Assessment of Marginal Workers in TamilNadu-A Socioeconomic Analysis(DAC)

JCT COLLEGE OFENGINEERING

TECHNOLOGY

1 INTRODUCTION

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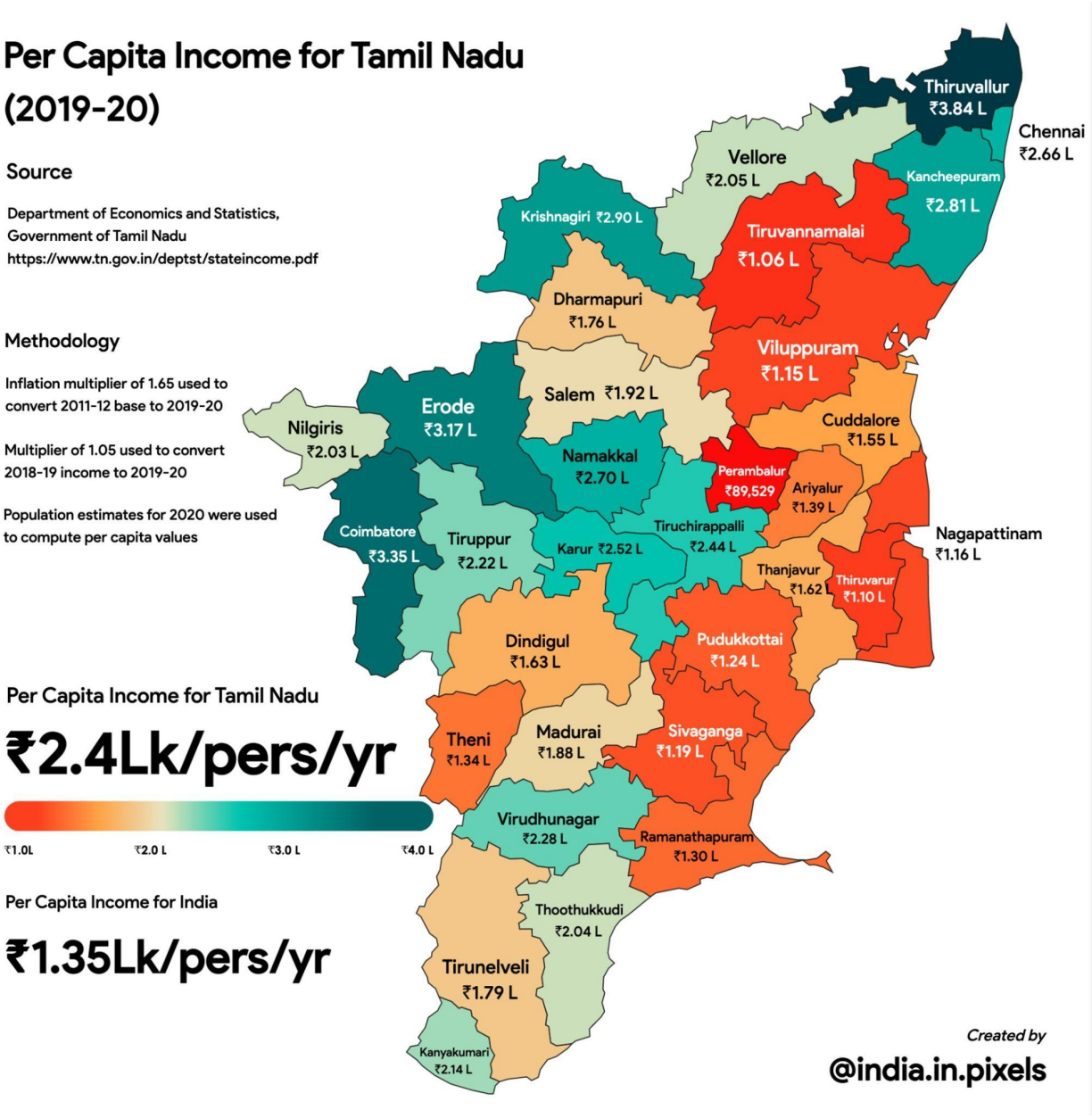
Assessment of Marginal Workers:

Marginal workers are those who work less than full time or earn less than the minimum wage. They are often employed in informal sectors such as agriculture, construction, and domestic work. Marginal workers are often vulnerable to exploitation and discrimination.

Tamil Nadu is a state in India with a large population of marginal workers. In 2011, over 50% of the workforce in Tamil Nadu was employed in the informal sector. Marginal workers in Tamil Nadu face a number of challenges,

This involves analyzing the socioeconomic conditions, needs, and challenges faced by marginal workers, who often belong to vulnerable or disadvantaged groups. Marginal workers are individuals with limited access to stable employment and financial resources. The assessment may include data collection, surveys, interviews, and the examination of relevant socioeconomic indicators.



