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# Influence of Gender, Age and Location on Students Perceived Link of Population Growth and Climate Change

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## Abstract

*Increase in population contributes and it is also affected by climate change, hence it deserves consideration in any climate change policy development strategies. Based on the importance of population growth on climate change, this study was embarked on to ascertain the perception of students to the influence of population growth on the consequences of climate change. The population of the study consisted of undergraduate students in a Federal University in Southern part of Nigeria. A sample size of 362 respondents were selected using systematic sampling to select every one and other halls of residence (3 halls of residence selected out of 6) and simple random sampling of balloting by replacement to select 14% each from the three halls of residence. The questionnaires administered were analyzed using SPSS version 20 and the descriptive and inferential statistical tools were employed to analyze the data gotten. The study revealed that there was a significant difference on the respondents perception based on their gender, age group and home of residence(Urban or rural). Based on these findings, it was recommended among other things that population control measures should be effectively implemented in the country. And any policy on climate change, gender, age group and location should be considered because a gender, age group and location bias policy will increase the severity of the problem.*

**Keywords:** Population growth, climate change, family planning, environmental education

## 1. Introduction

In Africa, by 2020, between 75million and 250million people are projected to be exposed to an increase of water stress due to climate change (Saterthwaite, 2008). When the consequences of climate change are unchecked, the results have been observed to be devastating particularly among the poorest communities that contributed the least to the causes of climate change. However climate change which is attributed to the accumulation of greenhouse gases generated mostly in the industrialized or developed countries lead to some devastating consequences such as incessant flooding, drought, extreme weather condition, declining agricultural product, which affects foods security and prevalence of disaster that affect human health. It affects everyone on earth. However, according to Population Action International PAI (2011), poorest countries and poorest groups within a population are most vulnerable to climate change hazards which is affecting agricultural production and making water scarce.

Human activities has been attributed to be the major factor in the steady increase of these

greenhouse gases in the atmosphere and most scientists are of the consensus that this building of greenhouse gases has played a role in the increase of average surface temperature of the earth with about 1.3°F over the past century. This phenomenon is known as global warming. According to Population, Health, Environment Policy and Practice Group (2008), current rates of greenhouse gas build up will cause further warming and induce additional changes in the climate system that would very likely be larger than those observed during the 20<sup>th</sup> century. Whilst as climate change receives a great deal of modern and scientific attention, it masks a wider problem especially the future projection of increased warming if not checked. In ameliorating this fright cumulating from climate change, two strategies are recommended by the Intergovernmental Panel on Climate Change and they are mitigation and adaptation. Mitigation is an action to limit causes of greenhouse gases from the burning of fossil fuel, forest trees, waste and so on. While adaptation is the ability to effectively cope with already existing aftermaths of climate change. However it has been proposed by Intergovernmental Panel on Climate Change IPCC (2014) that in addition to the traditional mitigation, measures such as alternative energy generation, energy efficacy and carbon capture and storage, population control program which can slow the rate of population growth can be a long term strategy to reduce green house gases emission.

Population growth is seen rarely as having a directly proportional relationship with climate change especially as population dynamics, consumption pattern and institutions tend to affect or influence it. With the world population estimated at 7.4 billion people (Worldometer, august 2016) every person on the planet emits carbon which is the main green house gas through consumption of products and energy. Hence more people on earth leads to more consumption, more emission, and heightened climate change. According to Stephenson, Crane, Levy, and Muslin (2013), some studies have investigated the impact of demographics on global emission of green house gases and suggest that different population growth pattern could affect emissions in the 21<sup>st</sup> century and that ageing of urbanization could play a more important part than they have in the past.

United Nation projected that if the world's population follows a low rather than a medium growth path, global emission will fall by 15% in 2050 by 40% in 2100. But a high population growth path will increase emission by 17% in 2000 and by 60% in 2100 (United Nation Department of Economic and Social Affairs, 2004). Population growth also exacerbate every other consequence associated with global climate change especially among regions where fertility remains high such as in Sub-Saharan Africa countries. Their population is predicted to increase by 2.6billion in the 21<sup>st</sup> century. This increasing population growth among the sub-Saharan countries tends to increase the number of people exposed to projected impact of climate change and exacerbate their vulnerability to climate change consequences.

