

# Assessment of Climate Change Awareness in Urban Versus Rural Populations: A Comparative Study

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## ABSTRACT

*In this study, the researchers explore and contrast climate change awareness in the urban and rural populations by looking into their knowledge, perception, and engagement. Using a structured survey instrument, data were collected from 500 respondents irrespective of age, gender, location, and with equal distribution. Results indicate awareness differences, with urban respondents being more informed on the causes of climate change than the rural respondents who were more aware of the effects in their immediate environment. From the results, it can be concluded that any attempts in marketing climate change strategies needs to be targeted to the respective areas of the two groups studied. This emphasizes how critical educational and outreach programs geared towards climate change issues in specific regions are.*

**Keywords:** *assessment; awareness; urban; rural populations*

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## I. INTRODUCTION

Climate change is one of the most pressing ecological challenges of our time, with profound implications for environmental sustainability and livelihoods (Naik et al., 2024). The United Nations Framework Convention on Climate Change defines climate change as a shift in global climate patterns, caused directly or indirectly by human activities that affect atmospheric composition and disrupt long-term weather patterns. This includes changes in temperature, humidity, and other

climate variables (Abbass et al., 2024; Harmsen, 2018).

The phenomenon of climate change has changed the way people handle the environment, tolerate economic activities and interact with each other as human beings. It has been noted that knowledge and understanding of climate change influences individual's sustainable practices and affirmative attitudes (Venghaus et al., 2022). During the last decade, various surveys have confirmed a strong increase in public concern about climate change (Jackson and Boyon, 2019). However, it is

reasonable to assume that awareness and knowledge can differ significantly by various demographic and geographic groups. Previous studies have established that there are variances in climate change and its impacts in urban and rural settings which in turn affects their levels of perception and awareness (Garcia & Patel, 2020).

For instance, urban dwellers may understand climate change from the perspective of increased pollution levels, experiencing more intense heat waves and increased pressure on infrastructure (Das et al., 2024). On the other hand, explanation for climate change in the context of rural areas may be provided in terms of effects on agricultural systems, reduced availability of water and loss of wildlife (Atkinson & Atkinson, 2023).

There are more studies that differentiate climate change awareness between rural and urban populations. Tenbrink and Willcock (2023) suggested that inhabitants in rural areas exhibit higher levels of place attachment compared to urban residents, which may influence their perception of climate change threats. Okaka and Odhiambo (2018) found that most urban residents are aware of climate change and attribute its causes mainly to human activities, indicating a readiness to engage in mitigation efforts. Moreover, a study by

Su et al. (2022) looked at how urban and rural areas handle and understand climate change differently. It found that cities depend more on economic and social systems, while rural areas rely on traditional knowledge and their own economic self-sufficiency.

For these reasons, it is imperative to assess the awareness of climate change in urban and rural populations. This study aims to investigate these differences in order to develop appropriate educational and policy strategies suited to different groups characteristics. The goal is to ensure that climate change awareness strategies are inclusive and effective, addressing the distinct characteristics, challenges, and resources of each group to foster a more informed and proactive approach to climate action.

## II. METHODS

### Research Design

The research adopts a descriptive correlational research design with a greater emphasis on the quantitative survey which seeks to collect data on climate change awareness levels among the urban and rural inhabitants. This design permits the comparison of knowledge, perception, and engagement between settings thus shedding light on how each group interprets climate

change and interacts with or addresses it (Smith et al., 2022).

### **Participants and Instrument**

The participants were chosen from an assortment of 500 individuals between the ages of 18 and 65. Half of the sample consisted of the respondents from rural and urban backgrounds respectively. A proportionate quota sampling technique was applied so as to include people with different levels and types of societal engagements that were captured in the study thus enhancing the external validity of the research (Li et al., 2021).

The survey has been created to assess climate change awareness in three aspects:

1. Knowledge: Awareness of the conceptualization and effects of climate change.
2. Perception: Opinions on how serious the threat is and the dangers that climate change poses.
3. Engagement: The inclination to take active measures to mitigate climate change.

