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The Predicaments of Non-Residential Students in Ghanaian Institutions of Higher Education: A Micro-Level Empirical Evidence

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Abstract
This paper in the field of capacity building and students' affairs used the external survey assessment techniques of the probit model to examine the predicaments of non-resident students of the College of Technology Education, University of Education, Winneba. Considering the very limited residential facilities and the growing demand for tertiary education, being a tertiary residential student is gradually becoming a mirage in most Ghanaian public universities. This paper argued that the College of Technology Education, either through direct provision or indirectly through private providers, should take all steps to ensure that future non-residential student housing projects are conceived as an integral part of the academic community by taking direct and pragmatic steps to mitigate against the difficulties and problems non-resident students encounter at their various places of residence.
Keywords: non-resident students, residential facilities, private providers, higher education,

Introduction

As the demand for major infrastructure development such as provision of students' accommodation at the University of Education, Winneba continue to grow, the much needed central government funding required to help alleviate the plight of shortages of accommodation on the College of Technology Education, University of Education, Winneba campus continues on the other to dwindle by the day. However, housing students on campus gives a coherence and unity to the broader student population. In addition to the added appeal that residential housing can bring to a university, Altschuler & Kramnick, (1999) provide the empirical evidence to show that there exist a clear connection between stable accommodation on campus and relative success in studies, and shared circumstances and experiences tend to lead to students identifying with each other in a way that is less obvious in more 'commuter-based' campuses. There is also a vibrant student culture on campuses that have a high residential rate. Similarly, there is empirical evidence to show that there is greater level of academic success among students who live in a stable and supportive residential environment. Agron (1997) reported that studies in North America indicate that students in hall of residence have higher Grade Point Averages, higher retention of their grades, are able to take on more credit hours and have the ability to form connections with the faculty members on campus. They also have a higher propensity to be more involved in students' leadership and politics. The College of Technology Education, University of Education, Winneba at first served as a *loco parentis* institution providing for the physical care and the educational well-being of the student. The rooms in the halls of residence then catered for every student by providing pastoral and halls library for those students who cannot attend to the main library of the college. Provision of these services enabled students to have a place of learning to supplement the formal teaching that goes on in the lecture theatres. In the very recent times however, considering the very limited residential facilities and the growing demand for tertiary education, being a tertiary residential student, is gradually becoming a mirage in most Ghanaian public universities and students of the College of Technology Education, of the University of Education Winneba are no exception to this predicament. The students' population of the College of Technology Education, University of Education Winneba as of the 2009/2010 academic year, stood at 7430. This comprise 5172 males (70%) and 2238 (30), *Academic Affairs Section*, (2010). The College of Technology Education, University of Education Winneba as of the same academic year has two official halls of residence, Opoku Ware Hall of residence and the Atwima Hall of residence accommodating students who have been granted residential status on campus. Atwima Hall has 43 rooms accommodating 172 students. Opoku Ware Hall on the other hand has 138 rooms accommodating 552 students. Out of the students' population of 7430, 724 (9.7%) are resident on campus. The figure (9.7%) is even higher if one considers the fact that some few rooms reserved for student leaders (SRC President and other Executives) have single or dual occupants. The excess demand of students' accommodation on campus over its limited supply has led to a trend in recent times where there has been a drift away from the collegial-based system of residential halls at the College of Technology Education, University of Education Winneba. And as the College of Technology Education, University of Education, Winneba continued to confront real cuts in budgetary support from the central government, its preferred option has been to encourage the private sector to

continue to absorb the ever growing demand for students' accommodation. This excess demand for students' accommodation has led to the reliance of the private landlords and landladies in the surrounding neighbourhoods of Abuakwa, Tanoso, IPT, Asouyeboa, Apatrapa, Nyankrenease, Atwima Techiman as suppliers to meet the excess demand. The quandary facing the College of Technology Education, University of Education, Winneba community in particular and the Ghanaian institutions of higher education in general for a long time has been the lack of empirical research to examining the 'plight' of these non-residential students. The objective of the paper is to empirically examine the predicaments of the non-residential students of College of Technology Education, University of Education, Winneba. A primary theme of the paper is to investigate the magnitude of socio-economic problems and challenges the non-resident students are confronted with at their various places of residence which are outside the premises of the College of Technology Education, University of Education, Winneba and help improve upon student affairs in the Collge. The structure of the paper is now outlined. The University of Education, Winneba institutional background immediately follows. The next section briefly adumbrates the theoretical framework within which the empirical analysis is couched, followed by a section detailing the statistical methodology used, and a section describing the data. The penultimate section contains a discussion of the empirical results and is followed by a concluding and recommendations section. Throughout this paper, I use the terms non-resident students and students interchangeably.

