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# Multivariate Analysis: Worry of Attack Is Influenced by Racial Origin and Other Social Factors

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**Abstract:** Historically, the UK has been known as a very heterogeneous country. Since the Middle Ages, racial and religious diversity has increased and is increasing again in the modern era. The outbreak of immigrants in Europe occurred in early 2010, as several crises in Africa and the Syrian war drove tens of millions of lives to Western Europe. England is a country that is open to accepting the entry of foreigners. Apart from the conflict, the ease of getting a job and a livelihood also has a significant impact on increasing immigration. This immigrant Phenomenon gives birth to social unrest, namely stereotypical discrimination. The development of ideologies such as xenophobia and religiophobia which spread fear and hatred of foreign people and religions makes minority groups afraid of being attacked. This small group had faced difficulties such as refusal to live in the environment, especially in urban areas. Not to mention the racial and gender factors that position women under the power of the opposite sex. Stereotyped perspectives affect the psychology of outnumbered groups, which can lead to fears of being attacked by the dominant group both verbally and physically. This paper aims to find out how social factors such as ethnic origin, religion, type of region, and gender of the population in England and Wales can explain the fear of attacks. This examination uses multivariate analysis and draws on the 2013-14 England and Wales Crime Survey.

**Keywords:** Worry of Attack, Ethnic Origin, Sex/Gender, Religion, Type of Living Area

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## 1. Introduction

The outbreak of immigrants in Europe occurred in 2010, as several crises in Africa and the Syrian war triggered the influx of 70 million people [4]. The United Kingdom provided asylum and entry for these foreigners, making this country the most ethnically diverse country in Western Europe, where 260,000 net migrations were estimated at the end of 2014 [7]. Despite the conflict, The livelihoods were easily accessible to foreigners, which significantly impacted immigration [17]. Consequently, social problems arose afterward.

Immigrants experience stereotypical discrimination due to their minority status as a result of the wave of European anti-immigrant sentiment [14]. Resulting several discriminatory thoughts have developed, such as xenophobia and religiophobia [16]. According to Peterie and Neil [13], xenophobia is defined as the fear and hatred of strangers and religiophobia refers to the "irrational fear" of a religious person [11]. Minorities also encounter difficulties such as rejection to live in the neighborhood, especially in an urban with densely

populated conditions [12]. Furthermore, the number of events referring to violence against women still occurs because of the ideology of male supremacy in society [15]. Stereotypical perspectives affect the psychology of the outnumbered group, which can lead to a worry of being attacked by dominant groups either verbally or physically [5].

The purpose of this study is to determine the level of concern of minorities in England and Wales by examining social factors and answering essay questions about how well ethnic origin, religion, type of area, and gender of the population in England and Wales can explain the worry of attack. This examination applies multivariate analysis and draws on the UK and Wales 2013-14 Crime Survey [10].

## 2. Variable Data

### 2.1. Dependent Variable

The outcome variable (dependent) is the ordinal variable coded as wraceat or "worried about being attacked because of

skin color, race and religion". This examination includes skin color as an element of ethnicity [3]. Wraceat is divided into four categories, namely "with possible answers ", very worried", "fairly worried", "not too worried" and "not at all worried " For this essay, the responses "very worried", "quite worried" and "not too worried" are coded together as "worried about being attacked." The recording was performed to create a binary variable differentiating between respondents who were afraid of being attacked and those who were not.

**2.2. Independent Variable**

There are four categorical explanatory variables (independent) ethnic origin is coded ethgrp2a, and the other three variables are sex (gender), relig3 (religion), and rural2 (type of area). These variables are used to examine factors influencing worries of being attacked. Gender and type of area are binary, while ethnicity and religion are ordinal. All categorical variables are given a dummy code so that the coefficient refers to the comparison between the categories in each variable. In addition, a reference category that is compared with all other types is selected for each variable. For example, for gender and rural2, dummy coding implies that the coefficient refers to the comparison between the sexes and type of area; the male was selected as the reference category while in gender, rural chosen as the reference.

In addition, the ethnic origin is divided into five groups: white, mixed, Asian or Asian British, Black or Black British, and Chinese or other. White is used as a reference because it is the majority. Moreover, the variable of relig3 is divided into seven categories, including no religion, Buddhist, Hindu, Muslim, Jewish, Sikh, and others. Following that, it will be recoded into three groups, namely "no religion", "Christians", and "minorities". First, Christians are the majority, then minorities are a combination of six other religions, and no religion is people who do not have beliefs.

**3. Method**

This study used logistic regression that requires a binary outcome that only have two possible outcomes, such as success or failure, yes or no, and so on. However, it has a wide range of explanatory variables [8]. Therefore, an analysis of logarithmic regression was conducted to predict worries of being attacked according to ethnic origin, religion, sex and type of area. This dataset was analyzed with Stata 17. Multicollinearity test is conducted to identify any explanators that are highly correlated with one another [2], as this can create statistical problems. Logistic regression models are considered feasible when there is no multicollinearity when all the VIF (inflation variance factors) are less than ten [9].

