International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

A Comparison of Probit Regression and Binary Regression

Robinson Amos Ibuchi; Okeregwu Blessing Amaka; Ockiya, Atto Kennedy; & Inamete Emem Ndah H.
Department of Mathematics & Statistics
Ignatius Ajuru University of Education, Rivers State, Nigeria
Email: ibuchirobinsonamos@gmail.com

ABSTRACT
In this research, an evaluation of the relationship between a response variable and several explanatory variables were considered using Binary and probit regression. The methods used in the analysis were descriptive statistics and regression techniques. This research focuses on the household utilized/non utilizes primary health care services with a formulated questionnaire, which were administered to 400 households. The statistical Software packages used are Microsoft Excel, SPSS 21 and Minitab 16. The result showed that the Binary regression model is the best fit in modelling binary response variable in form of a count data; based on the two assessment criteria employed [Akaike Information Criterions (AIC) and Bayesian Information Criterions (BIC)].
Keywords: Probit regression, Binary regression, Household Utilized/Non Utilizes Primary Health Care Services.

INTRODUCTION
By means of a numerical approach, regression analysis employs the relationship between two or more measureable variables, that is, a response variable that can be predicted from the other(s). This approach is extensively used in corporate, societal, interactive and biological sciences among other disciplines, according to Michael *et al.* (2005). The two types of regression are Linear and Nonlinear regression. The different types of linear regression are simple and multiple linear regression (Nduka, 1999) while the Nonlinear regressions are log-linear, quadratic, cubic, exponential, Probit, Binary and power regression. Remarkably, our interest in this research is to examine and make a significant comparison between the Probit Regression and Binary Regression. In the Probit model, a project rated (Y) successful is given a value 1 while a project rated unsuccessful is given a value of 0. Binary and multinomial regressions are commonly used by medical scientists and researchers for analysis of binary or polytomous outcomes. These methods are routinely used as diagnostic tools in all areas of medicine including oncology and cardiology. Zhou et al. (1999) used Binary regression to relate the gene expression with class labels. They also used Binary regression for their microarray-based analysis of cancer classification and prediction. Sator et al. (2000) applied a Binary regression model to identify enriched biological groups in gene expression microarray studies. Majid et al.(2000) performed Binary regression analysis to predict endoscopic lesions in iron deficiency anemia when there are no gastrointestinal symptoms. Morris et al. applied multinomial regression technique to analyze the sub-phenotypes by allowing for heterogeneity of genetic effects. Richman et al. (2003) investigated the association between European ancestry and renal disease when compared with African Americans, East Asians, and Hispanics. They concluded that European ancestry is protective against the development of renal disease in systematic lupus erythematosus. Their data had some outliers but they were excluded in their final analysis. Timmerman et al. used the Binary

International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

regression to distinguish between benign and malignant adnexal mass before surgery. Merritt et al. used the binary and multinomial Binary regressions to investigate the role of dairy food intake and risk of ovarian cancer. The validity of estimation and testing procedures used in the analysis of binary data are heavily dependent on whether or not the model assumptions are satisfied. The maximum likelihood method of estimating binary regression parameters using Binary, probit and many other methods is extremely sensitive to outliers and influential observations. From the work of Finney (1971), in his book Probit Analysis. He explains the proper use and analysis of quantal response data. According to him, Probit Analysis is a method of analyzing the relationship between a stimulus (dose) and the quantal (all or nothing) response. Quantitative responses are almost always preferred, but in many situations they are not practical. In these cases, it is only possible to determine if a certain response (such as death) has occurred. In a typical quantal response experiment, groups of animals are given different doses of a drug. The percent dying at each dose level is recorded. These data may then be analyzed using Probit Analysis. The Probit Model assumes that the percent response is related to the log dose as the cumulative normaldistribution. That is, the log doses may be used as variables to read the percent dying from the cumulative normal. Using the normal distribution, rather than other probability distributions, influences the predicted response rate at the high and low ends of possible doses, but has little influence near the middle. Hence, much of the comparison of different drugs is done using response rates of fifty percent. The probit model may be expressed mathematically as follows:

$P = \alpha + \beta\,[\log(Dose)]$.

Where P is five plus the inverse normal transform of the response rate (called the Probit).

MATERIALS AND METHODS

These research emphases on the household utilized and non-utilized primary health care services in Rumuche Emohua LGA of Rivers State. The data used for analysis were obtained through a constructed questionnaire. The extracted data from the administered questionnaire were presented to make comparison between responses from four hundred visited households. From the research, the response (Y) denotes the probability distribution $P(Y_i = 1) = \pi_i$ or $P(Y_i = 0) = 1 - \pi_i$ [Response Variable (Y), which explains the household utilized and none utilizes primary health care services of two or more times in the last one month] and the predictors (X) are described as:

AMO (X_1): Availability of Medical Officer
EDUC(X_2): Educational Years
PRIMED(X_3): Average price of medication (naira)
DISTANCE(X_4): Average driving distance (mins)
RY(X_5): Average Monthly Income of respondents (naira)

From any set of "p" predictors, we have 2^p alterative models which can be constructed. It is based on the fact that each predictor can either be excluded or included from the model according to (Christensen, 1997). Therefore, we have p=5, then 2^5 =32 different possible subset models that can be formed from the pool of five variables (X), such that $Y_i = \beta_0 + e_i$

That is, if there are regression models with five variables (X_1, X_2, X_3, X_4, X_5), with two variables [X_1 and X_2, X_1 and X_3,X_1 and X_4,X_1 and X_5, X_2 and X_3,X_2 and X_4,X_2 and X_5, X_3 and

International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

X_4, X_3 and X_5, thenX_4 and X_5], and so on. We used the goodness-of-fit tests (Z^* - test) to check if p-value is less than α -level in other to fit the adequate model. With the interest also, we investigate the use of household utilized and non-utilized primary health care services of two or more times in the last one month. We compare this model to identify which is suitable for Binary and Probit regression models, using the household utilized/ non utilizes primary health care services in Rumuche, Emohua Local Government Area of Rivers State data and further test whether $\beta_k = 0$, relate to the response variable by using the Likelihood ratio test Statistic G^2, Odd ratio, Wald test (z-test) and two model selection criteria: Akaike Information criterion (AIC) and Bayesian Information criterion and (BIC) techniques.

RESULTS AND DISCUSSION

In this section, the number of household size and Sex of the respondents who utilized/non utilized the primary health care services were constructed as shown in table 1.

Household size	Frequency	Percent
2	79	19.75
3	78	19.50
4	93	23.25
5	79	19.75
6	71	17.75
Sex	Frequency	Percent
F	383	95.75
M	17	4.25

From table, it indicate that household with 6 members has the minimum percentage with the value of 18%; while the household with 4 members has the maximum value of (23%), indicating that 23% of the respondents' families have 2 children alongside the husband and wife. It is further seen from the table that, 96% (383) of the respondents were females and 4% (17) were males. Suggesting that majority of respondents who visited the hospitals are females.

