Field Project: Survey Report

Topic: Correlation of plants with our mental state.

Introduction:

The relationship between nature and human well-being has long been a subject of interest in various fields of study, ranging from psychology to environmental science. As mental health issues such as anxiety, stress, and depression become more prevalent, there is growing interest in exploring natural, non-invasive approaches to improve mental well-being. One aspect of this is the role that plants, both indoors and outdoors, play in influencing our mental state. From large green spaces to small houseplants, there is a growing body of evidence that suggests the presence of plants can positively impact mood, reduce stress, and enhance cognitive function.

Historically, human interaction with plants has been fundamental to survival, providing food, medicine, and shelter. However, plants have also played an essential role in cultural, spiritual, and aesthetic aspects of human life. The ancient practice of horticulture and the concept of biophilia—humankind's innate affinity for nature—suggest that our relationship with plants goes beyond their utilitarian purposes. In modern times, as more people live in urbanized environments and spend increasing amounts of time indoors, the potential psychological benefits of plants have become especially relevant. Studies have indicated that exposure to nature, particularly green spaces such as parks, forests, and gardens, can reduce stress levels, enhance mood, and improve cognitive functioning. However, relatively little research has focused on the role of indoor plants or specific types of flora in relation to mental health outcomes.

The purpose of this study is to investigate the correlation between plants and mental states, focusing on the perceptions and experiences of individuals who engage with plants in various settings. Specifically, this research aims to determine whether the presence of plants, whether indoors or outdoors, can positively influence emotional well-being, reduce psychological stress, and improve mental clarity and focus. Through survey-based data collection, we will explore how participants perceive the role of plants in their daily lives, examining factors such as the frequency and duration of exposure, types of plants (indoor or outdoor), and the specific mental health benefits they attribute to this interaction.

This study is motivated by the increasing importance of mental health in modern society, as well as the potential for non-invasive, natural interventions to support emotional and psychological well-being. The survey findings could have practical implications in various domains, including interior design, environmental planning, workplace wellness programs, and therapeutic practices such as horticulture therapy. Ultimately, this research aims to provide a clearer understanding of how plants can serve as accessible tools for improving mental health in diverse settings, from urban apartments to rural homes, and from corporate offices to public spaces.

Practical application of this research:

Horticulture therapy is a therapeutic approach that uses gardening and plant-related activities to improve physical, mental, and emotional well-being. It is based on the idea that engaging with plants and nature can have a calming and healing effect on individuals. This form of therapy is often used for various populations, including people with disabilities, mental health issues, elderly individuals, and those recovering from illness or trauma.

Benefits of Horticulture Therapy:

1. Physical Health: Gardening activities can improve motor skills, coordination, and strength. They are often used in physical rehabilitation to promote exercise and movement.

2. Mental Health: Being in nature and working with plants can reduce stress, anxiety, and depression. It promotes relaxation and a sense of accomplishment.

3. Emotional Well-being: Nurturing plants helps build self-esteem, provides a sense of purpose, and can be a source of joy.

4. Cognitive Benefits: Gardening can stimulate memory and concentration, making it beneficial for those with cognitive impairments like dementia.

5. Social Interaction: Group gardening activities foster communication and socialization, helping individuals feel more connected.

Horticulture therapy is commonly used in hospitals, rehabilitation centres, nursing homes, and community gardens as a part of holistic treatment plans.

Workplace wellness programs are initiatives designed to promote the physical, mental, and emotional well-being of employees. By focusing on health and wellness, these programs aim to create a healthier and more productive workforce, reduce absenteeism, lower healthcare costs, and enhance employee engagement and satisfaction.

Incorporating plants into workplace wellness programs is a growing trend that aligns with the principles of biophilic design, which emphasizes the connection between nature and human health.

Here's an overview of how plants can be utilized in workplace wellness initiatives:

1.Improving Air Quality: Certain indoor plants, such as spider plants, peace lilies, and snake plants, are known to improve indoor air quality by filtering toxins and increasing oxygen levels. Healthier air can lead to reduced fatigue and improved cognitive function.

2.Enhancing Aesthetics and Mood: Incorporating plants into office decor enhances the aesthetic appeal of the workspace, making it more inviting and pleasant. A visually appealing environment can boost employee morale and job satisfaction. Studies show that exposure to greenery can enhance mood and promote feelings of calmness. The presence of plants can reduce stress and anxiety, creating a more positive atmosphere.

3.Boosting Productivity and Focus: Increased Concentration: Research indicates that having plants in the workplace can improve concentration and productivity. Natural elements in the environment can help employees feel more engaged and focused on their tasks.

Creativity Enhancement: Greenery in workspaces can stimulate creativity and problem-solving abilities, contributing to innovative thinking among employees.

4. Promoting Relaxation and Stress Relief: Interaction with plants, whether through caring for them or simply being around them, can have a calming effect on employees, helping to reduce stress levels. Designing break areas or relaxation zones with plants can provide employees with a serene space to unwind, facilitating better mental recovery during the workday.

5. Work-Life Balance: Encouraging employees to engage with nature outside of work, such as gardening workshops or plant-related activities, can help promote work-life balance and mental well-being.

Integrating plants into workplace wellness programs offers a multifaceted approach to improving employee health and productivity.

Previous studies on correlation of plants with our mental state:

1. **Kaplan and Kaplan's Attention Restoration Theory (1990):** This foundational theory suggests that natural environments help restore attention and reduce mental fatigue. Their research indicates that natural settings, including those with plants, can lead to improved mood and cognitive performance. The presence of nature facilitates relaxation and mental restoration.
2. **Plants and Stress Reduction:** Ulrich's study demonstrated that patients recovering from surgery in rooms with windows overlooking greenery had shorter hospital stays and required less pain medication than those without such views. This study highlighted the therapeutic benefits of plants and natural views in reducing stress and promoting healing.

