Table description

1. First I want to describe the Excel spreadsheet I made yesterday, because it is very handy for me and it will help us in this project. You can also use it for yourself. Over time, there will be more information there.

1.1 Page 1. There is a summary table with all the important information that I will be using to analyse the Drivers' assessments. When the summary table is in a closed state the maximum value for the whole category is shown. If you expand it, you will see the information for each case separately.

In column "A", there are 12 variables. If you click on the "+", you will see the complete information for each category. If a variable is shaded green, it means that the driver is not assessed for it. If it is blue, it means that the driver will receive points for that category. If the category is colored red, it means that it is a very important category and if the driver receives a grade of "F" for it, he can not get a total grade higher than "D", if the driver receives a grade of "D" for the red category, it means that he can not get a total grade higher than "C" and so on.

Column 'B' gives information about how many times more accidents happen, and under what conditions.

In the 'C' column, the information is by how many percent more often the accidents happen. (If it says "-", it means that accidents happen less often.) The data are written as decimal fractions. To get the percentages, multiply them by 100.

The information in column "D" is how many times more often deaths occur in a crash. The information is not available for all variables, so I will try to find it somewhere on the internet, but if you can provide me with this information, I would be very happy to. It might improve our programme.

In column "E" the information is how many points the driver will get, in each instance of assessment. I estimate it as follows: 4 points for grade "A", 3 points for grade "B", 2 points for grade "C", 1 point for grade "D", 0 points for grade "F". If "0" is written in this column when the table is closed, it means that this category is not evaluated and no points will be assigned to it.

1.2 On page Sheet 2. I think this is very clear and does not need to be explained. There's the information I could find in your file plus the fact that I myself have calculated using a mathematical formula.

Description of a formula from probability theory that I used

I made a formula to calculate the probability of an accident. I want you to look at it and tell me your thoughts on it.

The probability of getting into an accident for different conditions is as follows:

If the driver is going +50 miles per hour, the chance of getting into an accident(p1) is 1 in 17.8 = 1/17.8

If the driver is texting while driving(p2) - 1 in 2.65 = 1/2.65

If the driver has been drinking alcohol(p3) - 1 in 13.55 = 1/13.55

And so on.

We need to find the probability of an accident if an accident occurs (event A) as a result of "at least one" when all conditions are possible

The probability of an accident under each condition is independent of the probability of an accident under the other conditions, so the events in question (Accident due to speeding), (Accident due to texting) and (Accident due to alcohol) are all independent in combination. The probabilities of the opposite events, A1, A2, and A3 (i.e., the probabilities that the driver will not have an accident) are equal, respectively:

q1=1-p1 = 1-(1/17.8) = 0.94382022471,

q2=1-p2 = 1-(1/2.65) = 0.62264150943,

q3=1-p3 = 1-(1/13.55) = 0.92619926199

Therefore, the unknown probability P(A) = 1-q1q2q3 = 1 - 0.943820224710.622641509430.92619926199 = 0.45570821407.

If you want to make a percentage out of this, multiply by 100.

0.45570821407\*100 = 45.5708214078%

This is the probability of a driver getting into an accident if he is driving drunk, +50 mph, and texting. You can also easily calculate how much more likely it is than under normal conditions. Just subtract the result from the probability of an accident under normal conditions.

Also, I want to make it clear that we should not include cases that do not differ from normal conditions in this formula. For example, when the driver is NOT texting or NOT drunk. This does not affect the actual result, but it will affect the mathematical formula

About the program itself:

All marked in green are comments I left to make it easier for your specialist to understand how the program works. There are also comments marked (#Not important part, can be deleted to save memory). These are lines of code which are not needed to run the program, but using these lines makes testing the program much easier. In the final version of these lines can be removed.

Since this is a pyton and notepad type .ipynb, the code is divided into blocks and lines to enter information do not appear at the end of the program or in the console, but after each block in which there is a line requiring enter information from the keyboard, please note. Because if you have never programmed in pyton before the division of code into blocks may be quite unexpected for you.

Other than that, I will send you two files. The first file has a .py extension, the second file has a .ipynb extension. (Learn more about the difference between py and ipynb at https://stackoverflow.com/questions/57502484/what-is-the-difference-between-a-py-file-and-ipynb-file#:~:text=py%20is%20a%20regular%20python,settings%20in%20a%20specific%20format.)

If there will be any problems with running the code - feel free to contact me.