Fitted Binary Regression for Model A: Y versus A.M.O. and Education

The log-likelihood function (maximum likelihood estimators) of the Binary regression is used to estimate the parameters denoted as $\beta_0, \beta_1, \beta_2$ as described from the equation is as

$$\pi_i = \frac{\exp(\beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + ... + \beta_p x_{ip})}{1 + \exp(\beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + ... + \beta_p x_{ip})}$$

When p=2, X1=A.M.O, X2 =Education

Table 2: Estimated Coefficients, p-values and odds ratios for Model A

Predictor	Coefficients	P-values	Odds Ratio
Constant	1.32609	0.000	
A.M.O.	0.96622	0.000	2.63
Education Years	-0.08238	0.005	0.92

The fitted Binary response function and the fitted values (estimates for the model) in table 2 can be expressed as;

International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

$$\hat{\pi}_i = \frac{\exp(1.326 + 0.966x_{i1} - 0.0823x_{i2})}{1 + \exp(1.326 + 0.966x_{i1} - 0.0823x_{i2})}$$

From table 4.2, it is seen that both Availability of Medical Officers (A.M.O) and the level of Education played major roles on the respondents' utilization of the primary healthcare services, since both estimated parameters has significant effect. While the odds ratio suggests that in a facility where there are medical officers, which suggest that there is a likelihood of having at least 3 patients at any time with one being educated.

Fitted Binary Regression for Model B: Y versus A.M.O, Primed

Similarly, the log-likelihood function (maximum likelihood estimators) of the Binary regression model is obtained above when p=2, X1=A.M.O, X3=Primed will be estimated in table 3 as follows:

Table 4.3: Estimated Coefficients, p-values and odds ratios Model B

Predictor	Coefficients	P-values	Odds Ratio
Constant	0.692676	0.001	
A.M.O.	0.901548	0.000	2.46
Primed	-0.0001587	0.219	1.00

From the fitted Binary response function and the fitted values (estimates for the model) in table 3, we express its values as;

$$\hat{\pi}_i = \frac{\exp(0.693 \quad + 0.902 \ x_{i1} - 0.00016 \ x_{i3})}{1 + \exp(0.693 \quad + 0.902 \ x_{i1} - 0.00016 \ x_{i3})}$$

The table(3), it is notable that availability of Medical Officers (A.M.O) played major role on the respondents' utilization of the primary healthcare services, with p-value < 0.05 and has a significant effect. However, the average price of medication including transport cost (Primed), does not have effect on the healthcare service utilization and p-value >0.05 (0.22).

Fitted Binary Regression Model C: Y versus A.M.O., Distance (mins)

When p=2, X1 = A.M.O, X4 = Distance (mins)

Table 4: Estimated Coefficients, p-values and odds ratios Model C

Predictor	Coefficients	P-values	Odds Ratio
Constant	0.813482	0.002	
A.M.O.	0.901657	0.000	2.46
Distance (mins)	-0.0076804	0.194	0.99

It is very clear that the fitted Binary response function and the fitted values (estimates for the model) in table 4 expressed as;

$$\hat{\pi}_i = \frac{\exp(0.813 + 0.902x_{i1} - 00768x_{i2})}{1 + \exp(0.813 + 0.902x_{i1} - 00768x_{i2})}$$

That the availability of Medical Officers (A.M.O) determines the respondents' utilization of the primary healthcare services, with p-value (0.000) < 0.05 and hence, has a significant effect, while the Average Distance (mins), does not have an effect on the services with p-value of (0.194) > 0.05

International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

Fitted Binary Regression Model D: Y versus A.M.O., RY (No.000)

When p=2, X1=A.M.O, X5 = RY (No.000),

Table 5: Estimated Coefficients, p-values and odds ratios Model D

Predictor	Coefficients	P-values	Odds Ratio
Constant	0.622565	0.013	
A.M.O.	0.898790	0.000	2.46
RY (No.000)	-0.0000040	0.665	1.00

The fitted binary response function and the fitted values (estimates for the model) in table 5 expressed as;

$$\hat{\pi}_i = \frac{\exp(0.623 + 0.899x_{i1} - 0.00004x_{i5})}{1 + \exp(0.623 + 0.899x_{i1} - 0.00004x_{i5})}$$

The availability of Medical Officers (A.M.O) determines the respondents' utilization of the primary healthcare services, with p-value (0.000) < 0.05 while the Average income RY (No.000), does not have effect on the healthcare services with p-value of (0.665) > 0.05.

Fitted Binary Regression Model E: Y versus A.M.O., Education, Distance (mins)

When p=3 X1=A.M.O, X2=Education, x4=Distance (mins)

Table 6: Estimated Coefficients, p-values and odds ratios Model E

Predictor	Coefficients	P-values	Odds Ratio
Constant	1.54634	0.000	
A.M.O.	0.969482	0.000	2.64
Education	-0.0803738	0.007	0.92
Distance (mins)	-0.0067063	0.263	0.99

Here, the fitted Binary response function and the fitted values (estimates for the model) in table 6 is expressed as;

$$\hat{\pi}_i = \frac{\exp(1.546 + 0.969x_{i1} - 0.0804x_{i2} - 0.00671x_{i4})}{1 + \exp(1.546 + 0.969x_{i1} - 0.0804x_{i2} - 0.00671x_{i4})}$$

Indicates the availability of Medical Officers (A.M.O) and the Level of Education which determines the utilization of the primary healthcare services, with p-value < 0.05 (0.000 and 0.007 respectively) while the distance does not have effect with p-value of (0.263) > 0.05. It implies that availability of Medical Officers and the level of education are the major determining factors on the use of primary healthcare services. While the odds ratio suggests that in a facility where there are Medical Officers and that, there is a likelihood of having at least 3 patients at any time with one being educated because of the distance (min) who might not visit the facility.

Fitted Binary Regression Model F; Y versus A.M.O., Education, Primed, Distance (mins), RY

When p=5, X1=A.M.O, X2=Education, X3=Primed, x4=Distance, X5=RY

International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

Table 7: Estimated Coefficients, p-values and odds ratios Model F

Predictor	Coefficients	P-values	Odds Ratio
Constant	1.72150	0.000	
A.M.O.	0.972932	0.000	2.65
Education	-0.0811425	0.006	0.92
Primed	-0.0001570	0.246	1.00
Distance (mins)	-0.0064727	0.280	0.99
RY (N0.000)	-0.0000011	0.911	1.00

The fitted Binary response function and the fitted values (estimates for the model) in table 7 expressed as;

$$\hat{\pi}_i = \frac{\exp(1.722 + 0.973x_{i1} - 0.0811x_{i2} - 0.000157x_{i3} - 0.00647x_{i4} - 0.000001x_{i5})}{1+\exp(1.722 + 0.973x_{i1} - 0.0811x_{i2} - 0.000157x_{i3} - 0.00647x_{i4} - 0.000001xi5)}$$

Shows that the availability of Medical Officers (A.M.O) and the Level of education determines the utilization of services with p-values < 0.05 (0.000 and 0.006 respectively), while distance, primed and RY have no effect with p-values > 0.05.

This suggests that the availability of Medical Officers and level of education are the major determining factors on the use of primary healthcare services.

Table 8: The rank of AIC and BIC values of the Six Binary models selected

Model	Predictors	Rank	AIC	BIC
A	X1 , X2 (A.M.O, Education)	1	447.313	459.287
B	X1 , X3 (A.M.O, Primed)	6	453.681	465.655
C	X1 , X4 (A.M.O, Distance)	4	453.510	465.485
D	X1 , X5, (A.M.O, RY)	5	454.993	466.967
E	X1 , X2, X4 (A.M.O, Education, Distance)	2	448.071	464.037
F	X1 , X2, X3 X4, X5 (A.M.O, Education, Primed, Distance, RY)	3	450.566	474.515

In table 8, the AIC and BIC with the least values is Model A, therefore Model A is the best model used for the two model selection criterion and can be expressed as:

$$\hat{\pi}_i = \frac{\exp(1.326 + 0.966x_{i1} - 0.0823x_{i2})}{1+\exp(1.326 + 0.966x_{i1} - 0.0823x_{i2})}$$

where, $\hat{\pi}_i$ = Y is response variable (if household utilized primary health care services or not) and (X1=A.M.O, X2= Education).