Conclusion:

These studies collectively demonstrate a strong correlation between plants and mental well-being, highlighting the importance of greenery in various environments. The findings suggest that integrating plants into daily life can lead to significant improvements in mood, stress reduction, and overall mental health, reinforcing the idea that nature plays a vital role in enhancing our psychological state.

Hypothesis:

PLANTS AND THEIR CORRELATION WITH OUR MENTAL STATE.

Dataset:

The spreadsheet contains survey data with several parameters related to interaction with plants, lifestyle habits, and general interests, personal experiences of the respondents. The following factors were considered for obtaining the dataset:

1. Demographics: Age, Gender (Female, Male), Native (City, Village)
2. Occupational Analysis: Working profession, type of job, retirement status.
3. Lifestyle: Frequency of exposure with nature, activities taken up by the respondent to spend time with nature.
4. Interest: Level of interest of the respondent in plants.
5. Effects of plants: Feelings of the respondent after spending time with plants, reduction in stress levels.
6. Personal thoughts of the respondent: Recommending others to have plants around.
7. Beliefs: Questions to analyze respondents understanding on importance of plants and nature in general.

Questionnaire:

1. **Demographics**

- Age Distribution: The age of respondents ranged from the group of under 18, 18 to 30, 31 to 50, and 51 and above. It was observed that most respondents belonged to the age groups of 18 to 30 and 31 to 50.

- Gender Distribution: The female participants were more as compared to male participants, as per the survey results.

- Native Regions: Respondents belonging to cities were exponentially more in number as compared to those from village, according to the survey results.

2. **Occupational Analysis**

- Professions: Respondents of the survey were mainly students, working professionals, home makers. Such respondents belonged to the age group from under 18 to 31 to 50.

- Type of Job: Jobs of Working professionals were classified into desk job, work from home, or a travel job, to get better insight on their interaction with plants.

- Retirement Status: Respondents were also retried and such respondents belonged to the age group of 51 and above.

3. **Lifestyle Habit**

- Nature Exposure Frequency: To Investigate how often respondents are exposed to nature, the questions indicating the frequency of interaction of respondent with plants (whether it is on a daily basis, rarely or never) and whether the respondents have plants at home were included in the survey. These responses were further analysed and correlated with the respondent's mental state.

- Activities in Nature: Common activities of respondents were investigated in the survey. Type of activity that respondents engage in when interacting with nature (e.g., gardening, hiking, walking) were checked. This helped in understanding preferred ways of engaging with plants.

4. Interest

- Interest Levels in Plants: Scale analysis was used to assess the overall interest in plants among respondents. This provided insight into the general sentiment towards gardening or plant care.

-Interest vs. Benefits: Whether higher interest levels correlate with reported benefits, such as stress reduction or increased happiness, was explored through the survey.

5. Effects of Plants

- Feelings After Interaction: How respondents feel after spending time with plants, was summarized.

- Stress Reduction: How many respondents feel that spending time with plants reduces stress was analysed. Responses were Cross-tabulated with demographic and lifestyle data to see if certain groups benefit more.

6. Personal Thoughts

- Recommendation to Others: The percentage of respondents who would recommend having plants around was assessed. This reflected general satisfaction and indicated advocacy for plant care.

-Qualitative Insights: The survey included open-ended questions, analysing qualitative feedback and that provided deeper insights into personal experiences and recommendations.

7. Beliefs

- Understanding Importance: Evaluate responses to questions regarding the importance of plants and nature helped gauge the respondents' environmental consciousness.

Demographic Analysis:

1. Age Group Distribution:

Majority (57 respondents) are aged 31 to 50.

52 respondents are aged 18 to 30.

17 are 51 and above.

Only 6 respondents are under 18.

2. Gender Distribution:

97 respondents are female.

35 respondents are male.

3. City vs. Village:

Most respondents (118) come from cities.

14 respondents are from villages.

4. Occupation:

59 are working professionals.

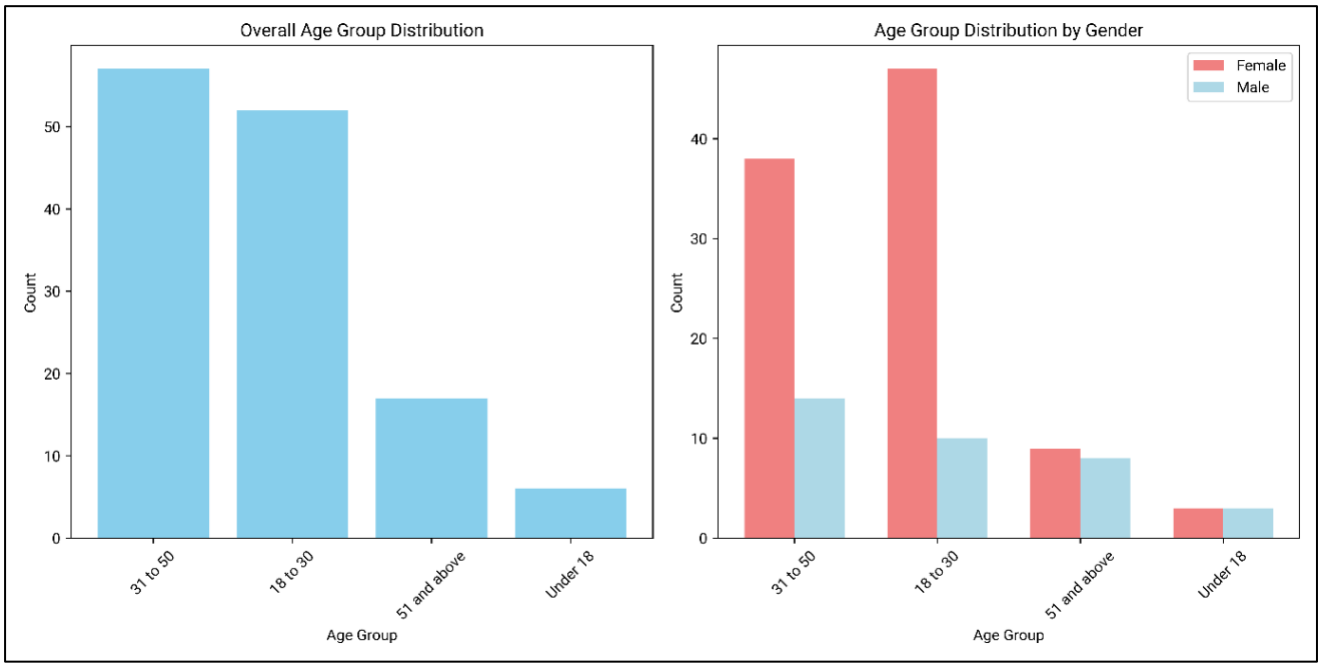
51 are students.

