Assessment of Marginal Workers in Tamil Nadu

Project Objective:

In the vibrant and diverse landscape of Tamil Nadu, the "Assessment of Marginal Workers" project takes center stage with a profound mission — to dissect, analyze, and visualize the intricate demographic characteristics of individuals navigating the challenging terrain of irregular and low-income work. This endeavor is not just a statistical exploration; it is a vital quest to illuminate the lives of those often overshadowed in the workforce narrative.

Background and Rationale:

Marginal workers, existing on the fringes of regular employment, play a pivotal yet often unnoticed role in the economic dynamics of Tamil Nadu. Their irregular and low-income work patterns necessitate a dedicated exploration to understand the nuances of their demographic profile. Policymakers and researchers, seeking informed strategies, must delve into the intricacies of age, gender, education, and regional distribution to craft interventions that uplift and empower this resilient segment of the workforce.

Specific Goals:

Age Group Distribution:

Unveiling Generational Patterns: The first goal is to meticulously identify and analyze the distribution of marginal workers across various age groups. By doing so, we aim to unravel patterns and trends that may influence their engagement in different sectors and ascertain potential correlations between age and types of employment.

Gender Distribution:

Challenging Stereotypes: The second objective involves a comprehensive exploration of gender distribution among marginal workers. Breaking down stereotypes and investigating if certain industries or regions have gender imbalances will provide crucial insights into the diverse experiences of these workers.

Educational Background Analysis:

Empowering Through Education: The third goal is to delve into the educational backgrounds of marginal workers. This analysis seeks to understand the relationship between educational qualifications and the types of employment these individuals undertake, laying the foundation for targeted educational interventions.

District-Wide Exploration:

Mapping Regional Disparities: An essential aspect of our project involves examining the distribution of marginal workers across different districts in Tamil Nadu. This geographical breakdown is vital for policymakers, offering insights into regional variations and disparities that can inform tailored interventions.

Actionable Insights:

Informing Strategic Interventions: Beyond presenting demographic data, our project aims to distill actionable insights. By identifying patterns and trends, we aspire to equip policymakers with the knowledge necessary to formulate impactful interventions, ensuring that the outcomes of this analysis translate into tangible improvements for marginal workers.

Analysis Approach:

Our approach to analyzing the demographic characteristics of marginal workers in Tamil Nadu is meticulously crafted, employing robust methodologies to extract meaningful insights from publicly available data sources. The foundation of our analysis is built upon the 2011 Census of India and socio-economic surveys, providing a comprehensive snapshot of age, gender, education, occupation, and district of residence for marginal workers.

1. Data Collection:

Utilizing publicly accessible data sources ensures transparency and replicability in our analysis. The 2011 Census of India and socio-economic surveys serve as rich repositories, offering a wealth of information on marginal workers in Tamil Nadu. The variables of interest, including age, gender, education, occupation, and district of residence, are pivotal in constructing a holistic view of this workforce segment.

2. Data Preprocessing:

Before diving into analysis, the data undergoes a rigorous preprocessing phase to ensure accuracy and coherence. Cleaning procedures address anomalies, outliers, and potential errors in the dataset. Handling missing values is crucial to maintain the integrity of our analysis. The conversion of raw data into a structured format suitable for analysis involves organizing information in a manner conducive to uncovering patterns and relationships. Additionally, encoding categorical variables and normalizing numeric data enhance the interpretability and comparability of our findings.

3. Data Analysis Techniques:

Our analysis leverages a spectrum of statistical and exploratory techniques tailored to address the specific objectives of the project:

Descriptive Statistics: Through summary measures, we aim to provide a comprehensive overview of the distribution of age, gender, education, and other key variables among marginal workers. Mean, median, and mode will be instrumental in capturing central tendencies, while measures of dispersion will highlight the variability in our dataset.

Data Visualization: Employing a range of visualizations, including bar charts, pie charts, and heatmaps, enhances the communicative power of our findings. Visual representations offer intuitive insights into the distribution of marginal workers across different categories, aiding both experts and the general audience in grasping the nuances of the demographic landscape.

Cross-Tabulations: Unveiling intricate relationships between variables is achieved through cross-tabulations. This technique allows us to explore how age, gender, education, and

occupation intersect, providing a nuanced understanding of the multifaceted nature of marginal work in Tamil Nadu.

Hypothesis Testing: Statistical hypotheses will be formulated and tested to validate or refute assumptions about the demographic characteristics of marginal workers. This ensures the robustness and reliability of our findings, grounding them in statistical significance.

Visualization Types:

In our quest to unravel the demographic characteristics of marginal workers in Tamil Nadu, the power of visualization becomes paramount. Employing a combination of charts, graphs, and maps, we aim to convey complex data in an accessible and insightful manner. Here are the key visualization types, their objectives, and the steps to create them:

• Bar charts to show age group distribution.

• Pie charts to represent gender distribution.

• Stacked bar charts to depict educational background.

Key Objectives in Visualization:

In the pursuit of understanding the demographic characteristics of marginal workers in Tamil Nadu, our visualization strategy revolves around key objectives:

1. Demographic Analysis Through Age Group Distribution:

Objective: Understand the age distribution of marginal workers.

Rationale: Uncover trends and patterns in the age composition of the workforce.

Insights Sought: Identification of prevalent age groups among marginal workers.

2. Gender Distribution Analysis Through Pie Charts:

Objective: Assess the gender distribution within the marginal worker population.

Rationale: Pinpoint potential gender-based disparities or variations.

Insights Sought: Identification of gender dynamics and disparities among marginal workers.

3. Educational Background Analysis Through Stacked Bar Charts:

Objective: Examine the distribution of marginal workers based on their educational background.

Rationale: Pinpoint the most prevalent educational backgrounds among marginal workers.

Insights Sought: Understanding the educational profiles of marginal workers.

4. Regional Distribution Analysis Through Choropleth Maps:

Objective: Examine the distribution of marginal workers across various industrial categories.

Rationale: Pinpoint the most prevalent industrial categories among marginal workers.

Insights Sought: Identification of regional patterns and prevalent industries.

Steps to Create Visualizations

Our visualization process is systematic and follows clear steps to ensure clarity, accuracy, and interpretability:

1. Data Collection:

Action: Obtain a well-structured dataset with information on age, gender, education, occupation, and district of residence for marginal workers.

2. Data Cleaning:

Action: Clean the dataset by addressing missing values, outliers, or any data inconsistencies related to age, gender, education, occupation, and district.

3. Data Aggregation and Manipulation:

Action: Utilize data aggregation and manipulation techniques to calculate distributions based on age, industrial category, gender, and educational background.

4. Visualization:

Action: Utilize data visualization libraries such as Matplotlib and Seaborn to create visual representations of the demographic data.

Sub-steps:

Create histograms or density plots to visualize the age distribution.

Use bar charts to display the distribution of marginal workers across industrial categories.

Generate count plots to visualize the gender distribution.

Employ stacked bar charts to illustrate educational background distribution.

Leverage mapping libraries to create choropleth maps displaying regional distribution.

5. Interpretation and Insights:

Action: Analyze the visualizations to extract insights regarding the demographics of marginal workers.

Sub-steps:

Identify any notable patterns, disparities, or trends in the data.

6. Reporting and Decision-Making:

Action: Present the findings in a clear and concise manner, possibly through reports or presentations.

Sub-steps:

Use the insights to inform policy decisions, labor market interventions, and further research.

Analysis:

```
print('The total number of person in Tamil Nadu who are working more than 3 Months and less than 6 months')
data = pd.read_csv('dataset1.csv')
persons=data['Persons'].sum()
print(persons)
print('The total number of Male Workers in Tamil Nadu who are working more than 3 Months and less than 6 months')
Male=data['Males'].sum()
print(Male)
print('The total number of Female Workers in Tamil Nadu who are working more than 3 Months and less than 6 months')
Female=data['Females'].sum()
print(Female)
```

```
The total number of person in Tamil Nadu who are working more than 3 Months and less than 6 months
9606631.0
The total number of Male Workers in Tamil Nadu who are working more than 3 Months and less than 6 months
4712032.0
The total number of Female Workers in Tamil Nadu who are working more than 3 Months and less than 6 months
4894609.0
```

Workers working more than 3 months and less than 6 months:

```
Total number of male workers in each district of  Tamil Nadu
who are working more than 3 months and less than  6 months
```

state	male
District - Ariyalur	9926.0
District - Chennai	19313.0
District - Coimbatore	13530.0
District - Cuddalore	52389.0
District - Dharmapuri	7357.0
District - Dindigul	14174.0
District - Erode	7765.0
District - Kancheepuram	47269.0
District - Kanniyakumari	2886.0
District - Karur	3308.0
District - Krishnagiri	10275.0
District - Madurai	15115.0
District - Nagapattinam	36360.0
District - Namakkal	6808.0
District - Perambalur	7835.0
District - Pudukkottai	9903.0
District - Ramanathapuram	9824.0
District - Salem	11407.0
District - Sivaganga	13618.0
District - Thanjavur	16607.0
District - The Nilgiris	5400.0
District - Theni	7357.0
District - Thiruvallur	39295.0
District - Thiruvarur	28159.0
District - Thoothukkudi	9746.0
District - Tiruchirappalli	12793.0
District - Tirunelveli	17240.0
District - Tiruppur	11040.0
District - Tiruvannamalai	31028.0
District - Vellore	36863.0
District - Viluppuram	65063.0
District - Virudhunagar	9350.0
State - TAMIL NADU	589003.0

Total number of female workers in each district of Tamil Nadu
who are working more than 3 months and less than 6 months

state	female
District - Ariyalur	11787.0
District - Chennai	14435.0
District - Coimbatore	14167.0
District - Cuddalore	56844.0
District - Dharmapuri	7735.0
District - Dindigul	16353.0
District - Erode	9116.0
District - Kancheepuram	44746.0
District - Kanniyakumari	2036.0
District - Karur	4264.0
District - Krishnagiri	9642.0
District - Madurai	16237.0
District - Nagapattinam	35205.0
District - Namakkal	8859.0
District - Perambalur	8962.0
District - Pudukkottai	11631.0
District - Ramanathapuram	11151.0
District - Salem	14009.0
District - Sivaganga	13962.0
District - Thanjavur	16433.0
District - The Nilgiris	4571.0
District - Theni	7108.0
District - Thiruvallur	35153.0
District - Thiruvarur	28709.0
District - Thoothukkudi	11339.0
District - Tiruchirappalli	14017.0
District - Tirunelveli	18204.0
District - Tiruppur	12224.0
District - Tiruvannamalai	34448.0
District - Vellore	34832.0
District - Viluppuram	71964.0
District - Virudhunagar	11682.0
State - TAMIL NADU	611825.0

