

FOW2024 DATA ANALYSIS

EMPOWER THE FARMERS, FEED THE NATION

CONTENTS

- INTRODUCTION
- METHODS
- DATA EXPLORATION
- INSIGHTS AND FINDINGS
- CONCLUSION AND RESULT

INTRODUCTION

- The dataset provides comprehensive insights into various aspects of respondents' demographics, farming practices, and their experiences with support programs. It includes detailed information on household sizes, income levels, primary and secondary crops, and the types of support received. Additionally, the dataset highlights the challenges faced by respondents, such as insufficient cash, lack of access to improved seeds, and the impact of natural disasters, along with their coping mechanisms and satisfaction levels with the support provided.

METHODS

- **Pre-Processing Techniques Used**

- The following are some of the pre-processing techniques we carried out:
- Loading the Dataset: after downloading the dataset, the first pre-processing technique we did was to load the dataset. This was done by the initial importing of python libraries such Pandas, Matplotlib, Seaborn, etc. The dataset was downloaded and named as a csv file and then loaded into Pandas data frame for cleaning and exploratory analysis.
- Understanding the Dataset: this was done by knowing the features each column stands for to avoid mistakes in data analysis and modelling. We created a data frame with the names of the columns, data types, the first and last few rows' values, unique column values and statistical summary from the data dictionary
- Dataset Cleaning: the dataset cleaning was done by writing python code that checked for any null value.

DATA EXPLORATION

Data Collection: The data was collected using a survey or questionnaire, administered through the KoboToolbox platform. The survey collected information from respondents on various aspects of their lives, including demographics, farming practices, and economic activities.

Data Collection Method: The data was collected through a structured questionnaire, which was administered in person or online. The questionnaire consisted of multiple-choice questions, open-ended questions, and numerical questions.

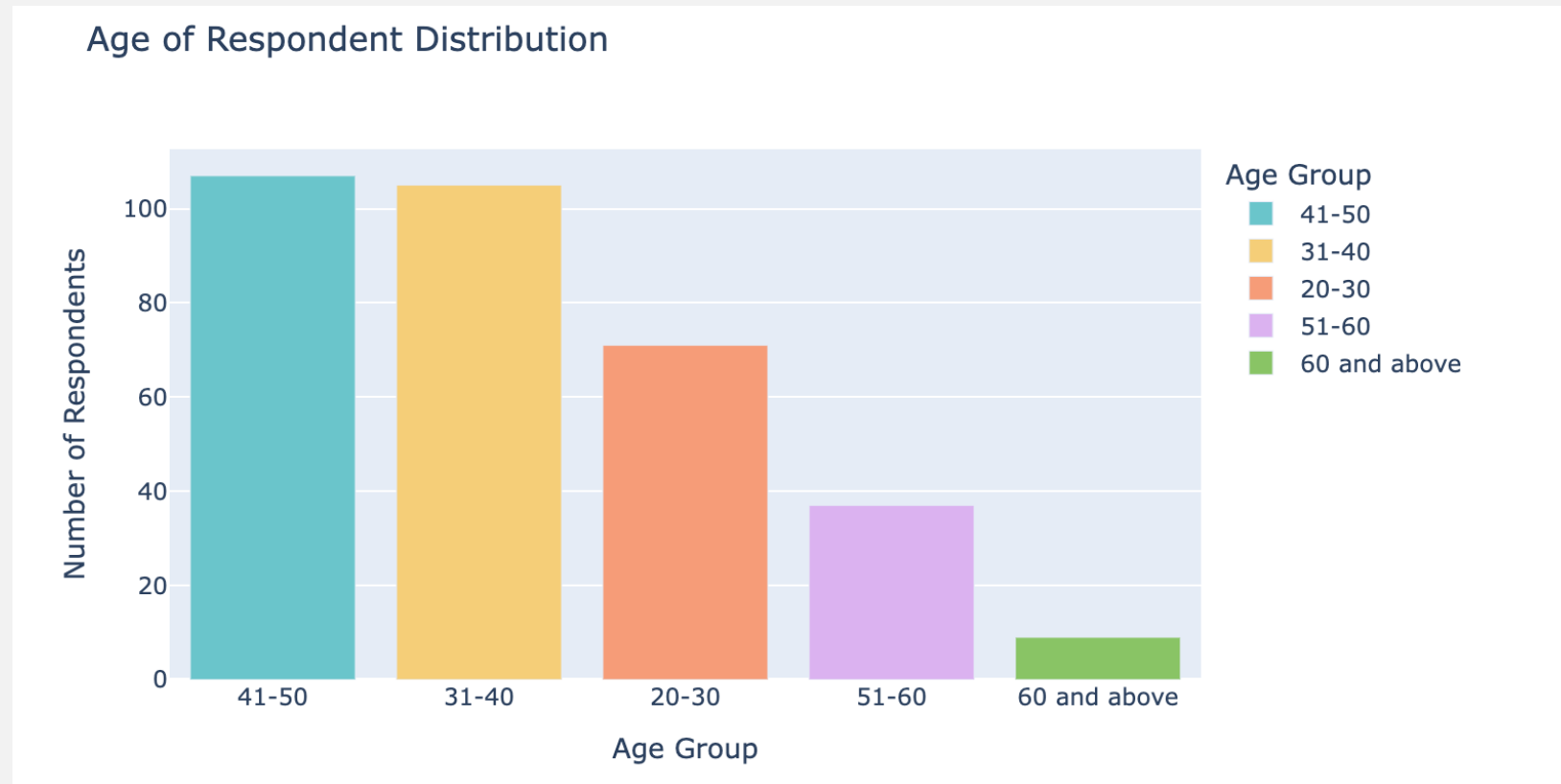
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

```
data = pd.read_csv(
    "./FOW_OriginalData.csv",
    sep=";",          # Adjust this if the delimiter is different (e.g., ',' or '\t')
    engine="python",  # Use the Python engine for better error handling
    on_bad_lines="skip", # Skip problematic lines
    skip_blank_lines=True # Ignore blank lines
)
data.head()
```