University of Education, Winneba Background

On 14th May, 2004 the University of Education Act, Act 2004 was enacted to upgrade the status of the University College of Education of Winneba to the status of a full University and to provide for related matters. The University of Education, Winneba was established in September, 1992 as a University College under PNDC Law 322 and the first batch of 481 students enrolled in November 1992. University of Education, Winneba brought together seven diploma awarding colleges located in different towns under one umbrella institution, viz., the Advanced Teacher Training College, the Specialist Training College and the National Academy of Music, all situated at Winneba; the School of Ghanaian Languages, Ajumako; College of Special Education, Mampong-Akuapem; the Advanced Technical Training College (presently, the College of Technology Education) Kumasi, and the St. Andrews Agricultural Training College, Asante Mampong. The Winneba Campus is the seat of the Vice-Chancellor with satellite campuses at Kumasi and Asante Mampong. *Undergraduate Admissions Brochure,* (2009).

Theoretical Framework

The empirical model estimated in this paper is guided by some theoretical considerations that characterised the problems and difficulties confronting the non-resident students' of the College of Technology Education, University of Education, Winneba. Kenyon, (1997) identified the predicaments of non-residential students as the physical fear of perceived increased in the treat of burglary and the physical hazards of neglected property. Again some predicaments are social problems in the form of perceived erosion of a stable and cohesive residential population resulting in the combination of fallen house values and high insurance costs associated with the presence of a large number of students settling in the community during the teaching terms of the local university for the community residents. *The Independent,* (13 August, 2000) arrived at similar conclusions based on anecdotal evidence. Craglia *et al.* (2000) reported that, other British studies based on empirical evidence have found higher crime burglary rates in areas with high concentrations of students owing to 'low security and low surveillance by neighbours'. A subsequent study by Kenyon & Heath (2001), reinforced the findings and identified the characteristic student let as being associated with 'bad landlords, noise, damp, run down localities, neighbourhood disputes, cramped conditions and poor value for money'. Hence, a very general model of the predicaments confronting non-residential students of the College of Technology Education, University of Education, Winneba at their various places of residence for this paper is expressed as follows:

NON-REDIFF = f(NOISEP, ENVP, LAKRESP, WATSHTOGE, NOELECTR GENDER, LEVEL, BDLNLORS, NEIDIPTS, PAYELECTR, PMONVLUE).

Where *NON-REDIFF* is the dependent variable which captures the response of students on whether they encounter difficulties and problems at their various place of abode. *NOISEP* is a dummy variable which captures whether a non-resident student is confronted with the problem of noise pollution at the place of residence. *ENVP* is a dummy variable which captures whether a non-resident student is confronted with the problem of environmental pollution at the place of residence. *LAKRESP* is a dummy variable which captures the response of the non-resident student on whether he or she has any resting place on campus. *WATSHTOGE* is a dummy variable which captures whether a non-resident student is confronted with the problem of inadequate supply of portable water at his or her place of residence. *GENDER* is a dummy variable capturing the sexual characteristic of the individual non-resident student. *LEVEL* is a dummy variable which captures the academic level of the non-resident student. *BDLNLORS* is a dummy variable which captures the perception of the non-resident student about whether his or her landlady or landlord is bad. *NEIDIPTS* is a dummy variable which

captures the response of the non-resident student as to whether she or he lives at a place where there are frequent neighbourhood disputes. *PAYELECTR* is a dummy variable which captures whether a non-resident student has to pay monthly electricity bill at his or her place of residence, and PMONVLUE is a dummy variable which captures the response of the non-resident student as to whether she or he has a 'poor value for money' in terms of rent paid at his or her place of residence during the semester session.
The expectations are that: *∂NON-REDIFF/ ∂NOISEP* >0, *∂NON-REDIFF/ ∂ENVP* >0, *∂NON-REDIFF/ ∂ LAKRESP* >0, *∂NON-REDIFF/ ∂ WATSHTOGE* >0, *∂NON-REDIFF/ ∂ BDLNLORS* >0, *∂NON-REDIFF/ ∂ NEIDIPTS* >0, *∂NON-REDIFF/ ∂ PAYELECTR* >0, *∂NON-REDIFF/ ∂ PMONVLUE* >0.

