1. An automobile dealer has two branches. There is a perception that there is difference courtesy shown by salesmen of the two branches. A survey was conducted and the sales teams of the two branches were rated. The data is tabulated as follows. Do we have evidence to conclude that the average courtesy levels of the braches differ?

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Branch 1 | 112 | 98 | 109 | 96 | 77 | 70 | 114 | 100 |  |
| Branch 2 | 115 | 107 | 85 | 97 | 125 | 118 | 125 | 125 | 119 |

1. A manager of insurance company argued that the length of stay of an inpatient in the hospital is related to fraction of insurance coverage. To ascertain this, the staff statistician collect random data of x patients who were treated as inpatients in different hospitals with differing insurance coverage. The data collected is given below. Does the data support the argument of the manager?

|  |  |  |
| --- | --- | --- |
| **Obs Id** | **Insurance Coverage** | **Duration of Stay** |
| 1 | Full | Medium |
| 2 | Half | Short |
| 3 | Half | Medium |
| … | … | … |
| … | … | … |
| 55 | Quarter | Short |
| 56 | Full | Medium |

1. Subham is chain store having 3 outlets across Chennai. During festival season (November-January) more cases of shop-lifting are reported. In an effort to increase vigilance, the store manager wishes to study the pattern in shop-lifting in his chain. The following data are collected. For the data can we conclude if there is any difference in shop-lifting cases across months or across locations?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Locations** | | | |
| **Months** |  | **Location A** | **Location B** | **Location C** |
| **November** | 80 | 114 | 86 |
| **December** | 95 | 83 | 99 |
| **January** | 64 | 75 | 62 |

1. A Pharmacist believes that his monthly revenue can be predicted by the value of inventory he holds. Please help him develop a model that can predict sales based on value of inventory help. Data is also available on number of prescriptions processed by him Do you think adding this variable will help in better prediction. Develop the model and test its significance and validate the model.

|  |  |  |  |
| --- | --- | --- | --- |
| **Pharmacy data** | | | |
| **Month** | **Value of Inventory** | **Prescriptions** | **Revenue** |
|  | Thousands |  | Lakhs |
| January | 150 | 600 | 13.95 |
| February | 75 | 450 | 7.20 |
| March | 150 | 600 | 13.35 |
| April | 150 | 300 | 9.75 |
| May | 75 | 300 | 6.30 |
| June | 120 | 300 | 9.30 |
| July | 112 | 450 | 11.10 |
| August | 97 | 600 | 9.00 |
| September | 135 | 450 | 11.40 |
| October | 135 | 300 | 9.15 |