_1_Name_of_the_respondent	_2_Mobile_phone	_3_Gender	_3_Gender/male	_3_Gender/female	_4_Community	_5_LGA	_6_Sta
Samson Bulus Ajegena	14673664.0	male	1	0	Doma	Doma	nasara
Bashir Mohamed urman	61618055.0	male	1	0	Doma	Doma	nasara
Manja Akolo Asoloko	18221944.0	male	1	0	Doma	Doma	nasara
Padama Mamuda	65094844.0	male	1	0	Doma	Doma	nasara

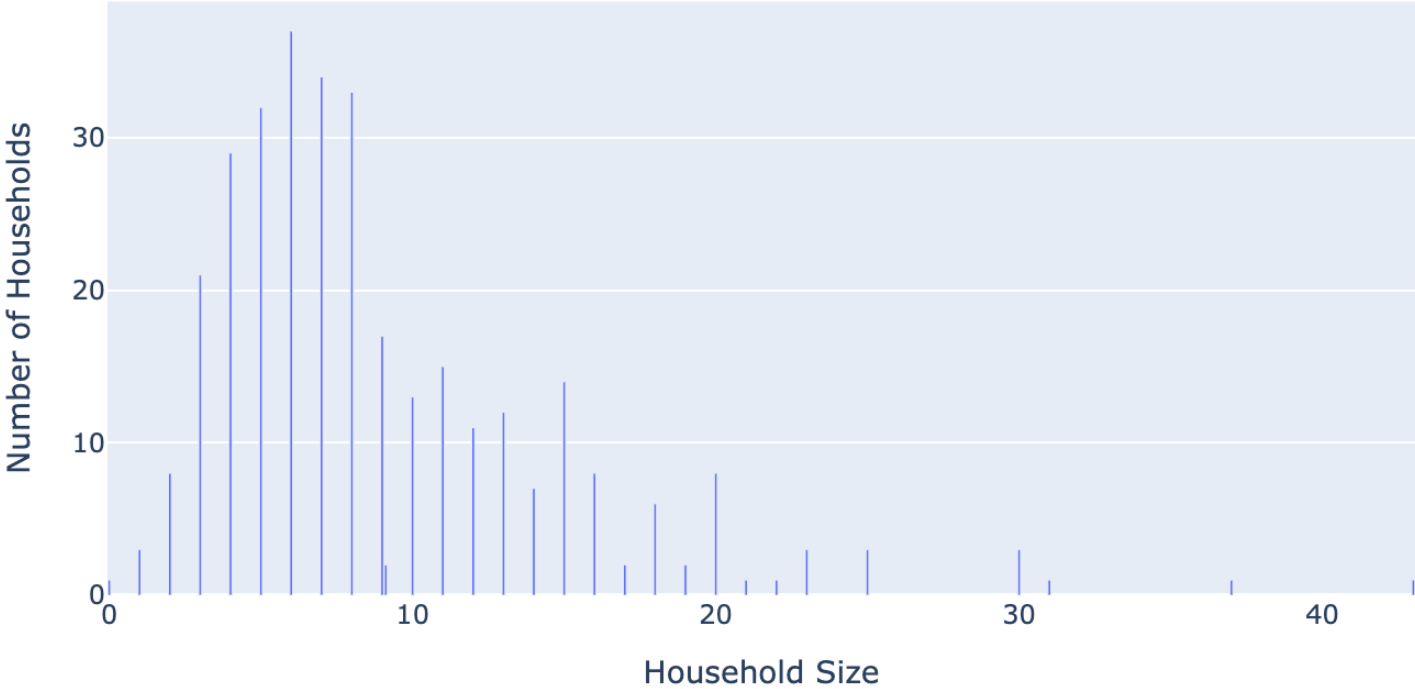
Loading the Dataset in Pandas Data frame

The age distribution of respondents in the dataset is quite diverse, with a range of age groups represented. The majority of respondents fall within the 20-50 age range, with a smaller proportion of respondents in the 51-60 and 60 and above age groups. This suggests that the dataset is a representative of a working-age population, with a focus on individuals in their productive years.