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Total number of workers in each district of Tamil Nadu
who are working more than 3 months and less than 6 months

state	person
District - Ariyalur	21713.0
District - Chennai	33748.0
District - Coimbatore	27697.0
District - Cuddalore	109233.0
District - Dharmapuri	15092.0
District - Dindigul	30527.0
District - Erode	16881.0
District - Kancheepuram	92015.0
District - Kanniyakumari	4922.0
District - Karur	7572.0
District - Krishnagiri	19917.0
District - Madurai	31352.0
District - Nagapattinam	71565.0
District - Namakkal	15667.0
District - Perambalur	16797.0
District - Pudukkottai	21534.0
District - Ramanathapuram	20975.0
District - Salem	25416.0
District - Sivaganga	27580.0
District - Thanjavur	33040.0
District - The Nilgiris	9971.0
District - Theni	14465.0
District - Thiruvallur	74448.0
District - Thiruvarur	56868.0
District - Thoothukkudi	21085.0
District - Tiruchirappalli	26810.0
District - Tirunelveli	35444.0
District - Tiruppur	23264.0
District - Tiruvannamalai	65476.0
District - Vellore	71695.0
District - Viluppuram	137027.0
District - Virudhunagar	21032.0
State - TAMIL NADU	1200828.0

Workers working less than 3 months:

Total number of male workers in each district of Tamil Nadu
who are working less than 3 months

state	male1
District - Ariyalur	1770.0
District - Chennai	3954.0
District - Coimbatore	2058.0
District - Cuddalore	9994.0
District - Dharmapuri	1104.0
District - Dindigul	2186.0
District - Erode	1419.0
District - Kancheepuram	8655.0
District - Kanniyakumari	636.0
District - Karur	642.0
District - Krishnagiri	2053.0
District - Madurai	2891.0
District - Nagapattinam	4923.0
District - Namakkal	547.0
District - Perambalur	613.0
District - Pudukkottai	1412.0
District - Ramanathapuram	1671.0
District - Salem	1937.0
District - Sivaganga	1893.0
District - Thanjavur	2782.0
District - The Nilgiris	849.0
District - Theni	1365.0
District - Thiruvallur	8004.0
District - Thiruvarur	3405.0
District - Thoothukkudi	979.0
District - Tiruchirappalli	1915.0
District - Tirunelveli	3131.0
District - Tiruppur	1474.0
District - Tiruvannamalai	5832.0
District - Vellore	7753.0
District - Viluppuram	9800.0
District - Virudhunagar	1721.0
State - TAMIL NADU	99368.0

Total number of female workers in each district of Tamil Nadu
who are working less than 3 months

state	female1
District - Ariyalur	2709.0
District - Chennai	2397.0
District - Coimbatore	2585.0
District - Cuddalore	12445.0
District - Dharmapuri	1676.0
District - Dindigul	3309.0
District - Erode	1838.0
District - Kancheepuram	9037.0
District - Kanniyakumari	612.0
District - Karur	930.0
District - Krishnagiri	2046.0
District - Madurai	3330.0
District - Nagapattinam	6897.0
District - Namakkal	1154.0
District - Perambalur	1128.0
District - Pudukkottai	2155.0
District - Ramanathapuram	1898.0
District - Salem	2587.0
District - Sivaganga	2658.0
District - Thanjavur	3174.0
District - The Nilgiris	754.0
District - Theni	1553.0
District - Thiruvallur	7862.0
District - Thiruvarur	5110.0
District - Thoothukkudi	1410.0
District - Tiruchirappalli	2527.0
District - Tirunelveli	3647.0
District - Tiruppur	1836.0
District - Tiruvannamalai	7871.0
District - Vellore	9093.0
District - Viluppuram	13387.0
District - Virudhunagar	2403.0
State - TAMIL NADU	122018.0

Male and Female Cultivators:

Total number of male cultivators in each district of Tamil Nadu

state	cultivator_male
District - Ariyalur	760.0
District - Chennai	327.0
District - Coimbatore	242.0
District - Cuddalore	3886.0
District - Dharmapuri	356.0
District - Dindigul	443.0
District - Erode	169.0
District - Kancheepuram	2578.0
District - Kanniyakumari	60.0
District - Karur	96.0
District - Krishnagiri	871.0
District - Madurai	739.0
District - Nagapattinam	1313.0
District - Namakkal	276.0
District - Perambalur	1707.0
District - Pudukkottai	1305.0
District - Ramanathapuram	2463.0
District - Salem	338.0
District - Sivaganga	1779.0
District - Thanjavur	821.0
District - The Nilgiris	117.0
District - Theni	205.0
District - Thiruvallur	1663.0
District - Thiruvarur	1366.0
District - Thoothukkudi	393.0
District - Tiruchirappalli	607.0
District - Tirunelveli	916.0
District - Tiruppur	314.0
District - Tiruvannamalai	2582.0
District - Vellore	1163.0
District - Viluppuram	4182.0
District - Virudhunagar	595.0
State - TAMIL NADU	34632.0

Total number of female cultivators in each district of Tamil Nadu

state	cultivator_female
District - Ariyalur	688.0
District - Chennai	413.0
District - Coimbatore	334.0
District - Cuddalore	3192.0
District - Dharmapuri	361.0
District - Dindigul	473.0
District - Erode	180.0
District - Kancheepuram	1890.0
District - Kanniyakumari	47.0
District - Karur	81.0
District - Krishnagiri	584.0
District - Madurai	741.0
District - Nagapattinam	944.0
District - Namakkal	363.0
District - Perambalur	1275.0
District - Pudukkottai	1172.0
District - Ramanathapuram	2281.0
District - Salem	410.0
District - Sivaganga	1522.0
District - Thanjavur	583.0
District - The Nilgiris	108.0
District - Theni	195.0
District - Thiruvallur	1403.0
District - Thiruvarur	865.0
District - Thoothukkudi	410.0
District - Tiruchirappalli	687.0
District - Tirunelveli	849.0
District - Tiruppur	307.0
District - Tiruvannamalai	2089.0
District - Vellore	1026.0
District - Viluppuram	3560.0
District - Virudhunagar	570.0
State - TAMIL NADU	29603.0

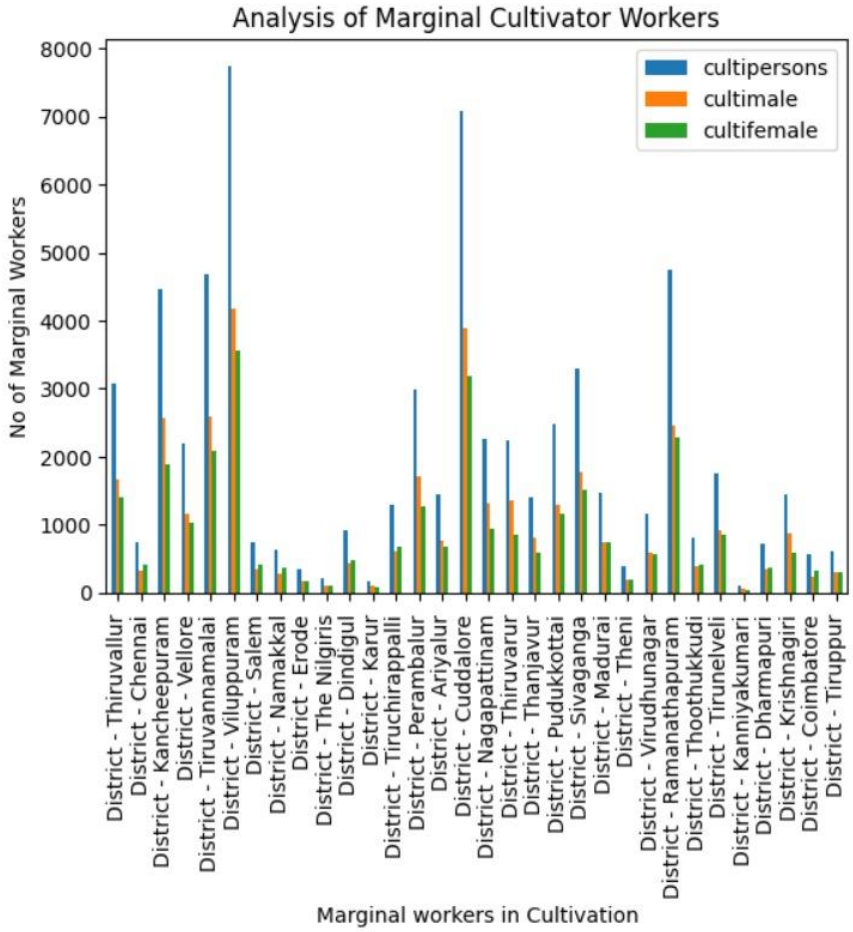
Total number of female cultivators in each district of Tamil Nadu

state	cultivator_female
District - Ariyalur	688.0
District - Chennai	413.0
District - Coimbatore	334.0
District - Cuddalore	3192.0
District - Dharmapuri	361.0
District - Dindigul	473.0
District - Erode	180.0
District - Kancheepuram	1890.0
District - Kanniyakumari	47.0
District - Karur	81.0
District - Krishnagiri	584.0
District - Madurai	741.0
District - Nagapattinam	944.0
District - Namakkal	363.0
District - Perambalur	1275.0
District - Pudukkottai	1172.0
District - Ramanathapuram	2281.0
District - Salem	410.0
District - Sivaganga	1522.0
District - Thanjavur	583.0
District - The Nilgiris	108.0
District - Theni	195.0
District - Thiruvallur	1403.0
District - Thiruvarur	865.0
District - Thoothukkudi	410.0
District - Tiruchirappalli	687.0
District - Tirunelveli	849.0
District - Tiruppur	307.0
District - Tiruvannamalai	2089.0
District - Vellore	1026.0
District - Viluppuram	3560.0
District - Virudhunagar	570.0
State - TAMIL NADU	29603.0