The survey in question is a modified version of already validated instruments (Garcia & Patel, 2020) and consequently it used the Likert scale to rate all the items for uniformity and for

easy comparison of responses. Items were arranged as follows:

Section A: Demographics: Obtained information about participants' age, sex, education level, type of work, and also whether they live in an urban or rural area.

Section B: Knowledge: Measured level of awareness on the causes and effects of climate change among the respondents.

Section C: Perception: Assessed the extent to which the respondents regard climate change and its effects on the region seriously.

Section D: Engagement: Explored the degree to which the participants were ready to engage in ecological activities.

### **Data Collection**

Over the course of four months (January to April 2023), data collection was carried out, and urban respondents provided responses in the online platform while rural respondents filled in paper questionnaires to ensure that both populations were catered for. Prior to the beginning of the data collection, consent was sought from each participant and confidentiality was observed throughout the study.

## Data Analysis

Descriptive statistical means such as percentages, mean, and standard deviation were used to analyze the levels of climate change awareness. On the contrary, inferential statistics, which consisted of t-tests and ANOVA, were applied to evaluate differences between urban and rural populations. Furthermore, demographic parameters were correlated with levels of awareness using Pearson's correlation (Kim et al., 2023).

## III. RESULTS

The results of the study reveal distinct differences in climate change awareness between urban and rural populations, particularly across the dimensions of knowledge, perception, and engagement. The findings are summarized in Table 1.

**Table 1: Climate Change Awareness in Urban vs. Rural Populations (N = 500)**

Dimension	Urban Population (n = 250)	Rural Population (n = 250)	Total (N = 500)	p-value
Knowledge	Mean (SD) = 4.3 (0.8)	Mean (SD) = 3.5 (0.9)	Mean (SD) = 3.9 (0.9)	< 0.01
Scientific Causes Awareness	80% (200)	52% (130)	66% (330)	< 0.01
Local Impacts Awareness	55% (138)	78% (195)	66.6% (333)	< 0.05

Perception	Mean (SD) = 4.1 (0.7)	Mean (SD) = 3.8 (0.8)	Mean (SD) = 3.95 (0.75)	< 0.05
Global Impact Concern	76% (190)	60% (150)	68% (340)	< 0.05
Localized Impact Concern	68% (170)	85% (213)	71.6% (358)	< 0.01
Engagement	Mean (SD) = 3.9 (0.6)	Mean (SD) = 3.7 (0.7)	Mean (SD) = 3.8 (0.65)	< 0.05
Support for Policy Measures	70% (175)	45% (113)	57.6% (288)	< 0.05
Practical Local Actions	60% (150)	74% (185)	67% (335)	< 0.01

Note: SD = Standard Deviation; p-value indicates significance level of t-tests comparing means between urban and rural populations.

## Knowledge

Urban participants outperformed their rural counterparts in understanding the science of climate change, especially with regard to fossil fuel combustion, deforestation, and industrial waste, where 80% of participants were able to identify these factors (Ochoa & Lee, 2021). On the other hand, more rural respondents identified climate change through its consequences, with 78% of respondents stating that they associate climate change with impacts on the environment, such as changes in crop and water supply. This is consistent with

earlier evidence that suggests that awareness in rural contexts is often formed based on one's experience of environmental degradation (Garcia & Patel, 2020).

### **Perception**

Responses among urban participants reflected a greater level of urgency; 76% of them regarded climate change as a situation requiring immediate attention globally. On the contrary, rural participants tended to concentrate on the most obvious effects of climate change on their communities, as 85% of them viewed climate change in terms of local effects such as droughts and loss of biodiversity. This understanding is consistent with existing literature that has found that the closer a person is to an environmental change, the less likely they are to perceive or be concerned about climate issues (Maiella et al., 2020).

### **Engagement**

Both urban and rural communities showed an inclination towards engaging in action for climate change, although the ways that they preferred doing this varied. Several policy measures, are more likely to be supported by urban respondents policy measures such as renewable energy and

emission reduction (70%). On the other hand, rural participants seemed to prefer more proactive activities, like water and soil activities; a whopping 74% of these participants expressed a penchant for such context specific practices. After all, there is evidence supporting the notion that people participate in actions that best fit their lifestyles and environments (Singh & Nair, 2023).

