Analysis of UK Time Survey 2014-15: Investigating Demographics and Social Aspects

# Introduction

In this report, we investigate the demographics and social aspects of individuals in the UK by analyzing data collected in the ‘UK Time Survey 2014-15.’ We aim to understand the social and demographic landscape of the country, which is crucial for making informed decisions. In response to Amy Jones' inquiries regarding these matters in the UK, we intend to conduct a thorough analysis using data from the UK Time Survey 2014-15.

# Analysis and Discussion

After obtaining the dataset, my first step was to explore it thoroughly. I checked for any missing values, blank spaces, duplicates, null values, and column headers. During this process, I observed that the column headers were not appropriately written. Therefore, I renamed them and formatted the table to ensure accurate analysis.

Question 1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Mean | Standard Deviation | Quartiles(Q1) | Quartiles(Q2) | Quartiles(Q3) |
| Age | 49.97725148 | 18.0157874 | 35 | 49 | 64 |
| Number\_of\_People(HouseHold Size) | 2.630414459 | 1.347478908 | 2 | 2 | 4 |
| Number\_Of\_Children | 0.513555625 | 0.915753139 | 0 | 0 | 1 |
| Number\_Of\_Adult | 2.116858835 | 0.965055312 | 2 | 2 | 2 |

The Table above shows that:

* The average Age is 49.9 with a standard deviation of 18. The middle 50% of the Age is between 35 and 64.
* The average number of people (household size) is 2.63 with a standard deviation of 1.35. The middle 50% of the households have between 2 and 4 people.
* The average number of children is 0.51 with a standard deviation of 0.91. The middle 50% of the children in the household are between 0 and 1.
* The average number of adults is 2.11 with a standard deviation of 0.96 which suggests that there is a variation in the number of adults per household. the fact that the middle 50% of households have 2 adults indicates that a significant portion of households have only a couple of adults.

Question 1(ii)

|  |  |
| --- | --- |
|  | Under 40 Years |
| Own a vehicle | 0.2539732 |
| Are divorced | 0.005609224 |
| Own a dishwasher | 0.13836086 |
| Are retired | 0.000311624 |
| Are in fair health | 0.040978498 |
| Live in the Southeast | 0.048457463 |
| Are completely satisfied with their income | 0.033811156 |

The Table above shows that:

* Approximately 25.4% of individuals who are under 40 own a vehicle.
* Roughly 0.56% of people who are below the age of 40 have gone through a divorce.
* Approximately 13.84% of individuals who are under 40 own a dishwasher.
* Approximately 0.03% of individuals who are under 40 are retired.
* Approximately 4.10% of individuals under 40 are in fair health.
* Around 4.85% of people below the age of 40 reside in the southeastern region.
* Approximately 3.38% of individuals under 40 are completely satisfied with their income.

Question 2

**Table 1**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Sex & Work Status** | | | | | | | | | | |
|  | Retired | In paid employment (full or part-time) | Looking after family or home | Unemployed | Long-term sick or disabled | Doing something else | Full-time student | Self-employed | On maternity leave | On a government training scheme |  |
| Male | 0.119819258 | 0.199594889 | 0.003427859 | 0.020878778 | 0.01402306 | 0.002492988 | 0.018853225 | 0.050327205 | 0 | 0.000312 |  |
| Female | 0.153318791 | 0.261452166 | 0.057338735 | 0.017139296 | 0.012932378 | 0.002337177 | 0.023215955 | 0.033966968 | 0.008102213 | 0.000467 |  |

Table 1 shows that Females are more likely than males to report being engaged in looking after family or home duties. This aligns with traditional gender roles where females often bear the primary responsibility for caregiving and household chores.

**Table 2**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Sex & Qualification** | | | | |
|  | A level or equivalent | Degree or higher | Higher education | Other | Secondary |
| Male | 0.068401371 | 0.11561234 | 0.078529137 | 0.054222499 | 0.11296354 |
| Female | 0.113898411 | 0.149267685 | 0.090526644 | 0.074322219 | 0.142256155 |

Table 2 shows that both males and females have the highest proportions of individuals with secondary qualifications, indicating that secondary education is the most common level of educational attainment for both genders.