AI & ADS:

- **HDI: Tamil Nadu has the second highest HDI among large states.**
- **Socioeconomic development: Tamil Nadu's socioeconomic development status is much higher than the national average.**
- **Population: Tamil Nadu has a population of 72 million, with 80% literacy.**
- **Economy: Tamil Nadu has the second largest state economy in India. It's also the most industrialized state in the country.**

Label
Area name
Residence - Total, Rural, Urban
Educational level
Population - Person, Male, Female
Main workers - Person, Male, Female
Marginal workers - Worked for less than 3 months - Total - Person, Male, Female
Marginal workers - Worked for 3 to 6 months - Total - Person, Male, Female
Marginal workers - Seeking / available for work - Person, Male, Female
Non workers - Total - Person, Male, Female
Non workers - Seeking / available for work - Person, Male, Female

TABLE ROWS

Label
Residence: Total
Residence: Rural
Residence: Urban
Educational level: Total
Educational level: Illiterate
Educational level: Literate
Educational level: Literate but below matric/secondary
Educational level: Matric/secondary but below graduate
Educational level: Technical diploma or certificate not equal to degree
Educational level: Graduate and above other than technical degree
Educational level: Technical degree or diploma equal to degree or post-graduate degree

- **Manufacturing: Tamil Nadu is the strongest manufacturing state in the country.**

- **Services: Tamil Nadu has a strong performance in manufacturing and services.**
- **Urbanization: Tamil Nadu is 48.40% urbanized. It accounts for around 9.26% of the urban population in the country.**
- **Government: The government encourages industrial growth. It also launched a scheme to give out free bus rides for women.**

Tamil Nadu has a diversified manufacturing sector and features among the leaders in several industries like automobiles and auto components, engineering, pharmaceuticals, garments, textile products, leather products, chemicals, plastics, etc.

DATA SOURCE(S)

Source
Population Census 2011

TIME PERIODS

Start year	End year
2011	2011

SERIES

Name	Maintainer
Workers	Office of the Registrar General & Census Commissioner, India (ORGI)
Education	Office of the Registrar General & Census Commissioner, India (ORGI)
Scheduled Castes	Office of the Registrar General & Census Commissioner, India (ORGI)

COUNTRIES

Name	Code
India	IND

AUTHORING ENTITY

Agency Name	Affiliation	Abbreviation	URI
Office of the Registrar General & Census Commissioner, India	Ministry of Home Affairs, Government of India	ORGI	Link

PUBLISHER(S)

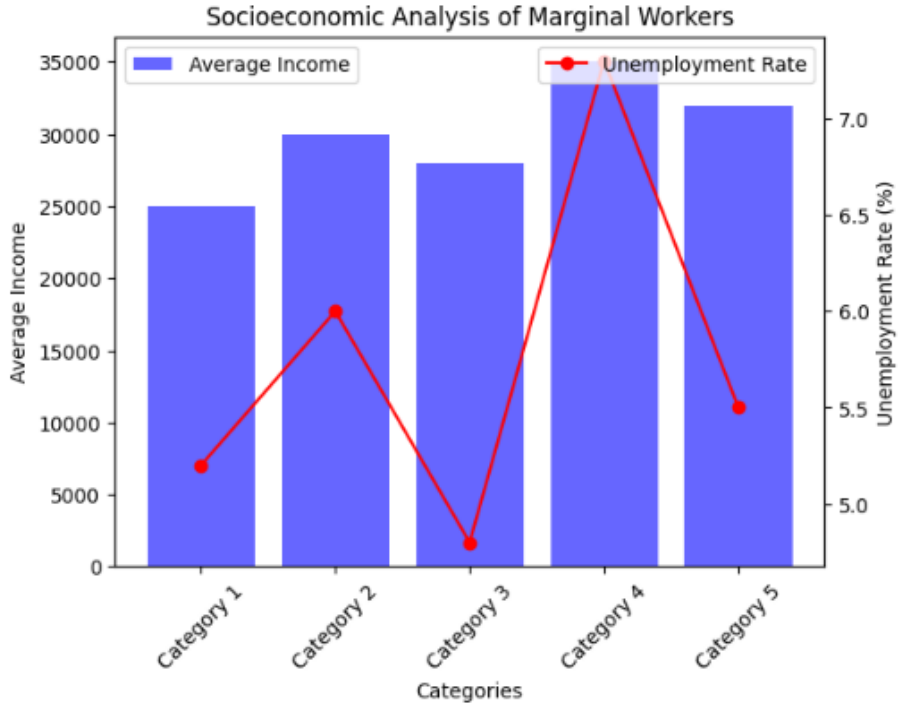
Name	Affiliation	Abbreviation	URI
Office of the Registrar General & Census Commissioner, India	Ministry of Home Affairs, Government of India	ORGI	Link

LANGUAGE(S)