Already population growth in this Africa region is putting a strain on the limited supply of fresh water and other resources which is exacerbated by climate change as it increases the variability of precipitation pattern and loss of predictable rainfall and other resources. This can result in more scarcity or stress and inability to manage the water resources. According to Erhabor and Oronsaye (2014) a United Nations Development Program UNDP report in 2005 stated that Nigeria along with 23 other sub- Sahara countries would not be able to achieve the Millennium Development Goals (MDG) especially concerning Child and Maternal health due to the impact caused by Climate Change in the countries. Erhabor and Oronsaye further asserted that World Health Organization WHO (2013) key facts stated that global warming that occurred since the 1970s caused over 140,000 excess deaths annually by the year 2004, the damage costs to health (i.e. excluded costs in health- determining sectors such as agriculture and water and sanitation) is estimated to be between US\$ 2-4 billion/year by 2030 due to climate change. Many of the major killers such as diarrhoeal diseases, malnutrition, malaria and dengue are highly sensitive and are expected to worsen as the climate changes. Climate change also affects the social and environmental determinants of health- clean air, safe drinking water, sufficient food and secure shelter.

Accordingly, Parry, Rosenzweig and Livermore (2005) reported that with a projected population growth, an increase in agricultural production loss and an increase in the prices of food due to climate change will place an additional 90 to 125million people in developing countries mainly in sub-Saharan Africa at risk of hunger by 2050. Furthermore, as the population continues to grow, housing pressure will result in more people that will have to live on floodplains or other flood

prone areas which are dangerous especially with limited resources to curb disasters that could occur. This therefore reveals that population growth increase the vulnerability of sub-Saharan African countries to the aftermath of climate change as it limits their ability to actualize their economic potential and utilize resources needed to adapt to climate change crisis.

With references to the fact that population growth does not only cause climate change but exacerbate each of its problems, it raises the need to acknowledge and create an innovative approach in mitigating and adapting to the consequences of climate change. Hence decision makers engaged in drafting climate change policy responses at the local, national and international levels should adequately assess population trends and their interactions with efforts to mitigate and adapt to the consequences climate change. Nigeria is the seventh largest population in the world with an estimated 186 million persons (Worldometer, august 2016). The country is not exempted from the scenario of the influence of population growth and the consequences of climate change on her citizens. With the fact that the median age is 18years reveals that Nigeria has an extremely young population which poses a high risk of steep and disastrous growth curve, thereby increasing the consumption of resources, increasing greenhouse gases and vulnerability to the aftermath of climate change. Therefore with the concern of the aftermath of climate change due to population explosion, the researchers tend to investigate the perception of these youths (undergraduate students) towards the connection of population growth and climate change. This study also tend to close the gap in knowledge on how the population control can help ameliorate the aftermath of climate change and promote sustainable development among the sub-Saharan Africa countries. Accordingly, this research will focus the attention of policy makers and key stakeholder in population control and climate change on the need to consider demographic dynamics in creating strategies to curb the adverse aftermath of climate change.

## **2. Hypotheses**

The following hypotheses were stated.

1. There is no significant difference in the undergraduate students' perception on the connection of population growth and climate change based on gender
2. There is no significant difference in the undergraduate students' perception towards the link between population growth and climate change based on their age.
3. There is no significant difference in the undergraduate students' perception towards the link between population growth and climate change based on their residential area.