Probit Regression

Considering the Probit regression, the log-likelihood function for Probit regression to estimate the maximum likelihood estimators can be denoted as $\beta_0, \beta_1, \beta_2, \ldots\ldots, \beta_n$ and it is obtained as described in the equation above.

Fitted Probit Regression Model A; Y versus A.M.O., Education

When p=2 (X1=A.M.O, X2=Education),

International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

Table 9: Estimated Coefficients, Wald Chi-Square and Significance Values Model A

Predictors	Coefficients	Wald Chi-Square	Sig.
(Intercept)	-.260	2.406	.121
Education	-.022	2.024	.155
AMO	.259	4.547	.033

The fitted Probit response function and the fitted values (estimates for the model) in table 9 expressed as;

$$\hat{\mu}_i = \exp(-0.260 - 0.022x_{i1} + 0.259x_{i2})$$

Indicates that the Probit regression on the availability of Medical Officers (A.M.O) has mean effect on the utilization of primary healthcare facility with significance value of 0.033 < 0.05; while education level was seen as not to have any effect, hence, insignificant.

Fitted Probit Regression Model B, Y versus A.M.O., Primed

When p=2 (X_1=A.M.O, X_3=Primed)

Table 10: Estimated Coefficients, Wald Chi-Square and Significance Values Model B

Predictors	Coefficients	Wald Chi-Square	Sig.
(Intercept)	-.420	13.464	.000
AMO	.246	4.136	.042
Primed	-4.190E-005	.387	.534

The fitted Probit response functions and fitted values (estimates for the model) in table10 expressed as;

$$\hat{\mu}_i = \exp(-0.420 + 0.246x_{i1} - 4.19\times10^{-5}x_{i3})$$

enabled us discovered that only availability of Medical Officers (A.M.O) has mean effect on the utilization of primary healthcare facility with significance p-value of 0.042< 0.05; while the Average price of medication including transport cost (Primed), was seen as not to have any effect, hence, insignificant.

Fitted Probit Regression Model C; Y versus A.M.O., Distance (mins),

When p=2, X1=A.M.O, X4=Distance (mins),

Table11: Estimated Coefficients, Wald Chi-Square and Significance Values Model C

Predictors	Coefficients	Wald Chi-Square	Sig.
(Intercept)	-.388	7.241	.007
AMO	.246	4.131	.042
Distance(min)	-.002	.430	.512

The fitted Probit response function and fitted values (estimates for the model) for table11 expressed as

$$\hat{\mu}_i = \exp(-0.388 + 0.246x_{i1} - 0.002x_{i4})$$

Emphases that only availability of Medical Officers (A.M.O) has mean effect on the utilization of primary healthcare facility with significant value of 0.042< 0.05; while, Distance (min) was seen to have no effect, hence, it is said not be significant.

Fitted Probit Regression Model D; Y versus A.M.O., RY (0.00),

When p=2 X1=A.M.O, X5=RY (0.00),

International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

Table12: Estimated Coefficients, Wald Chi-Square and Significance Values Model D

Predictors	Coefficients	Wald Chi-Square	Sig.
(Intercept)	-.439	10.315	.001
AMO	.246	4.139	.042
RY	-1.010E-006	.046	.831

The fitted Probit responses function and fitted values (estimates for the model) in Appendix E3 summary in Table 4.12 is expressed as

$$\hat{\mu}_i = \exp(-0.439+0.246x_{i1} - 1.01\times10^{-6}x_{i5})$$

Table 12 with the Probit regression shows that only availability of Medical Officers (A.M.O) has mean effect on the utilization of primary healthcare facility with significance p-value of 0.042< 0.05; while, RY (the Average income (No.000)), had no effect, hence, insignificant.

Fitted Probit Regression Model E; Y versus A.M.O, Education, Distance when p=3, X1=A.M.O, X2=Education, X4=Distance (mins)

Table 13: Estimated Coefficients, Wald Chi-Square and Significance Values Model E

Predictors	Coefficients	Wald Chi-Square	Sig.
(Intercept)	-.206	1.128	.288
AMO	.258	4.528	.033
Education	-.021	1.896	.169
Distance (mins)	-.002	.302	.582

The fitted Probit response function and fitted values (estimates for the model) in table 13 expressed as

$$\hat{\mu}_i = \exp(-0.206+0.258x_{i1} - 0.021x_{i2} - 0.002x_{i4})$$

Display that the Probit regression on availability of Medical Officers (A.M.O) has mean effect on the utilization of primary healthcare facility with its significance p-value of 0.033< 0.05; while, Distance (min) and Education were seen to have no effect, hence, insignificant.

Fitted Probit Regression Model F; Y versus A.M.O., Education, Primed, Distance, RY

When p=5, X1=A.M.O, X2=Education, X3= Primed, X4=Distance (mins), X5=RY

Table 14: Estimated Coefficients, Wald Chi-Square and Significance Values Model F

Predictors	Coefficients	Wald Chi-Square	Sig.
(Intercept)	-.164	.564	.453
AMO	.259	4.546	.033
Education	-.021	1.925	.165
Primed	-4.151E-005	.357	.550
Distance(Min)	-.002	.276	.599
RY	-2.051E-007	.002	.966

International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

The fitted Probit response functions and fitted values (estimates for the model) in table 14 expressed as

$$\hat{\mu}_i = \exp(-0.164+0.259x_{i1}-0.021x_{i2} - 4.15\times10^{-5}x_{i3}-0.002x_{i4} - 2.05\times10^{-7}x_{i5})$$

Is an evidence that the availability of Medical Officers (A.M.O) only determines the respondents' utilization of the primary healthcare facilities, with p-value < 0.05 (p=0.033). Hence, AMO have a significant effects, while the others has no effect on the healthcare facilities utilization, since their p-values are greater than 0.05.

Table 15: The Rank of AIC and BIC Values of the Six Probit Models Selected

Model	Predictors	Rank	AIC	BIC
A	X1 , X2 (A.M.O, Education)	1	768.157	780.131
B	X1 , X3 (A.M.O, Primed)	3	769.814	781.788
C	X1 , X4 (A.M.O, Distance)	2	769.769	781.743
D	X1 , X5, (A.M.O, RY)	5	770.159	782.219
E	X1 , X2, X4 (A.M.O, Education, Distance)	4	769.851	785.817
F	X1 , X2, X3 X4, X5 (A.M.O, Education, Primed, Distance, RY)	6	773.452	797.401

From the table,the results shows that the best model is Model A, using the AICP and BICP criterion and can expressed as

$$\hat{\mu}_i = \exp(-0.260 - 0.022x_{i1} + 0.259x_{i2})$$

Where, $\hat{\mu}_i$ = Y is response variable (if household utilized primary health care services or not) and (X1=A.M.O, X2=Education).

