ASSESSMENT OF MARGINAL WORKERS IN TAMIL NADU
DATA ANALYTICS WITH COGNOS- GROUP2
PHASE-5

OBJECTIVE:

Certainly, here are some specific objectives for an assessment of marginal workers in Tamil Nadu:

1.**Define Marginal Workers**: Develop a clear and precise definition of marginal workers in the context of Tamil Nadu, considering factors such as the duration of employment, income levels, and the type of employment.

2.**Quantify the Marginal Workforce**: Estimate the number of marginal workers in Tamil Nadu and analyze their distribution across different districts and sectors. Determine the proportion of the workforce that falls into this category.

3.**Demographic Profiling**: Profile the demographic characteristics of marginal workers, including age, gender, education level, marital status, and rural/urban residence, to understand their composition.

4.**Labor Market Participation**: Assess the labor force participation rate among marginal workers and compare it to non-marginal workers. Identify any patterns related to seasonal or temporary employment.

5.**Income and Earnings**: Analyze the income levels and earnings of marginal workers, including wage disparities between marginal and non-marginal workers. Examine income volatility and fluctuations over time.

6. **Occupational Segmentation**: Identify the sectors and occupations where marginal workers are most prevalent. Explore the types of jobs they engage in, including informal and unorganized labor.

7. **Access to Social Services**: Evaluate the access of marginal workers to social services such as healthcare, education, and housing. Determine if they face barriers in accessing these essential services.

8. **Livelihood Strategies**: Investigate the livelihood strategies of marginal workers, including diversification of income sources and coping mechanisms during periods of unemployment or underemployment.

9.**Vulnerabilities and Challenges**: Identify the vulnerabilities and challenges faced by marginal workers, such as job insecurity, lack of social protection, and exposure to health risks.

10.**Migration Patterns**: Examine the migration patterns of marginal workers, both within Tamil Nadu and to other states, to understand the role of mobility in their employment choices.

11.**Social Inclusion**: Assess the social inclusion and integration of marginal workers within their communities, and identify any discrimination or exclusionary practices they may face.

12. **Policy Analysis**: Analyze existing government policies and programs aimed at marginal workers in Tamil Nadu, evaluating their effectiveness and identifying areas for improvement.

13. **Comparative Analysis**: Compare the situation of marginal workers in Tamil Nadu with national and regional trends to provide context and highlight unique challenges faced in the state.

14. **Recommendations**: Based on the assessment findings, provide actionable policy recommendations and interventions that can improve the socioeconomic conditions of marginal workers in Tamil Nadu.

DESIGN THINKING:

Design thinking is a creative problem-solving approach that can be applied to the assessment of marginal workers in Tamil Nadu. It emphasizes empathy, ideation, and iteration to develop innovative solutions. Here's a design thinking process tailored to this assessment:

1. **Empathize** : Immerse in the Marginal Worker Experience:** Begin by understanding the daily lives, challenges, and aspirations of marginal workers. Conduct ethnographic research, interviews, and focus groups to gather qualitative data.

-Stakeholder Mapping : Identify all stakeholders involved, including marginal workers, government agencies, NGOs, and employers. Understand their perspectives, needs, and constraints.

2. **Define** : Problem Definition:** Synthesize the research findings to define the key problems and challenges faced by marginal workers in Tamil Nadu. Develop a clear problem statement.

-User Personas : Create detailed personas representing different categories of marginal workers, considering their demographics and pain points.

3. **Ideate** : Brainstorm Solutions:Organize ideation workshops with a multidisciplinary team. Generate a wide range of ideas to address the identified problems, considering both incremental improvements and radical innovations.

-Prototyping : Develop low-fidelity prototypes or mock-ups of potential solutions. These can be in the form of policies, programs, or initiatives.

4. **Prototype:**

- Test Prototypes : Conduct small-scale pilot tests of the selected prototypes. Gather feedback from marginal workers and stakeholders to refine and improve the proposed solutions.

- Iterate: Continuously refine and iterate the prototypes based on user feedback. Be open to pivoting or discarding ideas that do not work.

5. **Test** : Large-Scale Testing: Implement the refined prototypes on a larger scale, taking into account scalability and sustainability. Monitor the impact on marginal workers and collect quantitative and qualitative data.

-Evaluate Impact : Assess the effectiveness of the solutions in addressing the challenges faced by marginal workers. Measure outcomes such as improved income, access to services, and overall well-being.

6. **Implement:**
-Full-Scale Implementation: Roll out the most successful solutions as full-fledged programs or policies, involving relevant government agencies, NGOs, and other stakeholders.