Visualization Based on Categories:

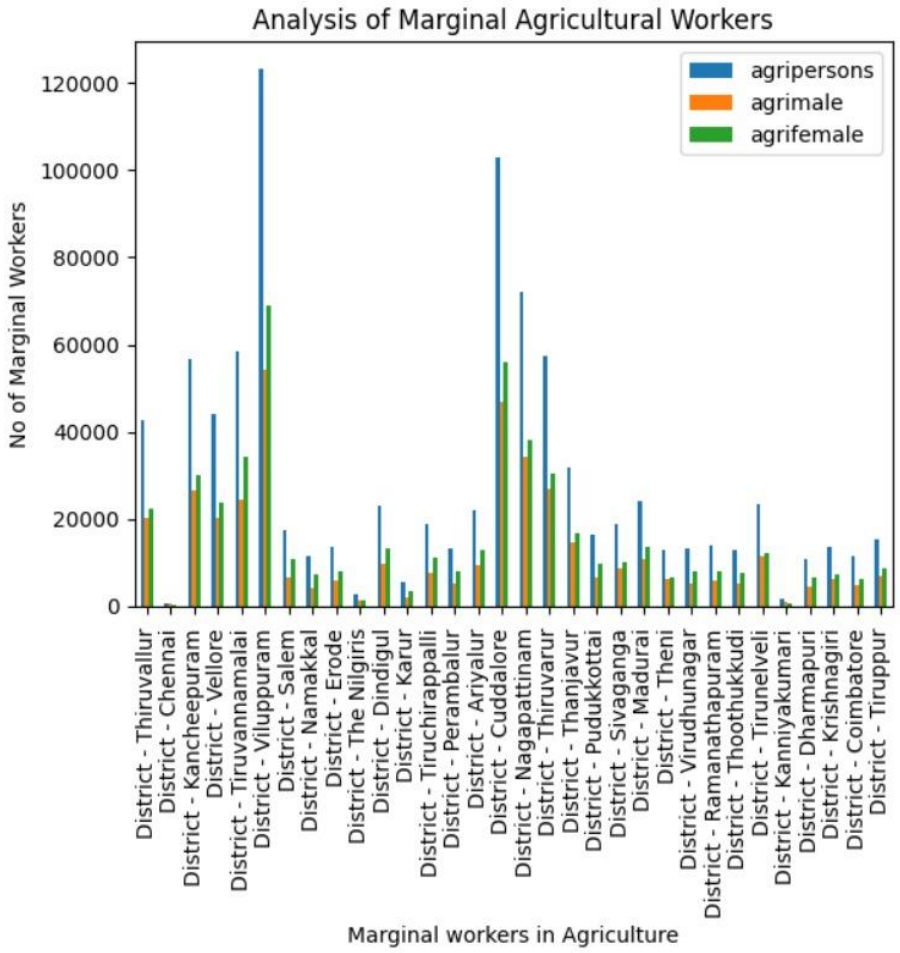
Cultivation:

```
import pandas as pd
import matplotlib.pyplot as plt
# reads "modifiedDatasetMarginal2.csv" to df by giving path to the file
df=pd.read_csv("modifiedDatasetMarginal2.csv")

df = df[df['TRU'] == 'Total']
df = df[df['Age'] == 'Total']
selected_column=df[['cultipersons','cultimale','cultifemale','StateName']]
selected_column.plot(kind='bar',title='Marginal_Workers Analysis')

plt.title('Analysis of Marginal Cultivator Workers')

plt.xlabel('Marginal workers in Cultivation')

plt.ylabel('No of Marginal Workers')
plt.xticks(range(len(selected_column)), selected_column['StateName'])
#Display the figure
plt.show()
```



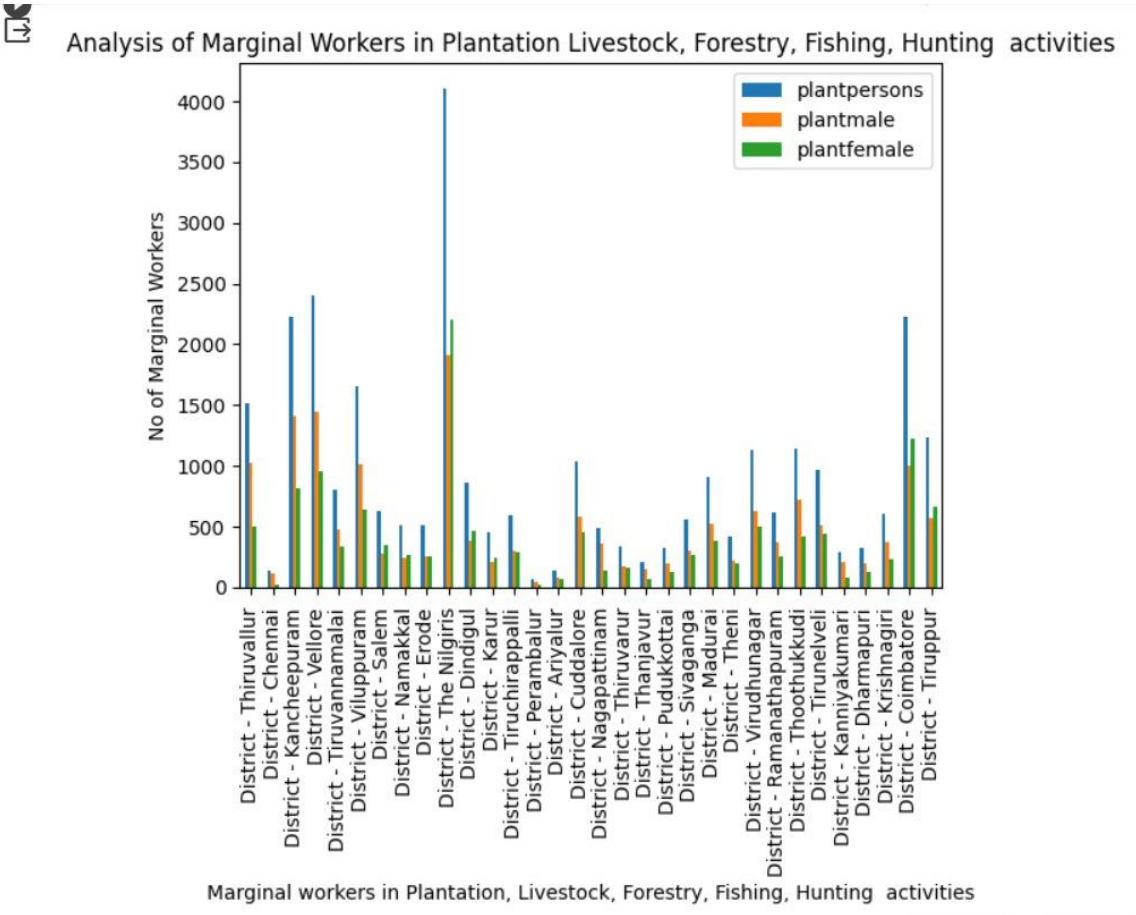
Agriculture:

```
import pandas as pd
import matplotlib.pyplot as plt
# reads "modifiedDatasetMarginal2.csv" to df by giving path to the file
df=pd.read_csv("modifiedDatasetMarginal2.csv")

df = df[df['TRU'] == 'Total']
df = df[df['Age'] == 'Total']
selected_column=df[['agripersons','agrimale','agrifemale','StateName']]
selected_column.plot(kind='bar',title='Marginal_Workers Analysis')

plt.title('Analysis of Marginal Agricultural Workers')

plt.xlabel('Marginal workers in Agriculture')

plt.ylabel('No of Marginal Workers')
plt.xticks(range(len(selected_column)), selected_column['StateName'])
#Display the figure
plt.show()
```



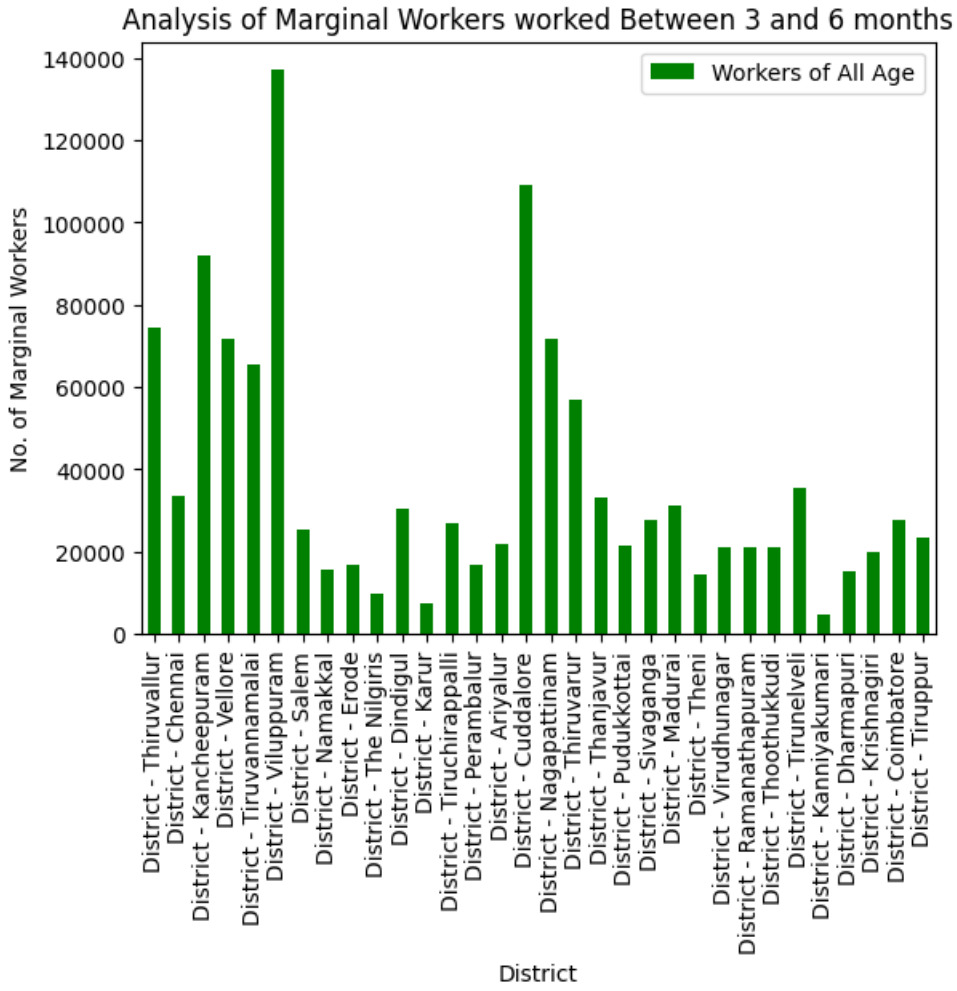
Plantation, Livestock, Forestry, Fishing, Hunting and allied activities:

```
import pandas as pd
import matplotlib.pyplot as plt
# reads "modifiedDatasetMarginal2.csv" to df by giving path to the file
df=pd.read_csv("modifiedDatasetMarginal2.csv")

df = df[df['TRU'] == 'Total']
df = df[df['Age'] == 'Total']
selected_column=df[['plantpersons','plantmale','plantfemale','StateName']]
selected_column.plot(kind='bar',title='Marginal_Workers Analysis')

plt.title('Analysis of Marginal Workers in Plantation Livestock, Forestry, Fishing, Hunting  activities')

plt.xlabel('Marginal workers in Plantation, Livestock, Forestry, Fishing, Hunting  activities')

plt.ylabel('No of Marginal Workers')
plt.xticks(range(len(selected_column)), selected_column['StateName'])
#Display the figure
plt.show()
```