Statistical Methodology
The binary (*NON-REDIFF*) dependent variable in this application assumes a value of either one or zero depending on whether the non-resident respond experiencing some problems at his or her place of residence. A probit model is used in estimation because of the limited binary nature of the dependent variable. The logistic model could alternatively have been used in estimation. Although there are practical interpretational benefits to using the logit model, no process experiment or model naturally engenders the underlying logistic distribution for this paper. This however is not the case for the underlying normal distribution inherent in the probit binary nature of the dependent variable and therefore explains the choice of the probit model in this application. The probit model chosen for this paper is underpinned by reference to a threshold framework. This is done by introducing a latent or unobservable continuous dependent variable y_i^*, where:

$$y_i^* = \mathbf{x}_i'\boldsymbol{\beta} + u_i, \quad i = 1 \ldots 400 \qquad [1.1]$$

and $u_i \sim N(0, \sigma^2)$, $y_i^* \sim N(\mathbf{x}_i'\boldsymbol{\beta}, \sigma^2)$.

$$\text{If } y_i^* \geq 0 \text{ then } y_i = 1, \text{ and if } y_i^* < 0 \text{ then } y_i = 0. \qquad [1.2]$$

If the latent dependent variable equals or exceeds zero, the event occurs and if not, the event does not occur. Thus, there is a replacement of a discrete observable dependent variable by a continuous unobservable one given the expression:

$$\text{Prob}[y_i = 1] = \text{prob}[y_i^* \geq 0] \qquad [1.3]$$

Subtracting the mean of y_i^* from both sides of the inequality [1.3] gives:

$$\text{prob}[y_i^* - \mathbf{x}_i'\boldsymbol{\beta} \geq -\mathbf{x}_i'\boldsymbol{\beta}] \qquad [1.4]$$

Dividing expression [1.4] through by the standard error (σ) generates a standardised random variable yielding:

$$\text{prob}\left[\frac{y_i^* - \mathbf{x}_i'\boldsymbol{\beta}}{\sigma} \geq -\frac{\mathbf{x}_i'\boldsymbol{\beta}}{\sigma}\right] = \text{prob}\left[\frac{u_i}{\sigma} \geq -\frac{\mathbf{x}_i'\boldsymbol{\beta}}{\sigma}\right] = \text{prob}\left[\frac{u_i}{\sigma} \leq \frac{\mathbf{x}_i'\boldsymbol{\beta}}{\sigma}\right] \qquad [1.5]$$

$$\text{where } \frac{y_i^* - \mathbf{x}_i'\boldsymbol{\beta}}{\sigma} = \frac{u_i}{\sigma} \qquad [1.6]$$

Expression [1.6] is interpreted as the standardised random variable and expression [1.5] follows from the symmetric nature of the normal distribution, and gives the probability that the standardised random variable $\frac{u_i}{\sigma}$ is less than the threshold value $\frac{\mathbf{x}_i'\boldsymbol{\beta}}{\sigma}$. This is the cumulated probabilities from $-\infty$ to the point delineated by $\frac{\mathbf{x}_i'\boldsymbol{\beta}}{\sigma}$.Using the notation already introduced, expression [1.5] could be written as:

$$\text{prob}\left[\frac{u_i}{\sigma} \leq \frac{\mathbf{x}_i'\boldsymbol{\beta}}{\sigma}\right] = F\left[\frac{(\alpha + \beta X_i)}{\sigma}\right] \qquad [1.7]$$

Defining $\theta = \frac{u_i}{\sigma}$, it could then be expressed as:

$$F(\frac{\mathbf{x_i'\beta}}{\sigma}) = \int_{-\infty}^{\mathbf{x'\beta \div \sigma}} f(\theta)\, d\theta \qquad [1.8]$$

Under the assumption of using a normal distribution to replace the general probability density function (pdf), an expression by that of the normal distribution finally gives:

$$F(\frac{\mathbf{x_i'\beta}}{\sigma}) = \int_{-\infty}^{\mathbf{x'\beta \div \sigma}} \frac{1}{\sqrt{2\pi\sigma^2}} \exp\frac{-\theta_i^2}{2} d\theta \qquad [1.9]$$