Table 16: Summary of the Coefficients and p-values of Six Binary and Probit Regression Models

			Estimated Coefficients (P-values at 5%)		
S/No.	Model	Model Variables	Binary Regression Model (LM)	Probit Regression Model (PM)	Level of Significant
1	A	Constant X1=A.M.O, X2=Edu. (Y , X1, X2)	$\beta_0 = 1.326$ (0.000) $\beta_1 = 0.966$ (0.000) $\beta_2 = -0.082$ (0.005)	$\beta_0 = -0.26$ (0.121) $\beta_1 = 0.259$ (0.033) $\beta_2 = -0.022$ (0.155)	β_0 β_1 β_2 are sig. for (LM) while only β_1 is sig. for (PM)
2	B	Constant X1=A.M.O, X3=Primed (Y, X1, X3)	$\beta_0 = 0.693$ (0.001) $\beta_1 = 0.902$ (0.000) $\beta_3 = -0.00016$ (0.219)	$\beta_0 = -0.420$ (0.00) $\beta_1 = 0.246$ (0.042) $\beta_3 = -4.19\times10^{-5}$ (0.534)	β_0 β_1 are sig. for both
3	C	Constant X1=A.M.O,	$\beta_0 = 0.813$ (0.002) $\beta_1 = 0.702$ (0.000)	$\beta_0 = -0.388$ (0.007) $\beta_1 = 0.246$ (0.042)	β_0 β_1 are sig. for both

International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

		X4=Distance (Y, X1,X3)	$\beta_4 = -0.0076$ (0.194)	$\beta_4 = -0.002$ (0.512)	
4	D	Constant X1=A.M.O, X5=RY (Y, X1,X4)	$\beta_0 = 0.623$ (0.013) $\beta_1 = 0.899$ (0.000) $\beta_4 = -4.01\times10^{-6}$ (0.665)	$\beta_0 = -0.439$ (0.001) $\beta_1 = 0.246$ (0.042) $\beta_4 = -1.01\times10^{-6}$ (0.831)	β_0 β_1 are sig. for both
5	E	Constant X1=A.M.O, X2=Edu. X4=Distance (Y, X1, X2, X3)	$\beta_0 = 1.546$ (0.000) $\beta_1 = 0.969$ (0.000) $\beta_2 = -0.080$ (0.007) $\beta_4 = -0.0067$ (0.263)	$\beta_0 = -0.206$ (0.288) $\beta_1 = 0.258$ (0.033) $\beta_2 = -0.021$ (0.169) $\beta_4 = -0.002$ (0.582)	β_0 β_1 β_2 are sig. for (LM) while only β_1 is sig. for (PM)
6	F	Constant X1=A.M.O, X2=Edu. X3=Primed X4=Distance X5=RY (Y, X1, X2, X3, X4, X5)	$\beta_0 = 1.722$ (0.000) $\beta_1 = 0.973$ (0.000) $\beta_2 = 0.0297$ (0.006) $\beta_3 = -1.57\times10^{-4}$ (0.246) $\beta_4 = -0.0065$ (0.280) $\beta_5 = -1.1\times10^{-6}$ (0.911)	$\beta_0 = -0.164$ (0.453) $\beta_1 = 0.259$ (0.033) $\beta_2 = -0.021$ (0.165) $\beta_3 = -4.15\times10^{-5}$ (0.550) $\beta_4 = -4.01\times10^{-6}$ (0.665) $\beta_5 = -2.05\times10^{-7}$ (0.966)	β_0 β_1 β_2 are sig. for (LM) while only β_1 is sig. for (PM)

Table 17: Comparison of the Rank of AIC and BIC of the Six Binary and Probit Regression Models

		Binary regression		
Rank	Model: Predictors	AIC	BIC	Predictors
1	Model A: Y, X1 , X2 (A.M.O, Education)	447.313	459.287	Model A: X1 , X2 (A.M.O, Education)
2	Model E: Y, X1 , X2, X4 (A.M.O, Education, Distance)	448.071	464.037	Model C: X1 , X4 (A.M.O, Distance)
3	Model F: Y, X1 , X2, X3 X4, X5 (A.M.O, Education, Primed, Distance, RY)	450.566	474.515	Model B: X1 , X3 (A.M.O, Primed)
4	Model C: Y, X1 , X4 (A.M.O, Distance)	453.510	465.485	Model E: X1 , X2, X4 (A.M.O, Education, Distance)
5	Model D: Y, X1 , X5, (A.M.O, RY)	454.993	466.967	Model D: X1 , X5, (A.M.O, RY)
6	Model B: Y, X1 , X3 (A.M.O, Primed)	456.680	465655	Model F: X1 , X2, X3 X4, X5 (A.M.O, Education, Primed, Distance, RY)

CONCLUSION

It may be concluded that Binary regression *AIC* and BIC values are 447.331 and 459.287 respectively for the Model A (i.e. A.M.O and Education) and it is the lowest of all the

models selected suggesting that Model A is the best model. Also, the Probit regression *AIC* and BIC values are 768.157 and 780.131 respectively for the Model A (i.e. A.M.O and Education) and it's the lowest of the entire model suggesting that Model A is the best model.

REFERENCES

Achen, M., (1999), Ozone treatment of apples to reduce Eschericia coli, Institute of Food Techhnologists Annual meeting, Chicago, Il.

Afifi, W. A. Dillow,M. R. and Morse, C. (2004). Examining predictors and consequences of information seeking in close relationships, Personal relationships, 11, 429-449.

Agresti, A. (2007), An introduction to categorical Data Analysis,Second Edition, Wiley, Inc., New York.

Aitkin, M. and Clayton, D., (1980), The fitting of exponential, Weibull and Extreme Value distribution to complex Survival Data using GLIM, Appl. Statist. Vol. 29, No. 2, 156-163.

Arlitt, M.F. and Williamson, C.L., (1997), "Internet web servers work load characterization and performance implications", IEEE/ACM Transactions on Networking. 5(5):631.

Berk, R. A. (2003), Regression Analysis: A constructive critique, CA: Sage Publications, Newbury Park.

Berk, R. and MacDonald, J. (2008), "Overdispersion and Poisson regression" *Journals of Quantitative Criminology* 24(3), 269 – 284.

Cannizzaro, F, Greco, G.; Rizzo, S. Sinagra, E. (1978) ,"Result of the measurement carried in order to verify the validity of the Poisson-exponential distribution in radioactive decay event". *The international Journal of Applied Radiation and Isotopes* 29(11), 649.

Christensen, R. (1997), Log-linear models and logistic regression, Second edition. Springer-Verlag, New York.

APPENDIX DATA

THE HOUSEHOLD UTILIZED/NON UTILIZES PRIMARY HEALTH CARE SERVICES WITH A FORMULATED QUESTIONNAIRE, WHICH WEREADMINISTEREDTO400HOUSEHOLDS.

S/N	Y	Household Size	Sex	RY (No.000)	Primed	Distance (mint)	Education Years	A.M.O.
1	1.00	3	F	20000.00	2450.00	20.00	12.00	0.00
2	1.00	4	F	18000.00	500.00	10.00	12.00	1.00
3	1.00	5	F	35000.00	650.00	45.00	16.00	0.00
4	1.00	6	F	25000.00	700.00	45.00	16.00	1.00
5	0.00	4	F	14000.00	0.00	60.00	12.00	0.00
6	1.00	3	F	18000.00	300.00	15.00	16.00	1.00
7	1.00	6	F	12000.00	1250.00	10.00	6.00	1.00
8	1.00	2	F	30000.00	1000.00	60.00	16.00	1.00