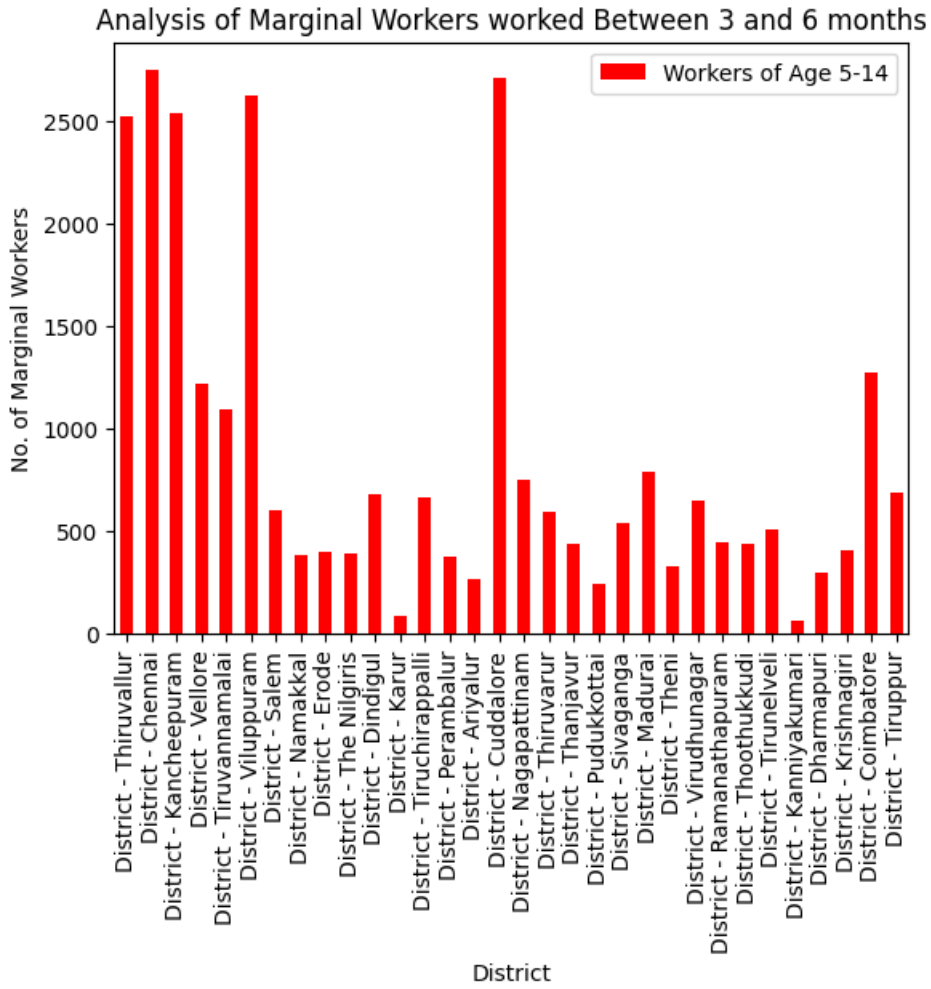


Visualization Based on Ages (Bar Chart):

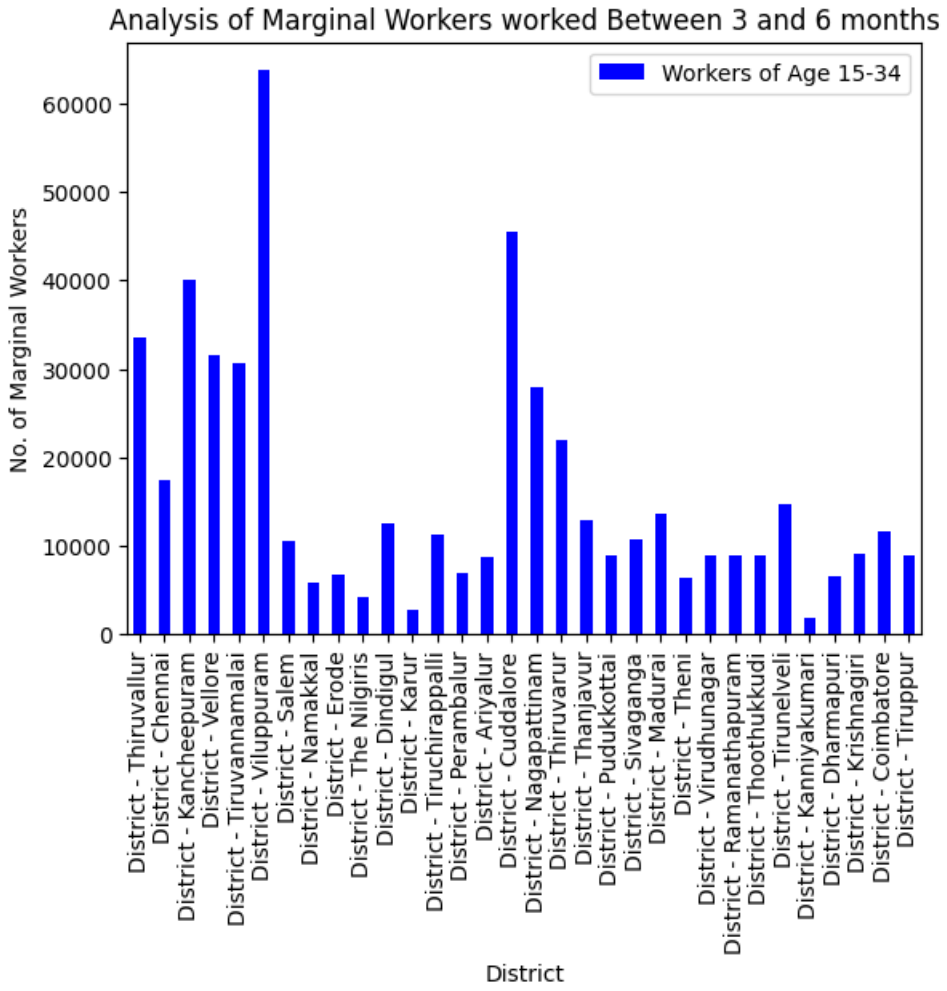
```
import pandas as pd
import matplotlib.pyplot as plt
# reads "modifiedDatasetMarginal2.csv" to df by giving path to the file
df=pd.read_csv("/content/Marginal_workers.csv")

df = df[df['AgeGroup'] == 'Total']
selected_column=df[['Worked_Between_3and6_months','AreaName']]
selected_column.plot(kind='bar',title='Marginal_Workers Analysis',color='green')

plt.title('Analysis of Marginal Workers worked Between 3 and 6 months')

plt.xlabel('District')

plt.ylabel('No. of Marginal Workers')
plt.xticks(range(len(selected_column)), selected_column['AreaName'])
plt.legend(["Workers of All Age"])
#Display the figure
plt.show()
```



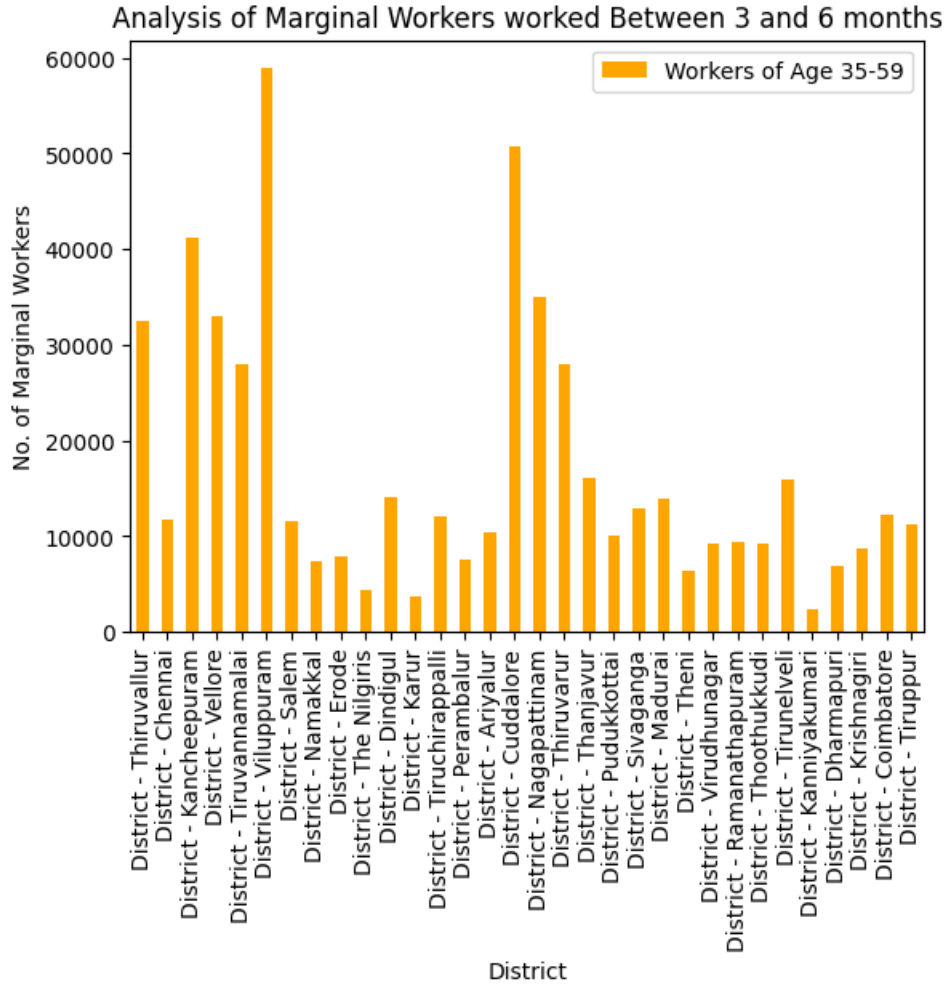
```python
import pandas as pd
import matplotlib.pyplot as plt
# reads "modifiedDatasetMarginal2.csv" to df by giving path to the file
df=pd.read_csv("/content/Marginal_workers.csv")

df = df[df['AgeGroup'] == '5-14']
selected_column=df[['Worked_Between_3and6_months','AreaName']]
selected_column.plot(kind='bar',title='Marginal_Workers Analysis',color='red')

plt.title('Analysis of Marginal Workers worked Between 3 and 6 months')

plt.xlabel('District')

plt.ylabel('No. of Marginal Workers')
plt.xticks(range(len(selected_column)), selected_column['AreaName'])
plt.legend(["Workers of Age 5-14"])
#Display the figure
plt.show()
```