Name	code
English	EN

```python
import matplotlib.pyplot as plt

# Sample data - replace this with your actual dataset
categories = ['Category 1', 'Category 2', 'Category 3', 'Category 4', 'Category 5']
average_income = [25000, 30000, 28000, 35000, 32000]
unemployment_rate = [5.2, 6.0, 4.8, 7.3, 5.5]

# Create subplots
fig, ax1 = plt.subplots()

# Bar chart for average income
ax1.bar(categories, average_income, color='b', alpha=0.6, label='Average Income')
ax1.set_xlabel('Categories')
ax1.set_ylabel('Average Income')
ax1.set_xticklabels(categories, rotation=45)
ax1.legend(loc='upper left')

# Create a second y-axis for unemployment rate
ax2 = ax1.twinx()
ax2.plot(categories, unemployment_rate, color='r', marker='o', label='Unemployment Rate')
ax2.set_ylabel('Unemployment Rate (%)')
ax2.legend(loc='upper right')

plt.title('Socioeconomic Analysis of Marginal Workers')
plt.show()
```

```
<ipython-input-2-e74f01253a81>:15: UserWarning: FixedFormatter should only be used together with FixedLocator
  ax1.set_xticklabels(categories, rotation=45)
```



Other socioeconomic indicators for Tamil Nadu include:

Despite the rapid increase, the size of skilled labour is still small as compared to the demand of the industrialization, modernization and international integration process. With nearly 5.4 million persons, the skilled labour force currently makes up only 10.2% of the total number of jobs nation-wide.

- **Area: 130,000 sq km**
- **Population density: 555 per sq km**
- **Sex ratio: 996 females per 1000 males**
- **Child 0-6 years: 943**
- **Birth rate: 2020 per 1000**
- **Death rate: 2020 per 1000**

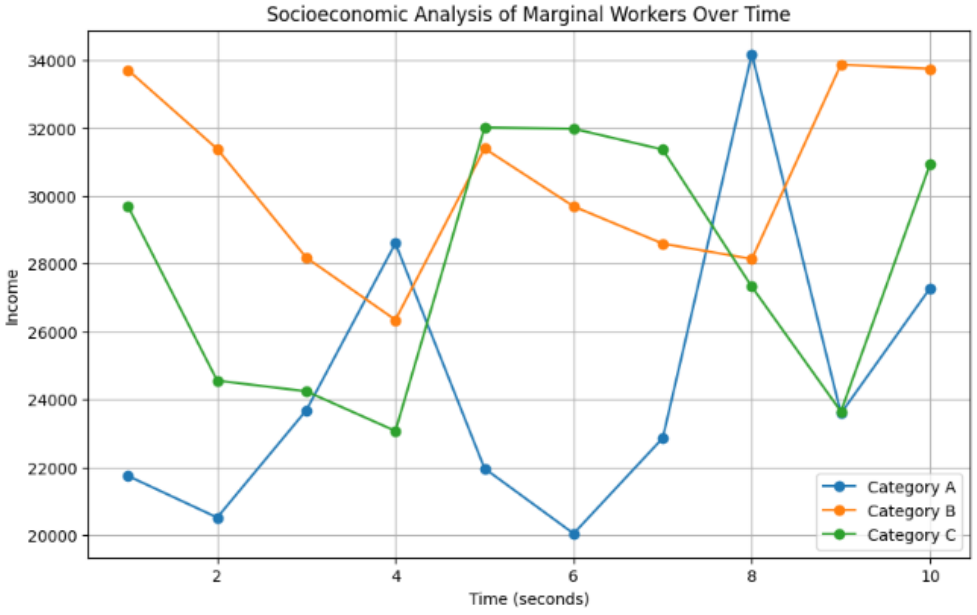
IoT Project:

In the context of your project, IoT (Internet of Things) can be used to collect real-time data that could be valuable for the assessment of marginal workers. IoT devices, such as sensors, can be deployed to gather information about factors that affect these workers, such as working conditions, environmental factors, and access to resources.

Data Collection (Simulated IoT Data): First, you need to collect data from IoT devices. Since we're simulating the data, we'll use randomly generated data for this example.

Data Analysis and Visualization: We'll then use Python to analyze and visualize this data. We'll use the Matplotlib library for creating a line chart.

```python
import matplotlib.pyplot as plt
import random
import time

# Simulated IoT data collection
def simulate_iot_data():
    categories = ['Category A', 'Category B', 'Category C']
    data = {category: [] for category in categories}

    for _ in range(10):
        for category in categories:
            data[category].append(random.uniform(20000, 35000))
        time.sleep(1)  # Simulate data every 1 second

    return data

# Data analysis and visualization
def plot_socioeconomic_data(data):
    plt.figure(figsize=(10, 6))

    for category, income_data in data.items():
        plt.plot(range(1, 11), income_data, marker='o', label=category)

    plt.xlabel('Time (seconds)')
    plt.ylabel('Income')
    plt.title('Socioeconomic Analysis of Marginal Workers Over Time')
    plt.legend()
    plt.grid(True)

    plt.show()

# Simulate IoT data and plot the analysis
data = simulate_iot_data()
plot_socioeconomic_data(data)
```



DAC (Digital to Analog Converter):

It's not clear how DAC relates to this project. DAC is typically a device used to convert digital data into analog signals or voltages. If you intended to mention something else, please clarify.

