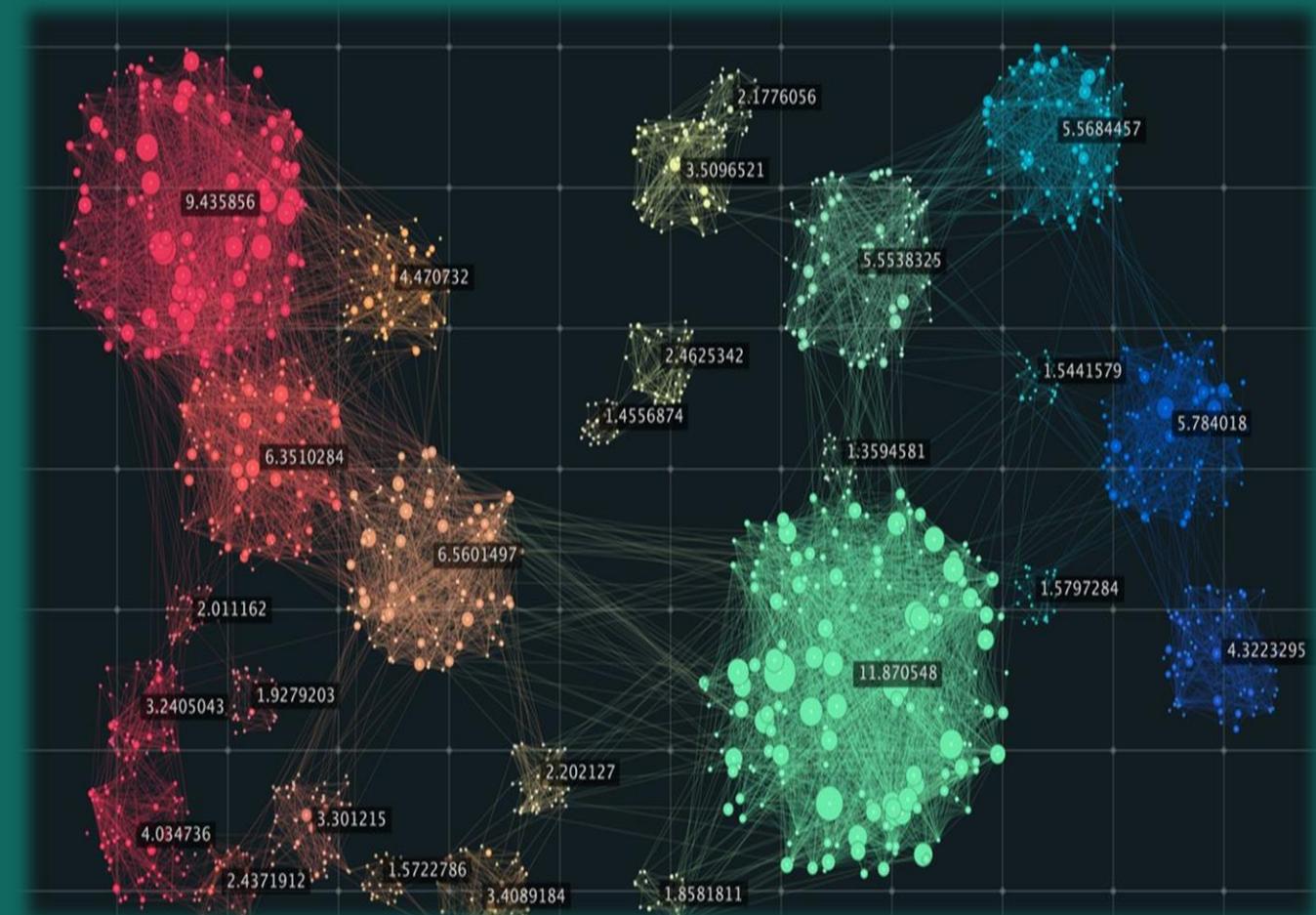


# Machine Learning Model

1. Random Forest Regressor
