WILLINGNESS TO CONVERT TO THE BICYCLE FOR INTRA CITY TRANSPORTATION IN CALABAR: REVISITING THE OLD WAY.

Sur (Dr) Chima Ogba
&
Dr. Inah Okon

Background

- Calabar city hold enormous potential for cycling
- This is as this mode of transport is not entirely new to residents of this city:
  - first as colonial port city;
  - first capital of Nigeria; and
  - now the administrative headquarters of Cross River
  - prides itself as Nigeria tourist destination
- The aim of this paper is to develop a methodology for predicting the willings of residents to cycle and thus set the stage for effective bicycle transportation in the city.
Methodology

• Multistage cluster sampling was used to sample respondents from all 22 political wards
• Subsequent 440 instruments were administrated to residents from all wards using random sampling technique
• Instrument included question on whether respondents were willing to ride in the city or not
• A total of 12 bicycle infrastructure and traffic characteristics were asked in a 6-point likert scale with options ranging from highly satisfied (1) to highly dissatisfied (6)

• Variables were coded and analysed in SPSS environment using simple percentages, cross tabulation and logistic regression statistics.
• Our regression model predicted the logit, that is, the natural log of the odds of any of the decision. That is,
  \[ \ln(\text{ODDS}) = \ln(\hat{Y}) = a + bX, \]
  \[ 1 - \hat{Y} \]

  where \( \hat{Y} \) the predicted probability of willingness to ride coded with 1 rather than 0, unwillingness to ride. \( 1 - \hat{Y} \) is the predicted probability of the other decision and \( X \) is our predictor variable.
Results

![Socioeconomic variables and percentage distribution table]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>223</td>
<td>61.8</td>
</tr>
<tr>
<td>Female</td>
<td>138</td>
<td>38.2</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-17</td>
<td>72</td>
<td>19.9</td>
</tr>
<tr>
<td>18-35</td>
<td>206</td>
<td>57.1</td>
</tr>
<tr>
<td>36-50</td>
<td>65</td>
<td>18.0</td>
</tr>
<tr>
<td>51-65</td>
<td>12</td>
<td>3.3</td>
</tr>
<tr>
<td>&gt;65</td>
<td>6</td>
<td>1.7</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post graduate</td>
<td>12</td>
<td>3.3</td>
</tr>
<tr>
<td>Bachelor</td>
<td>98</td>
<td>27.1</td>
</tr>
<tr>
<td>OND/NCE</td>
<td>82</td>
<td>22.7</td>
</tr>
<tr>
<td>SSCE/WAEC</td>
<td>132</td>
<td>36.6</td>
</tr>
<tr>
<td>No formal education</td>
<td>37</td>
<td>10.2</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
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<td></td>
</tr>
<tr>
<td>Student</td>
<td>164</td>
<td>45.4</td>
</tr>
<tr>
<td>Civil/Public servant</td>
<td>119</td>
<td>33</td>
</tr>
<tr>
<td>Armed forces</td>
<td>62</td>
<td>17.2</td>
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<tr>
<td>Other</td>
<td>10</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>1.7</td>
</tr>
</tbody>
</table>

![Willingness to ride chart]
Gender and ridership

- Omnibus Tests of Model Coefficients gives us Chi-Square of .000 on 1 df, significant beyond .001.
- This is a test of the null hypothesis that adding the gender variable to the model has not significantly increased our ability to predict the decisions made by our respondents.
- The variables in the equation output shows that the regression equation is: \( \ln(\text{ODDS}) = -0.068 + 0.005 \times \text{Gender} \)
- For our women:
  \[ \hat{Y} = \frac{\text{ODDS}}{1 + \text{ODDS}} = \frac{-0.068}{1 + (-0.068)} = 0.073. \]
  That is, our model predicts that 7% of women will be willing to ride.

Willingness to ride in Calabar

- A test of the full model versus a model with intercept only was statistically significant, \( \chi^2 (24, N=315) = 50.5, p<.001 \) and \( \chi^2 (19,n=315)=36.5, p<.001 \).
- Our model was able to correctly classify 86% of those unwilling to ride and 29.1% of those unwilling to ride, for an overall success rate of 66.2%.
- A man is 0.918 times more willing to ride than a woman.
Willingness contd.

- Respondents from 50 – 65yeas are 7.23 times (or 23%) more willing to ride than all other age groups holding 18-35 (our reference age) constant
- Trades (occupation 1) are 1.094 times (or 0.9%) more likely to ride in the city than all other occupations holding students as our control.
- Education (3) (OND/NCE) is 1.73 times more likely to cycle in the city than all other educational groups holding SSCE/WAEC as constant

Bicycle infrastructure/traffic characteristics

- Lanes (1.181)
- Conflicts with motorist (1.338)
- Lack of respect for cycling (1.078)
- Culture_stigma (1.046)
- Weather (1.013)
- Potholes (1.222)
- Safety issues (1.280), and
- Illumination (1.241)

- There present a more significance in predicting the probability of resident’s willingness to cycle in the city
Figure 2: Observed groups and Predicted probabilities

Predicted Probability is of Membership for Yes
The Cut Value is .50
Symbols: N - No
Y - Yes
Each Symbol Represents 1.25 Cases.
Conclusion/Recommendation

• This study has put forward a methodology for bicycle infrastructure development in Calabar and other cities where the old culture of cycling has been lost to motorised transportation.
• The willingness of urban residents to cycle has remain a highly unpredictable
• Quality of bicycle transport infrastructure and other transport characteristics are more significant variables for predicting willingness to cycle in the study area.
• Deliberate attempt must therefore be made to include in urban infrastructure design designated bicycle paths to motivate residents to ride cycle in the city.
Thank you for your attention

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