CASE SUDY GROUP A1

Mariam Sorour, Quang Nguyen, Ferdoushi Nahar, Seye Jimo

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Research Question
"Does Annual Household Income Play a Role in Minority's Political Party Identification?"

1. Introduction

1.1. Objective
   To identify if an association exists between the variable's Annual household income and Political Party Identification.

The data in this case study was gathered via a survey after the general election in 2010. This was a first distinct and separate survey probing into ethnic minorities in the UK. This survey targeted five ethnic minorities instead of the general population. The five ethnic minorities included in the survey consisted of people of Indian, Pakistani, Bangladeshi, Black Caribbean, and Black African background.

A sample consists of 2787 adults aged 18+ from England, Scotland, and Wales. These participants were all interviewed between May 4th and August 31st 2010. Questions in the survey probed various aspects of individual's political identification ranging from questions about whether they were on electoral register, their feelings toward different political parties, their opinions on prominent figures from these parties, their personal finance and tax situations, their choice of media source for election information etc.

The research question can be of interest to various individuals and groups, including researchers, policymakers, political analysts, and advocacy organizations.

1.2. Possible Research Targets

Understanding Voting Patterns: Investigating the relationship between annual household income and political party identification among minorities can provide insights into how economic factors influence voting patterns within these communities.

Policy Implications: Policymakers may be interested in the research findings to develop targeted policies that address the needs and concerns of minority communities based on their income levels.

Political Strategy: Political parties and candidates may find this research useful in tailoring their outreach and campaign strategies. If there is a correlation between income and party identification, understanding these dynamics can help parties effectively communicate their messages to different demographic groups.

Social Scientists and Academia: Scholars and researchers in political science, sociology, and related fields may be interested in this research question to contribute to the academic understanding of minority political behavior.

Community Advocacy: Advocacy groups focused on minority issues may find this research relevant for advocating for policies that address economic inequalities within minority communities.

2. Data and Methodology

2.1. Data

The dataset used for analysis contains 2787 rows corresponding to 2787 adults aged 18+ from England, Scotland, and Wales; and 637 columns corresponded to 637 probing questions of various aspects in the survey. The dataset is stored in "BSE_2010.dta" file under stata format. However, the main tool we use to analyze the data is SPSS, so we converted data file to "BSE_2010.sav" and use this format instead.

There are two main variables (columns) that the research question is interested in studying:

1. **Party Identification (bq9_1) as dependent variable.** The variable is nominal type and their values are:

2 = "Refused" (refused to answer)	7 = "Green Party"
-1 = "Don't know"	8 = "United Kingdom Independent Party (UKIP)"
1 = "None/No"	9 = "British National Party (BNP)"
2 = "Labour"	10 = "Coalition Party/Conservative-Lib Dem Party"
3 = "Conservatives"	11 = "Other"
4 = "Liberal Democrats"	12 = "Respect"
5 = "Scottish National Party (SNP)"	13 = "Not Stated"
6 = "Plaid Cymru"	

2. **Annual Household Income (zqinc) as independent variable.** The variables is nominal type and their values are:

-2 = "Refused" (refused to answer)	8 = "35001 - 40000"
-1 = "Don't know"	9 = "40001 - 45000"
1 = "0 - 5000"	10 = "45001 - 50000"
2 = "5001 - 10000"	11 = "50001 - 60000"
3 = "10001 - 15000"	12 = "60001 - 70000"
4 = "15001 - 20000"	13 = "70001 - 80000"
5 = "20001 - 25000"	14 = "80001 or more"
6 = "25001 - 30000"	17 = "Not Stated"
7 = "30001 - 35000"	

When preforming the initial assessment of the data set the following conditions became evident:

- No cells with expected values <1),
- no more than 20% of cells with values <5

Both conditions occurred which increases the likelihood that the test of choice will make a poor estimation of association in the data set.

2.1.1. Data Cleaning

After considering that there are many levels in Party Identification that do not have high counts, we elected to remove some parties so as to improve the test significance approximation.