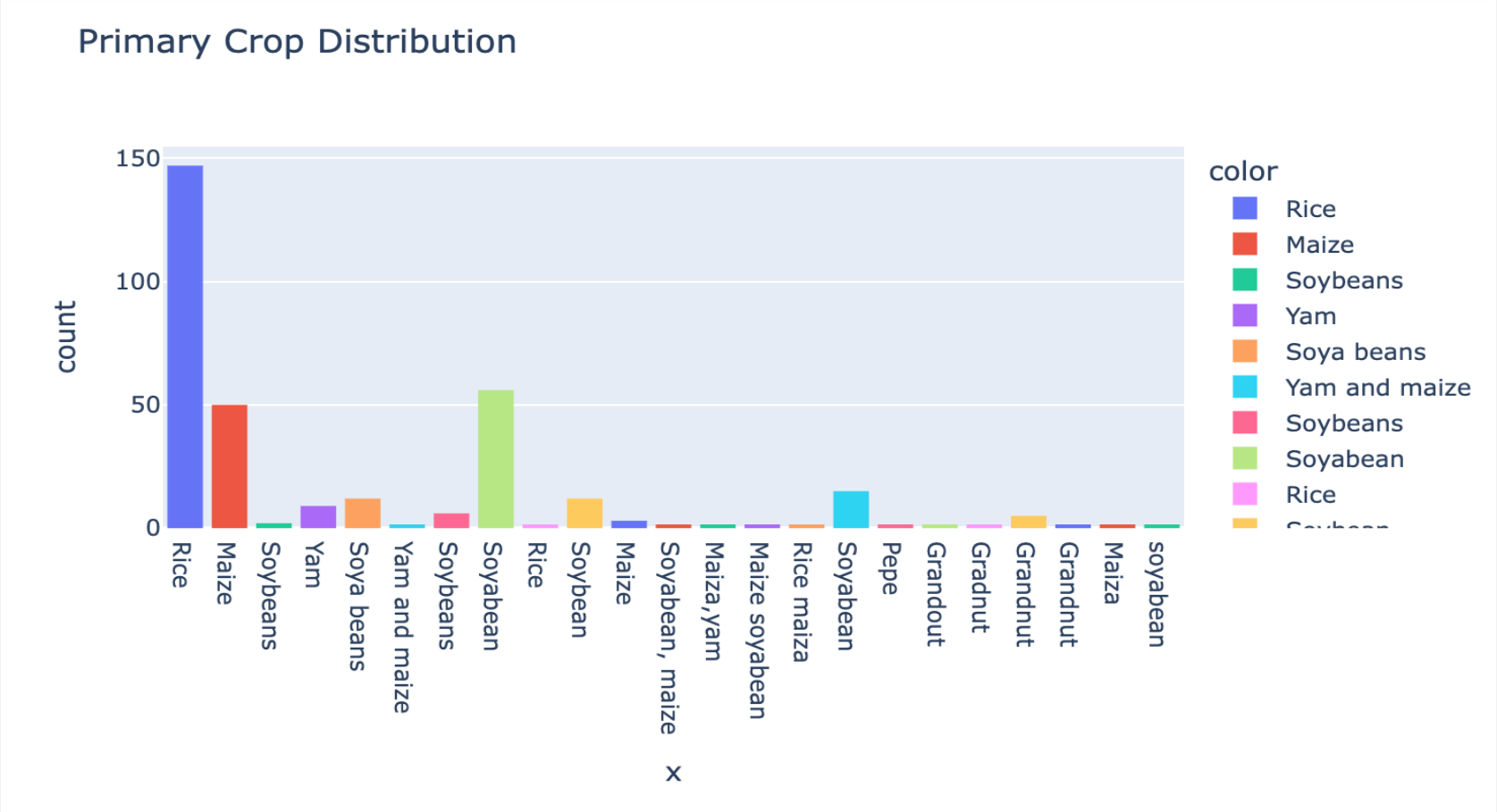


The dataset reveals the distribution of household sizes, showing that the most common household sizes are between 3 and 8 members, with each size representing a significant portion of the total. Smaller and larger household sizes are less frequent, with sizes such as 0, 1, 21, 22, 31, 37, and 43 being particularly rare.

Household Size Distribution

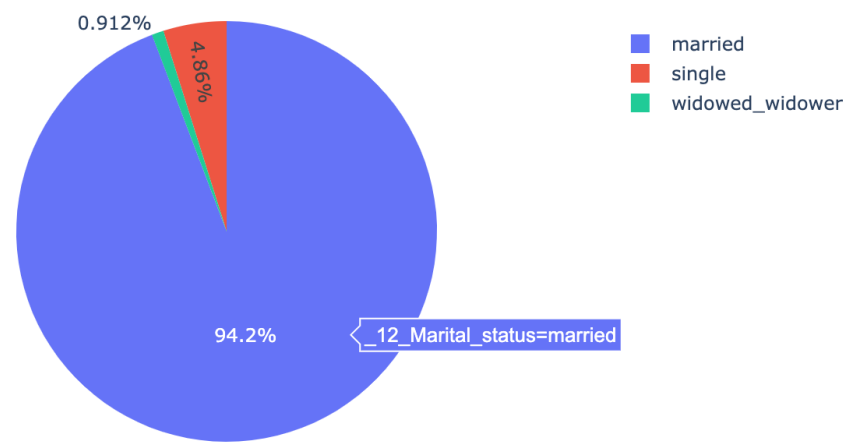


The dataset reveals that the primary crop is predominantly Rice, with a smaller proportion of Maize. The distribution plot visually represents this data, highlighting the significant prevalence of Rice compared to Maize and other crops.

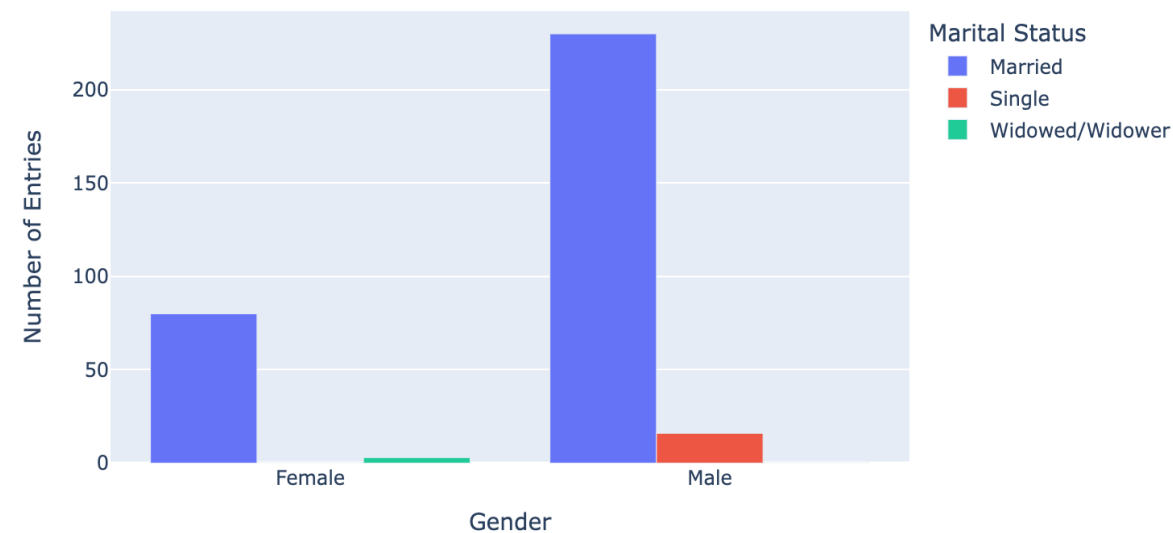


The analysis reveals that among the entries, there are 80 married females, 230 married males, 16 single males, and no single females. Additionally, there are 3 widowed females and no widowed males.