The statistical significance of regression analysis is used to determine the likelihood that the observed relationship between variables in the sample results from sampling error alone [1]. Statistical significance (p-value) affects the probability that the observed results from sampling error. The null hypothesis is valid if more than one sample is drawn from the same population [6]. The level of statistical significance was set at alpha=0.05.

**4. Univariate Analysis**

Before the process was carried out, the 35371 respondents who were observed in the study were first evaluated to determine whether or not there were any missing data. Secondly, the answers of respondents who "refused" or "refused to answer" and respondents who answered "don't know" were also discarded. Following are the descriptive statistical analysis after cleaning the data:

*Table 1. Univariate data of variables used in the logistic regression model.*

How worried about being attacked because of skin color, ethnic origin, or religion	Frequency	Percentage
Wraceat		
Worried	3,410	40.49
Not Worried	5,012	59.51
Total	8,422	100.00
Respondent's ethnic origin		
ethgrp2a		
White	7,590	90.12
Mixed	77	0.91
Asian	429	5.09
Black	225	2.67
Chinese	101	1.20
Total	8,422	100.00
Respondent religion		
relig3		
No Religion	2,553	30.31
Christian	5,333	63.32
Minorities	536	6.36
Total	8,422	100.00
Respondent's gender		
Sex		
Male	3,832	45.50
Female	4,590	54.50
Total	8,422	100.00
Type of area		
rural2		
Urban	6,456	76.66
Rural	1,966	23.34
Total	8,422	100.00

Source: Crime Survey for England and Wales 2013-14: Teaching Dataset.

Based on the results of the descriptive statistical analysis shown in table 1, we can see that from the 8,422 respondents, 3,410 individuals (40.49%) are "Worried" about being attacked, whereas 5,012 respondents (59.51%) are "Not Worried". Looking at the result of the ethgrp2a variable, it can be deduced that out of 8,422 respondents, 7,590 people (90.12%) are of the "White" group, 77 people (0.91%) belong to the "Mixed", followed by 5.09%, or 429 people are of Asian, and so on. Moreover, the results of the Relig3 variable show that 2,553 respondents (30.31%) stated they did not have any religion. Therefore, approximately 63.32% or 5,333 respondents belonged to the "Christian", and there were 536 respondents (6.36%) of the "Minorities" religions.

Furthermore, the results of the sex variable show that out of the 8,422 respondents observed in the study, 3,832 are "Male" and 4,590 are "Female". Finally, the Rural2 variable shows that of the 8,422 respondents surveyed in the study, 6,456

people (30.31%) lived in the "Urban" area, and 1,966 (23.34%) settled in the "Rural" residence.

### 5. Result

Logistic regression analysis explained the relationship with interval or categorical independent variables based on the binary dependent variable. In the binary variable, there are two categories, namely the category indicating success (Y=1) and the category showing failure (Y=0). Therefore, this report will use a logistic regression model approach to examine the effect of ethgrp2a, relig3, gender, and rural2 variables on the binary type wraceat variable, namely Not Worried = 0, and Worried = 1. A test of multicollinearity is conducted first.

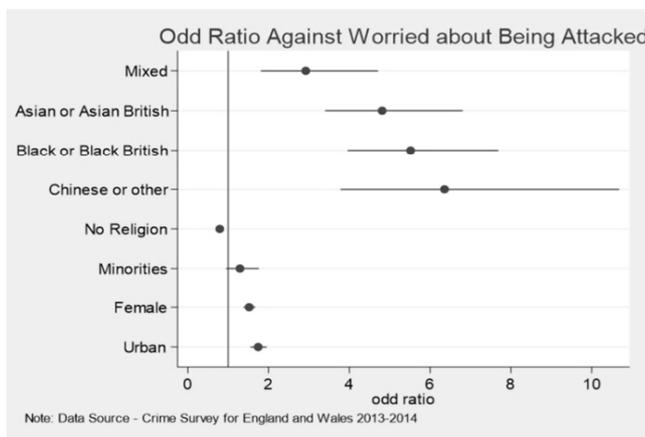
Multicollinearity test is intended to investigate whether independent variables within a model are correlated. In the logistic regression model, it is expected that the independent variables are not associated with each other. To establish the presence or absence of multicollinearity, examining each independent variable's Variance Inflation Factor (VIF) and its tolerance to the dependent variable is imperative. If the value of VIF is 10, then the model is declared to contain symptoms of multicollinearity, or if the tolerance value is < 0.10, then the model is reported to have signs of multicollinearity.