International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

9	1.00	3	F	45000.00	1550.00	20.00	16.00	0.00
10	0.00	3	F	8500.00	0.00	45.00	12.00	0.00
11	0.00	6	F	13400.00	0.00	20.00	12.00	0.00
12	1.00	5	F	19200.00	1850.00	45.00	16.00	1.00
13	1.00	3	F	16500.00	200.00	20.00	16.00	1.00
14	0.00	2	F	27300.00	0.00	75.00	16.00	0.00
15	0.00	2	M	30000.00	0.00	65.00	12.00	0.00
16	1.00	2	F	11200.00	200.00	20.00	6.00	1.00
17	1.00	2	F	16450.00	550.00	45.00	12.00	1.00
18	1.00	6	M	18150.00	450.00	75.00	6.00	0.00
19	0.00	5	F	29000.00	0.00	45.00	12.00	0.00
20	1.00	6	F	12300.00	350.00	20.00	6.00	0.00
21	1.00	5	F	37500.00	0.00	20.00	6.00	1.00
22	1.00	4	F	24850.00	2500.00	75.00	6.00	0.00
23	1.00	6	F	9500.00	2600.00	20.00	6.00	1.00
24	0.00	5	F	9500.00	550.00	20.00	6.00	0.00
25	1.00	2	F	3250.00	1550.00	20.00	12.00	0.00
26	1.00	3	F	9500.00	2500.00	45.00	6.00	1.00
27	1.00	6	F	3250.00	0.00	45.00	6.00	1.00
28	0.00	2	F	13000.00	2950.00	20.00	16.00	0.00
29	0.00	4	F	9500.00	1350.00	20.00	16.00	0.00
30	0.00	6	F	13000.00	2100.00	45.00	16.00	0.00
31	1.00	2	F	18000.00	1300.00	75.00	12.00	1.00
32	1.00	3	F	18000.00	300.00	45.00	12.00	1.00
33	1.00	4	F	25500.00	150.00	45.00	6.00	1.00
34	1.00	2	F	3250.00	0.00	20.00	6.00	0.00
35	1.00	3	F	18000.00	800.00	20.00	6.00	0.00
36	1.00	6	F	9500.00	850.00	20.00	6.00	0.00
37	0.00	2	F	18000.00	150.00	20.00	12.00	0.00
38	1.00	4	F	13000.00	1300.00	45.00	12.00	0.00
39	1.00	6	F	13500.00	850.00	45.00	6.00	1.00
40	1.00	2	F	3250.00	300.00	75.00	6.00	1.00
41	1.00	3	F	6500.00	0.00	75.00	12.00	1.00
42	1.00	4	F	25500.00	350.00	45.00	12.00	1.00
43	0.00	3	F	6500.00	800.00	20.00	16.00	0.00
44	0.00	3	F	25500.00	170.00	45.00	16.00	0.00
45	1.00	4	F	3250.00	300.00	45.00	12.00	1.00
46	1.00	3	F	6500.00	850.00	20.00	6.00	1.00
47	1.00	4	F	9500.00	770.00	20.00	6.00	0.00
48	0.00	4	F	9500.00	1270.00	45.00	6.00	1.00
49	1.00	2	F	9500.00	850.00	45.00	6.00	0.00
50	1.00	2	M	9500.00	0.00	45.00	12.00	0.00
51	0.00	4	F	3250.00	200.00	20.00	6.00	0.00

52	1.00	3	F	6500.00	300.00	45.00	16.00	1.00
53	1.00	5	F	9500.00	800.00	20.00	12.00	1.00
54	1.00	5	F	9500.00	250.00	75.00	16.00	0.00
55	1.00	5	F	3250.00	250.00	75.00	12.00	1.00
56	1.00	4	F	3250.00	200.00	20.00	6.00	1.00
57	1.00	3	F	3250.00	200.00	20.00	6.00	0.00
58	1.00	6	F	9500.00	850.00	20.00	6.00	1.00
59	1.00	5	F	33000.00	250.00	20.00	16.00	0.00
60	1.00	6	F	33000.00	350.00	20.00	12.00	0.00
61	1.00	6	F	33000.00	750.00	45.00	12.00	1.00
62	1.00	3	F	18000.00	800.00	45.00	6.00	0.00
63	1.00	6	F	33000.00	0.00	45.00	6.00	1.00
64	1.00	4	F	25500.00	0.00	45.00	6.00	1.00
65	1.00	2	F	25500.00	850.00	45.00	16.00	1.00
66	0.00	5	F	18000.00	250.00	75.00	6.00	0.00
67	1.00	3	F	18000.00	700.00	20.00	6.00	0.00
68	1.00	6	F	13000.00	850.00	20.00	16.00	1.00
69	1.00	2	F	6500.00	0.00	45.00	6.00	1.00
70	1.00	5	F	9500.00	250.00	45.00	12.00	0.00
71	0.00	4	F	6500.00	770.00	20.00	12.00	0.00
72	1.00	6	F	13000.00	300.00	45.00	12.00	1.00
73	1.00	5	F	13000.00	0.00	20.00	6.00	0.00
74	1.00	4	F	18000.00	250.00	20.00	6.00	0.00
75	1.00	6	F	25500.00	0.00	75.00	6.00	1.00
76	1.00	5	M	6500.00	750.00	20.00	6.00	1.00
77	1.00	6	F	6500.00	0.00	20.00	6.00	1.00
78	1.00	4	F	3250.00	850.00	75.00	12.00	1.00
79	1.00	6	F	18000.00	700.00	75.00	12.00	0.00
80	1.00	2	F	3250.00	0.00	75.00	6.00	0.00
81	1.00	4	F	18000.00	250.00	20.00	16.00	1.00
82	1.00	4	F	25500.00	0.00	45.00	12.00	1.00
83	1.00	6	F	33000.00	0.00	20.00	12.00	0.00
84	0.00	5	F	33000.00	750.00	20.00	12.00	0.00
85	1.00	3	F	18000.00	850.00	20.00	6.00	1.00
86	1.00	5	F	6500.00	0.00	20.00	12.00	1.00
87	1.00	2	F	9500.00	450.00	20.00	16.00	1.00
88	1.00	6	F	9500.00	1370.00	45.00	6.00	0.00
89	0.00	4	F	9500.00	0.00	20.00	6.00	1.00
90	1.00	2	F	9500.00	770.00	45.00	6.00	1.00
91	1.00	5	F	6500.00	0.00	45.00	6.00	0.00
92	1.00	6	F	6500.00	1370.00	45.00	6.00	0.00
93	1.00	5	F	13000.00	0.00	20.00	6.00	1.00
94	1.00	4	F	13000.00	850.00	45.00	16.00	0.00