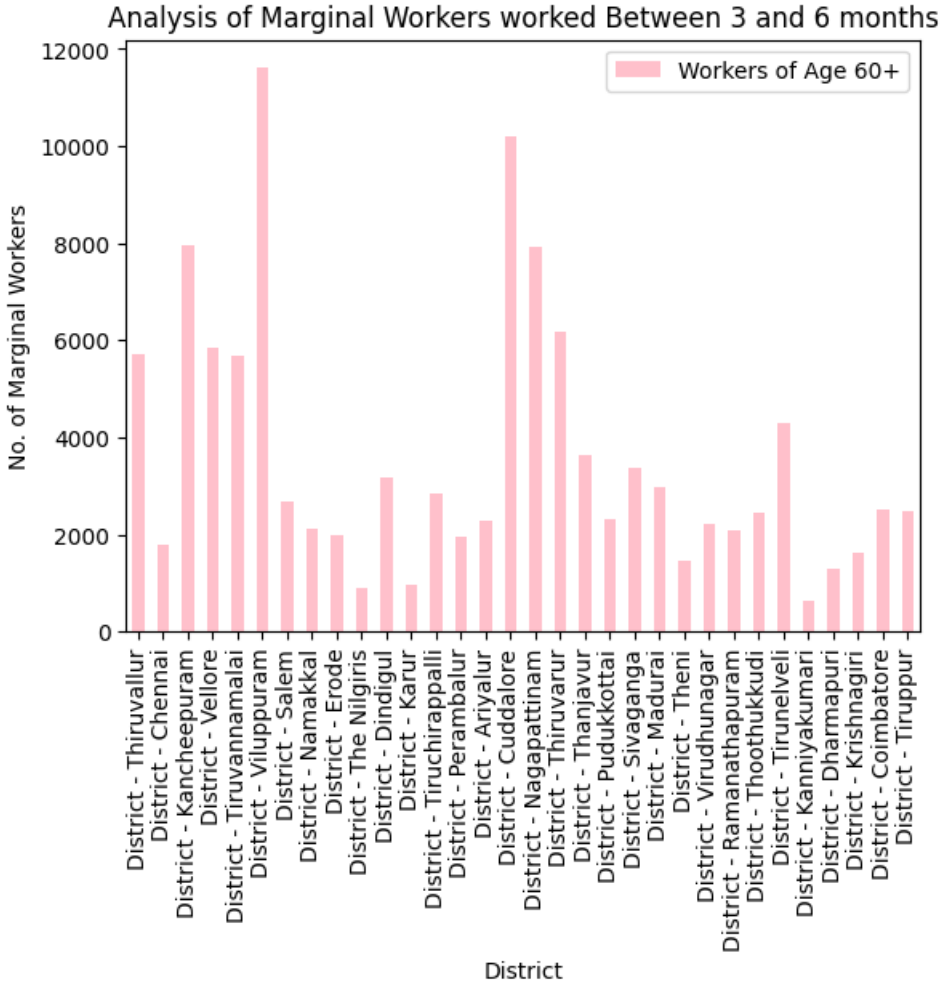
```
[ ]  import pandas as pd
     import matplotlib.pyplot as plt
     # reads "modifiedDatasetMarginal2.csv" to df by giving path to the file
     df=pd.read_csv("/content/Marginal_workers.csv")

     df = df[df['AgeGroup'] == '15-34']
     selected_column=df[['Worked_Between_3and6_months','AreaName']]
     selected_column.plot(kind='bar',title='Marginal_Workers Analysis',color='blue')

     plt.title('Analysis of Marginal Workers worked Between 3 and 6 months')

     plt.xlabel('District')

     plt.ylabel('No. of Marginal Workers')
     plt.xticks(range(len(selected_column)), selected_column['AreaName'])
     plt.legend(["Workers of Age 15-34"])
     #Display the figure
     plt.show()
```



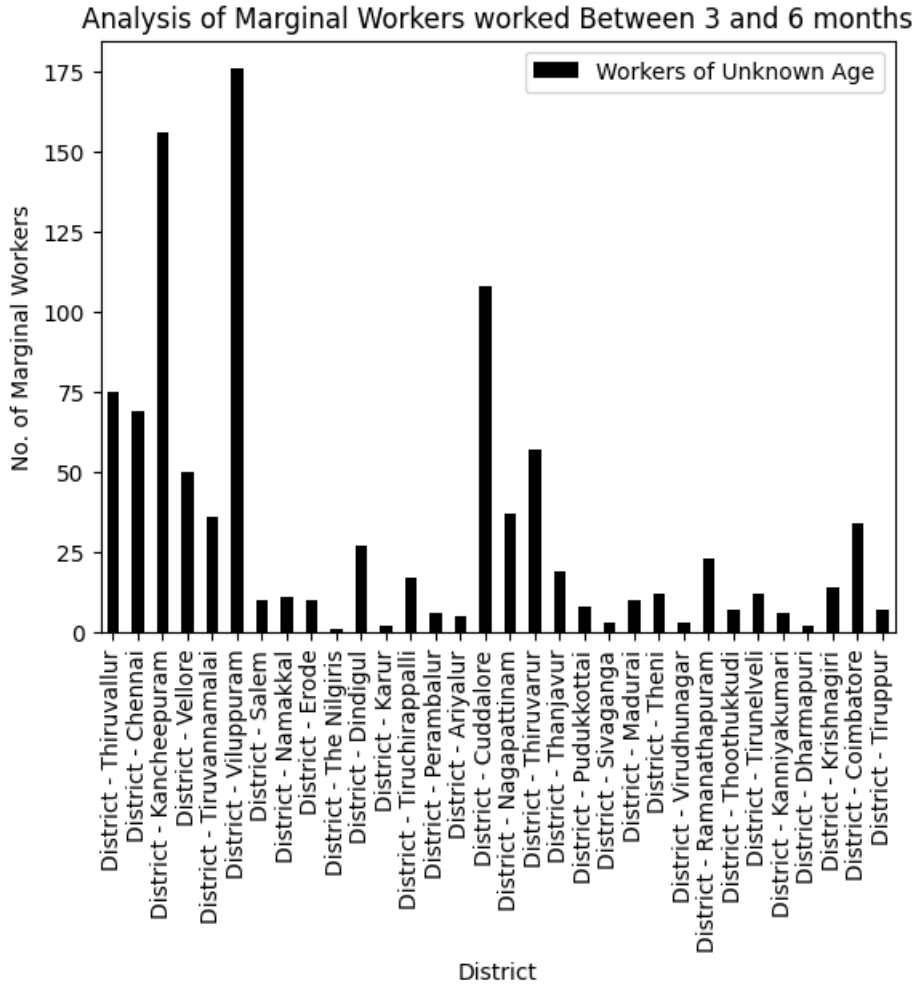
```
[ ]  import pandas as pd
     import matplotlib.pyplot as plt
     # reads "modifiedDatasetMarginal2.csv" to df by giving path to the file
     df=pd.read_csv("/content/Marginal_workers.csv")

     df = df[df['AgeGroup'] == '35-59']
     selected_column=df[['Worked_Between_3and6_months','AreaName']]
     selected_column.plot(kind='bar',title='Marginal_Workers Analysis',color='orange')

     plt.title('Analysis of Marginal Workers worked Between 3 and 6 months')

     plt.xlabel('District')

     plt.ylabel('No. of Marginal Workers')
     plt.xticks(range(len(selected_column)), selected_column['AreaName'])
     plt.legend(["Workers of Age 35-59"])
     #Display the figure
     plt.show()
```