  2. Clustering



1

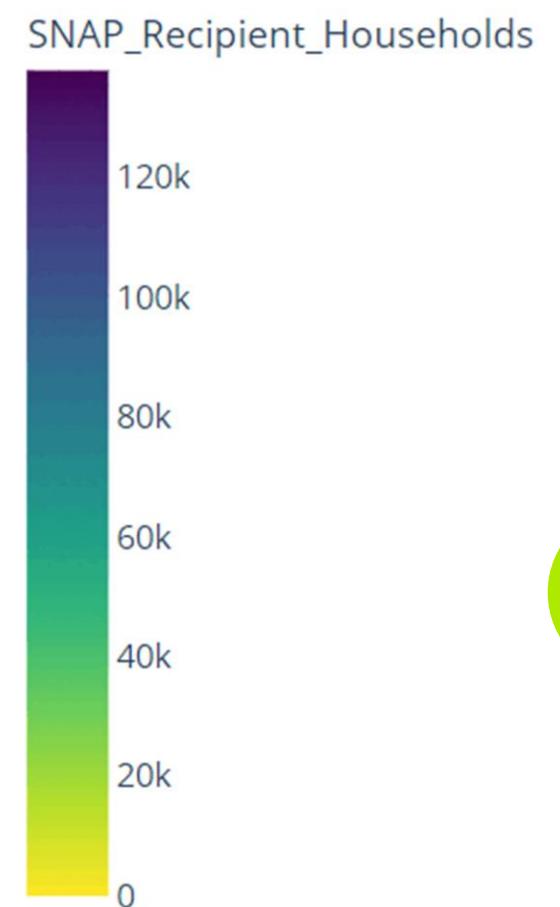
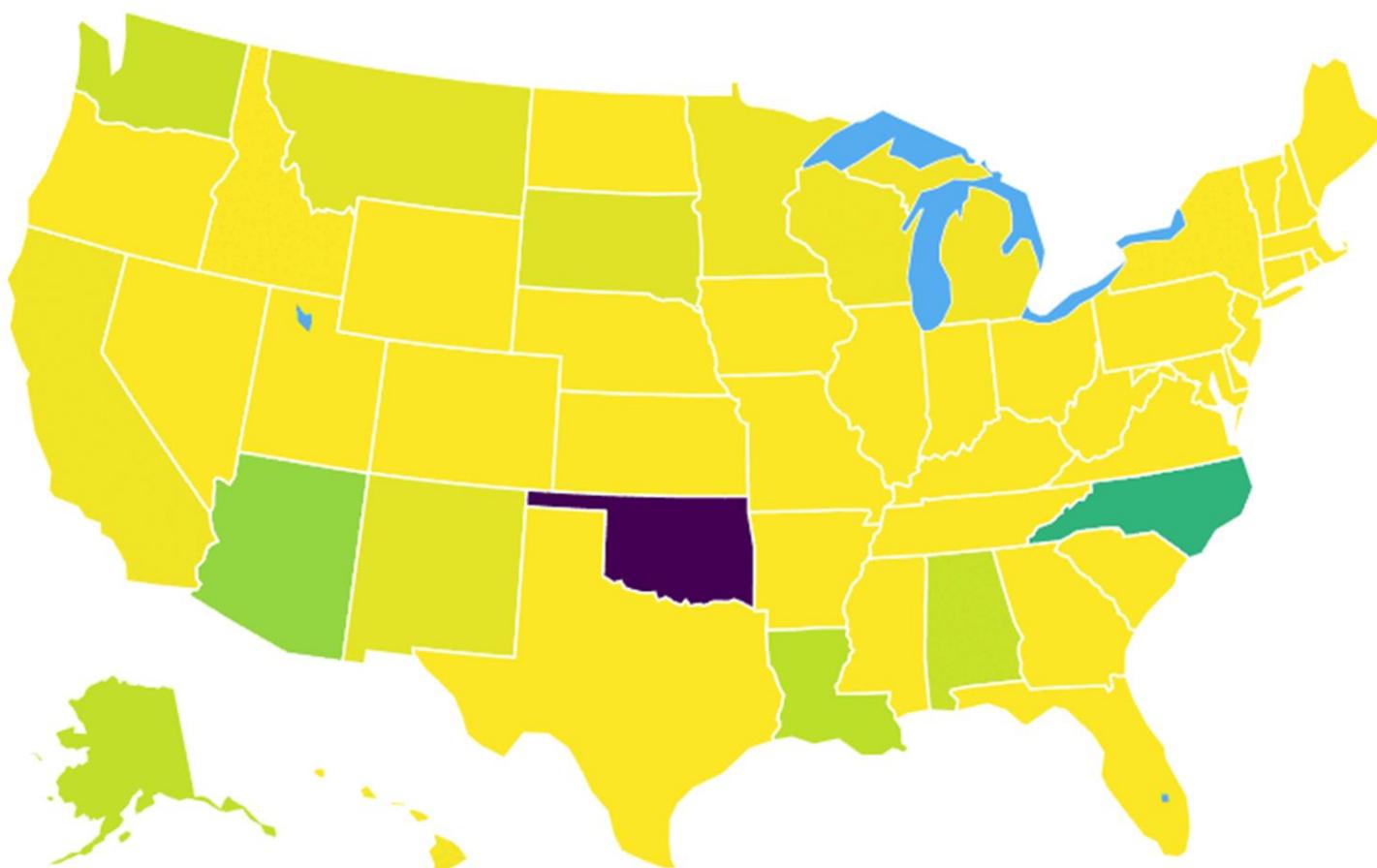