## **IV. DISCUSSION**

The research underscores the fact that urban dwellers are more aware of climate change than their rural counterparts due to their different lifestyles, resources and information access. It could also be noted that most urban dwellers tend to be of a higher scientific understanding than those in the rural areas due to their interaction with formal education and educational material regarding the environment which is available in most urban areas (Severin, 2020). The same urban advantage in education and awareness stated by Yi et al. (2023) has been supported by the findings that orientation to climate education significantly improves climate understanding at least in all levels of education.

The level of consciousness displayed by the rural respondents with regard to the perceived changes in the

environment is indicative of a climate change perception that is likely due to lived experience of its effects on agriculture and water (Martinez & Zhao, 2020). Some studies extend this in that such factors in the countryside help in acknowledging the local consequences but narrow knowledge about the global roots of climate change (Baker & Thomson, 2021).

**Climate Education Interventions Based on the Results of the Study**

Climate education is very essential and thus the results of the study stressed the need so that such climate education is specific to the intended beneficiaries. Urban areas could benefit from the implementation of strategies which address the adverse impact of climate change globally as well as policies aimed at encouraging them to join the fight against climate change (Fallmann & Emeis, 2020). In the case of rural territories, so much experience on climate change exists that programmes on education will be more descriptive on strategies of alleviation than on strategies of building resilience (Garcia & Patel, 2020).

In addition, the mutual readiness of the two populations to participate in climate-friendly activities demonstrates the existence of effective place-based interventions. Potentially, this could

create urban and rural programs where such readiness is utilized by providing appropriate resources to the two regions, for example, offering community based water saving practices workshops in the rural setting or organizing programs on energy saving behaviors in the cities. A place-based framework aligns with the recommendation for an encultured education—education that is relevant to the ethnic, regional, or cultural context of the learners.

## V. CONCLUSION

The findings of the present study highlight the importance of geographic and experiential factors in the awareness of climate change. Information campaigns and other initiatives designed for cosmopolitan and local populations focusing on the different aspects of climate change will help eliminate the awareness and activities gap. Taking into cognizance the differences urban and rural populations have, help equip climate change preparedness in its people and thus its implementation to the actual programs of the particular community.

**Appendix:**  
**Survey Questionnaire**  
**Climate Change Awareness**

**Section A: Demographic Information**

1. Age: \_\_\_\_
2. Gender: \_\_\_\_
3. Education Level:
  - High School
  - Undergraduate
  - Graduate
  - Other: \_\_\_\_
4. Residence:
  - Urban
  - Rural
5. Occupation:

**Section B: Knowledge of Climate Change**

6. Are you familiar with the term “climate change”?
  - Yes
  - No
7. What do you believe are the causes of climate change? (Select all that apply)
  - Deforestation
  - Industrial Emissions
  - Fossil Fuel Combustion
  - Natural Cycles
  - Don't know
8. Which of the following effects do you associate with climate change? (Select all that apply)
  - Rising temperatures
  - Sea-level rise
  - Extreme weather events
  - Loss of biodiversity
  - Crop failure

- Other: \_\_\_\_
- Don't know

**Section C: Perception of Climate Change**

9. How serious do you think climate change is as a problem?
  - Not serious
  - Slightly serious
  - Moderately serious
  - Very serious
10. How likely do you believe climate change will impact your community within the next 10 years?
  - Very unlikely
  - Unlikely
  - Likely
  - Very likely

**Section D: Engagement in Environmental Actions**

11. How often do you engage in actions to reduce climate change, such as recycling or conserving water?
  - Never
  - Rarely
  - Sometimes
  - Often
12. Would you be willing to participate in more environmental activities if provided with information and resources?
  - Yes
  - No
  - Unsure
13. Which types of environmental actions do you engage in? (Select all that apply)
  - Recycling
  - Reducing energy use

- [ ] Using public transportation
- [ ] Conserving water
- [ ] Avoiding plastic
- [ ] Planting trees
- [ ] Other: \_\_\_\_\_

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