Information in 'Annual Household Income' such as "Refused", "Don't know" or "Not Stated", were dropped out of the dataset. So after cleaning those

After data cleaning and modification:

1Party Identification (bq9_1) :

    1 = "None/No"
    2 = "Labour"
    3 = "Conservatives"
    4 = "Liberal Democrats"

2. Annual Household Income (zqinc):

1 = "0 - 5000"	8 = "35001 - 40000"
2 = "5001 - 10000"	9 = "40001 - 45000"
3 = "10001 - 15000"	10 = "45001 - 50000"
4 = "15001 - 20000"	11 = "50001 - 60000"
5 = "20001 - 25000"	12 = "60001 - 70000"
6 = "25001 - 30000"	13 = "70001 - 80000"
7 = "30001 - 35000"	14 = "80001 or more"

Also, we have a related variable "Five Ethnicities" correspond to 5 ethnic minorities we've mentioned above:
    1 = "Black Caribbean"
    2 = "Black African"
    3 = "Indian"
    4 = "Pakistani"
    5 = "Bangladeshi"

2.2. Methodology

A **Chi-square test** was conducted in order to assess whether an association exists between annual household income and party identification.

The Chi-square test (also know as the Pearson Chi-square) is one of the most useful statistics for testing hypotheses when the variables are nominal, ordinal. It is a non-parametric statistical test. The non-parametric tests should be used when any of the following conditions pertains to the data:

1. The level of measurement of all the variables is nominal or ordinal.
2. The sample sizes of the study groups are unequal; for the χ^2 the groups may be of equal size or unequal size whereas some parametric tests require groups of equal or approximately equal size.
3. The original data were measured at an interval or ratio level, but violate one of the following assumptions of a parametric test:
   - The distribution of the data was seriously skewed or kurtotic.
   - The data violate the assumptions of equal variance or homoscedasticity.
   - For any of a number of reasons (1), the continuous data were collapsed into a small number of categories, and thus the data are no longer interval or ratio.

The assumptions of Chi-square (χ^2) test include:

1. The data in the cells should be frequencies or counts of cases rather than percentages or some other transformation of the data.
2. The levels (or categories) of the variables are mutually exclusive. That is, a particular subject fits into one and only one level of each of the variables.
3. Each subject may contribute data to one and only one cell in the χ^2. If, for example, the same subjects are tested over time such that the comparisons are of the same subjects at Time 1, Time 2, Time 3, etc., then χ^2 may not be used.
4. The study groups must be independent. This means that a different test must be used if the two groups are related.
5. There are 2 variables, and both are measured as categories, usually at the nominal level. However, data may be ordinal data. Interval or ratio data that have been collapsed into ordinal categories may also be used.
6. The value of the cell expected should be 5 or more in at least 80% of the cells, and no cell should have an expected of less than one. This assumption is most likely to be met if the sample size equals at least the number of cells multiplied by 5. Essentially, this assumption specifies the number of cases (sample size) needed to use the χ^2 for any number of cells in that χ^2 (2)

However, after we tried a Chi-Square test, the result returned that there are "88 cells (58.7%) have expected count less than 5", which means the assumption (6) of Chi-Square test is violated and also there are a few cells have expected count less than 1. So we can't simply apply Chi-Square for our research question, instead, the study focused on main parties only so as to improve the chi square approximation.

We also compared our two main variables to the related variable "Five Ethnicities" one-by-one with "Annual Household Income", we can use normal Pearson Chi-Square since the result only has 3 cells (4%) of expected counts less than 5 and no expected cell value less than 1. With "Party Identification", we will have to use the Monte Carlo simulation for Chi-Square test as above because 25 cells (50%) of expected cells count are less than 5 and exist some cells have value less than 1.

The tool we use for test and analyze the dataset is *SPSS (Statistical Package for the Social Sciences)*, used for statistical analysis and developed by IBM.