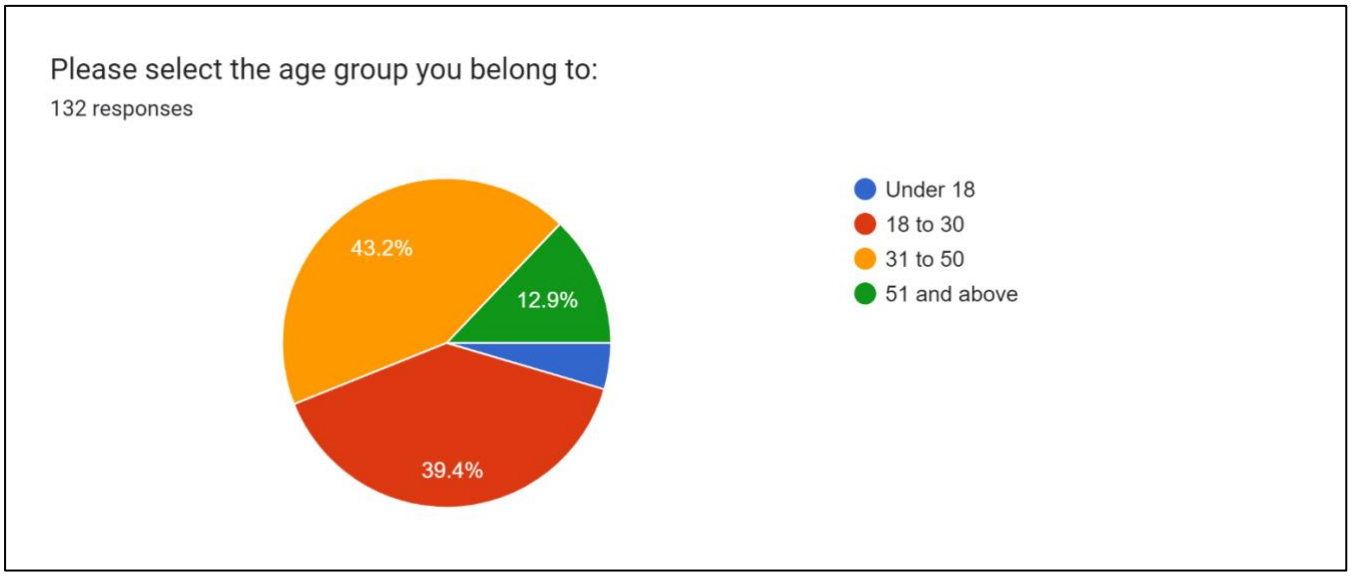
14 are homemakers.

8 are retired individuals.

Data Analysis:

1. **The distribution of age groups among the respondents, and how it varies by gender:**





Age group distribution:

1. Overall

- **31 to 50**: This age group has the highest number of respondents, with a count of 57.
- **18 to 30**: The second largest group, with 52 respondents.
- **51 and above**: This group has 17 respondents.
- **Under 18**: The smallest group, with only 6 respondents.

2. Gender

- **Female Respondents**:
    - **31 to 50**: 38 females
    - **18 to 30**: 47 females
    - **51 and above**: 9 females
    - **Under 18**: 3 females

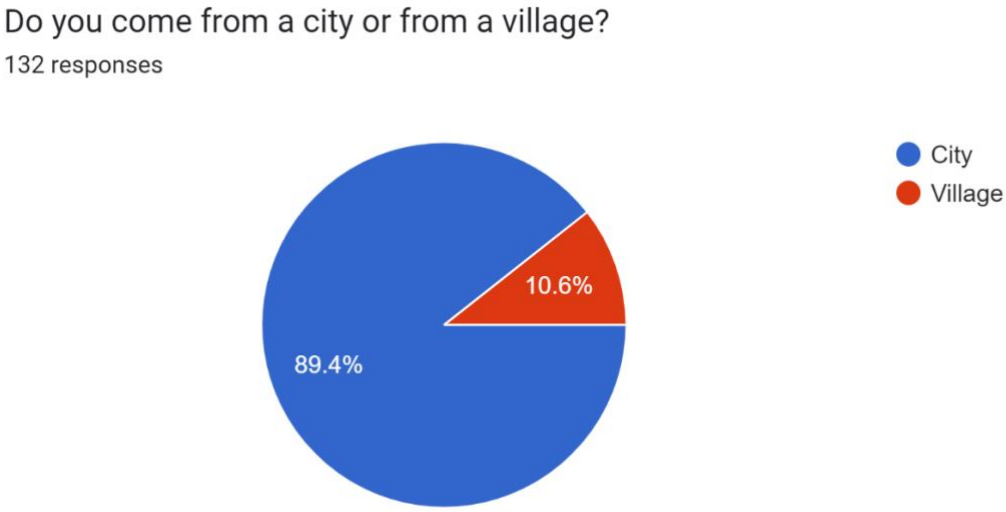
- **Male Respondents**:
    - **31 to 50**: 14 males
    - **18 to 30**: 10 males
    - **51 and above**: 8 males
    - **Under 18**: 3 males