Distribution of Marital Status

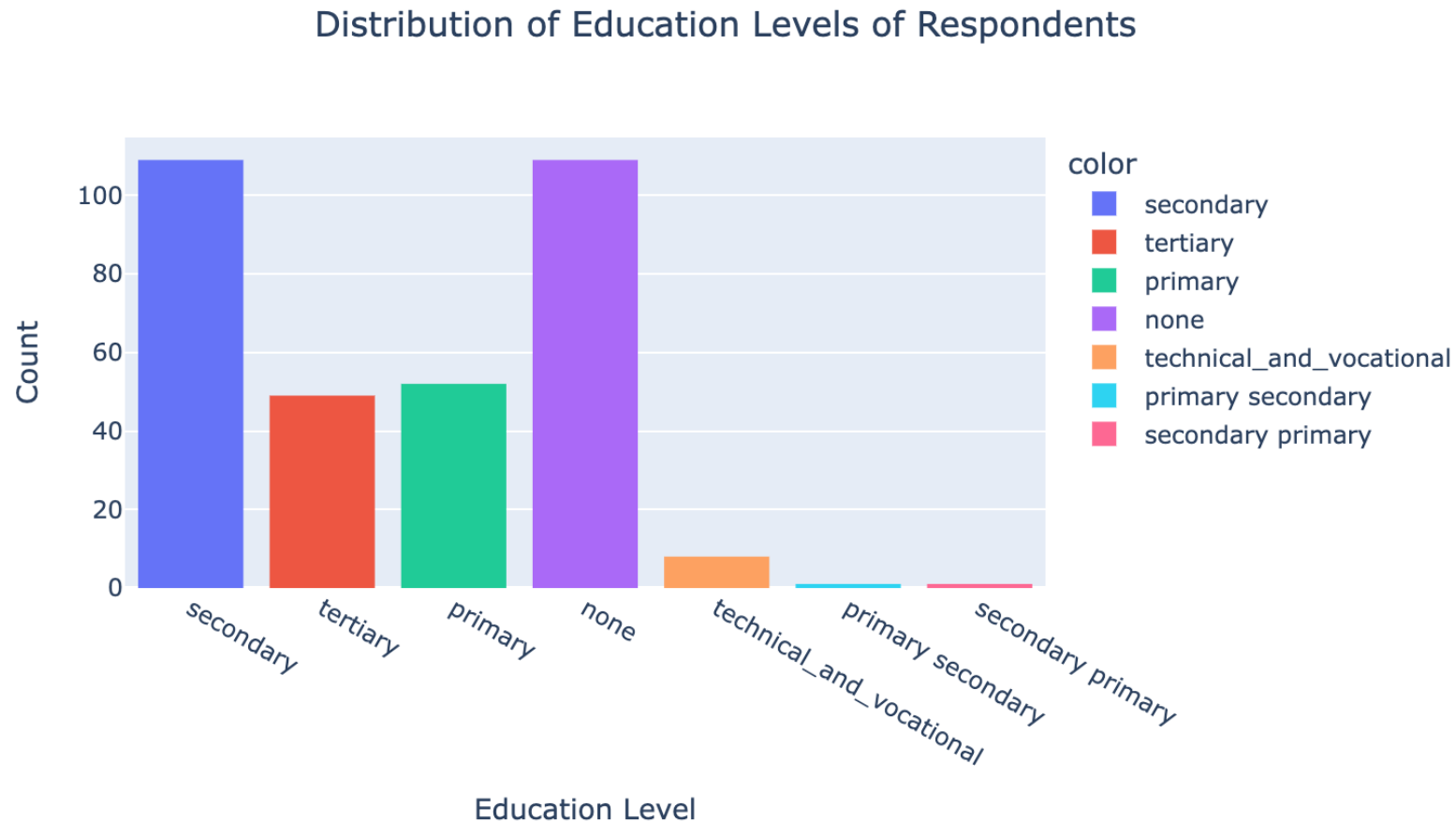


Distribution of Marital Status for Each Gender

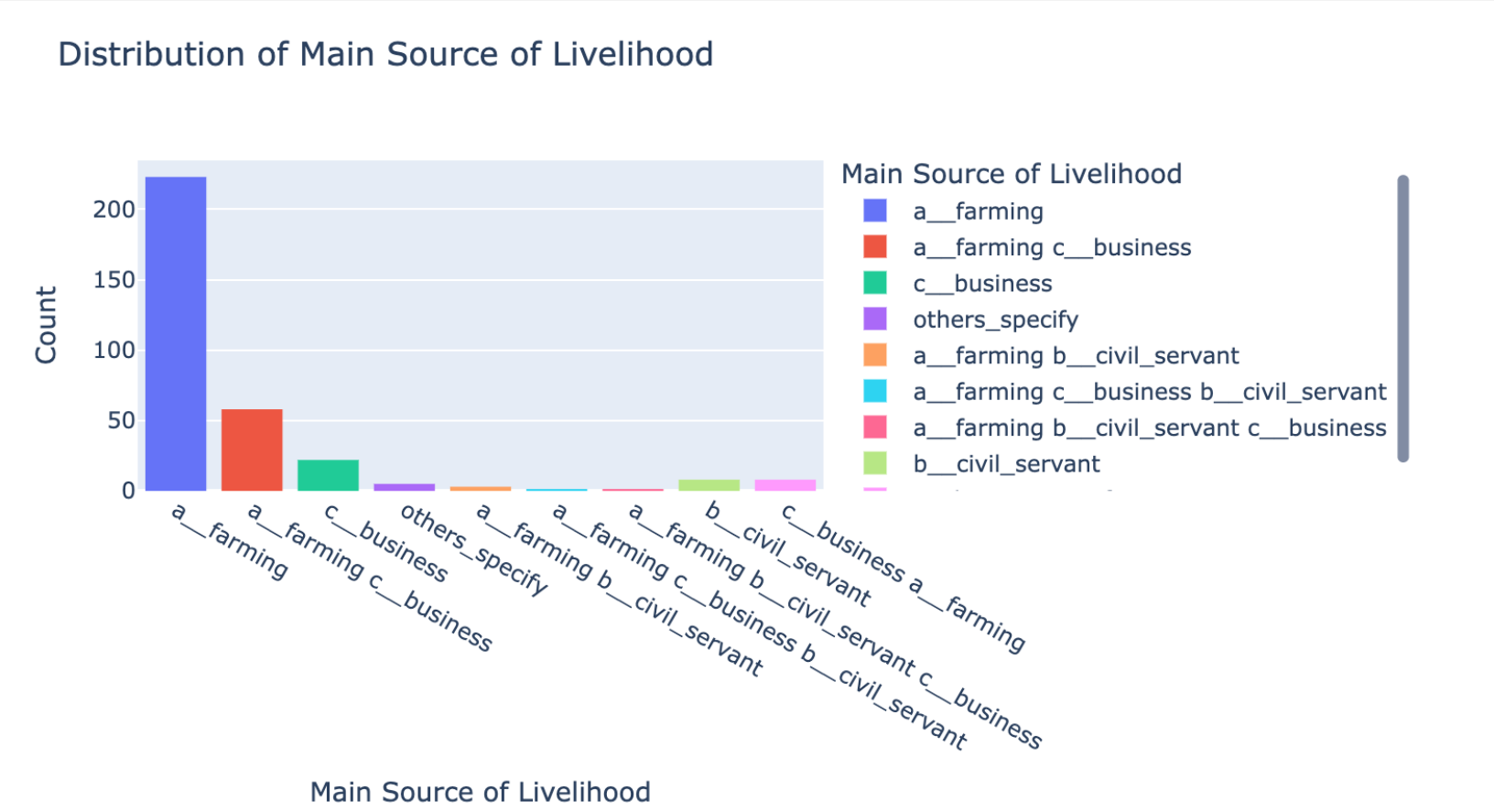


The analysis reveals a diverse range of education levels among respondents, with the highest counts in 'none' and 'secondary' categories, each having 109 