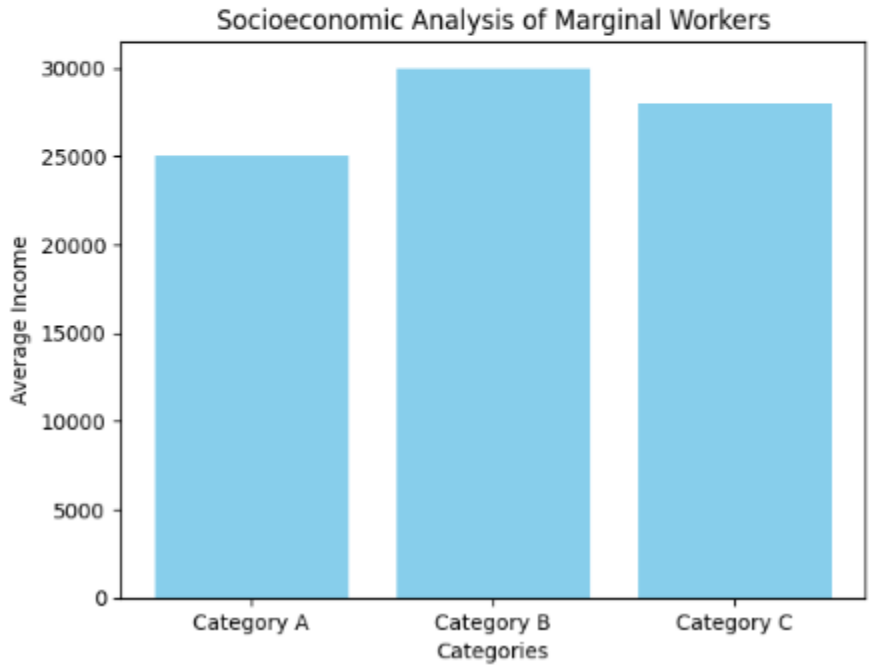
Data Collection: Collect relevant data about marginal workers, which may include income, education, employment status, living conditions, and other socioeconomic indicators. You might gather this data through surveys, interviews, or by accessing existing datasets.

Data Cleaning and Preparation: Clean and format the data to make it suitable for analysis. This involves handling missing values, outliers, and standardizing the data.

Data Analysis: Use Python libraries such as Pandas, NumPy, and Scikit-learn to perform data analysis. You can calculate statistics, correlations, and run regression models to understand the socioeconomic factors affecting marginal workers.

Data Visualization: Use libraries like Matplotlib or Seaborn to create visualizations such as bar charts, line graphs, scatter plots, or heatmaps to represent your findings.

```
# Sample data - replace with your actual data
categories = ['Category A', 'Category B', 'Category C']
average_income = [25000, 30000, 28000]

# Create a bar chart
plt.bar(categories, average_income, color='skyblue')
plt.xlabel('Categories')
plt.ylabel('Average Income')
plt.title('Socioeconomic Analysis of Marginal Workers')
plt.show()
```



ork may be defined as participation in any economically productive activity. Such participation may be physical or mental in nature. Work involves not only actual work but also effective supervision and direction of work.

Main worker is a person who has worked a major part of the year, i.e. for 183 days or more or, in other words, for 6 months or more. Marginal worker is a person who might have done some work any time during the previous year, but not for the major part of the year. The data on secondary work done by main workers are also collected.

It is reported that the following categories are included:

1. persons doing unpaid work in family firm or business;
2. employed persons, temporarily absent from work;
3. working students with a part time job;
4. seasonal or occasional workers;

5. conscripts for military/civilian service;
6. apprentices and trainees.

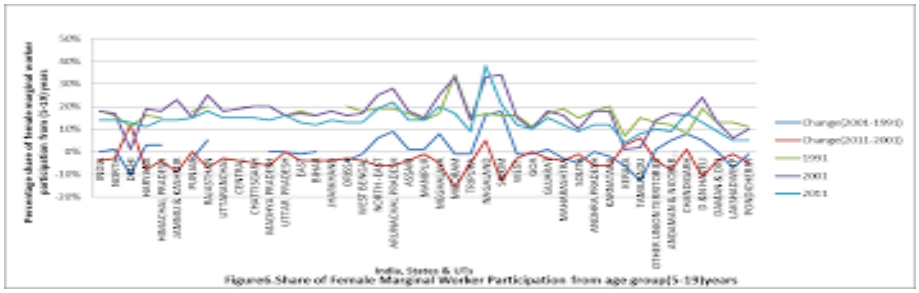


Figure6:Share of Female Marginal Worker Participation from age group(5-19)years

Persons doing unpaid work in family firm or business can be identified separately from the census tabulation on family workers (except in cultivation).