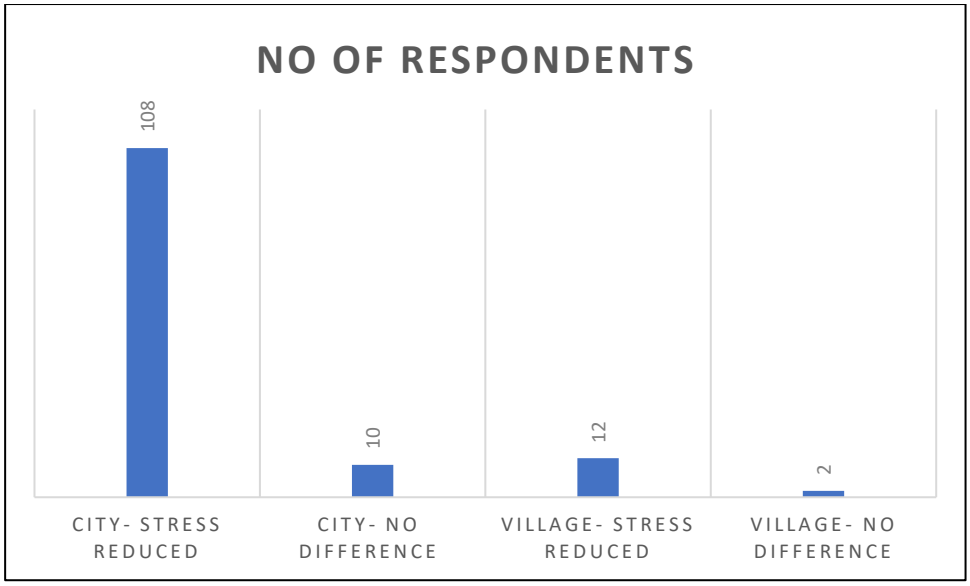
- The bar chart (overall age group distribution) shows that the 31 to 50 age group is the largest, followed by 18 to 30.
- The grouped bar chart (Age group distribution by gender) indicates that females dominate the 18 to 30 and 31 to 50 age groups, while the distribution is more balanced in the older age groups.

Conclusion

- **Dominant Age Group**: The 31 to 50 age group is the most represented among respondents.
- **Gender Differences**: Females are more prevalent in the younger age groups, particularly 18 to 30 and 31 to 50, compared to males.

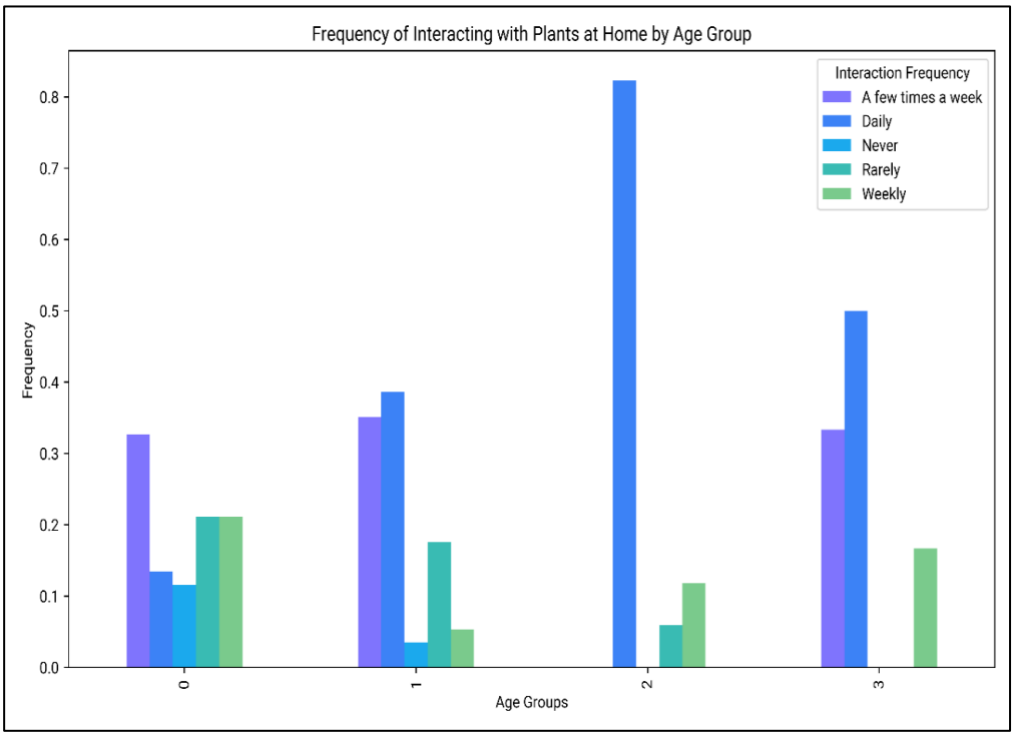
2. **Exploring whether there is a correlation between the type of area (City or Village) respondents come from and their reported stress levels in the presence of nature.**





- Based on the data collected, there is a clear correlation between the type of area respondents come from and their reported stress levels in the presence of nature. City dwellers show a significant reduction in stress, with 108 out of 118 respondents indicating that nature helps them forget their worries.
- In contrast, only a small number of villagers reported similar benefits, with 12 stating that nature helps reduce their stress.
- This suggests that urban individuals may experience a greater contrast in their environment, leading to more pronounced stress relief when exposed to natural settings compared to those from rural areas.