International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

95	1.00	3	F	18000.00	400.00	20.00	6.00	1.00
96	1.00	2	F	18000.00	450.00	45.00	6.00	0.00
97	1.00	4	F	33000.00	0.00	75.00	16.00	1.00
98	1.00	5	F	33000.00	300.00	75.00	6.00	0.00
99	1.00	5	F	25500.00	0.00	20.00	12.00	1.00
100	0.00	4	F	33000.00	1350.00	20.00	6.00	0.00
101	1.00	4	F	13000.00	450.00	45.00	12.00	1.00
102	1.00	2	M	9500.00	0.00	20.00	12.00	1.00
103	1.00	3	F	9500.00	850.00	20.00	6.00	0.00
104	1.00	5	F	9500.00	1350.00	20.00	6.00	0.00
105	1.00	5	F	18000.00	850.00	45.00	6.00	1.00
106	1.00	3	F	18000.00	0.00	75.00	16.00	1.00
107	1.00	3	F	13000.00	850.00	20.00	6.00	0.00
108	1.00	6	F	9500.00	770.00	45.00	6.00	1.00
109	1.00	4	F	9500.00	450.00	45.00	6.00	0.00
110	1.00	2	F	13000.00	870.00	20.00	6.00	0.00
111	1.00	3	F	6500.00	250.00	20.00	6.00	1.00
112	1.00	4	F	6500.00	300.00	20.00	16.00	1.00
113	1.00	4	F	33000.00	700.00	20.00	6.00	0.00
114	0.00	3	F	33000.00	1850.00	45.00	6.00	0.00
115	1.00	5	F	18000.00	800.00	20.00	6.00	0.00
116	0.00	2	F	33000.00	1370.00	45.00	16.00	0.00
117	1.00	6	F	25500.00	450.00	7.00	6.00	1.00
118	1.00	3	M	25500.00	400.00	75.00	16.00	1.00
119	1.00	6	F	25500.00	1350.00	45.00	6.00	0.00
120	1.00	5	F	33000.00	0.00	20.00	6.00	0.00
121	0.00	6	F	25500.00	1770.00	45.00	16.00	0.00
122	1.00	6	F	6500.00	0.00	20.00	16.00	1.00
123	1.00	3	F	6500.00	820.00	20.00	6.00	1.00
124	1.00	4	F	6500.00	0.00	45.00	6.00	0.00
125	1.00	3	F	33000.00	1370.00	45.00	12.00	1.00
126	0.00	2	F	18000.00	850.00	20.00	16.00	0.00
127	1.00	5	F	18000.00	700.00	20.00	6.00	1.00
128	1.00	4	F	9500.00	0.00	20.00	6.00	1.00
129	1.00	2	F	9500.00	770.00	20.00	12.00	1.00
130	1.00	3	F	33000.00	0.00	20.00	16.00	0.00
131	1.00	4	F	33000.00	270.00	20.00	16.00	1.00
132	1.00	2	F	13000.00	0.00	20.00	12.00	0.00
133	1.00	4	F	13000.00	0.00	20.00	16.00	1.00
134	1.00	5	F	9500.00	750.00	20.00	12.00	1.00
135	0.00	5	F	9500.00	0.00	20.00	16.00	0.00
136	1.00	5	F	6500.00	300.00	45.00	12.00	0.00
137	1.00	4	F	6500.00	250.00	45.00	12.00	1.00

138	1.00	2	F	13000.00	0.00	75.00	16.00	1.00
139	1.00	3	F	18000.00	850.00	45.00	6.00	1.00
140	1.00	2	F	25500.00	0.00	20.00	6.00	0.00
141	1.00	3	M	25500.00	800.00	75.00	6.00	0.00
142	1.00	5	F	25500.00	300.00	45.00	6.00	0.00
143	1.00	4	F	9500.00	0.00	75.00	6.00	1.00
144	1.00	4	F	9500.00	750.00	45.00	12.00	1.00
145	1.00	6	F	6500.00	400.00	20.00	12.00	0.00
146	1.00	4	F	6500.00	250.00	20.00	12.00	1.00
147	0.00	2	F	3250.00	400.00	75.00	16.00	0.00
148	0.00	5	F	3250.00	800.00	75.00	12.00	0.00
149	1.00	2	F	13000.00	0.00	75.00	6.00	1.00
150	1.00	4	F	25500.00	750.00	45.00	12.00	1.00
151	0.00	6	F	25500.00	0.00	20.00	16.00	1.00
152	1.00	6	F	33000.00	0.00	75.00	6.00	0.00
153	1.00	5	F	13000.00	1370.00	75.00	16.00	1.00
154	1.00	2	F	13000.00	1750.00	45.00	6.00	1.00
155	0.00	5	F	18000.00	0.00	20.00	12.00	0.00
156	1.00	5	F	9500.00	750.00	20.00	6.00	0.00
157	1.00	2	F	6500.00	270.00	20.00	6.00	1.00
158	0.00	4	F	18000.00	450.00	20.00	12.00	0.00
159	1.00	3	F	33000.00	400.00	20.00	12.00	0.00
160	1.00	5	F	33000.00	300.00	20.00	12.00	0.00
161	1.00	4	F	33000.00	0.00	20.00	12.00	1.00
162	0.00	3	F	25500.00	750.00	20.00	6.00	1.00
163	1.00	4	F	18000.00	0.00	45.00	6.00	0.00
164	0.00	3	F	9500.00	770.00	20.00	16.00	0.00
165	1.00	5	F	9500.00	1350.00	20.00	12.00	0.00
166	0.00	5	F	25500.00	820.00	45.00	12.00	1.00
167	1.00	2	F	33000.00	0.00	45.00	12.00	1.00
168	1.00	4	F	33000.00	0.00	20.00	6.00	0.00
169	0.00	3	F	18000.00	750.00	45.00	12.00	0.00
170	1.00	2	F	9500.00	350.00	20.00	6.00	1.00
171	0.00	6	F	9500.00	0.00	45.00	6.00	0.00
172	0.00	4	F	18000.00	400.00	45.00	6.00	1.00
173	1.00	6	F	25500.00	700.00	20.00	6.00	1.00
174	1.00	5	F	18000.00	0.00	45.00	6.00	1.00
175	0.00	4	F	9500.00	300.00	20.00	6.00	0.00
176	1.00	4	F	13000.00	0.00	20.00	6.00	1.00
177	1.00	6	F	13000.00	1300.00	20.00	12.00	1.00
178	0.00	2	M	13000.00	0.00	20.00	6.00	0.00
179	1.00	5	F	25500.00	0.00	20.00	6.00	0.00
180	0.00	4	F	25500.00	850.00	20.00	6.00	1.00

International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

181	1.00	6	F	33000.00	250.00	45.00	12.00	0.00
182	0.00	2	F	33000.00	750.00	20.00	16.00	1.00
183	1.00	3	F	25500.00	0.00	45.00	6.00	1.00
184	1.00	6	F	25500.00	0.00	20.00	6.00	0.00
185	1.00	2	F	25500.00	870.00	20.00	6.00	1.00
186	0.00	5	F	18000.00	0.00	20.00	6.00	0.00
187	1.00	2	F	6500.00	300.00	20.00	6.00	1.00
188	0.00	4	F	25500.00	0.00	20.00	6.00	0.00
189	1.00	3	F	25500.00	850.00	45.00	16.00	1.00
190	1.00	4	F	33000.00	400.00	75.00	16.00	1.00
191	0.00	3	F	33000.00	250.00	20.00	6.00	0.00
192	1.00	4	F	9500.00	0.00	20.00	12.00	1.00
193	1.00	5	F	9500.00	700.00	20.00	12.00	0.00
194	1.00	4	F	9500.00	300.00	45.00	12.00	0.00
195	0.00	6	F	6500.00	750.00	45.00	12.00	1.00
196	1.00	2	F	18000.00	0.00	20.00	12.00	1.00
197	1.00	4	F	13000.00	0.00	20.00	6.00	1.00
198	1.00	6	F	13000.00	700.00	20.00	6.00	1.00
199	1.00	4	F	18000.00	350.00	45.00	6.00	0.00
200	1.00	6	F	25500.00	0.00	20.00	6.00	1.00
201	1.00	5	F	33000.00	820.00	20.00	12.00	1.00
202	1.00	2	F	33000.00	250.00	20.00	12.00	0.00
203	1.00	4	F	33000.00	0.00	20.00	12.00	1.00
204	1.00	3	F	6500.00	850.00	20.00	6.00	0.00
205	1.00	2	F	3250.00	350.00	20.00	6.00	1.00
206	1.00	2	F	3250.00	1800.00	45.00	12.00	0.00
207	1.00	6	F	3250.00	0.00	45.00	16.00	1.00
208	1.00	2	F	6500.00	0.00	20.00	16.00	1.00
209	0.00	2	F	6500.00	770.00	20.00	6.00	0.00
210	1.00	3	F	9500.00	1300.00	20.00	6.00	1.00
211	0.00	4	F	13000.00	800.00	45.00	6.00	0.00
212	1.00	2	F	13000.00	0.00	20.00	6.00	1.00
213	0.00	3	F	13000.00	350.00	45.00	6.00	1.00
214	1.00	4	M	33000.00	350.00	45.00	12.00	0.00
215	1.00	4	M	3250.00	2570.00	20.00	6.00	1.00
216	1.00	4	F	6500.00	1250.00	20.00	12.00	1.00
217	0.00	6	F	6500.00	750.00	20.00	12.00	1.00
218	1.00	3	F	25500.00	0.00	45.00	12.00	0.00
219	0.00	2	F	25500.00	2450.00	45.00	12.00	0.00
220	1.00	3	F	33000.00	0.00	20.00	6.00	1.00
221	0.00	2	F	13000.00	350.00	45.00	6.00	0.00
222	0.00	6	F	13000.00	0.00	20.00	6.00	1.00
223	1.00	6	F	18000.00	50.00	45.00	6.00	0.00

