Two pharma companies have created the antidote of Corona virus. One Drug (denoted by Old Drug) was created and Finished applying by August. The drug didn’t show the result as it was expected. So the New Drug was created and applied. Both the drugs were applied on a set of 200000 people.10000 patients were selected to see if there is any significant effect or which one works better. The patients were divided into 5000 groups (denoted as Patient\_id ). Each group has patient with similar health condition. Old Drug was applied on first 5000 patients and New Drug was applied on second 5000 patients. The effect of the both the drugs were recorded group wise.

Both the companies have claim, their drugs work best on the patient with

1. Normal Oxygen Level ( denoted as Oxy\_level ) The average Oxygen level should be 99 .
2. Average Pulse rate ( denoted as Pulse\_rate ) of the patient should not be more than 100 .
3. Average blood sugar ( denoted as Blood\_Sugar ) level as 150 .
4. Average age ( denoted as Age ). of the patients should not be less than 40.

Both the drugs were applied on the patients on three phases. The recovery status with an index number were recorded after each phase of Drug application. More the index number better the performance of the Drug. It was expected that the both the drugs will have positive effect on the patients. It is claimed that the New Drug works better than Old Drug. The performance of Old Drug for different phases were recorded as Old\_1, Old\_2, Old\_3 respectively.

1. For the problem statement, Test the Assumptions about the patients’ health record.

* Form the required hypothesis and test them.

1. Validate the claim that there is no gender discrimination while selecting the sample
   * Form the required hypothesis and test them.
2. Validate that there was no discrimination based on age group and gender while selecting the patient or in other words the patients were selected randomly.

Age group is described as ,

|  |  |
| --- | --- |
| **Age** | **Age group** |
| Age < 12 | **A** |
| 12 < Age ≤ 25 | **B** |
| 25 < Age ≤ 40 | **C** |
| 40 < Age ≤ 58 | **D** |
| 58 < Age | **E** |

* + Form the required hypothesis and test them.

1. Validate the claim that New Drug works better:
   * Form the required hypothesis and test them.
2. Also validate the claim that there is gradual improvement in performance of the New Drug over the phases:
   * Form the required hypothesis and test them.
3. Test whether the New Drug works better on any specific age group or it has uniform effect on the age group:
   * Form the required hypothesis and test them.