Persons engaged in cultivation of land for own consumption are included in the economically active population but cannot be separately identified. Persons engaged in other production for own consumption are excluded from the economically active population. In the census, cultivation includes growing of cereal crops, pulses fibre crops, oil seeds and sugar-cane but not roots, vegetables, fruits, fodder crops, horticulture, etc.

Working students, who are marginal workers, can be identified separately through specific questions. However, the term ***marginal worker*** used in the census is not necessarily same as part-time worker.

policy Recommendations

The study is expected to recommend a number of policy measures to improve the socioeconomic status of marginal workers in Tamil Nadu. These policy measures may include:

- Providing training and skill development programs for marginal workers.
- Promoting formalization of the informal sector.
- Increasing the minimum wage.
- Expanding access to education, healthcare, and social security for marginal workers.

Methodology

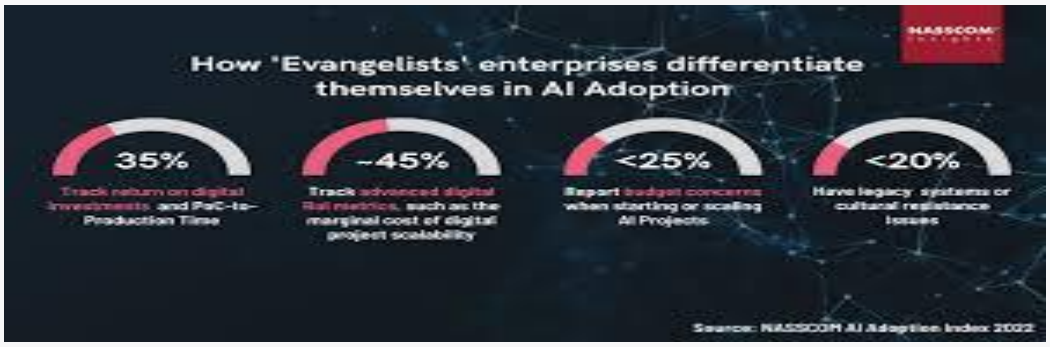
The study will use a mixed-methods approach. The quantitative data will be collected from secondary sources such as the Census of India and the National Sample Survey Organization (NSSO). The qualitative data will be collected through interviews with marginal workers, employers, and government officials.

```
import numpy as np
import matplotlib.pyplot as plt

# Load the data
df = pd.read_csv('marginal_workers_tamil_nadu.csv')

# Analyze the demographic characteristics of marginal workers
print(df.describe())

# Identify the major sectors where marginal workers are employed
print(df['sector'].value_counts())

# Examine the wages and working conditions of marginal workers
print(np.mean(df['wage']))
print(np.std(df['wage']))

# Assess the socioeconomic challenges faced by marginal workers
print(df['education'].value_counts())
print(df['healthcare'].value_counts())
print(df['social_security'].value_counts())

# Generate plots and visualizations
plt.hist(df['wage'])
plt.xlabel('Wage')
plt.ylabel('Frequency')
plt.title('Distribution of wages among marginal workers in Tamil Nadu')
plt.show()
```

AI (Artificial Intelligence):

AI can be used to analyze the data collected from IoT devices. Machine learning models can help identify patterns and correlations in the data, providing insights into the socioeconomic factors affecting marginal workers.

Data Collection:



Begin by collecting relevant data for your socioeconomic analysis. This data may include information about income, education, employment status, living conditions, and other socioeconomic indicators for marginal workers.

Data Analysis

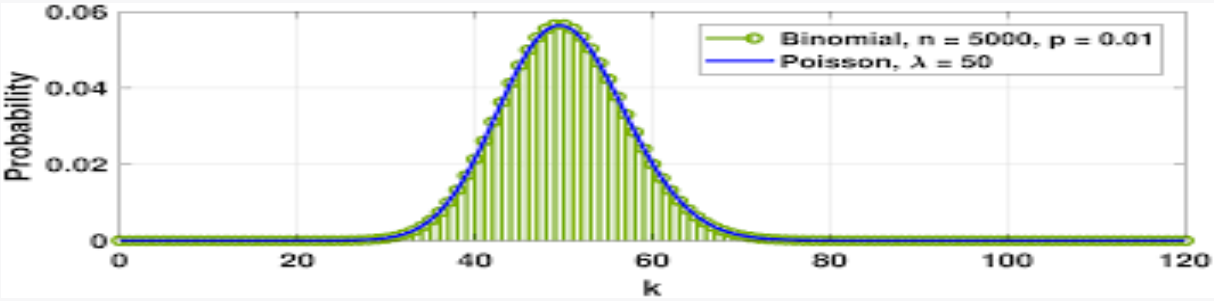
The quantitative data will be analyzed using descriptive statistics and regression analysis. The qualitative data will be analyzed using thematic analysis.