224	0.00	5	F	9500.00	0.00	20.00	12.00	1.00
225	1.00	6	F	6500.00	1350.00	45.00	12.00	1.00
226	1.00	5	F	13000.00	0.00	20.00	6.00	0.00
227	0.00	2	F	13000.00	750.00	20.00	6.00	0.00
228	1.00	4	F	18000.00	850.00	20.00	16.00	1.00
229	0.00	3	F	25500.00	0.00	45.00	6.00	0.00
230	1.00	5	F	25500.00	350.00	45.00	6.00	1.00
231	1.00	6	F	25500.00	0.00	20.00	6.00	1.00
232	0.00	3	F	25500.00	450.00	45.00	6.00	0.00
233	1.00	3	F	6500.00	450.00	45.00	6.00	1.00
234	1.00	4	F	6500.00	170.00	20.00	6.00	1.00
235	1.00	3	F	6500.00	150.00	20.00	12.00	1.00
236	1.00	5	F	3250.00	850.00	20.00	12.00	1.00
237	1.00	4	F	18000.00	450.00	20.00	12.00	1.00
238	0.00	3	M	18000.00	0.00	20.00	16.00	0.00
239	1.00	3	F	3250.00	1350.00	45.00	12.00	1.00
240	0.00	2	F	25500.00	850.00	20.00	6.00	0.00
241	0.00	3	F	33000.00	0.00	20.00	6.00	1.00
242	1.00	2	F	33000.00	350.00	45.00	12.00	0.00
243	1.00	2	F	33000.00	350.00	45.00	6.00	1.00
244	0.00	2	F	18000.00	0.00	45.00	16.00	1.00
245	1.00	3	F	18000.00	800.00	20.00	12.00	0.00
246	0.00	4	F	6500.00	0.00	45.00	6.00	1.00
247	1.00	6	F	25500.00	1750.00	20.00	6.00	1.00
248	1.00	2	F	33000.00	750.00	20.00	6.00	1.00
249	1.00	5	F	25500.00	250.00	75.00	6.00	1.00
250	0.00	2	F	25500.00	400.00	45.00	12.00	0.00
251	1.00	5	F	6500.00	1250.00	20.00	12.00	1.00
252	0.00	5	F	9500.00	0.00	45.00	12.00	1.00
253	1.00	6	F	9800.00	400.00	45.00	6.00	0.00
254	1.00	4	F	24450.00	1870.00	75.00	6.00	0.00
255	1.00	6	F	37250.00	2400.00	75.00	6.00	1.00
256	1.00	5	F	26900.00	1250.00	75.00	12.00	1.00
257	1.00	5	F	32600.00	2850.00	45.00	12.00	1.00
258	0.00	4	F	35500.00	700.00	75.00	12.00	1.00
259	1.00	5	F	24400.00	1490.00	20.00	12.00	0.00
260	0.00	2	F	19800.00	2620.00	75.00	6.00	1.00
261	1.00	4	F	29850.00	250.00	20.00	6.00	1.00
262	1.00	3	M	17850.00	2600.00	20.00	6.00	1.00
263	1.00	5	F	30550.00	2480.00	20.00	6.00	0.00
264	0.00	6	F	9250.00	1760.00	45.00	6.00	0.00
265	0.00	4	F	24600.00	450.00	45.00	16.00	1.00
266	1.00	5	F	29800.00	2050.00	45.00	16.00	0.00

International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

267	1.00	4	F	37800.00	2700.00	45.00	12.00	1.00
268	0.00	6	F	37750.00	2400.00	45.00	12.00	0.00
269	1.00	4	F	16000.00	1000.00	20.00	6.00	1.00
270	1.00	6	F	27800.00	1750.00	20.00	6.00	0.00
271	0.00	5	F	14500.00	2950.00	75.00	6.00	0.00
272	1.00	4	F	10050.00	850.00	20.00	6.00	1.00
273	0.00	2	F	33100.00	1350.00	45.00	12.00	1.00
274	1.00	2	F	40600.00	2880.00	20.00	6.00	0.00
275	0.00	4	F	11650.00	2150.00	75.00	12.00	1.00
276	0.00	5	F	13450.00	2660.00	75.00	6.00	1.00
277	1.00	5	F	20700.00	1990.00	20.00	12.00	1.00
278	1.00	3	F	35950.00	1880.00	45.00	12.00	0.00
279	1.00	3	F	43100.00	1100.00	20.00	6.00	1.00
280	0.00	3	F	28150.00	1630.00	20.00	6.00	0.00
281	0.00	3	F	27250.00	2050.00	20.00	12.00	1.00
282	1.00	6	F	12200.00	100.00	45.00	12.00	0.00
283	0.00	2	F	14750.00	1640.00	20.00	16.00	1.00
284	1.00	6	F	21850.00	2300.00	45.00	16.00	1.00
285	0.00	3	F	34850.00	2750.00	20.00	12.00	0.00
286	1.00	3	F	42700.00	2100.00	20.00	6.00	1.00
287	1.00	6	F	32900.00	1550.00	20.00	12.00	1.00
288	1.00	4	F	22100.00	2920.00	20.00	6.00	0.00
289	0.00	4	F	25300.00	2900.00	20.00	12.00	1.00
290	1.00	5	F	17050.00	1260.00	75.00	12.00	0.00
291	1.00	4	F	32250.00	2080.00	75.00	16.00	1.00
292	1.00	4	F	25200.00	1000.00	20.00	16.00	1.00
293	0.00	3	F	30750.00	1930.00	20.00	16.00	0.00
294	0.00	6	F	42550.00	2210.00	20.00	12.00	1.00
295	1.00	4	F	27700.00	2550.00	20.00	12.00	1.00
296	1.00	6	F	24000.00	410.00	20.00	12.00	1.00
297	0.00	3	F	28000.00	190.00	45.00	16.00	1.00
298	1.00	5	M	24550.00	1680.00	45.00	16.00	0.00
299	1.00	3	F	39150.00	350.00	20.00	16.00	1.00
300	0.00	3	F	10700.00	2350.00	45.00	12.00	1.00
301	1.00	6	F	40950.00	2500.00	20.00	16.00	0.00
302	1.00	6	F	30550.00	2250.00	20.00	16.00	1.00
303	1.00	5	M	10100.00	1550.00	75.00	6.00	0.00
304	0.00	3	F	8800.00	1050.00	45.00	6.00	1.00
305	0.00	5	F	11700.00	2650.00	45.00	12.00	0.00
306	1.00	2	F	13000.00	510.00	45.00	12.00	1.00
307	1.00	3	F	38100.00	2700.00	45.00	6.00	0.00
308	1.00	5	F	36850.00	2410.00	45.00	12.00	1.00
309	0.00	2	F	22200.00	60.00	75.00	12.00	1.00