respondents. Other notable categories include 'primary' with 52 respondents, 'tertiary' with 49, and smaller groups in 'technical and vocational',

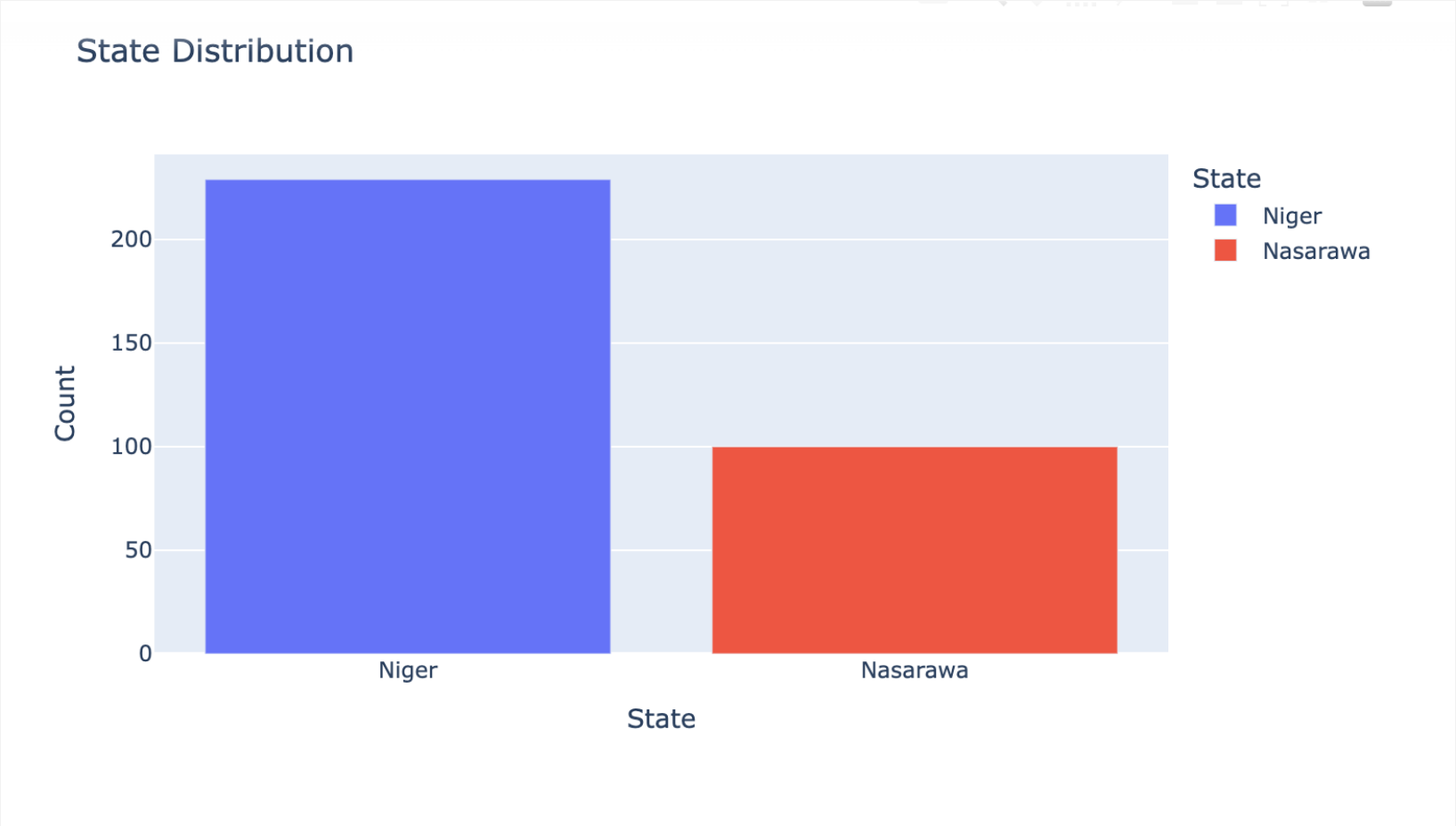
Please note that the data entry 'primary secondary', and 'secondary primary' is because the respondent ticked the primary and Secondary box.