**Table 3**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Sex & Satisfied with Income** | | | | | | |
|  | Completely satisfied | Mostly satisfied | Completely dissatisfied | Somewhat satisfied | Mostly dissatisfied | Neither satisfied or dissatisfied | Somewhat dissatisfied |
| Male | 0.054534123 | 0.147242132 | 0.020411343 | 0.090526644 | 0.026643814 | 0.042380804 | 0.047990028 |
| Female | 0.08320349 | 0.189467124 | 0.027422873 | 0.113742599 | 0.038641321 | 0.058273605 | 0.0595201 |

Table 3 shows that females generally have higher proportions of individuals who report being completely satisfied, mostly satisfied, and somewhat satisfied with their income compared to males.

**Table 4**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Sex & Satisfaction with marriage or partner** | | | | | | | |
|  | Neither satisfied or dissatisfied | Item not applicable | Mostly satisfied | Completely satisfied | Completely dissatisfied | Mostly dissatisfied | Somewhat satisfied | Somewhat dissatisfied |
| Male | 0.002337177 | 0.206918043 | 0.054534123 | 0.153162979 | 0.001246494 | 0.001090682 | 0.007790589 | 0.0026488 |
| Female | 0.005920848 | 0.294328451 | 0.081956996 | 0.164537239 | 0.002804612 | 0.001090682 | 0.01667186 | 0.002960424 |

Table 4 shows that females have higher proportions of individuals who report being mostly satisfied, completely satisfied, and somewhat satisfied with their marriage or partner compared to males.

**Table 5**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Sex & Non-food shopping** | | | | | |
|  | Dislike a little | Dislike a lot | Do not do the activity | Like a little | Like a lot | Neither like or dislike |
| Male | 0.0621689 | 0.051573699 | 0.024774073 | 0.114833281 | 0.073387348 | 0.102991586 |
| Female | 0.092552197 | 0.075257089 | 0.014802119 | 0.161732627 | 0.110470552 | 0.115456529 |

Table 5 shows that the higher proportions of females reporting liking non-food shopping may indicate stronger preferences for shopping experiences, enjoyment of browsing, or engagement with retail environments among females.

**Table 6**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Qualification & Region of Living** | | | | | | | | | |  |  |
|  | East Midlands | East of England | London | North East | North West | Northern Ireland | Scotland | South East | South West | Wales | West Midlands | Yorkshire & Humberside |
| A level or equivalent | 0.023527579 | 0.01838579 | 0.014957931 | 0.004985977 | 0.022592708 | 0.004985977 | 0.007634777 | 0.031318168 | 0.012309131 | 0.009505 | 0.014334684 | 0.017762543 |
| Degree or higher | 0.025553132 | 0.023060143 | 0.041445933 | 0.005141789 | 0.030539109 | 0.006388283 | 0.021190402 | 0.045029604 | 0.021502026 | 0.011218 | 0.015269554 | 0.018541602 |
| Higher education | 0.017139296 | 0.018541602 | 0.011530072 | 0.006076659 | 0.018229978 | 0.00436273 | 0.01573699 | 0.024618261 | 0.017606731 | 0.008725 | 0.009192895 | 0.017295108 |
| Other | 0.010906825 | 0.012776566 | 0.006699907 | 0.005141789 | 0.016360237 | 0.007167342 | 0.013555625 | 0.014802119 | 0.01137426 | 0.005921 | 0.010283577 | 0.013555625 |
| Secondary | 0.025085696 | 0.029915862 | 0.01667186 | 0.010439389 | 0.026332191 | 0.007946401 | 0.022125273 | 0.039264568 | 0.021346214 | 0.01449 | 0.015425366 | 0.026176379 |

Table 6 shows that London stands out with the highest proportion of individuals holding a degree or higher qualification, followed by the Southeast and Southwest regions.

This suggests that urban areas and regions with larger cities may have higher concentrations of individuals with advanced educational credentials.