3. Descriptive Statistics

Basic frequencies assessments were conducted and are presented below:

Table 1. Annual Household Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 - 5000	168	6.0	6.0	6.0
	5001 - 10000	311	11.2	11.2	17.2
	10001- 15000	270	9.7	9.7	26.9
	15001 - 20000	210	7.5	7.5	34.4
	20001 - 25000	135	4.8	4.8	39.3
	25001 - 30000	136	4.9	4.9	44.1
	30001 - 35000	87	3.1	3.1	47.3
	35001 - 40000	103	3.7	3.7	51.0
	40001 - 45000	52	1.9	1.9	52.8
	45001 - 50000	46	1.7	1.7	54.5
	50001 - 60000	62	2.2	2.2	56.7
	60001 - 70000	38	1.4	1.4	58.1
	70001 - 80000	37	1.3	1.3	59.4
	80001 or more	77	2.8	2.8	62.1
	Unknown	1055	37.9	37.9	100.0
	Total	2787	100.0	100.0	

37.9% (1055/2787) of people took part in the survey did not provide information about their annual household income. The others' incomes are between 0 to 40,000 £.

Table 2. Five Ethnicities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Black Caribbean	668	24.0	24.0	24.0
	Black African	579	20.8	20.8	44.7
	Indian	593	21.3	21.3	66.0
	Pakistani	673	24.1	24.1	90.2
	Bangladeshi	274	9.8	9.8	100.0
	Total	2787	100.0	100.0	

The distribution of five ethnicities in this data is almost equal in size (approximately 20 – 24% for each ethnicity), except that Bangladeshi is less than other four (9.8%), which is unequal to others.

Table 3. Party Identification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None/No	342	12.3	12.3	12.3
	Labour	1661	59.6	59.6	71.9
	Conservatives	232	8.3	8.3	80.2
	Liberal Democrats	253	9.1	9.1	89.3
	Scottish National Party (SNP)	9	.3	.3	89.6
	Green Party	14	.5	.5	90.1
	United Kingdom Independence Party (UKIP)	5	.2	.2	90.3
	British National Party (BNP)	3	.1	.1	90.4
	Coalition party/Conservative-Lib dem party	1	.0	.0	90.4
	Unknown	267	9.6	9.6	100.0
	Total	2787	100.0	100.0	

Most of the candidates in the survey are from Labour Party (59.6%), which means there are unequal sizes of "Party Identification" factor's levels (cells).

4. Crosstabulation Analysis

The crosstabulation table of "Annual Household Income x Party Identification" (AHI x PI) is shown on the next page:

Table 4. Annual Household Income "Party Identification Crosstabulation"