There is a potential identification problem here in that given the current specification, one cannot identify either the β vector separately from the σ ancillary parameter. In order to resolve the identification problem, the ancillary parameter (σ), is set equal to unity. The unit of measurement of y_i^* therefore does not affect y_i. Multiplying y_i^* by a positive constant does not change y_i and a unit increase in y_i^* leads to an increase of one standard deviation. Imposing this identification restriction of σ equal to unity, gives:

$$F(\mathbf{x_i'\beta}) = \int_{-\infty}^{\mathbf{x'\beta \div \sigma}} \frac{1}{\sqrt{2\pi\sigma^2}} \exp\frac{-\theta_i^2}{2} d\theta = \Phi(\mathbf{x_i'\beta}) \qquad \text{Thus;}$$

$$\text{prob}(y_i=1) = \Phi\left(\frac{\mathbf{x_i'\beta}}{\sigma}\right) = \Phi(\mathbf{x_i'\beta}) \qquad [1.10]$$

given $\sigma = 1$.

Where $\Phi(\cdot)$ is the notation defining the cumulative distribution function for a standard normal random variable.

Data

The empirical analysis for this paper useD information obtained from a unique individual-level survey designed to elicit information on the socio-economic problems and difficulties confronting non-residential students at the College of Technology Education, Kumasi. The survey was conducted by the author in the first semester month of November in the 2009/2010 academic year. The survey provided amongst other things, information on the academic status of an individual student and his or her place of residence when school is in session. The data are based on responses to individual-level questionnaires drawn from purposive sampling, designed to be *ad hoc* and combines elements of 'snowballing'. This procedure however, does not vitiate the exercise as the information obtained from such surveys do provide important statistical estimates for policy inference, Markova & Reilly, (2007).

The survey obtained information on:

a) individual student's level characteristics including gender and level on the academic ladder.

b) the place of abode of the individual non-resident student, hostel-level characteristics including size and composition of the hostel, that is how many students are there to a room and how much is paid as rent. In addition to the conventional biases associated with obtaining complete and correct responses from a sample survey, a survey on students activities encounters difficulties arising from the zeal of respondents to reveal or over emphasize the difficulties and problems confronting them. In order to attenuate the effect of this systematic bias on survey responses, the approach of interviewing was modified to minimize respondent bias. The confidential nature of the survey was emphasized and students were assured that the information would only be used for research purposes. The sequence and wording of the questions on the questionnaire were adjusted to elicit honest responses from the students as possible under the circumstances. A total number of 412 students were interviewed; however, the responses for twelve students were excluded as they could offer no meaningful responses.

Descriptive Statistics of Empirical Data

Table 1A depicts a histogram showing the amount non-residential students paid as rent at their various place of residence for the 2009/2010 academic year at the College of Technology Education, University of Education, Winneba. 88 students reported paying between GH¢100 to GH¢199 as rent at their place of residence for the academic year. This represents (22%) of the sample. The relevant histogram depicting the percentage frequency is also presented in Table 1B. 305 students also reported paying GH¢200 as their rent for a room for the academic session. This number represents (76.25 %) of the sample. 1 student reported paying GH¢300 as rent for the academic session, while 6 students also reported paying GH¢400 each as rent for their various places of residence. This comes to (0.25%) and (1.5%) respectively.

