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1 Introduction

This analysis aims to determine whether income and ethnicity influence marital status based on data from the 2021 English Household Census. I explored the income distribution by marital status and analyze how ethnicity may affect marital trends through visualization and summary statistics.

1.1 The Data

The data had 9 columns (`ID`, `Person_ID`, `Age`, `Mar_Stat`, `INC`, `Female`, `H8`, `Eth`, `Highest Ed`) and 27,410 entries with each entry representing an individual. Thanks to @tidyverse and @ggthemes, I was able to perform analysis of this dataset in RStudio using packages in the R tidyverse and ggthemes libraries.

1.2 DATA OVERVIEW,TIDYING AND TRANSFORMATION

I viewed the data structure and cleaned the data by removing null values and assigned a new name for the clean data.

▶ Code

```
'data.frame':   27410 obs. of  9 variables:
 $ ID       : int  37 37 37 241 242 377 418 465 465 484 ...
 $ Person_ID : int  1 2 3 1 1 1 1 1 2 1 ...
 $ Age       : int  20 19 19 50 29 69 59 55 47 33 ...
 $ Mar_Stat  : chr  "Never married" "Never married" "Never
married" "Never married" ...
 $ INC       : int  10000 5300 4700 32500 30000 51900 12200 0
2600 16800 ...
 $ Female    : int  1 1 1 1 1 1 1 0 1 0 ...
 $ H8        : int  0 0 0 0 0 0 0 0 0 ...
 $ Eth       : chr  "White" "White" "Black" "White" ...
 $ Highest.Ed: chr  "Some HE" "Some HE" "Some HE" "Masters or
higher " ...
```
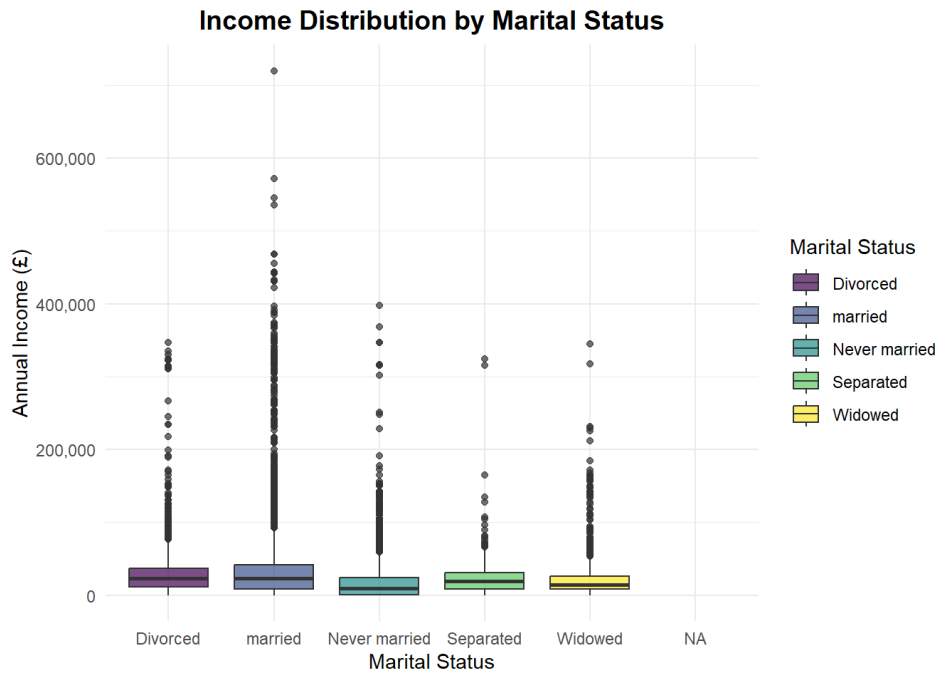
▶ Code

1.3 INCOME DISTRIBUTION BY MARITAL

STATUS

Exploring the income distribution across different marital statuses using a box plot. This visualizes the variability in income for each marital category.