						Party Identification						
			None/No	Labour	Conservatives	Liberal Democrats	Scottish National Party (SNP)	Green Party	United Kingdom Independence Party (UKIP)	British National Party (BNP)	Coalition party/Conservative-Lib dem party	Unknown	Total
Annual Household Income	0 - 5000	Count	23	99	11	15	1	1	0	1	0	17	16
		Expected Count	20.6	100.1	14.0	15.3	.5	.8	.3	.2	.1	16.1	168.
		% within Party Identification	6.7%	6.0%	4.7%	5.9%	11.1%	7.1%	0.0%	33.3%	0.0%	6.4%	6.0%
	5001 - 10000	Count	31	203	19	24	1	2	0	1	1	29	31
		Expected Count	38.2	185.4	25.9	28.2	1.0	1.6	.6	.3	.1	29.8	311.
		% within Party Identification	9.1%	12.2%	8.2%	9.5%	11.1%	14.3%	0.0%	33.3%	100.0%	10.9%	11.2%
	10001- 15000	Count	28	180	16	27	2	2	0	1	0	14	27
		Expected Count	33.1	160.9	22.5	24.5	.9	1.4	.5	.3	.1	25.9	270.
		% within Party Identification	8.2%	10.8%	6.9%	10.7%	22.2%	14.3%	0.0%	33.3%	0.0%	5.2%	9.7%
	15001 - 20000	Count	26	132	13	17	0	2	0	0	0	20	21
		Expected Count	25.8	125.2	17.5	19.1	.7	1.1	.4	.2	.1	20.1	210.
		% within Party Identification	7.6%	7.9%	5.6%	6.7%	0.0%	14.3%	0.0%	0.0%	0.0%	7.5%	7.5%
	20001 - 25000	Count	11	84	14	14	0	1	1	0	0	10	13
		Expected Count	16.6	80.5	11.2	12.3	.4	.7	.2	.1	.0	12.9	135.
		% within Party Identification	3.2%	5.1%	6.0%	5.5%	0.0%	7.1%	20.0%	0.0%	0.0%	3.7%	4.8%
	25001 - 30000	Count	10	85	17	9	1	0	0	0	0	14	13
		Expected Count	16.7	81.1	11.3	12.3	.4	.7	.2	.1	.0	13.0	136.
		% within Party Identification	2.9%	5.1%	7.3%	3.6%	11.1%	0.0%	0.0%	0.0%	0.0%	5.2%	4.9%
	30001 - 35000	Count	8	51	8	13	0	0	1	0	0	6	8
		Expected Count	10.7	51.9	7.2	7.9	.3	.4	.2	.1	.0	8.3	87.
		% within Party Identification	2.3%	3.1%	3.4%	5.1%	0.0%	0.0%	20.0%	0.0%	0.0%	2.2%	3.1%
	35001 - 40000	Count	15	56	13	11	1	0	0	0	0	7	10
		Expected Count	12.6	61.4	8.6	9.4	.3	.5	.2	.1	.0	9.9	103.
		% within Party Identification	4.4%	3.4%	5.6%	4.3%	11.1%	0.0%	0.0%	0.0%	0.0%	2.6%	3.7%
	40001 - 45000	Count	4	37	2	5	0	0	0	0	0	4	5
		Expected Count	6.4	31.0	4.3	4.7	.2	.3	.1	.1	.0	5.0	52.
		% within Party Identification	1.2%	2.2%	0.9%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	1.9%
	45001 - 50000	Count	6	21	6	9	0	0	0	0	0	4	4
		Expected Count	5.6	27.4	3.8	4.2	.1	.2	.1	.0	.0	4.4	46.
		% within Party Identification	1.8%	1.3%	2.6%	3.6%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	1.7%
	50001 - 60000	Count	5	40	9	3	0	0	0	0	0	5	6
		Expected Count	7.6	37.0	5.2	5.6	.2	.3	.1	.1	.0	5.9	62.
		% within Party Identification	1.5%	2.4%	3.9%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	2.2%
	60001 - 70000	Count	6	19	7	1	0	0	0	0	0	5	3
		Expected Count	4.7	22.6	3.2	3.4	.1	.2	.1	.0	.0	3.6	38.
		% within Party Identification	1.8%	1.1%	3.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	1.4%
	70001 - 80000	Count	4	21	5	2	0	1	0	0	0	4	3
		Expected Count	4.5	22.1	3.1	3.4	.1	.2	.1	.0	.0	3.5	37.
		% within Party Identification	1.2%	1.3%	2.2%	0.8%	0.0%	7.1%	0.0%	0.0%	0.0%	1.5%	1.3%
	80001 or more	Count	13	38	13	9	0	1	0	0	0	3	7
		Expected Count	9.4	45.9	6.4	7.0	.2	.4	.1	.1	.0	7.4	77.
		% within Party Identification	3.8%	2.3%	5.6%	3.6%	0.0%	7.1%	0.0%	0.0%	0.0%	1.1%	2.8%
	Unknown	Count	152	595	79	94	3	4	3	0	0	125	105
		Expected Count	129.5	628.8	87.8	95.8	3.4	5.3	1.9	1.1	.4	101.1	1055.
		% within Party Identification	44.4%	35.8%	34.1%	37.2%	33.3%	28.6%	60.0%	0.0%	0.0%	46.8%	37.9%
Total		Count	342	1661	232	253	9	14	5	3	1	267	278
		Expected Count	342.0	1661.0	232.0	253.0	9.0	14.0	5.0	3.0	1.0	267.0	2787.
		% within Party Identification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Additionally, two more crosstabulation tables for "Annual Household Income x Five Ethnicities" (AHI x FE) and "Five Ethnicities x Party Identification" (FE x PI) are shown below:

Table 5. Annual Household Income – Five Ethnicities Crosstabulation

			Five Ethnicities					
			Black Caribbean	Black African	Indian	Pakistani	Bangladeshi	Total
Annual Household Income	0 - 5000	Count	57	52	17	22	20	168
		Expected Count	40.3	34.9	35.7	40.6	16.5	168.0
		% within Five Ethnicities	8.5%	9.0%	2.9%	3.3%	7.3%	6.0%
	5001 - 10000	Count	76	66	44	87	38	311
		Expected Count	74.5	64.6	66.2	75.1	30.6	311.0
		% within Five Ethnicities	11.4%	11.4%	7.4%	12.9%	13.9%	11.2%
	10001- 15000	Count	66	56	55	61	32	270
		Expected Count	64.7	56.1	57.4	65.2	26.5	270.0
		% within Five Ethnicities	9.9%	9.7%	9.3%	9.1%	11.7%	9.7%
	15001 - 20000	Count	53	54	36	44	23	210
		Expected Count	50.3	43.6	44.7	50.7	20.6	210.0
		% within Five Ethnicities	7.9%	9.3%	6.1%	6.5%	8.4%	7.5%
	20001 - 25000	Count	35	31	31	30	8	135
		Expected Count	32.4	28.0	28.7	32.6	13.3	135.0
		% within Five Ethnicities	5.2%	5.4%	5.2%	4.5%	2.9%	4.8%
	25001 - 30000	Count	32	32	37	28	7	136
		Expected Count	32.6	28.3	28.9	32.8	13.4	136.0
		% within Five Ethnicities	4.8%	5.5%	6.2%	4.2%	2.6%	4.9%
	30001 - 35000	Count	25	13	28	17	4	87
		Expected Count	20.9	18.1	18.5	21.0	8.6	87.0
		% within Five Ethnicities	3.7%	2.2%	4.7%	2.5%	1.5%	3.1%
	35001 - 40000	Count	23	19	36	19	6	103
		Expected Count	24.7	21.4	21.9	24.9	10.1	103.0
		% within Five Ethnicities	3.4%	3.3%	6.1%	2.8%	2.2%	3.7%
	40001 - 45000	Count	15	12	16	7	2	52
		Expected Count	12.5	10.8	11.1	12.6	5.1	52.0
		% within Five Ethnicities	2.2%	2.1%	2.7%	1.0%	0.7%	1.9%
	45001 - 50000	Count	12	9	18	6	1	46
		Expected Count	11.0	9.6	9.8	11.1	4.5	46.0
		% within Five Ethnicities	1.8%	1.6%	3.0%	0.9%	0.4%	1.7%
	50001 - 60000	Count	16	17	17	9	3	62
		Expected Count	14.9	12.9	13.2	15.0	6.1	62.0
		% within Five Ethnicities	2.4%	2.9%	2.9%	1.3%	1.1%	2.2%
	60001 - 70000	Count	9	11	15	1	2	38
		Expected Count	9.1	7.9	8.1	9.2	3.7	38.0
		% within Five Ethnicities	1.3%	1.9%	2.5%	0.1%	0.7%	1.4%
	70001 - 80000	Count	12	7	13	4	1	37
		Expected Count	8.9	7.7	7.9	8.9	3.6	37.0
		% within Five Ethnicities	1.8%	1.2%	2.2%	0.6%	0.4%	1.3%
	80001 or more	Count	22	13	27	7	8	77
		Expected Count	18.5	16.0	16.4	18.6	7.6	77.0
		% within Five Ethnicities	3.3%	2.2%	4.6%	1.0%	2.9%	2.8%
	Unknown	Count	215	187	203	331	119	1055
		Expected Count	252.9	219.2	224.5	254.8	103.7	1055.0
		% within Five Ethnicities	32.2%	32.3%	34.2%	49.2%	43.4%	37.9%
Total		Count	668	579	593	673	274	2787
		Expected Count	668.0	579.0	593.0	673.0	274.0	2787.0
		% within Five Ethnicities	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 6. Five Ethnicities – Party Identification Crosstabulation