Table 1A Numerical Representation of Rent Paid by Non-resident Students

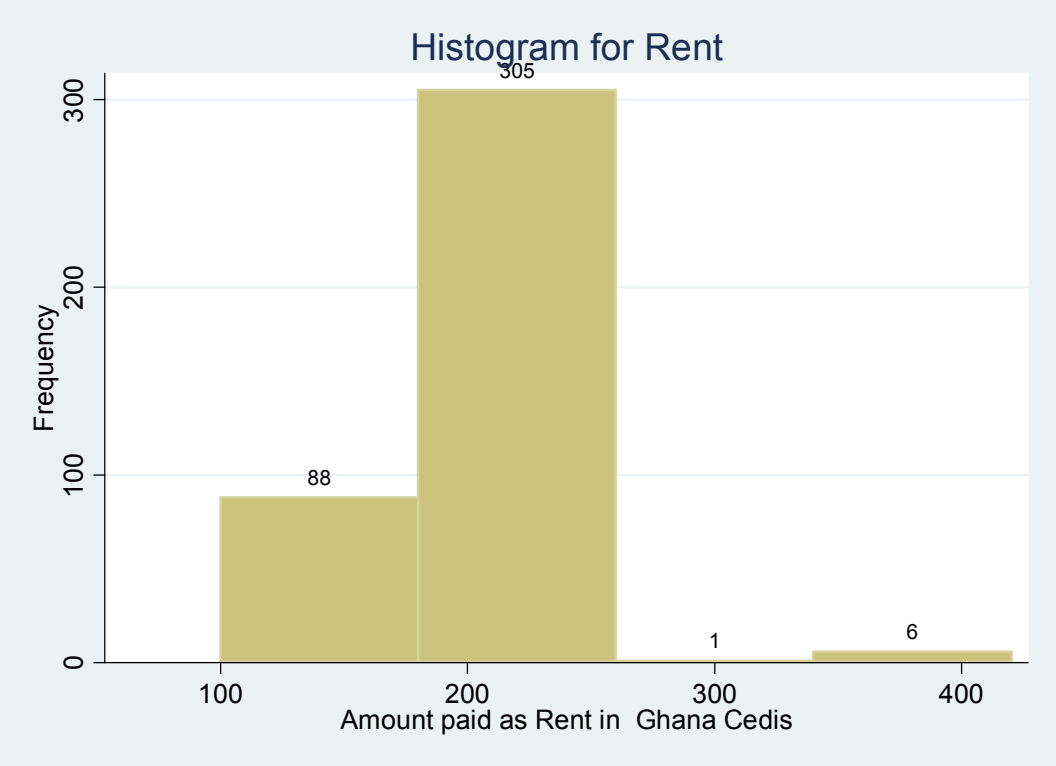
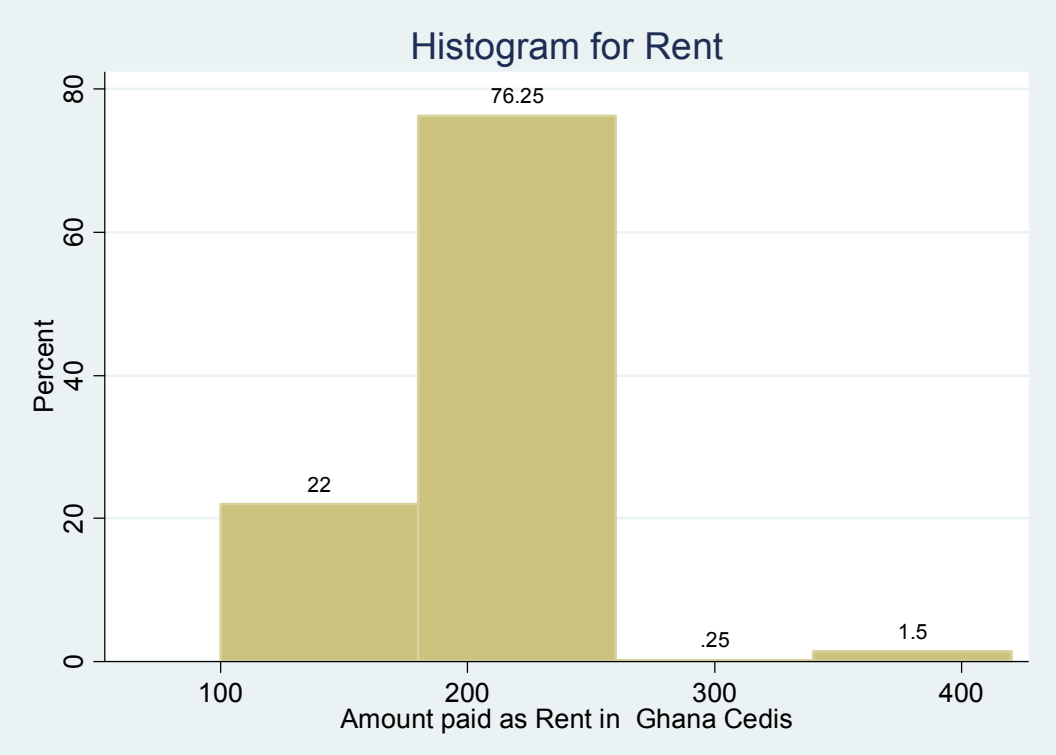


Table 1B Percentage Representation of Payment of Rent by Non-Resident Students



Again, the paper sought to determine the number of students there are to a room at the various places of residence. The data on the number of students to a room is again represented by a histogram in Table 2A. Only 3 students representing (0.75%) of the sample were able to rent a room to themselves. That is, these students individually are the sole occupants of their various rooms. 36 students representing, (7%) of the sample live as

two people to a room. On the issue of three students occupying a room, 94 students reported in the affirmative. This represents (23.5%) of the sample. 261 students representing (65.25%) of the sample live in a room that have four occupants and 6 students representing (1.5%) of the sample live in a room that have five occupants. The corresponding percentage figures are also represented in a histogram and depicted in Table 2B.