3. **How does the frequency of interacting with plants at home differ across different age groups?**



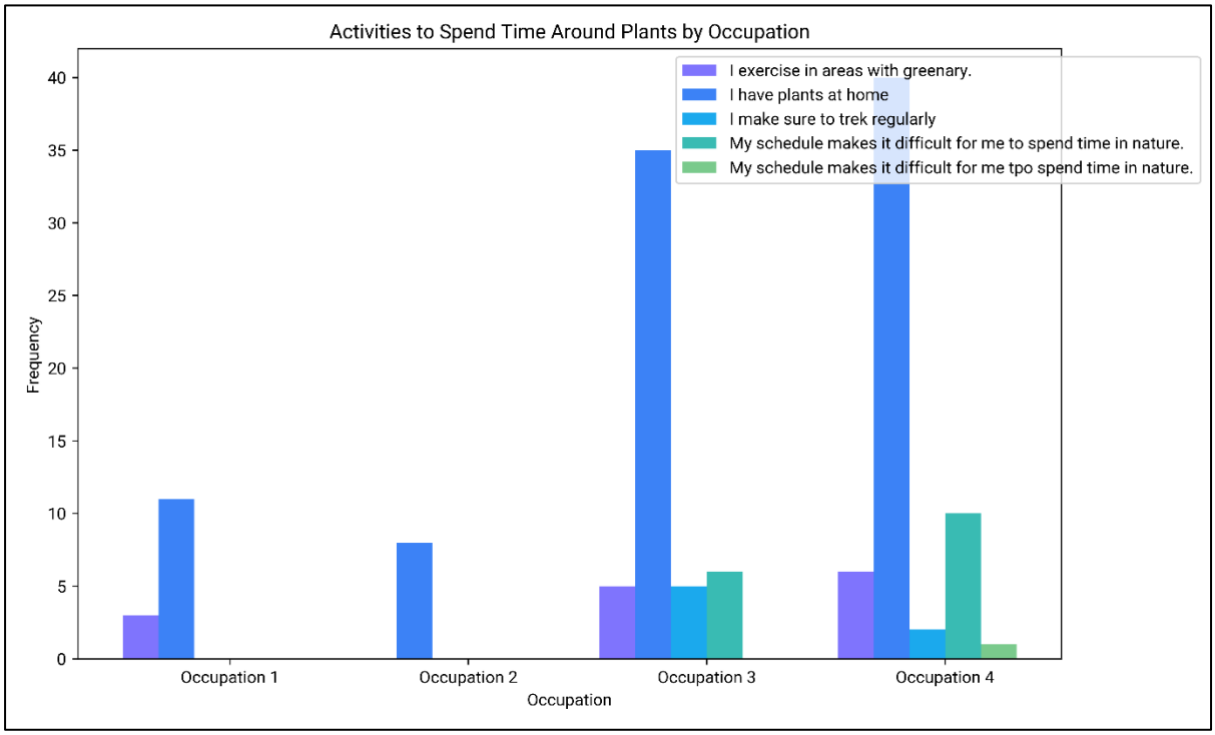
- **Age Group 2**: Shows the highest frequency of daily interaction with plants.
- **Age Group 0 and 1**: Have a more balanced distribution between interacting a few times a week and daily.

  Age Group 3: Has a notable frequency of weekly interactions.

Conclusion

- **Daily Interaction Dominance**: Age group 2 interacts with plants daily more than any other group.
- Other age groups show a mix of interaction frequencies, with some preferring weekly or a few times a week.

4. The common activities people engage in to spend more time around plants, and how do these activities vary by occupation:



Common Activities:

- **Having plants at home**: This is the most common activity, with a high mean value of 23.50, indicating that many people keep plants in their living spaces.
- **Exercising in areas with greenery**: This activity has a moderate mean of 3.50, suggesting that some people choose to exercise in green spaces.
- **Trekking regularly**: With a mean of 1.75, trekking is less common but still a notable activity.
- **Schedule difficulties**: The mean values for schedule difficulties (4.00 and 0.25) suggest that some people find it challenging to spend time in nature due to their schedules.

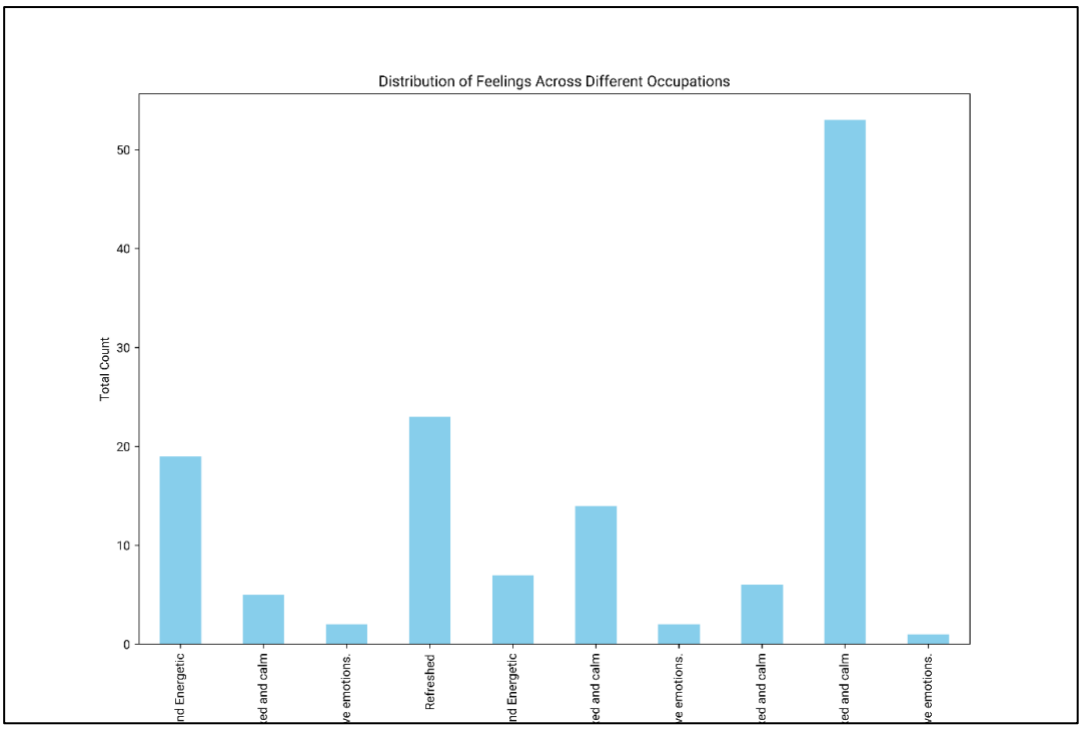
Occupational Correlation:

- **Occupation 1**: People in this occupation tend to have plants at home and occasionally exercise in green areas.
- **Occupation 2**: Similar to Occupation 1, but with fewer people engaging in these activities.
- **Occupation 3**: A significant number of people have plants at home, with some also trekking and facing schedule difficulties.
- **Occupation 4**: There is a balance between having plants at home and facing schedule difficulties, with fewer engaging in trekking.

Conclusion

- **Having plants at home is the most common activity** across all occupations, indicating a general preference for indoor greenery.
- **Occupation influences activity choice**: Those in Occupation 3 are more likely to engage in multiple activities, including trekking, while Occupation 4 faces more schedule-related challenges.

5. A noticeable trend in how respondents feel after spending time in nature based on their occupation:

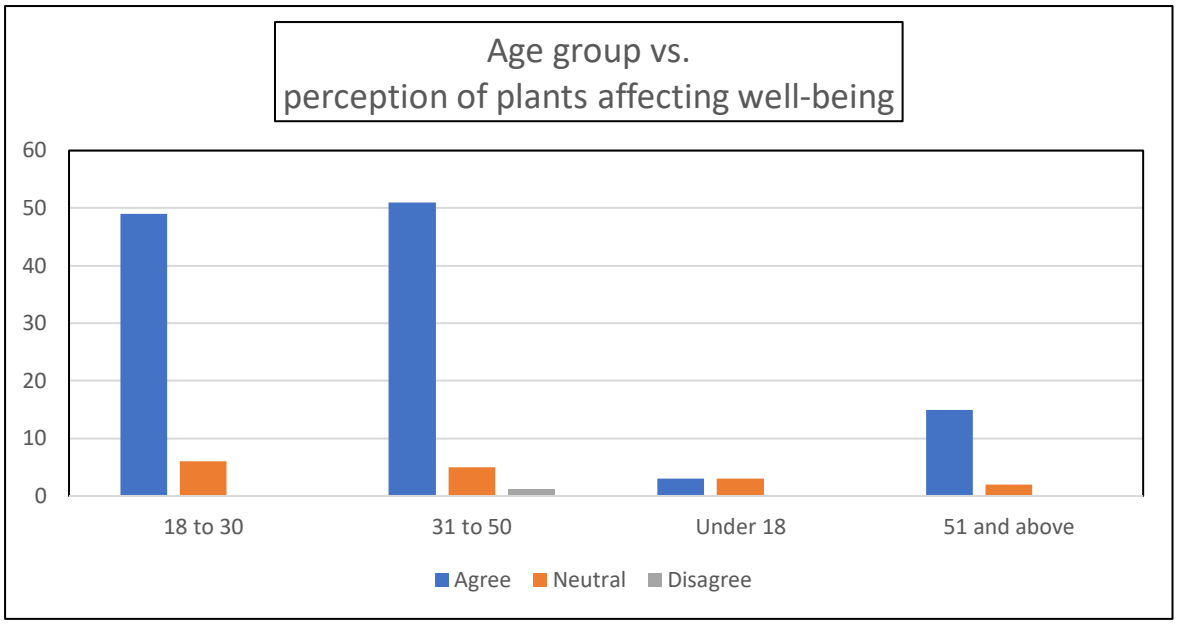


- **Dominant Feelings**: The bar chart shows "Relaxed and Calm" as the most frequently reported feeling, followed by "Refreshed."
- **Less Common Feelings**: Feelings like "I have never been around nature much to feel any of the above emotions" are less common, indicating most respondents have positive experiences in nature.

Conclusion:

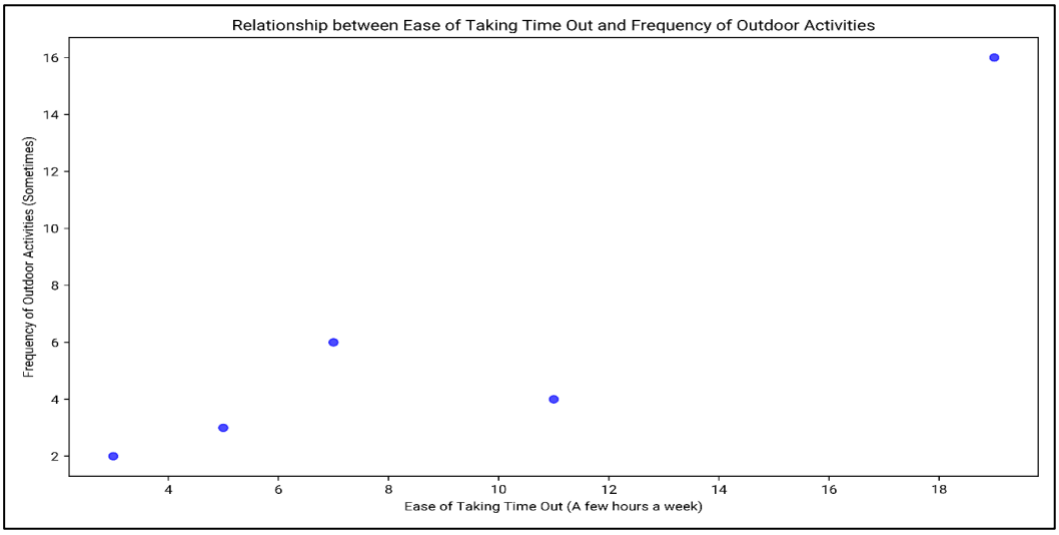
- There is a clear trend where most respondents feel "Relaxed and Calm" after spending time in nature, regardless of occupation.
- The data suggests that spending time in nature generally has a positive impact on respondents' emotions, with "Refreshed" and "Happy and Energetic" also being common feelings.