			None/No	Labour	Conservatives	Liberal Democrats	Scottish National Party (SNP)	Green Party	United Kingdom Independence Party (UKIP)	British National Party (BNP)	Coalition party/Conservative-Lib dem party	Unknown	Total
Five Ethnicities	Black Caribbean	Count	93	437	34	35	0	4	1	2	1	61	668
		Expected Count	82.0	398.1	55.6	60.6	2.2	3.4	1.2	.7	.2	64.0	668.0
		% within Party Identification	27.2%	26.3%	14.7%	13.8%	0.0%	28.6%	20.0%	66.7%	100.0%	22.8%	24.0%
	Black African	Count	73	389	29	32	0	3	0	0	0	53	579
		Expected Count	71.1	345.1	48.2	52.6	1.9	2.9	1.0	.6	.2	55.5	579.0
		% within Party Identification	21.3%	23.4%	12.5%	12.6%	0.0%	21.4%	0.0%	0.0%	0.0%	19.9%	20.8%
	Indian	Count	59	315	91	59	0	2	3	1	0	63	593
		Expected Count	72.8	353.4	49.4	53.8	1.9	3.0	1.1	.6	.2	56.8	593.0
		% within Party Identification	17.3%	19.0%	39.2%	23.3%	0.0%	14.3%	60.0%	33.3%	0.0%	23.6%	21.3%
	Pakistani	Count	74	367	55	103	9	3	0	0	0	62	673
		Expected Count	82.6	401.1	56.0	61.1	2.2	3.4	1.2	.7	.2	64.5	673.0
		% within Party Identification	21.6%	22.1%	23.7%	40.7%	100.0%	21.4%	0.0%	0.0%	0.0%	23.2%	24.1%
	Bangladeshi	Count	43	153	23	24	0	2	1	0	0	28	274
		Expected Count	33.6	163.3	22.8	24.9	.9	1.4	.5	.3	.1	26.2	274.0
		% within Party Identification	12.6%	9.2%	9.9%	9.5%	0.0%	14.3%	20.0%	0.0%	0.0%	10.5%	9.8%
Total		Count	342	1661	232	253	9	14	5	3	1	267	2787
		Expected Count	342.0	1661.0	232.0	253.0	9.0	14.0	5.0	3.0	1.0	267.0	2787.0
		% within Party Identification	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

- In our AHI x PI crosstabulation table, except for these values that have less counts and expected counts, the others party number count seem to be equal in percentage for each income level in the dataset.
- In AHI x FE table, we can see the percentages of ethnicity are similar (approximately equal) to others for each level of income in the dataset.
- And for FE x PI table, except the low count and expected count value cells, it's seem to be equal in percentage of party number count for each ethnicity.

5. Chi Square Test

For the main research question, we will have the null and alternative hypothesis:

+ H_0: There is no significant association between annual household income and minority political party identification.

+ H_a: There is a significant association between annual household income and minority political party identification.

Table 7. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	60.497[a]	39	.015
Likelihood Ratio	58.322	39	.024
Linear-by-Linear Association	3.125	1	.077
N of Valid Cases	1568		

a. 10 cells (17.9%) have expected count less than 5. The minimum expected count is 3.12.

Table 8. Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.196	.015
	Cramer's V	.113	.015
N of Valid Cases		1568	

The chi square test value was 60.497, p value= 0.015 and estimate of effect size Cramer's V = 0.113 (which implies the intensity of the association is not strong). This implies that a relationship exists between annual household income and party identification.

Table 9. Chi – Square Tests for AHI x FE

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	187.888[a]	56	<.001
Likelihood Ratio	196.226	56	<.001
Linear-by-Linear Association	21.690	1	<.001
N of Valid Cases	2787		

a. 3 cells (4.0%) have expected count less than 5. The minimum expected count is 3.64.

- The above Table shows chi square test results for AHI x FE.
- And for the question we are interested in the role of five ethnic minority in identify the party. We have the hypotheses and test result:

    + H_0: + There is no significant association between all groups of five ethnic minority and party identification.

    + H_a: There is at least one significant association among all groups of five ethnic minority and party identification.