▶ Code

```
Warning: Removed 6173 rows containing non-finite outside the
scale range
(`stat_boxplot()`).
```


Income Distribution by Marital Status

1.4 SUMMARY STATISTICS OF INCOME BY MARITAL STATUS

Calculating the mean, median,and count of income for each marital status, proving insights into variability within the group.

▶ Code

Income Statistics by Marital Status

Mar_Stat	mean_income	median_income	count
Divorced	29856.19	23000	2177
Never married	16402.50	9000	5606
Separated	24257.15	19200	435
Widowed	22250.66	14010	1405
married	33646.31	23000	11643

NA	NaN	NA	6144

1.5 Marital Status Distribution by Ethnicity

It shows how marital status varies by ethnicity i.e calculating marital status percentage by ethnicity

▶ Code

Marital Status Percentage by Ethnicity

Eth	Mar_Stat	count	percentage
Hispanic	married	443	47.3290598
White	married	8822	46.6057372
Other	NA	311	36.4595545
Asian	married	1272	35.8612912
Asian	NA	1094	30.8429659
Black	Never married	909	28.9030207
Other	married	242	28.3704572
Black	married	864	27.4721781
Black	NA	798	25.3736089
Other	Never married	203	23.7983587
Asian	Never married	841	23.7101776
Hispanic	Never married	213	22.7564103
Hispanic	NA	203	21.6880342
White	NA	3738	19.7474774
White	Never married	3440	18.1731734
Black	Divorced	287	9.1255962
White	Divorced	1622	8.5688626
Other	Divorced	51	5.9788980
Black	Widowed	181	5.7551669
White	Widowed	1084	5.7266628
Asian	Divorced	185	5.2156752
Hispanic	Widowed	39	4.1666667
Hispanic	Divorced	32	3.4188034
Black	Separated	106	3.3704293
Other	Widowed	27	3.1652989
Asian	Separated	81	2.2836200
Other	Separated	19	2.2274326

Asian	Widowed	74	2.0862701
White	Separated	223	1.1780865
Hispanic	Separated	6	0.6410256

1.6 VISUALIZING MARITAL STATUS DISTRO BY ETHNICITY

This visualizes the distribution of marital status by ethnicity usin the bar plot .

it showed the propotion of each marital status between all the ethnic groups

▶ Code
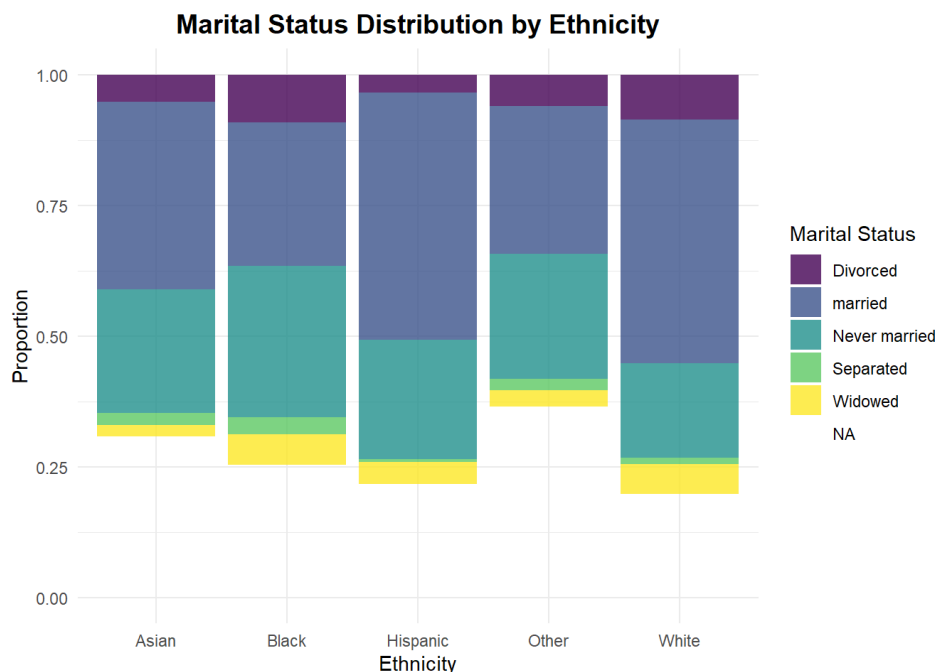
1.7 VISUALIZING INCOME,ETHNICITY AND MARITAL STATUS

