Q6

In this part, we test how the seniors who live alone without a family or any effective social relationships perceive their own health. In particular, we compare the perception of own health of older people who live with family with those who live alone. Here, we use “DEM\_MARSTRA” to determine the loneliness. The value is equal to 1 means the person lives with family and not feel alone while the value is equal to 2,3,4 means the person lives alone. The other variable is “HLT\_GENHELTH”, which means the responders perception of the general health compared to others at the same age. The value is equal to 1 or 3 when the person feels happy and healthy while the value is equal to 4 or 5 when the person feels their health is worse than others. One thing needs to mention is that we do use the variable “ADM\_H\_MEDSTA=1” to filter the data in order to ensure that only people aged over 65 are studied in this part.

To examine the significance of the association (contingency) between those two classifications, we built a contingency table, shown as follows:

Table 1 Contingency Table of Health and Loneliness

|  |  |  |
| --- | --- | --- |
|  | With Family | Living Alone |
| Poor Fair Health | 895 | 1049 |
| Good Health | 4590 | 4033 |

Then we conducted the Fisher's exact test to demonstrate whether there is association between health and loneliness (odds ratio is equal to 1). In the result, odds ratio is 0.75 and the p-value is significant, and the confidence interval doesn't contain 1. Therefore, we reject the null hypothesis and conclude that the odds of people with a poor fair health if they are living with family is 0.75 compared to if people with a good health but are living alone. We get a p-value that is smaller than 0.05, which means that there is a significant association between loneliness and health.

Q7

This question is an extension of the previous one. In this part, we discuss the relationship between loneliness and risk of depression. We first use the variable “ADM\_H\_MEDSTA=1” to filter the data in order to ensure that only people aged over 65 are studied in this part. Then we choose another variable to represent depression, which is HLT\_OCDEPRSS. If the value is equal to 1, it means the person has been diagnosed with depression.

However, we use two methods to define people without depression:

Firstly, if **HLT\_OCDEPRSS is equal to 2**, it means the person has not been diagnosed with depression. The contingency table is built as follows:

Table 2 Contingency Table of Depression and Loneliness (Method 1)

|  |  |  |
| --- | --- | --- |
|  | With Family | Living Alone |
| Depression | 992 | 1255 |
| Not Depression | 4513 | 3839 |

Secondly, if **HLT\_OCDEPRSS is not equal to 1**, it means the person does not officially declare that he has depression. In this case, we labelled all of them as not depression. The contingency table is built as follows:

Table 3 Contingency Table of Depression and Loneliness (Method 2)

|  |  |  |
| --- | --- | --- |
|  | With Family | Living Alone |
| Depression | 992 | 1255 |
| Not Depression | 4518 | 3854 |

We conducted the Fisher's exact test for each of the situation to demonstrate whether there is association between depression and loneliness (odds ratio is equal to 1). As a result, odds ratio is all equal to 0.67. Therefore, we reject the null hypothesis and conclude that the odds of people with depression if they are living with family is 0.67 compared to the people without depression but are living alone. We get a p-value that is smaller than 0.05 and the confidence interval doesn't contain 1, which mean that there is a significant association between loneliness and depression.