Table 2A

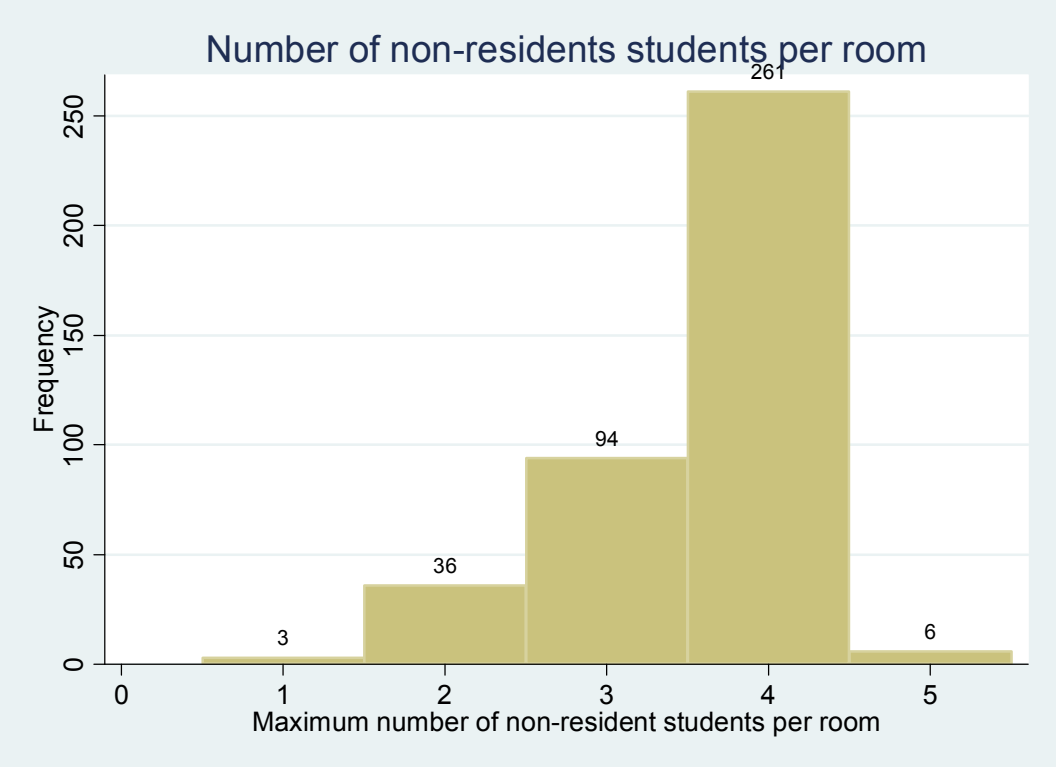


Table 2B

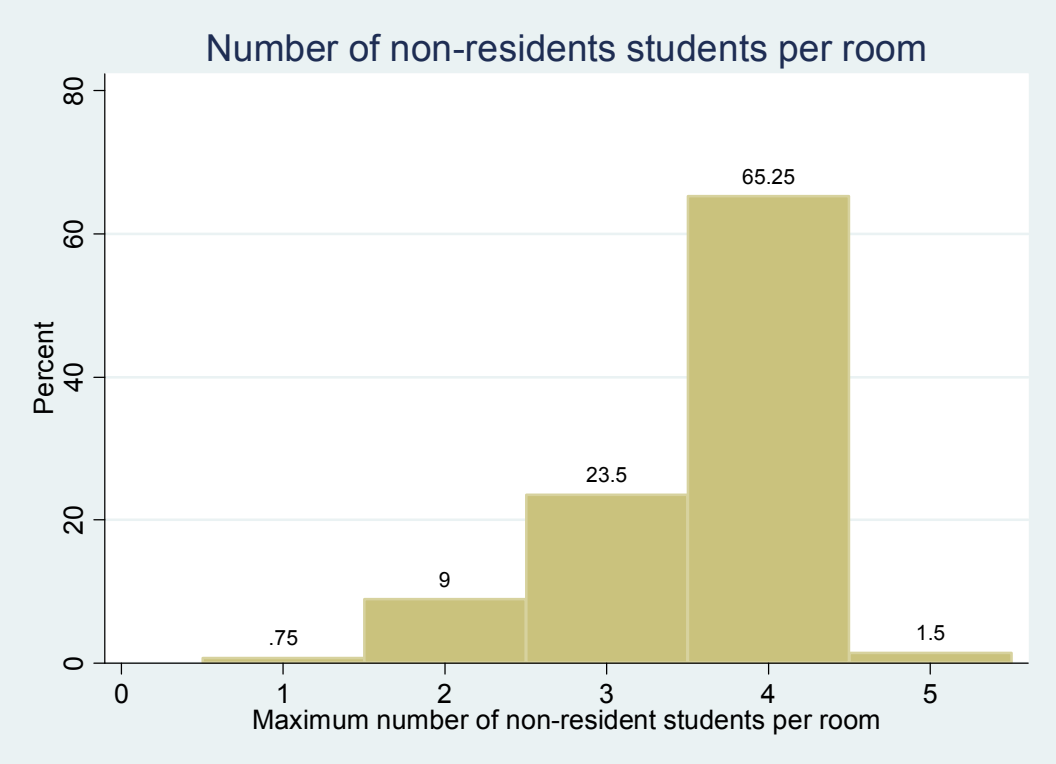


Table 3: Demographic information of Student Respondents

Variables		N	%
Gender	Male	275	69
	Female	125	31
Neighbourhood disputes		46	11
Value for Money		18	4
Bad LandLords/Ladies		98	24
Noise Pollution		334	83
Environmental Pollution		340	85
Lack of Resting Place		351	88
Water shortages		273	68
Paid for monthly electricity		355	89

Demographic information of the student respondents presented in Table 3, shows that 275 (69%) of the non-resident students were male and 125 (31%) were females. 46 students (11%) of the students reported living in an area with high frequency of neighbourhood disputes. 98 students (24%) of the students reported having bad landlords/landladies. 334 students (83%) of students reported living in an area with high noise pollution levels. Again, 340 students (85%) of the students reported living in an area that have high degree of environmental pollution. 351 students (88%) of students reported having no resting place on campus any time they feel like resting. 273 students (68%) of the students reported living in an area with acute water supply problems. 