This visualizes the relationship between income ,ethnicity and marital status using a box plot. hence combining all together

▶ Code

```
Warning: Removed 6173 rows containing non-finite outside the
scale range
(`stat_boxplot()`).
```

Income and Marital Status Across Ethnic Groups
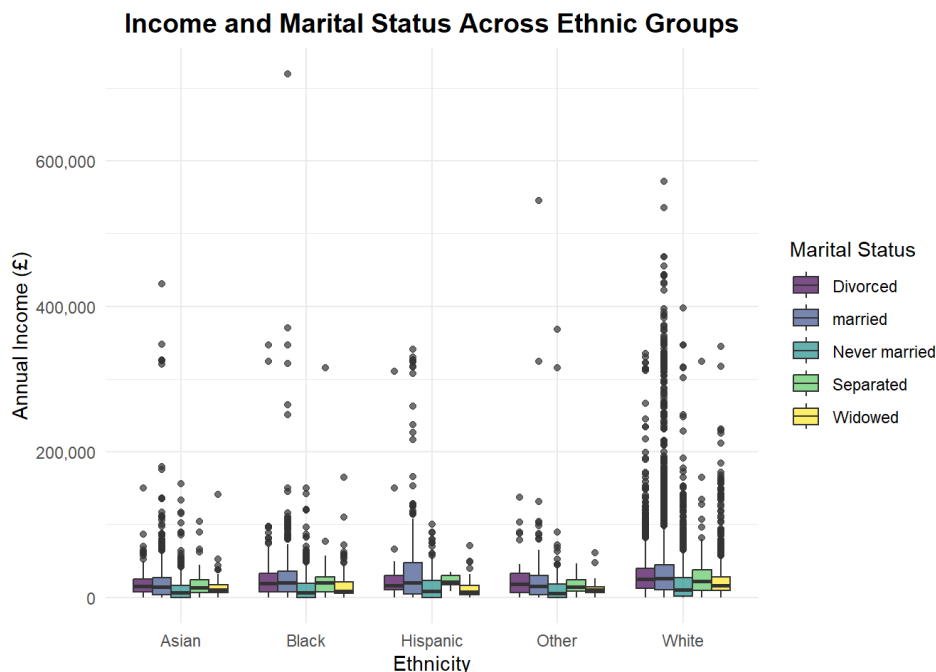
1.8 CONCLUSION

*I Noticed Married individuals generally showed higher median incomes compared to other marital status groups. This suggesst an obvious relationship between marital status and income,most likely suggests that the higher the income the more likely an individual might want to get married . which insuinate that low income people tend to swerve away from the idea of getting married.

*THE correlation analysis indicated a weak to moderate positive relationship between marital status and income, suggesting that marital status could play a role in income level but may not be the sole factor.

*Married individuals tended to have higher incomes than single individuals across all ethnic groups. This difference in income levels may suggest economic advantages associated with marriage, such as combined household income.

*Some ethnic groups had higher proportions of specific marital statuses,some ethnicities showed a higher percentage of married individuals, while others had more single or separated individuals. These variation might indicate the cultural or social factors influencing marital status distributions within ethnic groups.

1.9 LIMITATION

- Missing income data for 6,173 observations

- Binary gender classification

- Simplified housing classification

- Unavailability of employment type distinction "not married" should have been denoted with "single"

- Inaccurate binary gender classifications ,no geographical location ,work experience. This would have provided more understanding of income disparities.

1.10 REFRENCES

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