**Table 7**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Qualification & Satisfied with Income** | | | | | | |
|  | Completely satisfied | Mostly satisfied | Completely dissatisfied | Somewhat satisfied | Mostly dissatisfied | Neither satisfied or dissatisfied | Somewhat dissatisfied |
| A level or equivalent | 0.020878778 | 0.05079464 | 0.00966033 | 0.039264568 | 0.012464942 | 0.024150826 | 0.025085696 |
| Degree or higher | 0.045808663 | 0.104549704 | 0.008102213 | 0.050950452 | 0.012620754 | 0.017450919 | 0.02539732 |
| Higher education | 0.024150826 | 0.058429417 | 0.006388283 | 0.038797133 | 0.009037083 | 0.014334684 | 0.017918355 |
| Other | 0.017295108 | 0.041757557 | 0.00872546 | 0.024150826 | 0.009348707 | 0.014802119 | 0.012464942 |
| Secondary | 0.029604238 | 0.081177937 | 0.014957931 | 0.051106264 | 0.021813649 | 0.029915862 | 0.026643814 |

Table 7 shows that individuals with a degree or higher qualification show relatively higher proportions of being completely satisfied or mostly satisfied with their income compared to other qualification levels.

**Table 8**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Satisfaction with Job & Stressed** | | |
|  | Always | Never | Sometimes |
| Completely satisfied | 0.007323154 | 0.026020567 | 0.06653163 |
| Mostly satisfied | 0.016204425 | 0.029604238 | 0.166251169 |
| Completely dissatisfied | 0.006232471 | 0.001558118 | 0.01137426 |
| Somewhat satisfied | 0.011685883 | 0.012620754 | 0.097693986 |
| Mostly dissatisfied | 0.005920848 | 0.00171393 | 0.016983484 |
| Neither satisfied or dissatisfied | 0.006544095 | 0.004985977 | 0.040199439 |
| Somewhat dissatisfied | 0.009192895 | 0.0052976 | 0.040199439 |
| Not applicable | 0.041757557 | 0.095512621 | 0.278591462 |

Table 8 shows that there appears to be a relationship between job satisfaction and stress levels, with varying proportions of individuals reporting different stress levels across different categories of job satisfaction.

Question 4

1. The probability that a given individual is a female given they are self-employed.

|  |  |
| --- | --- |
| A female given they are self employed | |
|  | Self-employed |
| Female | 0.033966968 |

1. The probability that a given individual is a male who dislikes cooking family meals.

|  |  |
| --- | --- |
| A male who dislikes cooking the family meal | |
|  | Dislike a lot |
| Male | 0.018853225 |

1. The probability that a given individual is holding a degree or higher qualification given they are a female.

|  |  |
| --- | --- |
| Holding a degree or higher qualification given they are a female | |
|  | Degree or higher |
| Female | 0.149267685 |

1. The probability that a given individual is always stressed given they are a male.

|  |  |
| --- | --- |
| Always stressed given they are male | |
|  | Always |
| Male | 0.036615768 |

1. The probability that a given individual is living in the East-Midlands given they are divorced.

|  |  |
| --- | --- |
| Living in the East Midlands given they are divorced | |
|  | Divorced |
| East Midlands | 0.010283577 |

1. The probability that a given individual is holding a degree or higher qualification and self-employed

|  |  |
| --- | --- |
| Holding a degree or higher qualification and self employed | |
|  | Self employed |
| Degree or higher | 0.02804612 |

Question 5

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Calculate and comment on the correlation between number of children and household size | | | | | | | | |
| 0.698148 |  |  |  |  |  |  |  |  |

The table above shows a correlation coefficient of 0.698 which suggests a moderately strong positive correlation between the number of children and household size.

This indicates that as the number of children in a household increases, the household size tends to increase as well, and vice versa.