-Capacity Building: Provide training and resources to stakeholders involved in implementing the solutions to ensure effective execution.

7. **Monitor and Iterate:**
   - Continuous Feedback:Establish mechanisms for continuous feedback from marginal workers and stakeholders. Adapt and refine the solutions based on evolving needs and circumstances.

   -Scale Success : Scale up successful interventions to reach a larger portion of the marginal worker population in Tamil Nadu.

8. **Communicate and Advocate:**
Raise Awareness:Communicate the impact of the implemented solutions to the public, policymakers, and the media to build support and awareness.

   - Advocate for Change : Use the assessment findings and success stories to advocate for broader policy changes and improvements in the welfare of marginal workers at the state and national levels.

Throughout the design thinking process, it's essential to maintain a human-centered approach, prioritizing the needs and experiences of marginal workers in Tamil Nadu. By combining empathy, creativity, and iterative testing, this approach can lead to innovative and effective solutions to address the challenges faced by this vulnerable population.

DEVELOPMENT PHASE

UPDATE Read the migration plan to Notebook 7 to learn about the new features and the actions to take if you are using extensions - Please note that updating to Notebook 7 might break some of your extensions.   Don't show anymore

jupyter Untitled8 Last Checkpoint: 9 minutes ago (unsaved changes)   Logout

File   Edit   View   Insert   Cell   Kernel   Widgets   Help   Trusted   Python 3 (ipykernel) ○

```python
import pandas as pd
file_path = 'C:/Users/rishi/Downloads/assessment of marginal workers in tamil nadu.csv'
df = pd.read_csv(file_path)
```

In [7]: ▶ `df.describe()`

Out[7]:

	Worked for 3 months or more but less than 6 months - Persons	Worked for 3 months or more but less than 6 months - Males	Worked for 3 months or more but less than 6 months - Females	Worked for less than 3 months - Persons	Worked for less than 3 months - Males	Worked for less than 3 months - Females	Industrial Category - A - Cultivators - Persons	Industrial Category - A - Cultivators - Males	Industrial Category - A - Cultivators - Females	Industrial Category - A - Agricultural labourers - Persons
count	5.940000e+02	594.000000	594.000000	594.000000	594.000000	594.000000	594.000000	594.000000	594.000000	594.000000
mean	1.617277e+04	7932.700337	8240.067340	2981.629630	1338.289562	1643.340067	865.117845	466.424242	398.693603	12225.616162
std	7.607172e+04	36864.822704	39259.545337	13909.621137	6127.047670	7808.852522	4274.458077	2298.072295	1978.682322	60458.382586
min	0.000000e+00	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
25%	2.872500e+02	147.250000	144.000000	27.000000	14.250000	13.000000	9.000000	5.000000	4.000000	79.250000
50%	2.225500e+03	1147.000000	1076.000000	430.000000	198.500000	213.000000	69.500000	35.500000	32.000000	1094.000000
75%	9.628500e+03	4770.500000	4887.500000	1775.250000	774.250000	946.500000	466.000000	244.250000	204.750000	6279.750000
max	1.200828e+06	589003.000000	611825.000000	221386.000000	99368.000000	122018.000000	64235.000000	34632.000000	29603.000000	907752.000000

8 rows × 63 columns

```python
import matplotlib.pyplot as plt
import seaborn as sns
import pandas as pd
import numpy as np
```

In [2]: ▶ `df = pd.read_csv('C:/Users/rishi/Downloads/assessment of marginal workers in tamil nadu.csv')`

In [3]: ▶ `df.head()`

Out[3]:

	Table Code	State Code	District Code	Area Name	Total/ Rural/ Urban	Age group	Worked for 3 months or more but less than 6 months - Persons	Worked for 3 months or more but less than 6 months - Males	Worked for 3 months or more but less than 6 months - Females	...	Industrial Category - N to O - Females	Industrial Category - P to Q - Persons	Industrial Category - P to Q - Males	Industrial Category - P to Q - Females	Industrial Category - R to U - HHI - Persons	Industrial Category - R to U - HHI - Males
0	B0806SC	`33	`000	State - TAMIL NADU	Total	Total	1200828	589003	611825	221386	...	3565	11080	4019	7061	16833	4266
1	B0806SC	`33	`000	State - TAMIL NADU	Total	`5-14	27791	14125	13666	2447	...	11	122	71	51	427	169
				State												

In [8]: ▶ `df.head()`

Out[8]:

	Table Code	State Code	District Code	Area Name	Total/ Rural/ Urban	Age group	Worked for 3 months or more but less than 6 months - Persons	Worked for 3 months or more but less than 6 months - Males	Worked for less than 3 months - Females	...	Industrial Category - N to O - Females	Industrial Category - P to Q - Persons	Industrial Category - P to Q - Males	Industrial Category - P to Q - Females	Industrial Category - R to U - HHI - Persons	Industrial Category - R to U - HHI - Males
0	B0806SC	`33	`000	State - TAMIL NADU	Total	Total	1200828	589003	611825	221386	...	3565	11080	4019	7061	16833	4266
1	B0806SC	`33	`000	State - TAMIL NADU	Total	`5-14	27791	14125	13666	2447	...	11	122	71	51	427	169
2	B0806SC	`33	`000	State - TAMIL NADU	Total	15-34	514340	259560	254780	92423	...	1754	7536	2718	4818	8346	2127
3	B0806SC	`33	`000	State - TAMIL NADU	Total	35-59	542581	251957	290624	99202	...	1619	3205	1131	2074	6591	1487
4	B0806SC	`33	`000	State - TAMIL NADU	Total	60+	115103	62833	52270	27165	...	175	211	93	118	1457	483

In [10]: ▶ `df.tail()`

Out[10]:

	Table Code	State Code	District Code	Area Name	Total/ Rural/ Urban	Age group	Worked for 3 months or more but less than 6 months - Persons	Worked for 3 months or more but less than 6 months - Males	Worked for 3 months or more but less than 6 months - Females	...	Industrial Category - N to O - Females	Industrial Category - P to Q - Persons	Industrial Category - P to Q - Males	Industrial Category - P to Q - Females	Industrial Category - R to U - HHI - Persons	Indus Cate - R t I M
589	B0806SC	`33	`633	District - Tiruppur	Urban	`5-14	272	129	143	18	...	0	0	0	0	0	
590	B0806SC	`33	`633	District - Tiruppur	Urban	15-34	3285	1654	1631	473	...	20	44	15	29	62	
591	B0806SC	`33	`633	District - Tiruppur	Urban	35-59	3672	1769	1903	522	...	33	35	12	23	36	
592	B0806SC	`33	`633	District - Tiruppur	Urban	60+	696	399	297	111	...	0	3	0	3	10	
593	B0806SC	`33	`633	District - Tiruppur	Urban	Age not stated	2	1	1	0	...	0	0	0	0	0	

5 rows × 69 columns

In [12]: ▶ `print(df.info())`   `# To check the columns and data types`
`print(df.describe())`   `# Summary statistics of numerical columns`

`<class 'pandas.core.frame.DataFrame'>`

```
------  -----
 0   Table Code                                                594 non-
null    object
 1   State Code                                                594 non-
null    object
 2   District Code                                             594 non-
null    object
 3   Area Name                                                 594 non-
null    object
 4   Total/ Rural/ Urban                                       594 non-
null    object
 5   Age group                                                 594 non-
null    object
 6   Worked for 3 months or more but less than 6 months -  Persons   594 non-
null    int64
 7   Worked for 3 months or more but less than 6 months - Males      594 non-
null    int64
 8   Worked for 3 months or more but less than 6 months - Females    594 non-
null    int64
```

In [ ]: ▶|

In [18]: ▶| `plt.figure(figsize=(8, 6))`
`sns.countplot(data=df, x='Urban_Rural')`
`plt.title('Distribution of Marginal Workers in Urban and Rural Areas')`
`plt.xlabel('Location')`

File   Edit   View   Insert   Cell   Kernel   Widgets   Help   Trusted | Python 3 (ipykernel) ◯

In [1]: ▶| `import matplotlib.pyplot as plt`
`import seaborn as sns`
`import pandas as pd`
`import numpy as np`

In [2]: ▶| `df = pd.read_csv('C:/Users/rishi/Downloads/assessment of marginal workers in tamil nadu.csv')`

In [3]: ▶| `df.head()`

Out[3]:

	Age group	Worked for 3 months or more but less than 6 months - Persons	Worked for 3 months or more but less than 6 months - Males	Worked for 3 months or more but less than 6 months - Females	Worked for less than 3 months - Persons	...	Industrial Category - N to O - Females	Industrial Category - P to Q - Persons	Industrial Category - P to Q - Males	Industrial Category - P to Q - Females	Industrial Category - R to U - HHI - Persons	Industrial Category - R to U - HHI - Males	Industrial Category - R to U - HHI - Females	Industrial Category - R to U - Non HHI - Persons	Industrial Category - R to U - Non HHI - Males	Industrial Category - R to U - Non HHI - Females
Total	1200828	589003	611825	221386	...	3565	11080	4019	7061	16833	4266	12567	122088	55801	66287
	'5-14	27791	14125	13666	2447	...	11	122	71	51	427	169	258	19305	9774	9531
	15-34	514340	259560	254780	92423	...	1754	7536	2718	4818	8346	2127	6219	68929	32803	36126
	35-59	542581	251957	290624	99202	...	1619	3205	1131	2074	6591	1487	5104	26498	9675	16823
	60+	115103	62833	52270	27165	...	175	211	93	118	1457	483	974	7065	3394	3671