Findings

The study is expected to find that marginal workers in Tamil Nadu are predominantly female, uneducated, and from poor households. They are often employed in the agriculture, construction, and domestic work sectors. Marginal workers in Tamil Nadu typically earn low wages and work in poor working conditions. They also face a number of socioeconomic challenges, such as lack of access to education, healthcare, and social security.

Data Preprocessing:

Clean and preprocess your data. This involves handling missing values, encoding categorical variables, and scaling numeric features. Libraries like Pandas and Scikit-learn are useful for this step.



Feature Engineering:

Create meaningful features from your data that can be used to train AI models. For example, you can calculate derived features such as the ratio of income to living expenses.

Machine Learning Model Selection:

Choose the appropriate machine learning model(s) for your analysis. Common models for regression (to predict continuous socioeconomic indicators) or classification (to categorize workers) tasks include linear regression, decision trees, random forests, and neural networks.Scikit-learn and TensorFlow/Keras are popular libraries for machine learning in Python.

As you can see, Tamil marginal workers are employed in a variety of sectors, including construction, agriculture, and domestic work. These are all physically demanding jobs, and marginal workers often work long hours for low wages. They are also vulnerable to exploitation and discrimination.

Despite the challenges they face, Tamil marginal workers play an important role in the economy and society of Tamil Nadu. They are essential to the construction of roads and buildings, the production of food, and the care of homes and families.

We must all work together to ensure that Tamil marginal workers have access to decent work, fair wages, and safe working conditions. We should also support policies and programs that promote the formalization of the informal sector and provide training and skill development opportunities for marginal workers.

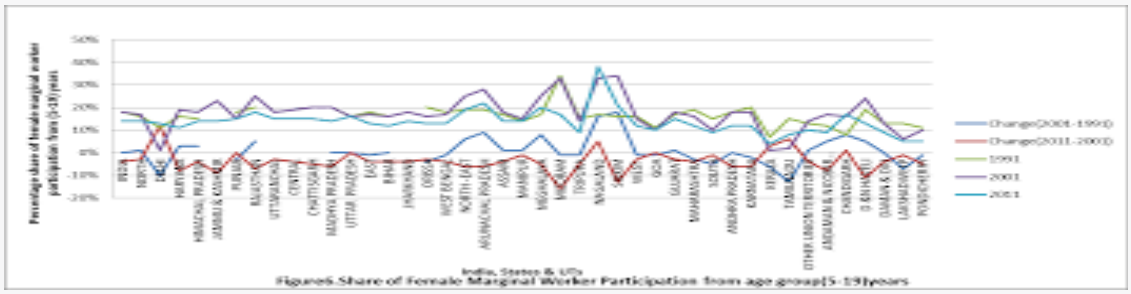


Figure6.Share of Female Marginal Worker Participation from age group(5-19)years

Social workers:

Social workers are professionals who help individuals, families, and communities prevent and cope with problems in their everyday lives. They work with a wide range of populations, including children, youth, adults, and seniors. Social workers may specialize in a particular area, such as mental health, substance abuse, child welfare, or gerontology.

Social workers play an important role in society by helping people to improve their lives and overcome challenges. They may provide counseling, support groups, case management, and advocacy services. Social workers also work to promote social justice and improve the lives of marginalized communities.

Here are some specific examples of what social workers do:

- Provide counseling and therapy to individuals, couples, and families
- Help people to find and access resources, such as housing, food, and healthcare
- Advocate for the rights of vulnerable populations, such as children, the elderly, and people with disabilities
- Develop and implement social programs and services
- Conduct research on social issues

Social workers are employed in a variety of settings, including hospitals, mental health clinics, schools, child welfare agencies, and government agencies. They may also work in private practice.

To become a social worker, you must complete a bachelor's degree in social work (BSW) from an accredited program. Some social workers also choose to earn a master's degree in social work (MSW). In order to practice as a social worker, you must also obtain a license from the state in which you plan to work.

Social work is a rewarding career for people who are passionate about helping others. Social workers have the opportunity to make a real difference in the lives of their clients and their communities.