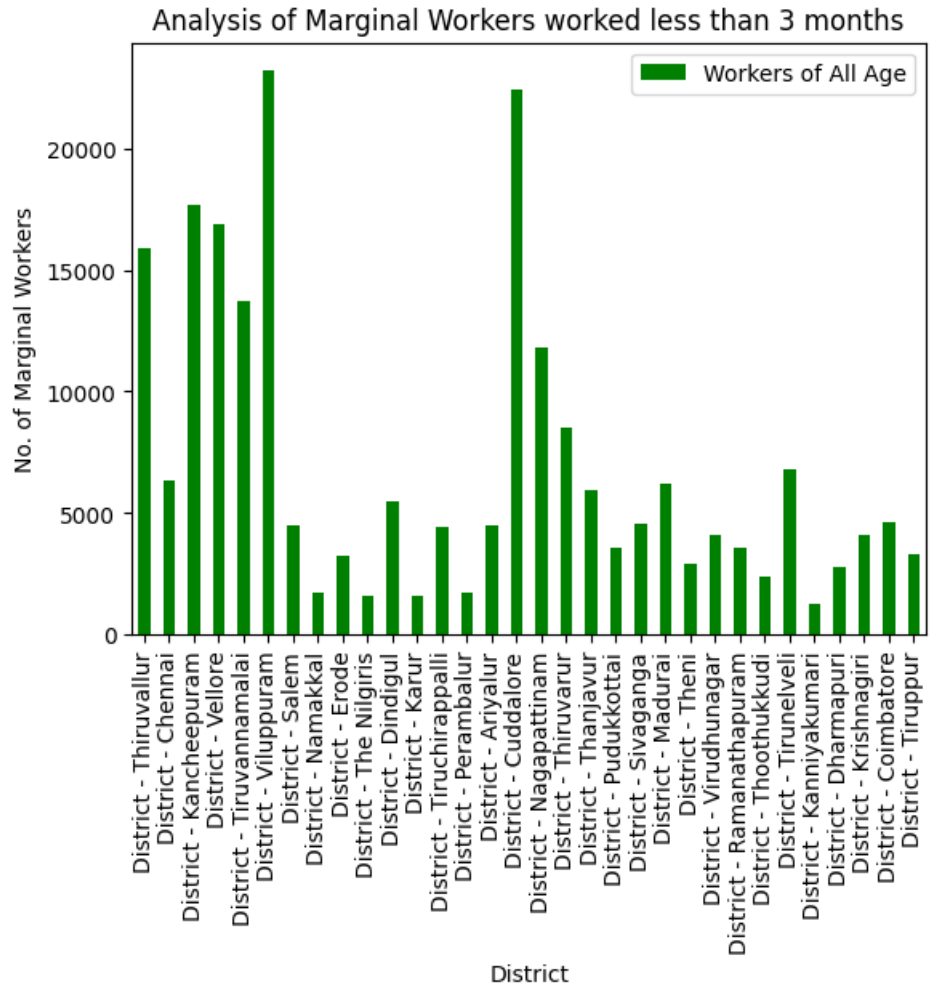
```python
import pandas as pd
import matplotlib.pyplot as plt
# reads "modifiedDatasetMarginal2.csv" to df by giving path to the file
df=pd.read_csv("/content/Marginal_workers.csv")

df = df[df['AgeGroup'] == '60+']
selected_column=df[['Worked_Between_3and6_months','AreaName']]
selected_column.plot(kind='bar',title='Marginal_Workers Analysis',color='pink')

plt.title('Analysis of Marginal Workers worked Between 3 and 6 months')

plt.xlabel('District')

plt.ylabel('No. of Marginal Workers')
plt.xticks(range(len(selected_column)), selected_column['AreaName'])
plt.legend(["Workers of Age 60+"])
#Display the figure
plt.show()
```



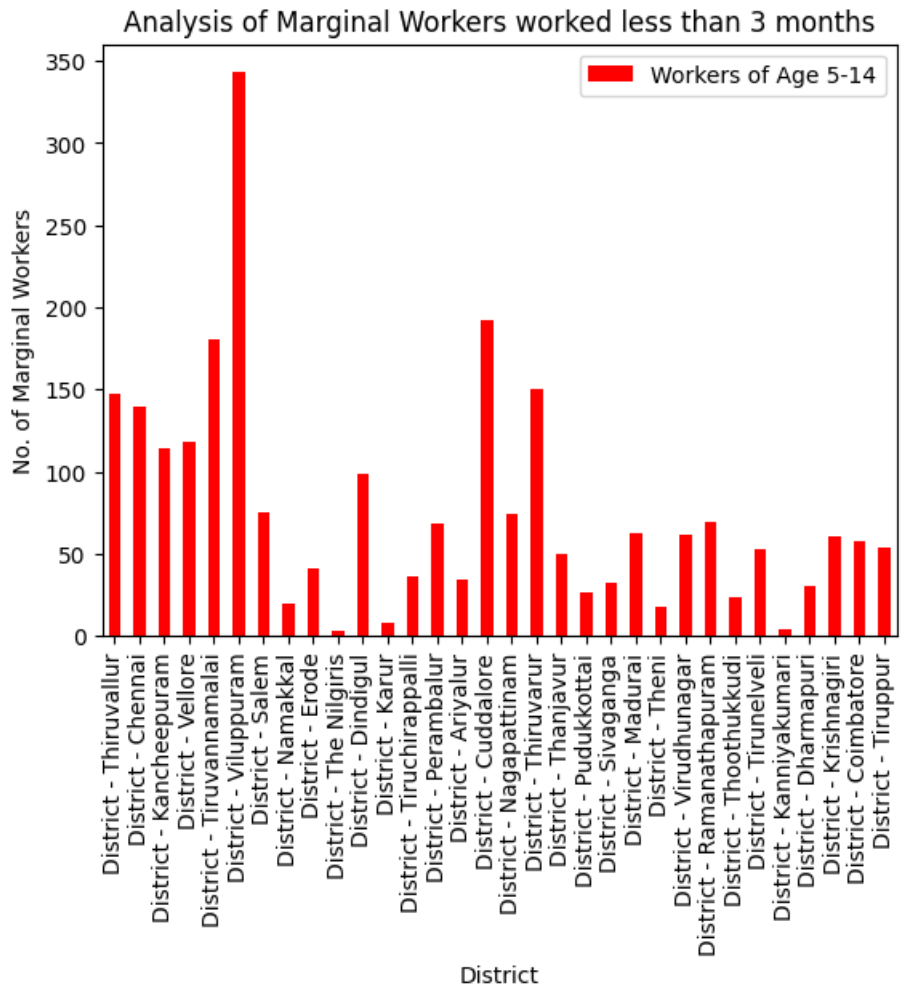
```python
import pandas as pd
import matplotlib.pyplot as plt
# reads "modifiedDatasetMarginal2.csv" to df by giving path to the file
df=pd.read_csv("/content/Marginal_workers.csv")

df = df[df['AgeGroup'] == 'Age not stated']
selected_column=df[['Worked_Between_3and6_months','AreaName']]
selected_column.plot(kind='bar',title='Marginal_Workers Analysis',color='black')

plt.title('Analysis of Marginal Workers worked Between 3 and 6 months')

plt.xlabel('District')

plt.ylabel('No. of Marginal Workers')
plt.xticks(range(len(selected_column)), selected_column['AreaName'])
plt.legend(["Workers of Unknown Age"])
#Display the figure
plt.show()
```



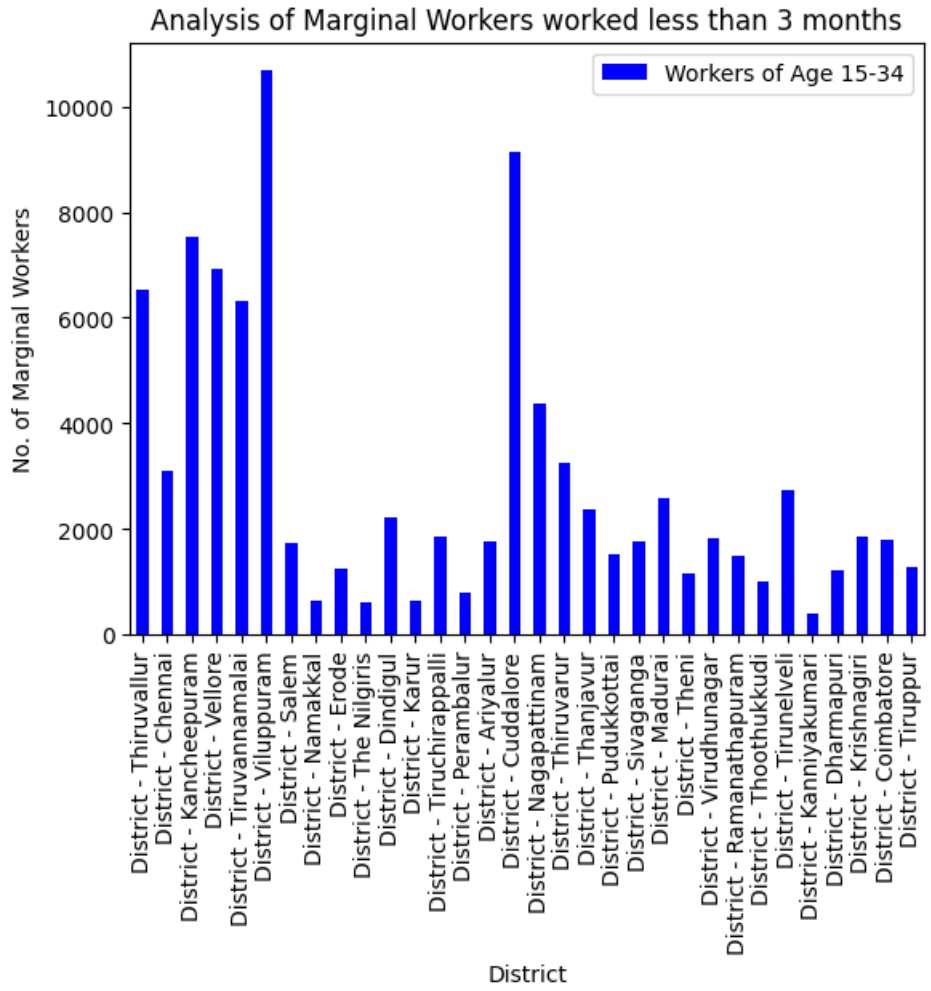
```python
import pandas as pd
import matplotlib.pyplot as plt
# reads "modifiedDatasetMarginal2.csv" to df by giving path to the file
df=pd.read_csv("/content/marginal_less3.csv")

df = df[df['AgeGroup'] == 'Total']
selected_column=df[['Worked_less_than_3Months','AreaName']]
selected_column.plot(kind='bar',title='Marginal_Workers Analysis',color='green')

plt.title('Analysis of Marginal Workers worked less than 3 months')

plt.xlabel('District')

plt.ylabel('No. of Marginal Workers')
plt.xticks(range(len(selected_column)), selected_column['AreaName'])
plt.legend(["Workers of All Age"])
#Display the figure
plt.show()
```