Question 5 (ii)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ANOVA |  |  |  |  |  |  |  |  |
|  | *df* | *SS* | *MS* | *F* | *Significance F* |  |  |  |
| Regression | 5 | 7819.987586 | 1563.997517 | 2617.442325 | 0 |  |  |  |
| Residual | 6412 | 3831.355512 | 0.597528932 |  |  |  |  |  |
| Total | 6417 | 11651.3431 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Upper 95.0%* |
| Intercept | 1.91235765 | 0.011520856 | 165.9909408 | 0 | 1.889772925 | 1.934942375 | 1.889772925 | 1.934942375 |
| X Variable 1 | 0.482195615 | 0.055983008 | 8.613249426 | 8.83765E-18 | 0.372450218 | 0.591941011 | 0.372450218 | 0.591941011 |
| X Variable 2 | 0.5955377 | 0.050308987 | 11.83760065 | 5.36362E-32 | 0.49691528 | 0.694160119 | 0.49691528 | 0.694160119 |
| X Variable 3 | 0.392380022 | 0.054950604 | 7.140595275 | 1.03191E-12 | 0.284658483 | 0.50010156 | 0.284658483 | 0.50010156 |
| X Variable 4 | 0.413092187 | 0.055914651 | 7.38790603 | 1.68126E-13 | 0.303480794 | 0.52270358 | 0.303480794 | 0.52270358 |
| X Variable 5 | 1.015788622 | 0.0192683 | 52.71812477 | 0 | 0.978016318 | 1.053560925 | 0.978016318 | 1.053560925 |
|  |  |  |  |  |  |  |  |  |
| X Variable 1 | Children (0-4 years old) | |  |  |  |  |  |  |
| X Variable 2 | Children (0-16 years old) | |  |  |  |  |  |  |
| X Variable 3 | Children (5-10 years old) | |  |  |  |  |  |  |
| X Variable 4 | Children (11-15 years old) | |  |  |  |  |  |  |
| X Variable 5 | Children (16-19 years old) | |  |  |  |  |  |  |

The table above shows the regression model has a reasonably good fit to the data, as indicated by the multiple R (0.819) and R-squared (0.671). This means that approximately 67.1% of the variance in household size can be explained by the independent variables included in the model and the coefficients suggest that households with more children in each age group tend to have larger household sizes. This finding aligns with common expectations, as larger families typically require more living space.

Question 6

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Question i: Test the hypothesis that the average national age has increased at a 5% level of significance. | | | | | | | | | | | | |  |
|  |
|  | Population mean (𝜇) | 48 |  |  |  |  |  |  |  |  |  |  |  |
|  | Population standard deviation (𝜎) | 15 |  |  |  | Test statistic Formula | (Sample mean - Population mean)/Population Std/Sqrt(Sample size) | | | | | | |
|  | Level of significance | 0.05 |  |  |  |  |
|  | Assume sample mean | 50 |  |  |  |  |
|  | Assume sample size | 30 |  |  |  |  |
|  | Null hypothesis (H0): μ=48 (The average national age in 2005 is still 48 years) | | | | | | |  |  |  |  |  |  |
|  | Alternative hypothesis (H1):μ>48 (The average national age has increased from 48 years) | | | | | | |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Then we calculate the Z-test statistic |  | Test statistic | 0.730297 |  |  |  |  |  |  |  |  |  |

The Table above shows the test statistic is 0.730297 which is greater than our critical value which makes us reject the null hypothesis which tells us that the average national age has increased.

Question 6(b)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Calculate the probability that an individual is between 32 and 55 years of age. | | | | | | | |
| Upper bound age | 55 |  | Lower bound age | 32 |  |  |  |
| Average Age | 48 |  | Average Age | 48 |  |  |  |
| Standard Deviation | 15 |  | Standard Deviation | 15 |  |  |  |
|  |  |  |  |  |  |  |  |
| Probability | 0.53657 |  |  |  |  |  |  |

The Table above shows that the probability of encountering an individual between 32 and 55 years old in 2005 is approximately 53.65%. This indicates that over half of the population likely fell within this age bracket.

Question 6(c)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Calculate the probability that an individual is below 40 years | | | | | | | |
| Upper bound age | 40 |  |  |  |  |  |  |
| Average Age | 48 |  |  |  |  |  |  |
| Standard Deviation | 15 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Probability | 0.296901 |  |  |  |  |  |  |

The table displays that in 2005, just under 30% of the population was under 40.

# Conclusion

# In conclusion, the UK Time Survey conducted in 2014-15 has provided valuable insights into the demographic and social aspects of individuals living in the UK. The findings of the survey have highlighted the significance of considering employment status when examining daily activity patterns. Further research could be conducted to explore the factors that influence these patterns and their potential long-term effects on the well-being of individuals.