File   Edit   View   Insert   Cell   Kernel   Widgets   Help   Trusted | Python 3 (ipykernel) ◯

In [4]: ▶| `df.tail()`

ct de	Area Name	Total/ Rural/ Urban	Age group	Worked for 3 months or more but less than 6 months - Persons	Worked for 3 months or more but less than 6 months - Males	Worked for 3 months or more but less than 6 months - Females	Worked for less than 3 months - Persons	...	Industrial Category - N to O - Females	Industrial Category - P to Q - Persons	Industrial Category - P to Q - Males	Industrial Category - P to Q - Females	Industrial Category - R to U - HHI - Persons	Industrial Category - R to U - HHI - Males	Industrial Category - R to U - HHI - Females	Industrial Category - R to U - Non HHI - Persons	Industrial Category - R to U - Non HHI - Males	Industrial Category - R to U - Non HHI - Females
33	District - Tiruppur	Urban	'5-14	272	129	143	18	...	0	0	0	0	0	0	0	228	104	124
33	District - Tiruppur	Urban	15-34	3285	1654	1631	473	...	20	44	15	29	62	6	56	675	247	428
33	District - Tiruppur	Urban	35-59	3672	1769	1903	522	...	33	35	12	23	36	9	27	279	103	176
33	District - Tiruppur	Urban	60+	696	399	297	111	...	0	3	0	3	10	3	7	81	35	46

In [8]: ▶| `plt.figure(figsize=(8, 6))`
`sns.histplot(data=df, x='Age group', bins=20, kde=True)`
`plt.title('Age Distribution of Marginal Workers')`
`plt.xlabel('Age group')`
`plt.ylabel('Frequency')`
`plt.show()`

Age Distribution of Marginal Workers
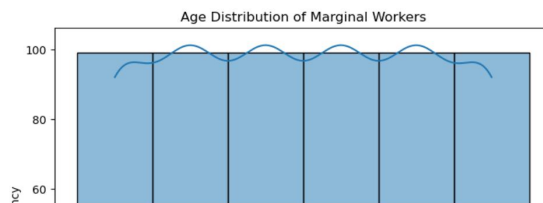
VISUALIZATION USING PYTHON

Age group

```
In [11]: ▶ plt.figure(figsize=(8, 6))
           sns.countplot(data=df, x='Total/ Rural/ Urban')
           plt.title('Distribution of Marginal Workers in Urban and Rural Areas')
           plt.xlabel('Location')
           plt.ylabel('Count')
           plt.show()
```


Distribution of Marginal Workers in Urban and Rural Areas

```
In [17]: ▶ plt.figure(figsize=(8, 6))
```

```
In [17]: ▶ plt.figure(figsize=(8, 6))
           sns.histplot(data=df, x='Industrial Category - P to Q - Males', y='Industrial Category - P to Q - Females', bins=20, kde=True
           plt.title('industrial category distribution of marginal workers')
           plt.xlabel('Industrial Category - P to Q - Males')
           plt.ylabel('Industrial Category - P to Q - Females')
           plt.show()
```


industrial category distribution of marginal workers

```
In [19]:  ▶ plt.figure(figsize=(8, 6))
             sns.histplot(data=df, x='Industrial Category - R to U - HHI - Males', y='Industrial Category - R to U - HHI - Females', bins=
             plt.title('industrial category distribution of marginal workers')
             plt.xlabel('Industrial Category - R to U - HHI - Males')
             plt.ylabel('Industrial Category - R to U - HHI - Females')
             plt.show()
```


industrial category distribution of marginal workers

Industrial Category - R to U - HHI - Males

```
In [20]:  ▶ lt.figure(figsize=(8, 6))
             ns.histplot(data=df, x='Industrial Category - R to U - Non HHI - Males', y='Industrial Category - R to U - Non HHI - Females'
             lt.title('industrial category distribution of marginal workers')
             lt.xlabel('Industrial Category - R to U - Non HHI - Males')
             lt.ylabel('Industrial Category - R to U - Non HHI - Females')
             lt.show()
```


industrial category distribution of marginal workers