6. The perception of plants affecting mental well-being vary across different age groups:



- **Strong Positive Perception**: Overall, there is a strong positive perception of plants affecting mental well-being, particularly at higher effect levels.
- **Age Group Variability**: Different age groups exhibit variability in their responses, suggesting that age may influence how individuals perceive the impact of plants on mental well-being.
- **The age groups 18 to 30 and 31 to 50 have a better perception about plants having an impact on mental well-being, as these age groups share more frequent interactions and experiences with plants or nature in general as compared to the respondents belonging to the under 18 or above 51 age group**.

7. The relationship between the ease of taking time out to be around nature and the frequency of outdoor activities:



- **Ease of Access**: The dataset includes various categories indicating how easy or difficult it is for individuals to take time out to be around nature, such as "A few hours a week" and "An hour or two daily"
- **Frequency of Activities**: The frequency of outdoor activities is categorized into "Never," "Rarely," "Sometimes," and more frequent engagements.

Visualization Insights

- **Scatter Plot Observation**: The scatter plot shows a positive correlation between the ease of taking time out and the frequency of outdoor activities. As it becomes easier for individuals to take time out, the frequency of outdoor activities tends to increase.

Conclusion

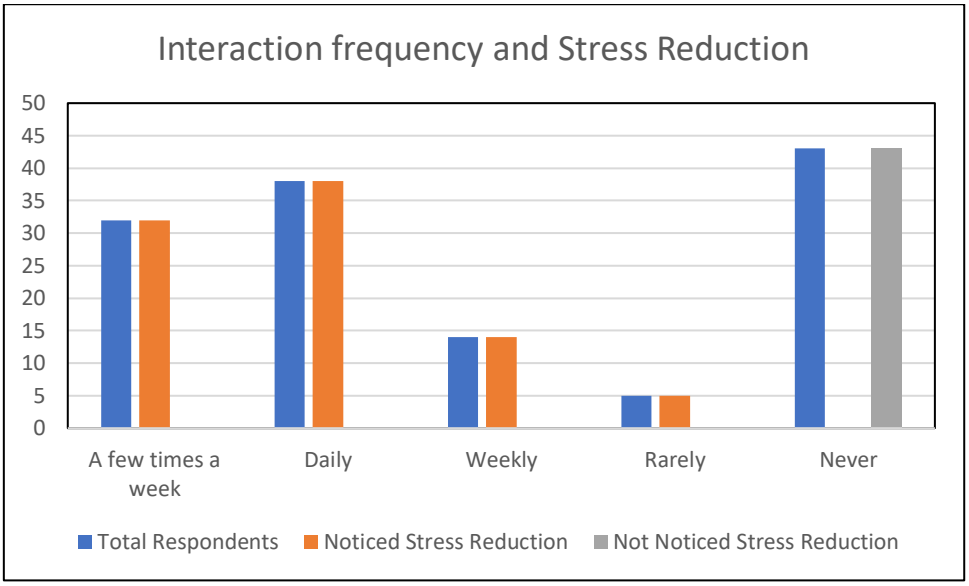
- There is a noticeable positive relationship between the ease of taking time out to be around nature and the frequency of outdoor activities. Individuals who find it easier to take time out are more likely to engage in outdoor activities frequently.
- Facilitating easier access to nature could potentially increase the frequency of outdoor activities among individuals.

8. The correlation between the frequency of interaction with plants at home and the reported reduction in stress levels among respondents from both cities and villages.

- The data is grouped by how often respondents interact with plants at home, categorized as 'A few times a week', 'Daily', 'Never', 'Rarely', and 'Weekly'.
- **Stress Reduction Categories**: The stress reduction levels are divided into two categories: 'I never really noticed the reduction in my stress levels' and 'Totally! Nature makes me forget all my worries.'
- **City Respondents**: All respondents in the dataset are from cities.

Visualization Insights

- Respondents who interact with plants daily or a few times a week report a significant reduction in stress levels, with counts of 38 and 32, respectively.
- Those who rarely or never interact with plants show lower counts of stress reduction, with only 5 respondents reporting a noticeable reduction when they never interact with plants.
- Weekly interaction also shows a moderate level of stress reduction, with 14 respondents reporting a positive effect.
- Respondents who never interact with plants, notice no stress reduction.

