Requirements

Here we specify the main requirements in terms of the relationships that must be visualised in order to answer each question, followed by brief design ideas for representations and interactions.

1. To answer Q1 the user needs to see correlations between dependent variables (Gender and Age) and independent variables (Sleep efficiency)

* Density Scatterplot matrix of Gender (& age) by Sleep Efficiency

1. To answer Q2 the user needs to do a nominal comparison between average alcohol consumption and Sleep Efficiency

* Scatterplot Matric of average alcohol consumption by Sleep Efficiency

1. To answer Q2 user may also want to explore urban-rural (and other categorical) differences in correlations between voting behavior and local prosperity.

* Density scatterplot, darker smudges indicate greater population density.

4. To answer Q4

* Include means of filtering by age (between 18 and 65 or ‘working age’)
* Include means of filtering for smoking status to only include non smokers
* Scatterplot of avg alcohol consumption vs avg exercise frequency against sleep efficiency

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| SLEEP EFFICIENCY |
| S*imple*  Q1. Do smokers sleep more efficiently than non-smokers on average?  Q2. How does alcohol consumption affect efficiency?  Q3. Do men sleep more efficiently than women, or vice versa?  *complex*  Q4. Between the ages of 18 and 65, which has a greater effect on sleep efficiency between exercise frequency and alcohol consumption on non-smokers, and which aids in getting efficient sleep the most? |
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| RESULTS  Q1. 1b is the average sleep efficiency for non-smokers in this sample (0.815) and the sleep efficiency of smokers is represented by 2b (0.732). We can conclude from this that on average a smoker will sleep less efficiently than a non-smoker of the same age.  Q2. 3b represents the variance of the scatterplot (0.343422) and gives the correlation coefficient to be (-0.586, approx. -0.6) in the downward direction, this implies that alcohol consumption has a strong negative effect on sleep efficiency. I.e., the more alcohol a person consumes on average the less efficient their sleep is.  Q3. 4b and 5b indicate the average for female members and male members of this Populus respectively. 4b is 0.783 at 37 years old, and 5b is 0.786 at 44 years old. This means on average men and women get 0.783 as far as sleep efficiency, but men at an older age than women. Trendlines on both graphs show positive correlation, and the gradient for female is 0.00146, and for male it is 0.00150 this means that following the trend backwards results in a sharper drop in sleep efficiency as age value gets smaller. Therefore, as is also indicated by the points on the graph where the density blotches are darker, there are more women than men who sleep efficiently (marginally), older men sleep better than older women, and younger women sleep better than young men.  Q4. For non-smokers, as we deduced in Q2, alcohol consumption has a bad effect on sleep efficiency, and against the exercise frequency scatter we see that exercise frequency has a positive relationship on sleep efficiency. I.e., the more a person exercises on average, the better they sleep.  From the perspective of the lifestyle coach this would help me tailor make lifestyle plans for different clients from different demographics to achieve the most efficient sleep for them. You should quit smoking to sleep more efficiently as non-smokers sleep more efficiently than smokers. If you do not smoke, you should exercise more and drink less alcohol to sleep more efficiently. If you are older, you must take extra care to do so as it becomes harder for you to sleep efficiently, more so in women. This also implies that perhaps young men tend to exercise less and consume more alcohol than young women. |