**Table 2.** Variance Inflation Factor (VIF) result of ethnic origin, religion, gender and type of area variables.

Variable Independent	VIF	SQRT VIF	Tolerance	R-Squared
ethgrp2a	1.15	1.07	0.8714	0.1286
relig3	1.13	1.06	0.8881	0.1119
sex	1.01	1.00	0.9943	0.0057
rural2	1.02	1.01	0.9774	0.0226

Source: Crime Survey for England and Wales 2013-14: Teaching Dataset

From table 2, all independent variables produce a VIF value of 10 or a tolerance greater than 0.1. Thus, there is no evidence for multicollinearity in this model. Furthermore, hypothesis testing determines whether the independent variable partially affects the dependent variable. As a result, if the p-value > the significance level (alpha = 5%) is significant, the independent variable will affect the dependent variable. The results of hypothesis testing can be seen through the table and graph:



**Figure 1.** Odds Ratio of How worried about Being attacked.

**Table 3.** The results (odds ratios) of How worried about Being attacked because of ethnic origin, religion, gender, and type of area.

Worried about being attacked	Odds ratio	Standard Error	P-value
ethgrp2a			
White	1.0		
Mixed	3.001687	0.7299587	0.000
Asian	5.131136	0.8885473	0.000
Black	5.191205	0.8519598	0.000
Chinese	5.547743	1.391959	0.000
relig3			
Christian	1.0		
No Religion	0.791846	0.0410248	0.000
Minorities	1.248742	0.1902914	0.145
Sex			
Male	1.0		
Female	1.523507	0.0719351	0.000
rural2			
Rural	1.0		
Urban	1.741754	0.1004015	0.000

R<sup>2</sup> = 0.0660; n = 8,422

Source: Crime Survey for England and Wales 2013-14: Teaching Dataset.

Tests of the effect of the ethgrp2a variable in the categories "Mixed", "Asian", "Black", and "Chinese" show a p-value of 0.000. The table 3, show the p-value < significance level (α = 5%). This means that with a significance level of 5%, it can be said that there is a significant effect of ethgrp2a on Wraceat. Based on the "Mixed" category, it shows that the "Mixed" group is more likely to worry about being attacked than the "White" (odds ratio = 3.001687). Then based on the "Asian" category, it shows that the "Asian" also tends to be more worried about being attacked than the "White" (odds ratio = 5.131136). Based on the "Black" category, it shows that the "Black" is also five times more worried about being attacked than the "White" (odd ratio = 5.191205). Likewise, based on the "Chinese" category, it shows that the "Chinese" is also more likely to worry about being attacked than the "White" (odd ratio = 5.547743).

Then testing the influence of the Relig3 variable in the "No Religion" category shows a p-value of 0.000. The test results show p-value < level of significance (α = 5%), meaning that with a significance level of 5%, it can be concluded that there is a significant influence of Relig3 on Wraceat. Based on these results, it shows that people who are "No Religion" are less likely to worry about being attacked than people with a "Christian" religion (odd ratio = 0.791846). However, people with the "minorities" religion were more likely to worry about being attacked than people with the "Christian" religion (odd ratio=1.248742), although the effect was not significant (p value=0.145 > alpha=5%).

Furthermore, testing the influence of the Sex variable shows a p-value of 0.000. Therefore, the test results show a p-value < level of significance (α = 5%), it can be concluded that there is a significant effect of Sex on Wraceat. Based on these results, it shows that people with the sex "Female" are more worried about being attacked than people with the sex "Male" (odd ratio = 1.523507).

Hence, testing the influence of Rural2 shows a p-value of 0.000. Therefore, a significance level of 5% indicates a significant effect of Rural2 on Wraceat based on the p-value < level of significance (alpha = 5%). This shows that people living in "Urban" areas are more likely to be worried of being

attacked than those living in "Rural" areas (odd ratio=1.741754).

## 6. Conclusion

Overall, several independent variables were measured by multivariate analysis with 6.60% of the variance in wraceat can be explained by ethgrp2a, religion3, gender and rural2. In addition, the value of adjusted  $R^2$  represents how much the dependent variable can be defined by the independent variable, including the number of explanatory variables and participant variables. According to the logistic regression, ethnicity is significantly associated with the worried of being attacked, with Chinese being at the top, followed by Black, Asian and mixed. In addition, religion has a profound effect on behavior, so the fewer beliefs, the lower worries of being attacked.

Moreover, Silva's statement related to "violence against women" can also be confirmed through a greater worried of women than men (odds ratio = 1.523507), indicating the possibility of violence against women. An extensive relationship also explains why worry is predominant in urban rather than rural life. Although logistic regression successfully determines the association, it is impossible to know which one dominates the dependent variable in this assignment. As indicated by the lower number of samples in several sub-categories, the sampling was disproportionate, leading to non-uniform data distribution. However, logistic regression is an excellent tool to use in this situation. Since this model makes no assumptions about the normality and homogeneity of the data, classical assumption tests are not needed. Furthermore, to discover which faith is most worried about being attacked, all categories of religion must be tested on the dependent variables. Then, further statistical analysis must be completed on other assignments to answer those questions.

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