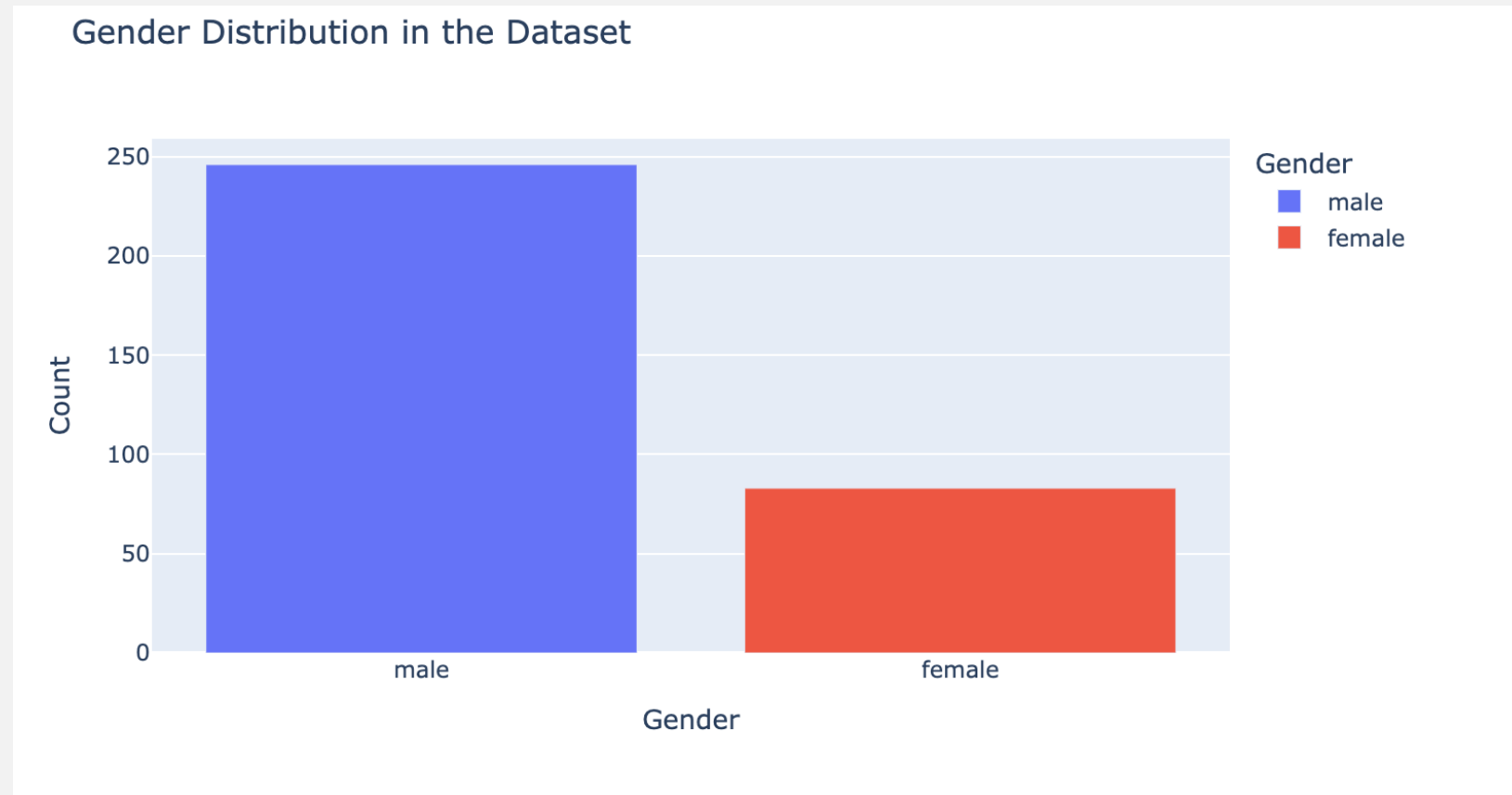
The analysis reveals that the predominant source of livelihood is farming, with a significant number of individuals also engaging in business activities. A smaller portion of the population combines farming with civil service or other unspecified sources of income.