355 students (89%) of the students reported paying for monthly electricity bills by having to purchase units from the electricity units vending sites. Only 18 students (4%) reported having value for money out of the rent paid to the landlords. Thus, 382 students (96) reported having poor value for money considering the rent they have paid.

Empirical Results and Discussion

The probit regression analysis was performed using the STATA (version 11) statistical software package. Table 4 reports the maximum likelihood estimates of the problems confronting the non-resident students at the College of Technology Education, University of Education, Winneba.

Table 4 Probit Maximum Likelihood Estimates of Problems confronting Non -Resident Students at the College of Technology Education

Variable	Estimates	
Constant	-3.653843	(0.8490338)
Neighbourhood disputes	0. 7272197	(0.8395535)
Water Shortages	** 0. 6243079	(0.3913615)
Bad LandLords/Ladies	0.9438243	(0 . 6135922)
Noise Pollution	*1.776148	(0.390031)
Environmental Pollution	*1.86108	(0.4588648)
Lack of Resting Place	*1.641446 Poor	(0. 6125186)
value for money	0.744698	(0. 1.819615)
Paid for own electricity	0. 3562726	(0. 5140886)
McFadden's Pseudo R^2		0.81

* ** denote statistical significance at the 0.05 and 0.10 level respectively using two-tailed tests
White (1980) standard errors are reported in parentheses