## **3. Method of the Study**

A descriptive survey research design was adopted for the study. The population comprised of undergraduate students in the university of Benin halls of residence during the 2015/2016 academic session. A sample size of 364 respondents were selected using systematic sampling technique to select everyone and other halls of residence (three halls of residence selected out of six) and simple random sampling of balloting by replacement to select 14% each from the three halls of residence. A personally structured, valid and reliable ( $r=0.86$ ) questionnaire was used for data collection. The questionnaire had two sections that is A and B. Each section presented items that assisted in answering the various research questions and hypotheses raised. The four point Likert scale in section B of Strongly agree (SA), Agree (A), Disagree (D) and Strongly disagree were compressed to two scales of Agree (A) and Disagree (D) during analysis in order to ensure easy understanding. However, three hundred and sixty four (364) copies of the questionnaire were distributed but three hundred and sixty two (362) were properly filled and returned, this yielded a 99.4% return rate. Therefore, 362 copies of the instrument returned were used for data analysis. Descriptive statistics of frequency, t-test statistics and ANOVA statistics (alpha level of 0.05) were used in answering the hypotheses.

## 4. Result and Discussion

### 4.1 Hypothesis 1:

There is no significant difference in the undergraduate students' perception on the connection of population growth and climate change based on gender

**Table 1:** summary of t-test analysis of difference between female and male students' perception on the link between population growth and climate change.

Gender	Mean	Std. D	Df	t	Sig.	Remark
Male	44.60	6.19	360	-2.081	0.038	Significant difference
Female	46.06	6.74				

Table 1 shows the difference between female and male students' perception on the link between population growth and climate change. It shows that there is a significant difference in male and female students' perception on the link between population growth and climate change ( $t = -2.081$ ;  $df = 360$ ;  $p < 0.05$ ). Therefore the null hypothesis is rejected. The mean value shows that females have a higher perception to the influence of population growth on climate change than their female counterpart.

### 4.2 Hypothesis 2:

There is no significant difference in the undergraduate students' perception towards the link between population growth and climate change based on their age.

**Table 2a:** One way ANOVA on the perceived influence of population growth and climate change by age group of respondents.

Source	Sum of squares	Df	Mean square	F-value	Sig.	Remark
Between group	485.423	2	242.713	5.793	0.003	Significant difference
Within group	15040.667	359	41.896			
	15526.102	361				

Table 2 shows that there is a difference in the perceived link between population growth and climate change based on age group of the respondents ( $F\text{-value} = 5.793$ ;  $df = 2, 359$ ;  $p < 0.05$ ). Therefore the null hypothesis is rejected.

**Table 2b:** Tukey HSD for mean difference in the perceived influence of population growth on climate change based on age of the respondents

(I) age	(J) age	Mean Difference (I-J)	Std. Error	Sig.
less than 18	18-25	-3.71757*	1.09688	.002
	26 and above	-2.93255	1.35569	.079
18-25	less than 18	3.71757*	1.09688	.002
	26 and above	.78502	.97275	.699
26 and above	less than 18	2.93255	1.35569	.079
	18-25	-.78502	.97275	.699

\*The mean difference is significant at the 0.05 level.

This table 2b gives a summary of the comparison in the difference in the perception of the respondents based on their age group. From the study, it can be deduced that there is significant difference between the respondents in the age range of less than 18 years and those in the age range of 18-25 years. With the respondents in the age range of 18-25 years having a higher

perception towards the influence of population growth and climate change than those in the age range of less than 18 years.

#### 4.3 Hypothesis 3:

There is no significant difference in the undergraduate students' perception towards the link between population growth and climate change based on their residential area.

**Table 3:** T-test analysis on the difference between respondents living in urban and rural on their perception of the link between population growth and climate change

Location	Mean	Df	t- value	Sig.	Remark
Rural	43.21	329	-4.024	0.000	Significant difference
Urban	46.39				

Table 3 shows the difference between respondents whose family residential location is in rural area from those who reside in urban area perception on the link between population growth and climate change. It shows that there is significant difference between respondents living in rural and urban area on their perception of the influence of population on climate change ( $t = -4.024$ ;  $df = 329$ ;  $p < 0.05$ ). Therefore, the null hypothesis is rejected. The mean shows that respondent whose family residence is at urban area have a higher mean score (46.39) than their rural area (43.21) counterparts.