Table 10. Chi-Square Tests

| | Value | df | Asymptotic Significance (2-sided) | Monte Carlo Sig. (2-sided) | | | Monte Carlo Sig. (1-sided) | | |
| | | | | Significance | 95% Confidence Interval | | Significance | 95% Confidence Interval | |
					Lower Bound	Upper Bound		Lower Bound	Upper Bound
Pearson Chi-Square	167.911[a]	36	<.001	.000[b]	.000	.001			
Likelihood Ratio	160.440	36	<.001	.000[b]	.000	.001			
Fisher-Freeman-Halton Exact Test	149.332			.000[b]	.000	.001			
Linear-by-Linear Association	4.115[c]	1	.043	.045[b]	.037	.053	.022[b]	.016	.027
N of Valid Cases	2787								

a. 25 cells (50.0%) have expected count less than 5. The minimum expected count is .10.

b. Based on 2787 sampled tables with starting seed 215962969.

c. The standardized statistic is 2.029.

For the result, in the table of AHI x PI test result, The chi square test value was 60.497, p value= 0.015 and estimate of effect size Cramer's V = 0.113 (which implies the intensity of the association is not strong). This implies that a relationship exists between annual household income and party identification.

- In the AHI x FE, the Pearson Chi-Square significant p-value < 0.001, suggests that we should reject null hypothesis and claim that there is at least one significant association among all groups of annual household income and five ethnic minority.

- And for FE x PI, (Table 9) the Monte Carlo for Pearson Chi-Square significant p-value < 0.001, suggests that we reject the null hypothesis. Which is there is significant association among all groups of annual household income and minority political party identification.

6. Visualization
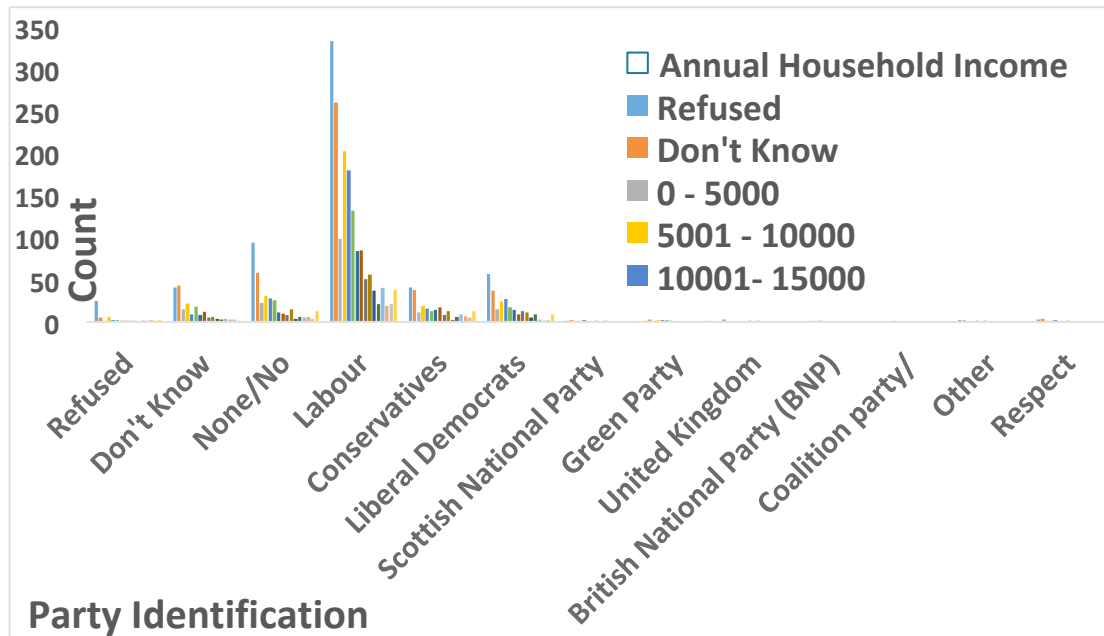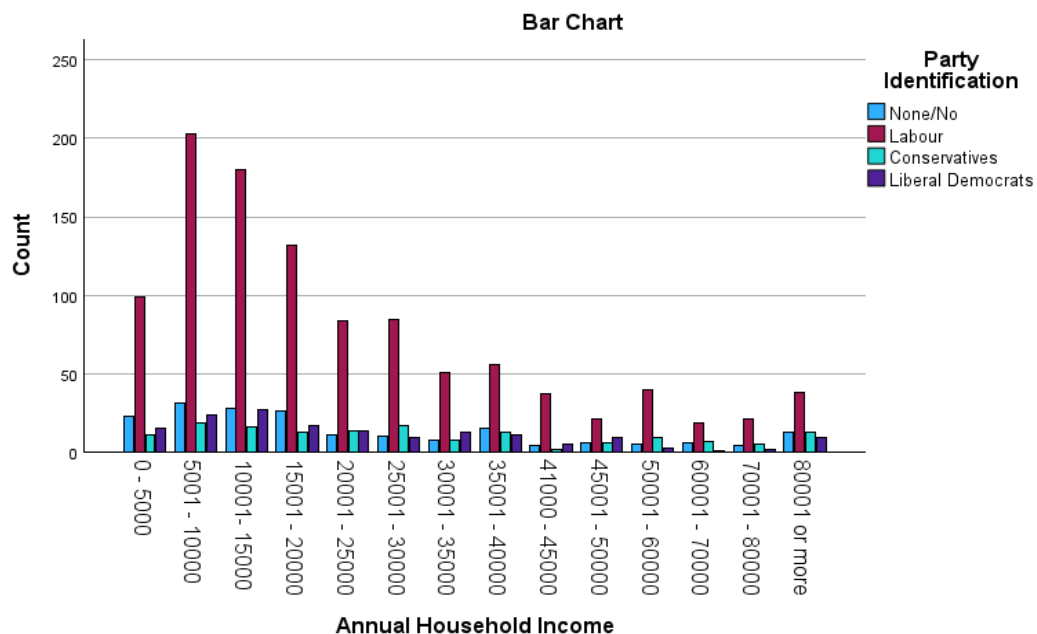
Figure 1. Before data modification