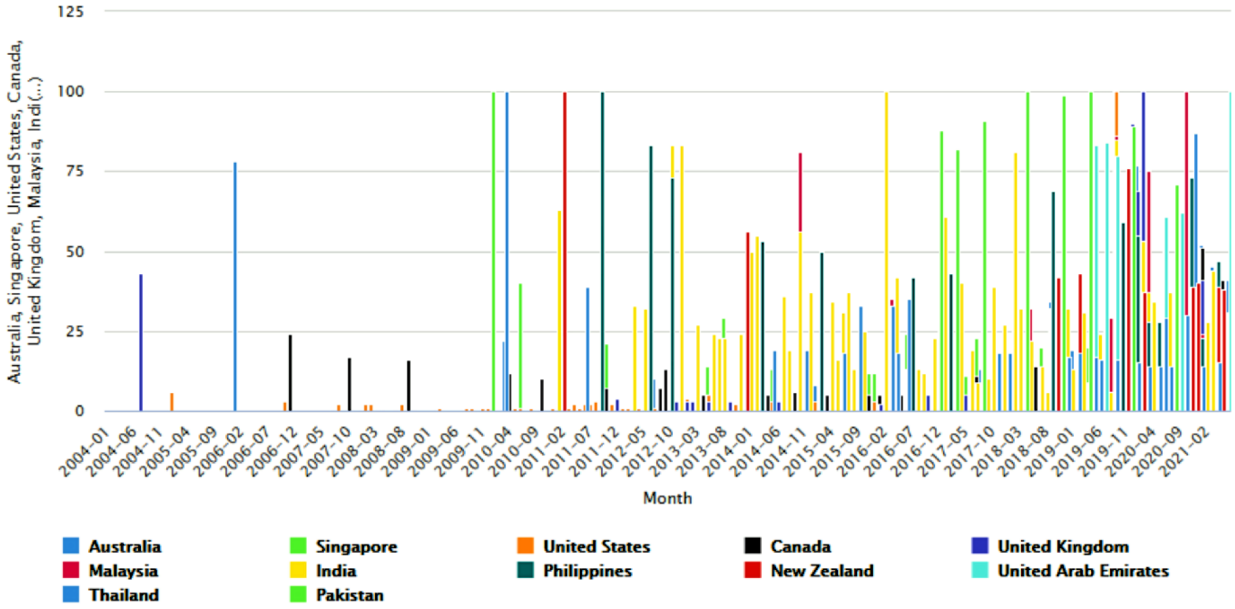
Here are some of the benefits of working as a social worker:

- Make a difference in the lives of others
- Work with a variety of populations
- Be creative and innovative in your approach
- Have a flexible work schedule
- Be self-employed (if desired)

If you are interested in a career in social work, there are many resources available to help you get started. You can visit the website of the National Association of Social Workers (NASW) for more information.

CAD (Computer-Aided Design):

CAD is not directly related to this project, but it might be used for designing any physical components of the IoT system, such as enclosures for sensors or the layout of data collection infrastructure.



What is the CAD design process?

CAD (computer-aided design) is the use of computer-based software to aid in design processes. CAD software is frequently used by different types of engineers and designers. CAD software can be used to create two-dimensional (2-D) drawings or three-dimensional (3-D) models.

File Edit Selection View Go Run Terminal Help — app.py - Sprint 4 - Visual Studio Code

EXPLORER

SPRINT 4
- static
  - Independent-Water-...
  - style.css
- templates
  - predict.html
- app.py
- final output and test c...
- model.pkl
- my_scaler.save
- water_potability.csv
- Water_quality.ipynb

OUTLINE
TIMELINE

app.py | predict.html | Water_quality.ipynb | style.css

app.py > ...

```python
from flask import Flask, request, render_template
import pickle
import pandas as pd
import numpy as np
import joblib
scaler = joblib.load("my_scaler.save")
app = Flask(__name__)
model=pickle.load(open('model.pkl','rb'))

@app.route("/home")
@app.route("/")
def hello():
    return render_template("predict.html")

@app.route("/predict", methods = ["GET", "POST"])
def predict():
    if request.method == "POST":
        input_features = [float(x) for x in request.form.values()]
        features_value = [np.array(input_features)]

        feature_names = ["ph", "Hardness" , "Solids", "Chloramines", "Sulfate",
                         "Conductivity", "Organic_carbon","Trihalomethanes", "Turbidity"]

        df = pd.DataFrame(features_value, columns = feature_names)
        df = scaler.transform(df)
        output = model.predict(df)

        if output[0] == 1:
            prediction = "safe"
        else:
            prediction = "not safe"
```