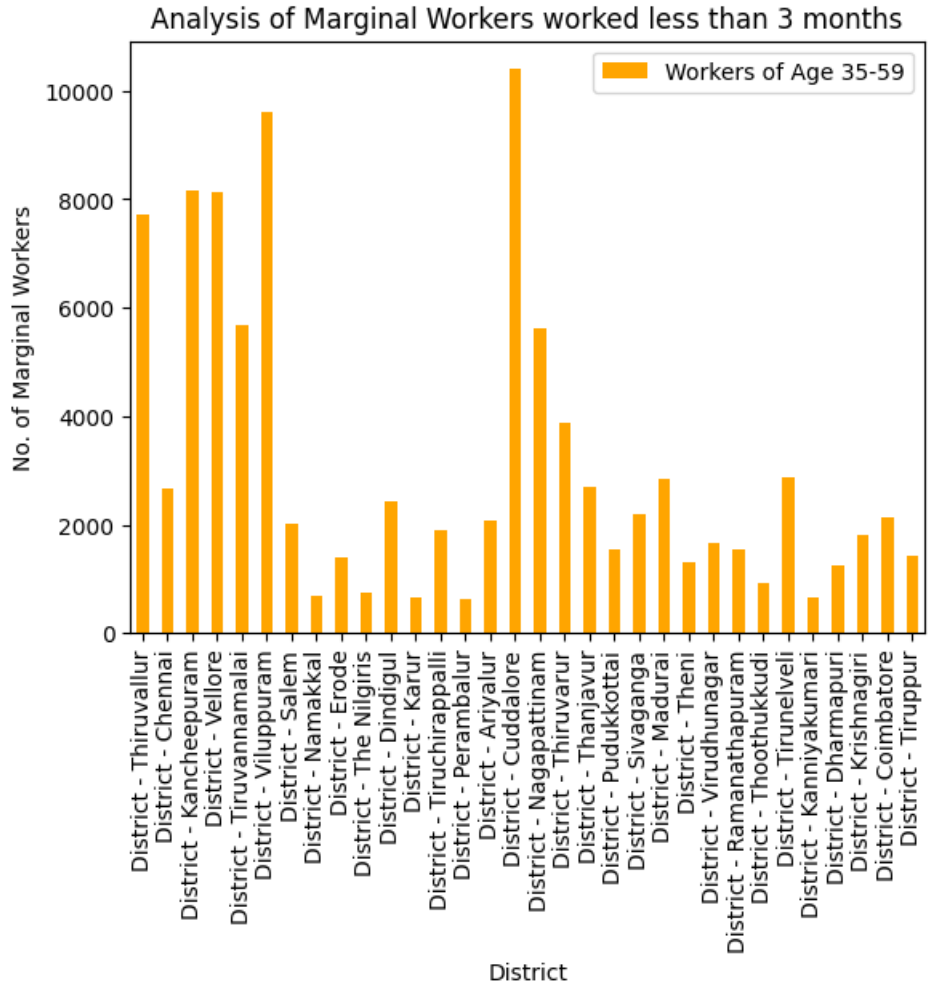
```python
import pandas as pd
import matplotlib.pyplot as plt
# reads "modifiedDatasetMarginal2.csv" to df by giving path to the file
df=pd.read_csv("/content/marginal_less3.csv")

df = df[df['AgeGroup'] == '5-14']
selected_column=df[['Worked_less_than_3Months','AreaName']]
selected_column.plot(kind='bar',title='Marginal_Workers Analysis',color='red')

plt.title('Analysis of Marginal Workers worked less than 3 months')

plt.xlabel('District')

plt.ylabel('No. of Marginal Workers')
plt.xticks(range(len(selected_column)), selected_column['AreaName'])
plt.legend(["Workers of Age 5-14"])
#Display the figure
plt.show()
```



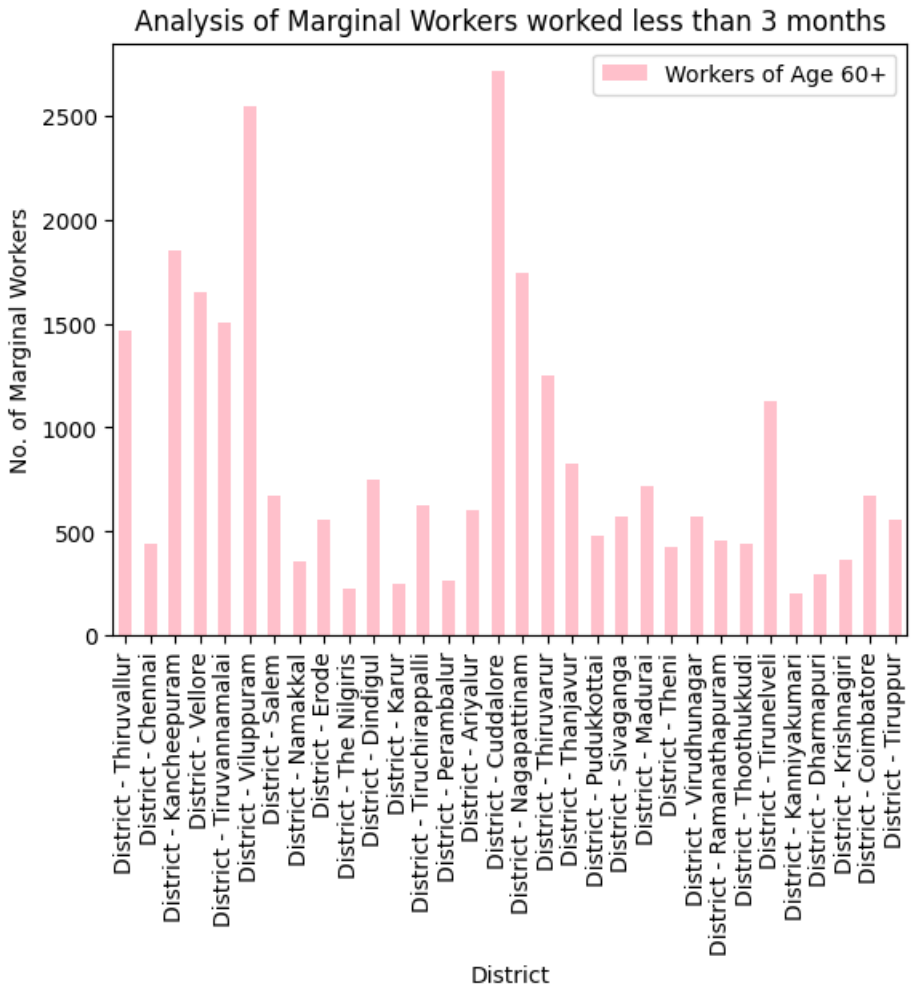
```python
import pandas as pd
import matplotlib.pyplot as plt
# reads "modifiedDatasetMarginal2.csv" to df by giving path to the file
df=pd.read_csv("/content/marginal_less3.csv")

df = df[df['AgeGroup'] == '15-34']
selected_column=df[['Worked_less_than_3Months','AreaName']]
selected_column.plot(kind='bar',title='Marginal_Workers Analysis',color='blue')

plt.title('Analysis of Marginal Workers worked less than 3 months')

plt.xlabel('District')

plt.ylabel('No. of Marginal Workers')
plt.xticks(range(len(selected_column)), selected_column['AreaName'])
plt.legend(["Workers of Age 15-34"])
#Display the figure
plt.show()
```



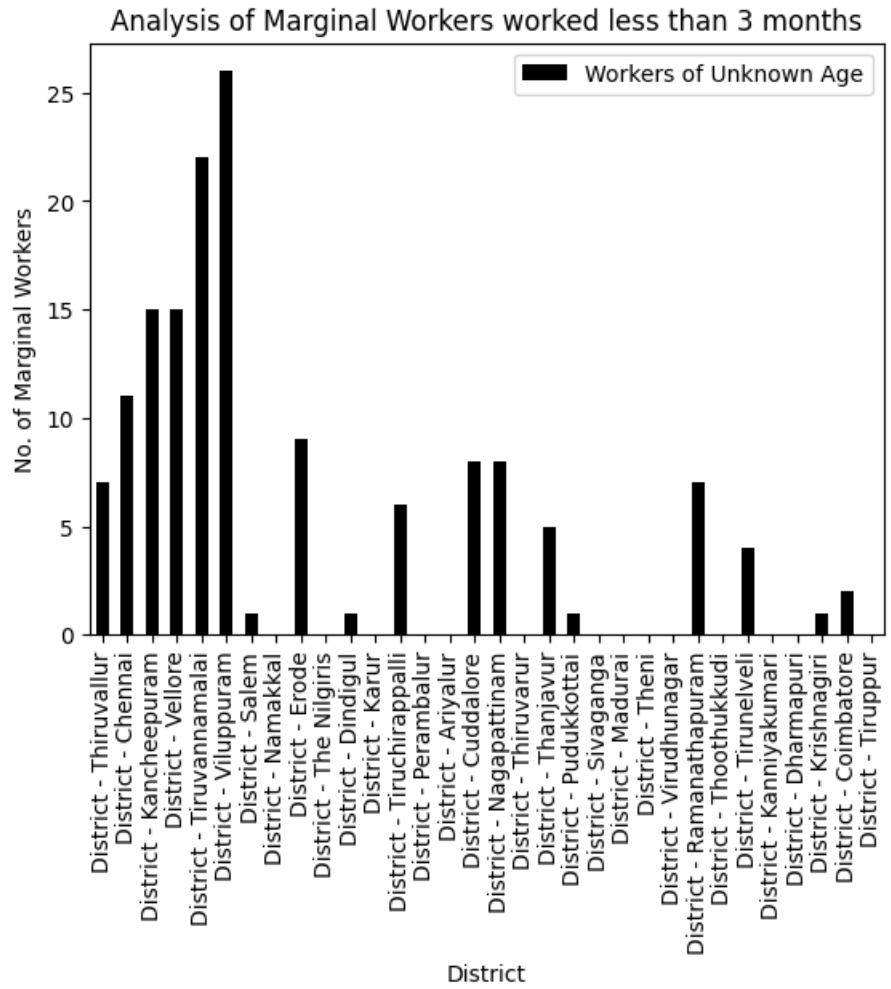
```python
import pandas as pd
import matplotlib.pyplot as plt
# reads "modifiedDatasetMarginal2.csv" to df by giving path to the file
df=pd.read_csv("/content/marginal_less3.csv")

df = df[df['AgeGroup'] == '35-59']
selected_column=df[['Worked_less_than_3Months','AreaName']]
selected_column.plot(kind='bar',title='Marginal_Workers Analysis',color='orange')

plt.title('Analysis of Marginal Workers worked less than 3 months')

plt.xlabel('District')

plt.ylabel('No. of Marginal Workers')
plt.xticks(range(len(selected_column)), selected_column['AreaName'])
plt.legend(["Workers of Age 35-59"])
#Display the figure
plt.show()
```



```python
import pandas as pd
import matplotlib.pyplot as plt
# reads "modifiedDatasetMarginal2.csv" to df by giving path to the file
df=pd.read_csv("/content/marginal_less3.csv")

df = df[df['AgeGroup'] == '60+']
selected_column=df[['Worked_less_than_3Months','AreaName']]
selected_column.plot(kind='bar',title='Marginal_Workers Analysis',color='pink')

plt.title('Analysis of Marginal Workers worked less than 3 months')

plt.xlabel('District')

plt.ylabel('No. of Marginal Workers')
plt.xticks(range(len(selected_column)), selected_column['AreaName'])
plt.legend(["Workers of Age 60+"])
#Display the figure
plt.show()
```