International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

310	1.00	2	F	19100.00	1050.00	20.00	6.00	0.00
311	1.00	6	F	27650.00	2550.00	20.00	6.00	1.00
312	1.00	2	F	19500.00	2180.00	75.00	6.00	0.00
313	1.00	3	F	17500.00	2450.00	20.00	12.00	1.00
314	1.00	2	F	24550.00	1950.00	20.00	16.00	1.00
315	0.00	4	F	11350.00	950.00	75.00	16.00	0.00
316	1.00	6	F	11400.00	700.00	20.00	16.00	0.00
317	0.00	5	F	27800.00	890.00	75.00	16.00	1.00
318	1.00	6	F	14400.00	700.00	20.00	16.00	1.00
319	0.00	6	F	34400.00	2650.00	20.00	16.00	1.00
320	1.00	5	F	35850.00	750.00	20.00	6.00	0.00
321	1.00	5	F	36350.00	2180.00	20.00	12.00	1.00
322	1.00	6	F	10750.00	50.00	45.00	12.00	1.00
323	0.00	3	F	123000.00	290.00	20.00	6.00	1.00
324	0.00	2	F	37000.00	1150.00	20.00	6.00	0.00
325	1.00	4	F	43400.00	2760.00	45.00	12.00	1.00
326	1.00	5	M	43400.00	1350.00	45.00	6.00	1.00
327	1.00	4	F	38500.00	1850.00	45.00	6.00	0.00
328	0.00	6	F	12900.00	1250.00	20.00	12.00	1.00
329	0.00	5	F	39350.00	1010.00	20.00	12.00	0.00
330	1.00	4	F	18200.00	850.00	20.00	12.00	1.00
331	1.00	2	F	27700.00	1280.00	20.00	12.00	1.00
332	0.00	3	F	15100.00	2750.00	20.00	12.00	1.00
333	1.00	5	F	26500.00	1850.00	20.00	6.00	0.00
334	1.00	5	F	35800.00	1750.00	20.00	6.00	1.00
335	1.00	6	F	15950.00	2800.00	20.00	6.00	1.00
336	0.00	2	F	34900.00	510.00	45.00	12.00	1.00
337	1.00	4	F	20550.00	1530.00	45.00	6.00	0.00
338	1.00	2	F	20200.00	2640.00	20.00	6.00	1.00
339	1.00	6	F	41250.00	1350.00	45.00	6.00	1.00
340	1.00	5	F	37400.00	600.00	45.00	12.00	1.00
341	1.00	3	F	8550.00	520.00	20.00	12.00	1.00
342	0.00	3	F	15400.00	1550.00	20.00	16.00	0.00
343	1.00	2	F	39500.00	1320.00	45.00	16.00	1.00
344	1.00	5	F	31500.00	1170.00	45.00	6.00	1.00
345	0.00	2	F	27150.00	350.00	20.00	6.00	0.00
346	0.00	4	F	42750.00	2790.00	20.00	16.00	1.00
347	1.00	3	F	42050.00	1700.00	45.00	12.00	0.00
348	1.00	2	M	18000.00	2090.00	20.00	12.00	1.00
349	1.00	5	F	15350.00	760.00	20.00	12.00	1.00
350	1.00	4	F	44150.00	1480.00	20.00	12.00	0.00
351	1.00	5	F	37050.00	2800.00	45.00	12.00	1.00
352	1.00	5	F	39800.00	870.00	20.00	12.00	1.00

International Journal of Science and Advanced Innovative Research
ISSN: 2536-7315 (Print) 2536-7323 (Online)
Volume 4, Number 3, September, 2019
http://www.casirmediapublishing.com

353	1.00	5	F	21500.00	1950.00	45.00	12.00	0.00
354	1.00	4	F	43450.00	2570.00	20.00	6.00	1.00
355	1.00	6	F	24150.00	870.00	20.00	6.00	1.00
356	1.00	2	F	44100.00	270.00	20.00	12.00	0.00
357	1.00	4	F	44850.00	2070.00	20.00	6.00	1.00
358	1.00	4	F	39350.00	2830.00	75.00	6.00	1.00
359	1.00	3	F	11150.00	490.00	75.00	6.00	1.00
360	0.00	4	F	34700.00	1450.00	75.00	6.00	1.00
361	1.00	2	F	38500.00	450.00	20.00	12.00	0.00
362	1.00	5	F	38350.00	1950.00	20.00	6.00	1.00
363	0.00	5	F	29050.00	2550.00	75.00	6.00	0.00
364	1.00	4	F	19750.00	670.00	20.00	6.00	0.00
365	1.00	5	F	29000.00	2250.00	45.00	6.00	1.00
366	0.00	6	F	12450.00	2650.00	75.00	12.00	0.00
367	1.00	4	F	34050.00	2350.00	45.00	6.00	1.00
368	1.00	3	F	38550.00	1950.00	20.00	6.00	0.00
369	0.00	3	F	13650.00	1650.00	75.00	16.00	1.00
370	0.00	4	F	15850.00	2700.00	45.00	16.00	0.00
371	1.00	2	F	34850.00	1000.00	20.00	12.00	1.00
372	1.00	5	F	19950.00	100.00	20.00	12.00	1.00
373	1.00	4	F	13800.00	2900.00	20.00	12.00	0.00
374	0.00	4	F	12600.00	2600.00	45.00	6.00	0.00
375	1.00	2	F	38650.00	2600.00	45.00	6.00	1.00
376	0.00	6	F	42550.00	800.00	45.00	6.00	1.00
377	1.00	3	F	10900.00	770.00	45.00	12.00	1.00
378	1.00	2	F	33450.00	750.00	45.00	6.00	0.00
379	1.00	2	F	13550.00	500.00	45.00	16.00	1.00
380	0.00	6	F	11700.00	350.00	45.00	12.00	1.00
381	1.00	6	M	34050.00	2950.00	20.00	12.00	1.00
382	1.00	2	F	14800.00	680.00	20.00	6.00	0.00
383	1.00	5	F	31350.00	2650.00	45.00	6.00	0.00
384	1.00	2	F	9200.00	1480.00	45.00	6.00	0.00
385	1.00	3	F	41900.00	1070.00	20.00	6.00	1.00
386	1.00	3	F	17700.00	2950.00	20.00	6.00	1.00
387	1.00	2	F	40500.00	1840.00	20.00	6.00	0.00
388	1.00	4	F	14750.00	2450.00	45.00	6.00	1.00
389	1.00	3	F	9700.00	1380.00	20.00	6.00	0.00
390	1.00	4	F	21750.00	1750.00	20.00	6.00	1.00
391	0.00	3	F	26700.00	1950.00	20.00	6.00	1.00
392	1.00	4	F	43000.00	2150.00	75.00	12.00	1.00
393	0.00	3	F	25300.00	2760.00	20.00	6.00	0.00
394	1.00	5	F	30100.00	750.00	75.00	6.00	1.00
395	1.00	4	F	32500.00	2550.00	75.00	6.00	1.00

396	0.00	3	F	20500.00	1890.00	20.00	6.00	1.00
397	1.00	4	F	40450.00	2160.00	20.00	6.00	0.00
398	0.00	4	F	22350.00	1150.00	20.00	6.00	0.00
399	1.00	2	F	8500.00	550.00	20.00	6.00	1.00
400	1.00	6	F	20100.00	2090.00	20.00	6.00	1.00