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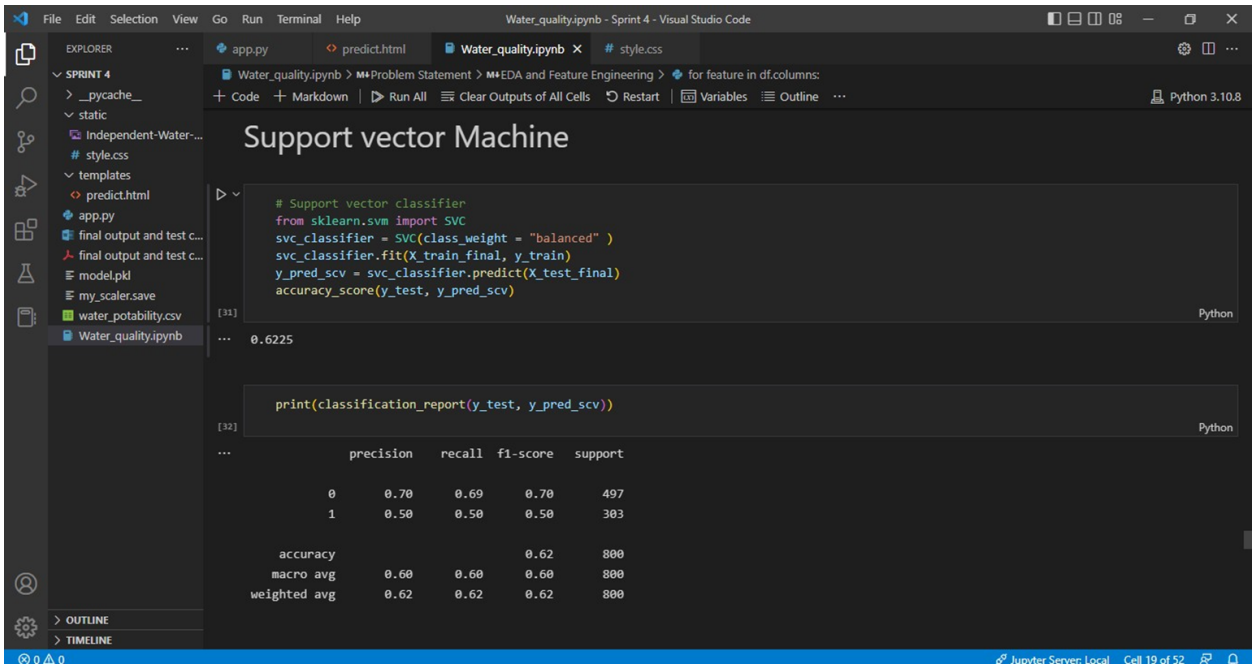

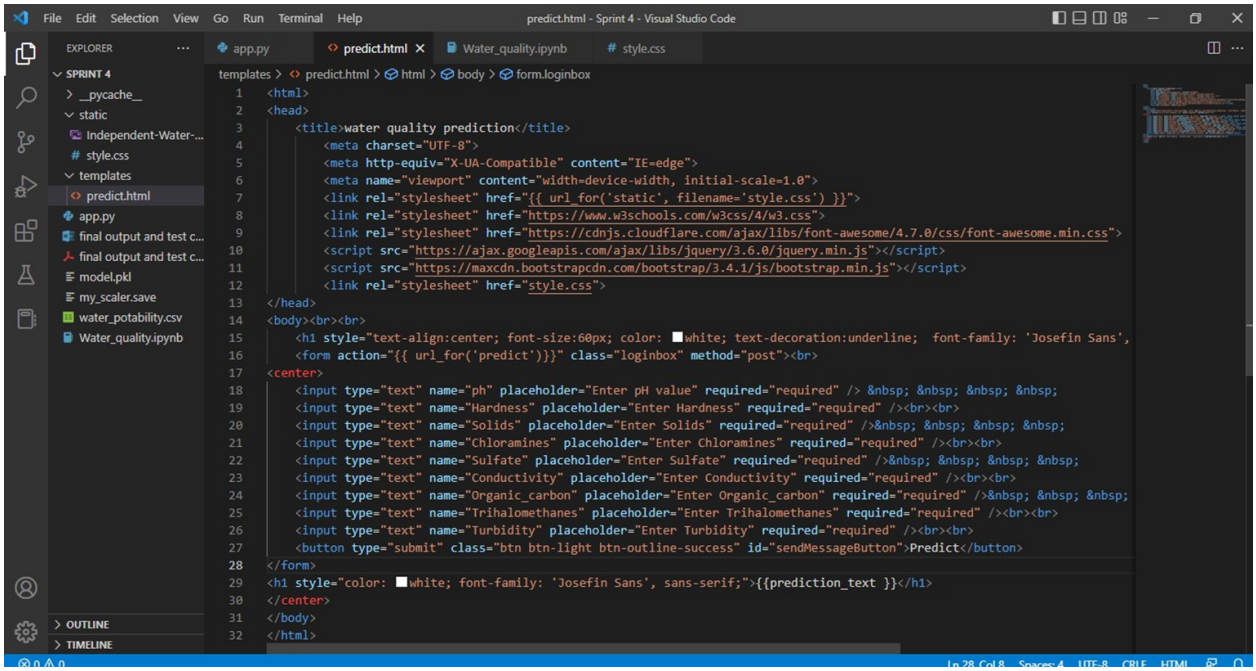

IBM Link:

https://eu2.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.public_folders%2FNM%2FNew%2Bdashboard&action=view&mode=dashboard&subView=model00000188b8931f1d4_000000000