2



# Statistics

### SNAP Recipient Households



# Important Features

0.052

- People above 65 years

0.063

- 18-24 age group with less than high-school education

0.031

- Over 25 years with less than 9<sup>th</sup> grade

0.041

- 25+ years with bachelors and associate degree

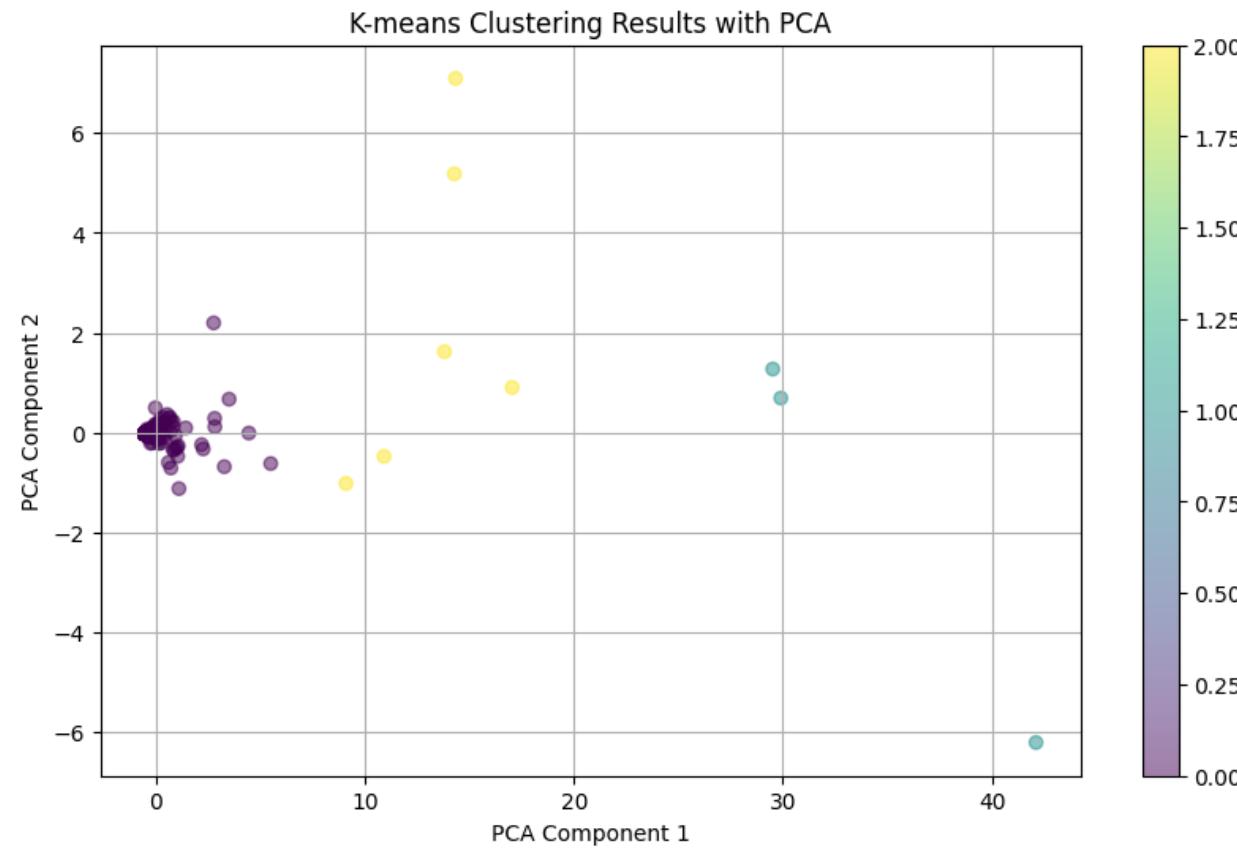
0.022

- 18-34 years below poverty

0.028

- Unemployed Civilian labor

# Clusters of native lands where the strategies should be implied

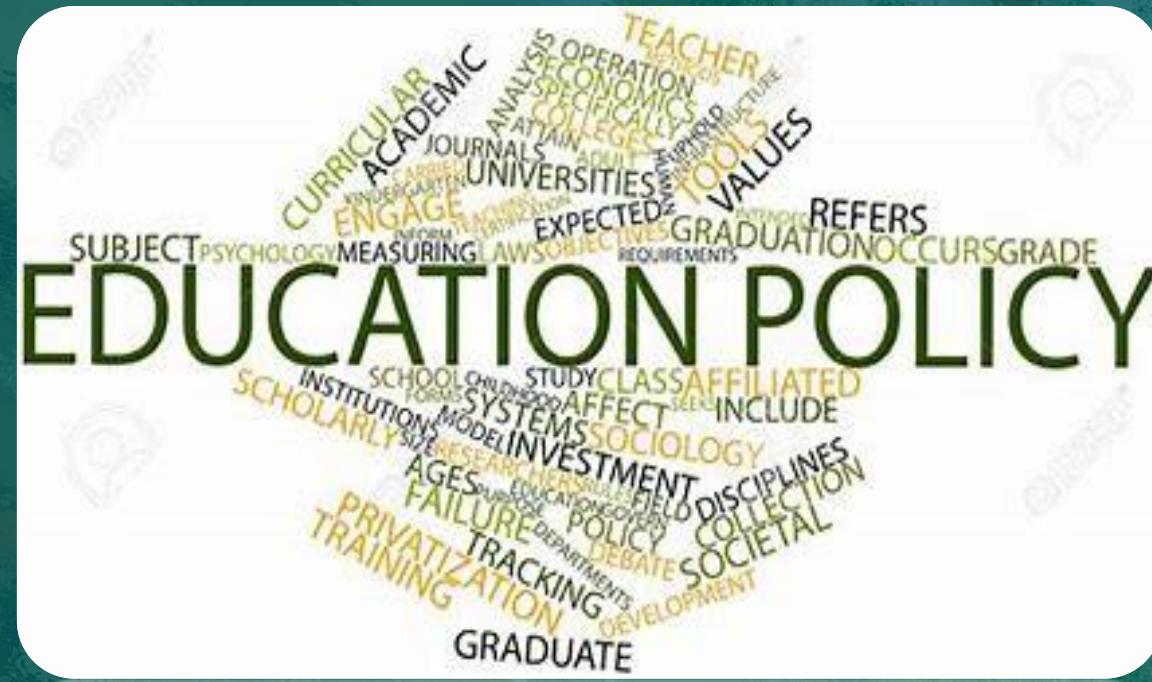


**Cluster 1:** 'New Mexico', 'California', 'Texas', 'New York', 'Alaska', 'Maine', 'Wisconsin', 'Nevada', 'Michigan', 'Florida', 'Montana', 'Minnesota', 'Oregon', 'South Carolina', 'Washington', 'South Dakota', 'Idaho', 'North Dakota', 'Kansas', 'Mississippi', 'Connecticut', 'Nebraska', 'Utah', 'Alabama', 'Iowa', 'Colorado', 'Massachusetts', 'Wyoming', 'Hawaii', 'Virginia', 'Delaware', 'New Jersey'

**Cluster 2:** 'Oklahoma', 'North Carolina'

**Cluster 3:** 'Arizona', 'Oklahoma', 'Louisiana'

# Strategy



# Learning Enrichment Initiative



# Entrepreneurial Edge



# Fair Wage Adjustment Policy

# Conclusion & Recommendation

To conclude, government should focus on :



## **Learning Enrichment Initiative**

- .....● Spread awareness and optimize education policies, which will be affordable to everyone.



## **Entrepreneurial Edge**

- .....● The department should encourage new startups and small business ideas, which will create new employment.



## **Fair Wage Adjustment Policy**

- .....● Daily wages should be revised to make families financially stable to lower below-poverty level family count.

Let's

# SNAP-Up

Together, Towards  
Zero Poverty





# THANK YOU

For watching this presentation