The McFaddens's Pseudo R^2 provides a high measure of 0.81 of goodness of fit of the model to the data. Half of the included variables are found to be statistically significant at conventional level, and all the estimated coefficients have the anticipated signs. The estimated effect suggests that being a non-resident student increases on average, and ceteris paribus, the standardised probit index by about 0.73 of a standard deviation the problem of having neighbourhood disputes at the place of residence. Being a non-resident student on average and ceteris paribus increased the standardised probit index by 0.62 of a standard deviation of having the problem and difficulty of having regular access to water supply at the place of residence. Being a non-resident student increases on average, and ceteris paribus, the standardised probit index by about 0.94 the problem of having to deal with a bad landlord or landlady, and being a non-resident student increases on average, and ceteris paribus, the standardised probit index by about 1.8 the problem and difficulty of having to deal with noise pollution at the place of residence. Again, being a non-resident student increases on average, and ceteris paribus, the standardised probit index by about 1.9 the problem and difficulty of having to deal with environmental pollution

at the place of residence. Again from the survey, being a non-resident student increases on average, and ceteris paribus, the standardised probit index by about 1.7 the problem and difficulty of having no place to rest while on the College of Technology Education campus. In addition being a non-resident student increases on average, and ceteris paribus, the standardised probit index by about 0.74 the problem and difficulty of getting no real value for money paid as rent at the place of residence. Lastly, being a non-resident student increases on average, and ceteris paribus, the standardised probit index by about 0.36 the problem and difficulty of having to do monthly purchases of electricity units to ensure continuous supply of power from the pre-paid meter at the place of residence. A more precise interpretation of the probability effects comes from calculating the marginal effects. The marginal effects are appropriately computed by weighting the probit coefficient by a relevant probability density functions (pdfs) points value. The marginal effects estimates are therefore presented in Table 5. The estimated marginal effect suggests that on average, and ceteris paribus, non-resident students are 3 percentage points more likely to live in places with neighbourhood disputes than residential students on campus. Again, non-resident students on average, and ceteris paribus, are 5 percentage points more likely to have difficulties with access to regular water supply at their places of abode than resident students on campus. Again, non-resident students on average, and ceteris paribus, are 4 percentage points more likely to have a bad landlord or landlady at their various places of residence. In addition, non-resident students on average, and ceteris paribus, are 31 percentage points more likely to experience noise pollution at their places of residence than residential students on campus. On the problem of environmental pollution, non-residential students on average, and ceteris paribus, are 35 percentage points more likely to experience environmental pollution at the place of residence than resident students on campus. Again, non-resident students on average, and ceteris paribus, are 29 percentage points more likely to roam about campus without resting a place than resident students. Moreover, non-resident students are on average, and ceteris paribus, 3 percentage points more likely to have bad deals and 'no value for money' for the rent paid at the place of residence. Lastly, non-resident students are on average, and ceteris paribus, 3 percentage points more likely to pay for monthly electricity bills by way of purchasing power units to feed their prepaid meter. These findings are in comport with the findings of Kenyon & Heath, (2001) who identified the characteristic student let as being associated with 'bad landlords, noise, damp, run down localities, neighbourhood disputes, cramped conditions and poor value for money'.

Table 5 Marginal Effects Estimates of Problems confronting Non-Resident Students at the College of Technology Education

Variable	Estimates
Neighbourhood disputes	0.03
Water Shortages	0.05
Bad LandLords/Ladies	0.04
Noise Pollution	0.31
Environmental Pollution	0.35
Lack of Resting Place	0.29
Poor value for money	0.03
Paid for own electricity	0.03

Conclusion and Recommendations

It is clear that there is a growing market for student accommodation outside the College of Technology Education, University of Education, Winneba campus and that this market is likely to continue to grow in the foreseeable future. Because there are the empirical evidence to show that there exist a clear connection between stable accommodation on campus and relative success in studies, the University of Education, Winneba must give considerable attention to addressing the issue of non-residential students accommodation. It is clearly in the interest of the College of Technology Education, University of Education, Winneba to encourage high quality non-residential student housing, since this will act to attract new students and it will act to encourage strong links between the College and the surrounding localities. In the new financial circumstances that confront institutions of higher education in Ghana in general and the College of Technology Education, University of Education, Winneba in particular, appropriate non-resident student housing projects can provide links that are crucial to the College of Technology Education's future and also leave a lasting benefit to the local communities. Given this trend, the author recommends that the College of Technology Education, University of Education, Winneba either through direct provision or indirectly through private providers, should take all steps to ensure that future non-residential student housing projects are conceived as an integral part of the academic community by taking direct and pragmatic steps to mitigate against the difficulties and problems non-resident students encounter as has been revealed by this paper. To this end, the author suggests the formation of non-resident students'

accommodation board to help liaise with the various landladies and landlords of the surrounding communities to help mitigate against the difficulties and problems non-resident students encounter when the College is in session. However, links that are crucial to the College of Technology Education's future and also beneficial to the surrounding local communities was not pursued and remains an agenda for future research.

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