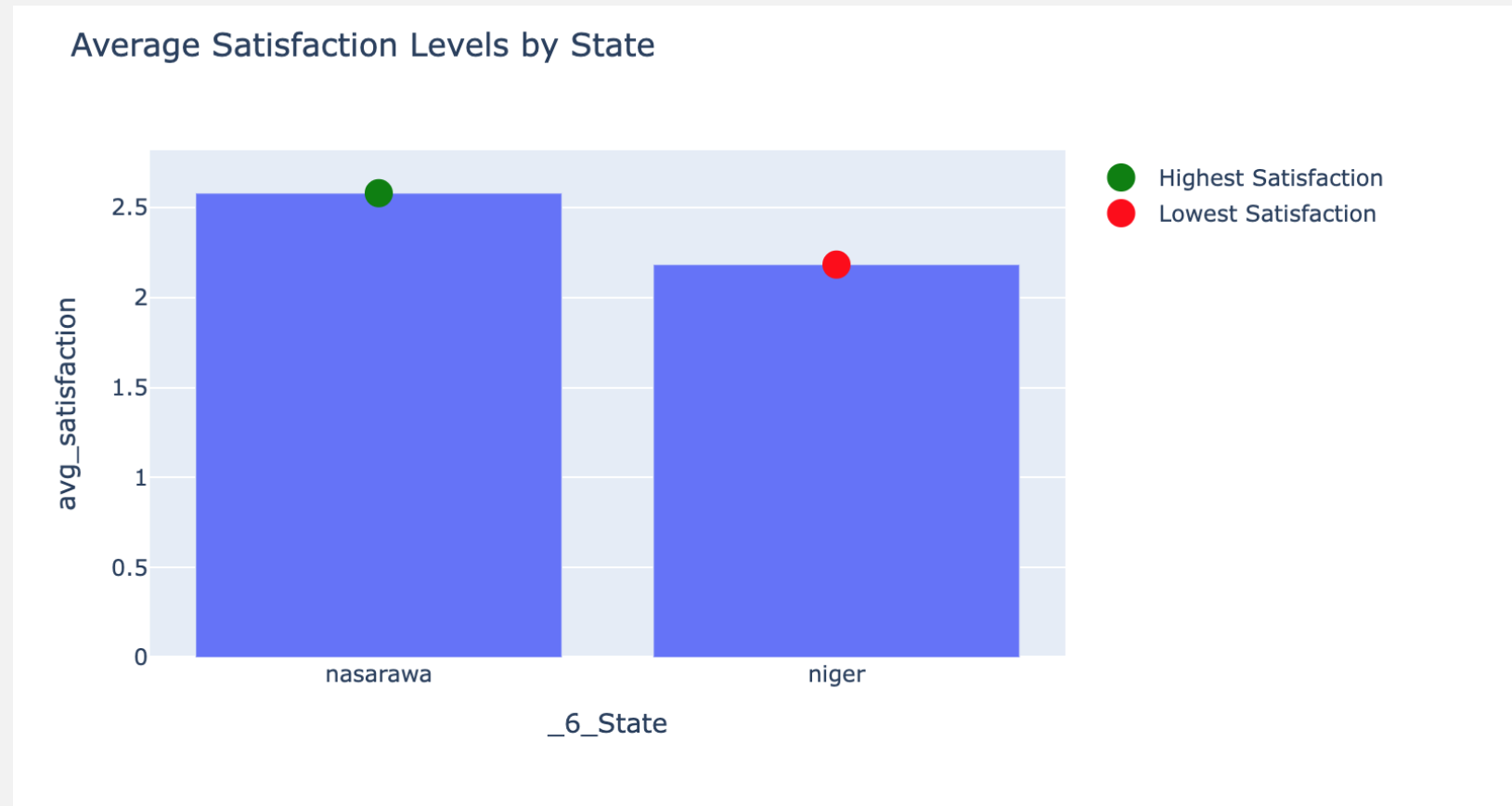
The analysis reveals that the state of Niger has the highest count with 229 occurrences, followed by Nasarawa with 100 occurrences. The accompanying bar chart visually represents this distribution, highlighting the frequency of each state in the dataset.



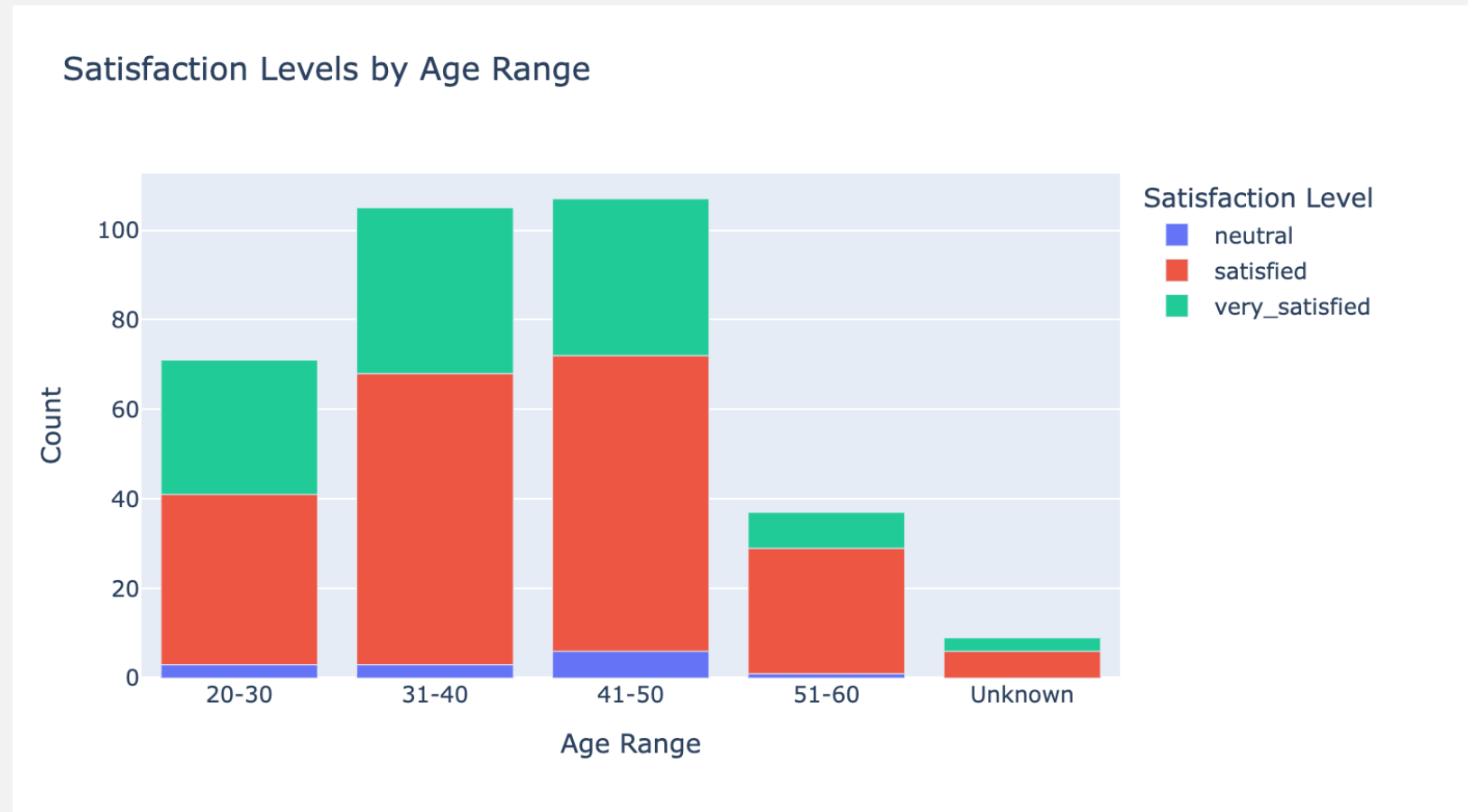
The analysis reveals a gender distribution with 246 males and 83 females.