## 5. Discussion of Findings

The findings from the study revealed how gender, age and residential location influence the perception of students towards the link of population growth and climate change. Generally, it was observed that the respondent perceived the seriousness of climate change. From the findings on table one it can be deduced that the gender of the respondents actually influenced their perception ( $p < 0.05$ ). This can be ascertained as there was a significant difference between males and females perceived influence of population growth and climate change. Furthermore, it can also be inferred that females showed major concern on the link of population growth and climate change. This is not surprising as various studies such as PAI (2011) reported that although every individual will be affected by climate change impacts in many places, women will suffer the most and physical and control factors do contribute to women disproportionate vulnerability to the impacts of climate change. They further asserted that though everyone will be affected by climate change impact in many places, women will suffer the most especially as physical and cultural factors contribute to their disproportionate vulnerability to the impact of climate change. In view of this, the finding of this research is in line with the study conducted by Swai, Mbwambo and Magayande (2012) in Tanzania. They reported that there was a significant association of respondents on their perception towards a change in climate and sex of the respondents. The report further asserted that the respondents perceive increased population as one of the major causes of climate change because population increased demand for farms, building materials including poles, firewood and grazing area also increased.

For the influence of age on the respondents perception to the link of population growth and climate change, it was observed from table two which summarized the ANOVA statistics that there is a significant difference across the age group on their perception. This shows that there age influences the respondents perception of the link between population growth and climate change. The difference was observed between the age groups of less than 18years and those of 18 to 25years of age. From the distribution, the respondents in the age group of less than 18years showed less concern on the link between population growth and climate change. This is in line with the study by Ndambiri, Ritho, Mbogoh, Nganga, Muiruri, Nyangmeso, Kipsat, Omboto, Agada, Kefa, Kubowon and Cherotwo (2012) when they asserted that age had a significant influence on the probability of the respondents to perceive climate change consequences.

However, for the influence of location, table three reveals a summary of the t-test statistics performed to test the hypothesis raised. From the study, it was observed that there was a significant difference between respondents whose family residential location in rural and those who reside in urban areas on their perception. Therefore, it can be deduced that the location where the respondents live influences their perception towards the link between population growth and climate change. This finding fit with the study conducted by Swai et al (2012) when they reported in their study to analyze perception on climate change by gender which was conducted in Bahl and Kondora district Dodoma region, Tanzania. The report revealed that perception of the respondents on climate change varied by location of the respondents. Furthermore, Rovin, Hardee and Kidanu (2013) asserted from a study they conducted to investigate responses to climate change in Ethiopia. Their study revealed that most of the participants are notably those whose location had pressure on agricultural land is increasing (urban development) mentioned abruptly that population growth is a contributing factor in or as a main cause of observed environmental change. Hence population growth linked with a decline in forest was perceived as related to changes in climate. Accordingly, PAI (2011) reported that demographic trends such as urbanization can lead to encroachment of population into ecologically marginal area which can exacerbate climate change.

## 6. Conclusion and Recommendation

It is pertinent to assess the perception of youth towards the link between population growth and climate change, because it is an essential component to be considered in any policy planning concerning the adaptation and mitigation of climate change. In view of this, various factors are needed to be observed that could affect the youth perception. From the study, the researchers observed that the three variables proposed that could affect their perception all had an influence on the respondents perceived link between population growth and climate change. However, for gender, the researchers' propose that in any policy on climate change, gender should be considered because a gender bias policy will increase the severity of the problem. Therefore to attain effective and successful adaptation, the needs of both males and females should be integrated in climate change policies.

Meeting the needs of women for family planning would go a long way in reducing fertility rate and slow population growth thereby reducing the growth of greenhouse gases and easing challenges of coping with climate change impact over the longterm. Also from this present study, it can be observed that family residence and age of the students are important factors in understanding population growth and climate change link perception. Therefore further studies are recommended to actually ascertain the factual influence of population growth and climate change.

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