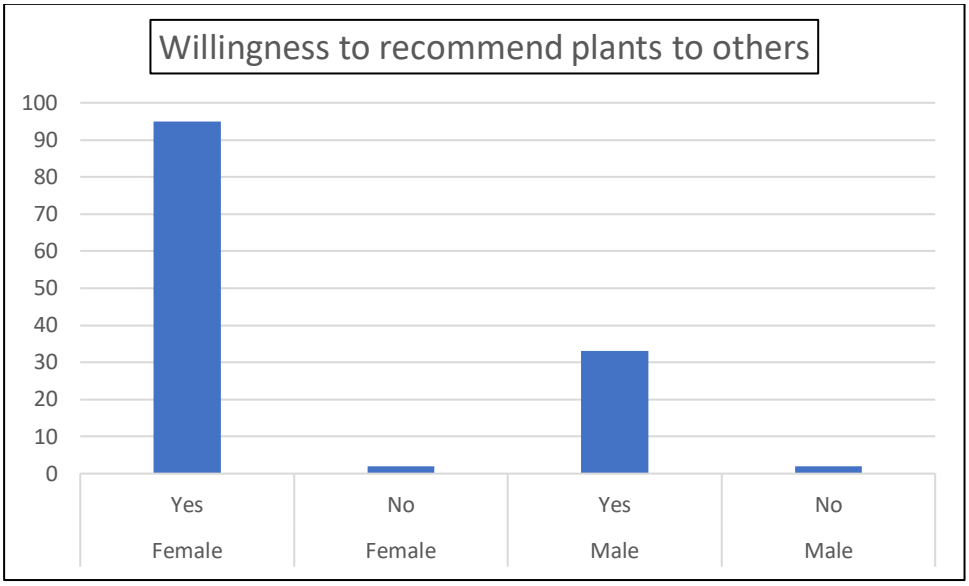


Conclusion

- There is a clear positive correlation between frequent interaction with plants and a reduction in stress levels among city respondents.
- Encouraging regular interaction with plants could be beneficial for stress management, especially in urban environments.

9. The Willingness to recommend having plants around living spaces differs between genders:

- **Female Responses**: 95 'Yes', 2 'No'
- **Male Responses**: 33 'Yes', 2 'No'



Conclusion

- **Higher Female Willingness**: Females are more likely to recommend having plants around living spaces than males.
- **Low Opposition Across Genders**: Both genders show very low opposition to recommending plants, indicating a general positive attitude towards having plants in living spaces.

10. Evaluation of responses regarding the importance of plants and nature:

Most people seem to have learned important life lessons from their interaction with nature, including:

1. Patience and Calmness: Many respondents reflected on how nature teaches patience and the ability to remain calm, which is particularly highlighted in comments about how plants and nature operate at their own pace, encouraging individuals to slow down and appreciate the process.

2. Resilience and Perseverance: Several individuals noted that nature exemplifies resilience, with references to plants' ability to grow and thrive even in challenging conditions. This appears to resonate with respondents as a metaphor for their own lives, emphasizing persistence through adversity.

3. Balance and Simplicity: The idea of balance, whether in nature or in life, was a recurring theme. Nature's simplicity often led people to reflect on the importance of balance in their personal and professional lives

4. Connection to the Natural World: Many individuals acknowledged how nature made them feel grounded and reminded them of their connection to the environment, fostering a sense of responsibility and care.

Overall, the most common lesson people took away from their experiences with nature is the importance of patience, resilience, and balance in life, echoing nature's quiet yet powerful influence.

Statistical Analysis

Mental health correlation	Topic and interaction with plants	No. of respondents	t value	p value	Inference
Busy schedule and mental health	people who agree that having plants improves or boosts their mental health and also interact frequently with plants	95	t = -0.57735	p = 0.026667	At the 0.05 level, the two means are significantly different.
	people who have busy schedules and thus neutral opinions and do not interact frequently with plants	37			
age and mental health	people under the age group of 18 or above the age group of 50 and interact frequently with plants	23	t = -2.28231	p = 0.0325	At the 0.05 level, the two means are significantly different.
	people in the age group of 18-50 and interact frequently with plants	109			

Based on the survey analysis, the T-test results indicate significant differences between various groups in their interaction with plants and mental well-being:

- Busy Schedules and Mental Health: The T-test revealed that people with busy schedules who frequently interact with plants reported a significant improvement in mental health compared to those with neutral opinions and infrequent plant interactions. This suggests that even for those with time constraints, engaging with plants can lead to mental health benefits.
- Age and Mental Health: A significant difference was observed between younger (18-50 years) and older (below 18 and above 50) individuals in terms of mental health benefits from frequent plant interaction. Younger individuals reported greater positive effects on mental health, likely due to more regular engagement with plants.

Overall, the T-test results highlight that plant interaction has a measurable impact on mental well-being, with frequency of interaction and lifestyle factors such as age and schedule playing a significant role. This underscores the potential for plants as a simple yet effective way to promote mental health across different demographic groups.

Conclusion:

The Growing Need for Investigating the Impact of Plants on Mental Well-Being

With the rise in stress, anxiety, and mental health disorders globally, it's crucial to explore natural, accessible solutions that can complement traditional treatments. Investigating how plants impact mental health could reveal simple, low-cost ways to enhance well-being

The biophilia hypothesis suggests that humans have an innate connection with nature, which benefits mental health. Exploring this scientifically through a survey can deepen understanding of how this connection affects emotions, cognition, and stress levels.

As more people live in urbanized, indoor environments with limited access to nature, understanding the importance of plants in mental health is vital. A survey can reveal the role plants play in urban settings, particularly in homes, workplaces, or public spaces, and how they help mitigate mental health challenges.

While many people believe that plants and nature improve mental health, gathering scientific data through a survey helps validate this belief. This can lead to more credible, evidence-based recommendations for mental health interventions.

With increased concern for the environment and sustainable living, people are becoming more interested in how natural elements, like plants, can improve their lives. Investigating the mental health benefits of plants connects individual well-being with environmental consciousness, encouraging greener lifestyles.

The data from the survey indicates a positive connection between interacting with nature and individual well-being. Respondents who engage with plants and nature on a regular basis report feeling more relaxed, calm, and refreshed. The survey also highlights that even minimal exposure to nature—such as having plants at home or occasionally visiting natural environments—fosters a sense of tranquillity and positivity. However, individuals with less interaction with nature tended to be neutral or indifferent about its impact on their well-being, suggesting that consistent exposure could enhance their mental and emotional state. Overall, the analysis suggests that integrating nature into daily routines, even in small ways, can contribute significantly to personal wellness.