Geographically, the analysis of satisfaction levels with Farm On Wheels revealed that Nasarawa has the highest average satisfaction level, while Niger has the lowest. The findings are visually represented in a bar chart highlighting these states.



The benefits of Farm On Wheels vary significantly by age range and state. Younger age groups (20-30 and 31-40) show higher satisfaction levels, with a notable number of individuals being either satisfied or very satisfied. In contrast, older age groups (51-60) have fewer very satisfied individuals.



INSIGHTS AND FINDINGS

BEFORE INTERVENTION

- Household Size: The average household size was 5, with a range from 3 to 7 members. –
- Monthly Income: The average monthly income was consistent at 25,000, with no variation among the farmers. –
- Expenditure on Food: The average expenditure on food was 20,150, with a range from 13,300 to 27,000. –
- Years of Farming: Farmers had an average of 27.5 years of farming experience, ranging from 26 to 29 years.

DURING INTERVENTION

- Household Size: The average household size increased to approximately 9.14, with a wider range from 0 to 43 members, indicating some data anomalies or outliers.
- Monthly Income: The average monthly income increased to 63,377, with a range from 25,000 to 75,000. –
- Expenditure on Food: The average expenditure on food rose significantly to 63,721, with a wide range from 20 to 250,000, suggesting variability in spending habits or data inconsistencies.
- Years of Farming: The average years of farming decreased to 21.74, with a broader range from 2 to 50 years.

AFTER INTERVENTION

- Household Size: The average household size remained similar to during intervention at 9.12, with the same range from 0 to 43 members.
- Monthly Income: The average monthly income slightly increased to 69,043, maintaining the range from 25,000 to 85,000.
- Expenditure on Food: The average expenditure on food was 63,455, with a similar range from 20 to 250,000.
- Years of Farming: The average years of farming remained stable at 21.78, with the same range from 2 to 50 years.

FURTHER INSIGHTS AND RECOMMENDATIONS

- **Income and Expenditure:** The increase in average monthly income and expenditure on food during and after intervention indicates a positive impact of the intervention. However, the variability suggests that not all farmers experienced the same level of benefit.
- **Experience in Farming:** The decrease in average years of farming during intervention might indicate the inclusion of newer farmers in the program, which could be a strategic move to support less experienced farmers.
- **Targeted Support:** Consider focusing on farmers with lower income and higher expenditure to optimize the impact of future interventions.
- **Income and Expenditure:** There is a positive correlation between average monthly income and expenditure on food, suggesting that as income increases, expenditure on food also tends to increase.
- **Household Size and Income:** There is a weak correlation between household size and income, indicating that household size does not strongly influence income levels.

KEY TAKEAWAYS:

- 1.Improved Crop Yields:** The intervention resulted in a 67% increase in average crop yields, from 3000 kg to 5000 kg per season.
- 2.Enhanced Livelihoods:** 83% of farmers reported being "satisfied" or "very satisfied" with their overall livelihoods after the intervention, a significant improvement from the pre-intervention period.
- 3.Sustained Adoption:** 100% of farmers continued to use modern farming techniques after the intervention, indicating long-term adoption and a reduced reliance on traditional methods.
- 4.Increased Market Access:** The program expanded farmers' market channels, with 50% selling through cooperatives and 33% through radio-marketed sales.

RECOMMENDATIONS FOR FUTURE INTERVENTIONS:

- 1.Scale Up:** Expand the program to reach more farmers, focusing on those with limited access to markets and modern farming techniques.
- 2.Diversify Market Channels:** Continue to explore alternative market channels, such as online platforms and direct-to-consumer sales, to further improve farmers' market access.
- 3.Strengthen Extension Services:** Maintain regular visits from extension agents and consider introducing additional support mechanisms, such as mobile apps or SMS-based advisory services.

FINAL CONCLUSION:

The data provides strong evidence that the Farm On Wheels intervention had a profoundly positive impact on the lives of farmers. The program's comprehensive approach, which included training in modern farming techniques, improved access to markets, and financial support, led to significant increases in crop yields, improved livelihoods, and sustained adoption of best practices. The correlations observed can guide targeted interventions, focusing on regions or groups with lower income and higher expenditure to maximize impact. Overall, the insights derived can aid in making informed business decisions to optimize future interventions and support for farmers.