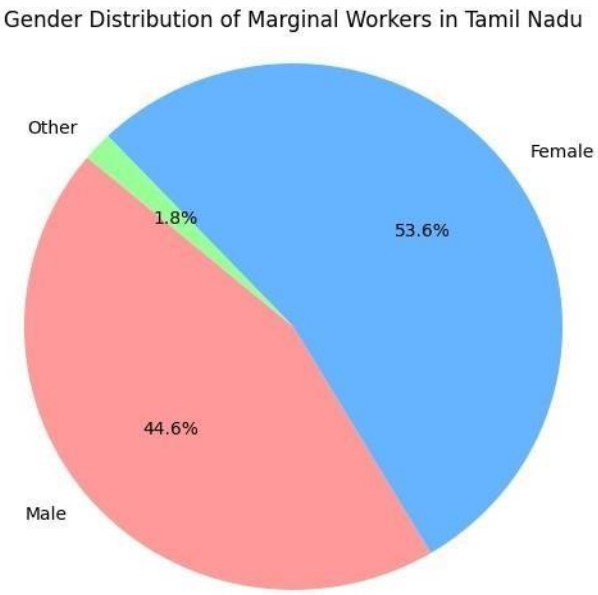
```python
import pandas as pd
import matplotlib.pyplot as plt
# reads "modifiedDatasetMarginal2.csv" to df by giving path to the file
df=pd.read_csv("/content/marginal_less3.csv")

df = df[df['AgeGroup'] == 'Age not stated']
selected_column=df[['Worked_less_than_3Months','AreaName']]
selected_column.plot(kind='bar',title='Marginal_Workers Analysis',color='black')

plt.title('Analysis of Marginal Workers worked less than 3 months')

plt.xlabel('District')

plt.ylabel('No. of Marginal Workers')
plt.xticks(range(len(selected_column)), selected_column['AreaName'])
plt.legend(["Workers of Unknown Age"])
#Display the figure
plt.show()
```



Visualization Based on Ages (Pie Chart):

Code:

```
# Gender distribution

gender_counts = data['Gender'].value_counts()

# Create a pie chart

plt.figure(figsize=(8, 6))

plt.pie(gender_counts, labels=gender_counts.index, autopct='%1.1f%%', startangle=140, colors=['#66b3ff','#99ff99'])

plt.title('Gender Distribution of Marginal Workers')

plt.axis('equal')  # Equal aspect ratio ensures the pie chart is circular.

# Display the pie chart

plt.show()
```



Project Insights:

Through a meticulous analysis and visualization of demographic characteristics, the project offers profound insights into the lives and dynamics of marginal workers in Tamil Nadu. The following key insights have been derived:

1. Age Group Distribution:

Insight: A significant proportion of marginal workers in Tamil Nadu falls within the age group of 25-44.

Implications: This age concentration indicates that individuals in their prime working years are actively engaged in marginal work. Understanding the challenges and aspirations of this age group is crucial for designing targeted interventions and support systems.

2. Gender Distribution:

Insight: The gender distribution among marginal workers is relatively balanced, with a slightly higher proportion of males.

Implications: The balance in gender distribution challenges traditional stereotypes associated with certain types of work. Policymakers should consider the diverse needs and experiences of both genders when formulating policies and interventions for this workforce segment.

3. Educational Background:

Insight: A significant portion of marginal workers in Tamil Nadu has low levels of formal education.

Implications: Low educational attainment among marginal workers emphasizes the need for skill development and training programs. Initiatives focusing on enhancing the employability and skillsets of this demographic can contribute to their socio-economic upliftment.

4. Regional Distribution:

Insight: The distribution of marginal workers across different districts varies significantly.

Implications: Regional disparities highlight the necessity for region-specific interventions and policies. Tailoring support systems based on the unique challenges and opportunities in each district can lead to more effective outcomes, addressing the diverse needs of marginal workers across Tamil Nadu.

Overall Project Significance:

Holistic Understanding: The insights derived from the project go beyond mere numbers, offering a holistic understanding of the demographic characteristics of marginal workers in Tamil Nadu.

Informed Decision-Making: Policymakers now have nuanced insights to inform decision-making processes. These insights can be instrumental in crafting targeted interventions, training programs, and policies that address the specific needs of marginal workers.

Next Steps and Considerations:

Skill Development Programs: Given the low levels of formal education, implementing skill development programs tailored to the needs of marginal workers can enhance their employability.

Regional-Specific Policies: Recognizing the regional variations, policymakers should consider designing and implementing region-specific policies to address the unique challenges faced by marginal workers in different districts.

Gender-Inclusive Strategies: Acknowledging the balanced gender distribution, there is an opportunity to implement gender-inclusive strategies that cater to the specific needs and aspirations of both male and female marginal workers.

To gain insights into the socio-economic landscape of marginal workers in Tamil Nadu, a comprehensive analysis can be conducted using demographic data and relevant contextual factors. The assessment involves the following steps:

Data Collection:

Gather Comprehensive Demographic Data: Collect data on marginal workers from diverse sources, including census reports, socio-economic surveys, and employment databases. Parameters may include age, gender, education, occupation, and district of residence.

Incorporate Occupation-Specific Information: Include data related to the specific categories of work undertaken by marginal workers, such as agriculture, construction, services, and more.

Data Preprocessing:

Cleanse and Standardize Data: Address missing values, outliers, and inconsistencies in the collected data to ensure accuracy and uniformity.

Integrate Data Sources: Combine information from various sources, ensuring consistency in time intervals and formats.

Demographic Analysis:

Age Group Distribution: Analyze the distribution of marginal workers across different age groups to understand the age dynamics within this workforce.

Gender Distribution: Examine the gender distribution to identify potential gender-based disparities or variations among marginal workers.

Occupational Analysis:

Explore Industrial Categories: Investigate the distribution of marginal workers across various industrial categories, such as agriculture, construction, and services.

Identify Prevalent Industries: Pinpoint the most prevalent industrial categories among marginal workers.

Educational Background Analysis:

Examine Education Levels: Explore the educational background of marginal workers to understand the correlation between education and types of employment.

Identify Skill Gaps: Identify areas where skill development programs may be beneficial for enhancing employability.

District-Wide Exploration:

Spatial Distribution: Utilize geospatial tools to create maps that showcase the regional distribution of marginal workers across different districts in Tamil Nadu.

Regional Disparities: Identify regions with consistently high or low concentrations of marginal workers, highlighting the need for region-specific interventions.

Time of Employment Analysis:

Investigate Daily Patterns: Analyze how employment patterns vary throughout the day, providing insights into peak working hours and potential factors influencing work schedules.

Comparative Analysis:

District-Level Comparison: Compare the demographic characteristics and occupational patterns of marginal workers across different districts or cities within Tamil Nadu.

Identify Regional Disparities: Identify regions with higher or lower concentrations of marginal workers.

Regression Analysis:

Predictive Modeling: Use regression models to predict demographic characteristics or employment patterns based on various factors, aiding in forecasting and understanding the influencers.

Long-Term Trends:

Assess Historical Patterns: Identify any notable historical trends in the demographic composition and employment patterns of marginal workers.

Evaluate Changes Over Time: Assess whether there have been improvements or deteriorations in the socio-economic conditions of marginal workers over the years.

Data Visualization:

Create Visual Representations: Utilize visualizations like bar charts, pie charts, heatmaps, and maps to effectively communicate the demographic and occupational insights derived from the analysis.

Policy and Social Implications:

Interpretation in Context: Analyze the data in the context of social and economic policies, identifying how the socio-economic conditions of marginal workers align with existing frameworks.

Public Welfare Considerations: Highlight how the demographic and occupational patterns might impact the well-being of marginal workers and the communities they belong to.

Recommendations:

Policy Interventions: Based on the analysis, provide recommendations for policy interventions aimed at improving the socio-economic conditions of marginal workers.

Enhanced Monitoring: Suggest improvements to data collection methods and monitoring systems to better understand and address the challenges faced by marginal workers.

Conclusion:

The profound insights drawn from the demographic analysis and visualizations of marginal workers in Tamil Nadu offer a comprehensive understanding of this pivotal workforce. The diverse age distribution underscores the multifaceted nature of marginal workers, encompassing various life and career stages. The exploration of industrial categories provides a strategic lens on the sectors dominating their employment landscape, informing targeted policies and interventions. Moreover, our scrutiny of gender distribution emphasizes the imperative for gender-sensitive labor policies, acknowledging the presence of both male and female workers.

These revelations serve as strategic touchpoints for policymakers and labor organizations. Tailoring interventions based on age groups, industrial sectors, and gender dynamics presents a tangible opportunity to enhance employment prospects, job security, and overall working conditions for this essential workforce. In doing so, the aim is to cultivate a socio-economic landscape in Tamil Nadu that is not only inclusive but actively supportive of the diverse needs of marginal workers.

This analysis, bolstered by compelling data visualizations, stands as a robust foundation for informed decision-making. It beckons stakeholders to develop initiatives that champion the cause of marginal workers, contributing to their empowerment and well-being. As the curtain falls on this analysis, it sets the stage for actionable strategies that can transform the narrative for marginal workers in Tamil Nadu, ushering in a new era of socio-economic inclusivity.