Figure 2. After Data modification

The above figure illustrates the popularity of the Labour party over the entire annual household income level. This chart also shows that most people in the minority communities are within low to middle class annual household income/socioeconomic status. The Labour party appears to represent the interests of the majority.

7. Conclusion

In conclusion, Labour party is the most popular political party among minority community members.

The Labour party appears to represent the interests of the majority of people from minority communities regardless of socioeconomic status. It could be that in minority communities' people are more inclined to stay close socially and therefore influence each other's political party choices.
Most people that participated in the survey were between low to middle socioeconomic status with respect to annual household income.

After performing statistical tests on this data set, we conclude that there is a significant (p value= 0.015) association between annual household income and party identification.

- This implies that party dentification is not independent of household income. A shift in the distribution of one will affect the distribution of the other.
- Higher annual household income may lead to greater access to resources, which could result in individuals being more likely to identify with mainstream political parties due to shard values.
- Individuals from minority communities with low household income may feel aligned with parties that advocate for income equality and social justice.
- The relationship between annual household income and political party identification may also have implication on policy preferences. People with higher incomes may align with policies that benefit them and the same is true for people of lower annual income (they may for example prioritize policies that address income inequality and social welfare).
- Annual income levels can influence voting behavior with each income bracket voting for parties that best represent their economic interests.
- Differences in income levels among individuals identifying with different political parties can affect social cohesion, thereby leading to polarization within society.

8. Recommendations

Policy recommendations: more should be done to address income inequality for people in minority communities. The majority of people were in low approaching middle class annual household income with more being in the lower end of annual household income. More should be done to help shift the majority to middle annual household income rather than lower.
-If the case is that the majority of the minority community is lower annual household income then more should be done to ease access to resources (such as health care and education)

9. References

* Cite sources: If you referred to specific literature, include a list of references.

[Cytel.book (ibm.com)](#)

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- 2 Biochem Med (Zagreb). 2013 Jun; 23(2): 143–149. Published online 2013 Jun 15. doi: 10.11613/BM.2013.018