

2023

# HEALTHCARE INSURANCE ANALYSIS

» Group No. 1[D1-D2]

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# INTRODUCTION

Through the data quality checks, Exploratory Data Analysis (EDA), and clustering of insurance details of the customers, we aim to identify the most profitably predictable future cost to invest into the customers healthcare insurance.

Additionally, based on our findings, it may be useful to the healthcare insurance provider to make a variety of strategic and tactical decisions.

Insurance were claimed according to the hospital tier, city tier, and the disease they are suffering from.

## DATASET

### Hospital table :

Customer Id, year/month/date, no. of children of customers, charges according to customer id, hospital tier, city tier, state id

### Medical examination table:

customer id, BMI (Body Mass Index), HBA1C level, Heart issue (yes/no), Any transplant (yes/no), cancer history (yes/no), No. of major surgery, smoker(yes/no)

### Name table:

customer id, name of customer

# VISUALIZATION

PATIENT AND THEIR CHILDREN

```
plt.figure(figsize=(10, 8))
sns.countplot('children', data=dataFinal)
plt.pie(dataFinal['children'].value_counts(), labels=dataFinal['children'].value_counts().index, autopct='%.1f%%')
plt.show()
```

Number of Major Surgeries vs Children

```
sns.countplot(x='NumberOfMajorSurgeries', hue='children', data=dataFinal)
```

28°C Near record 12:16 22-07-2023

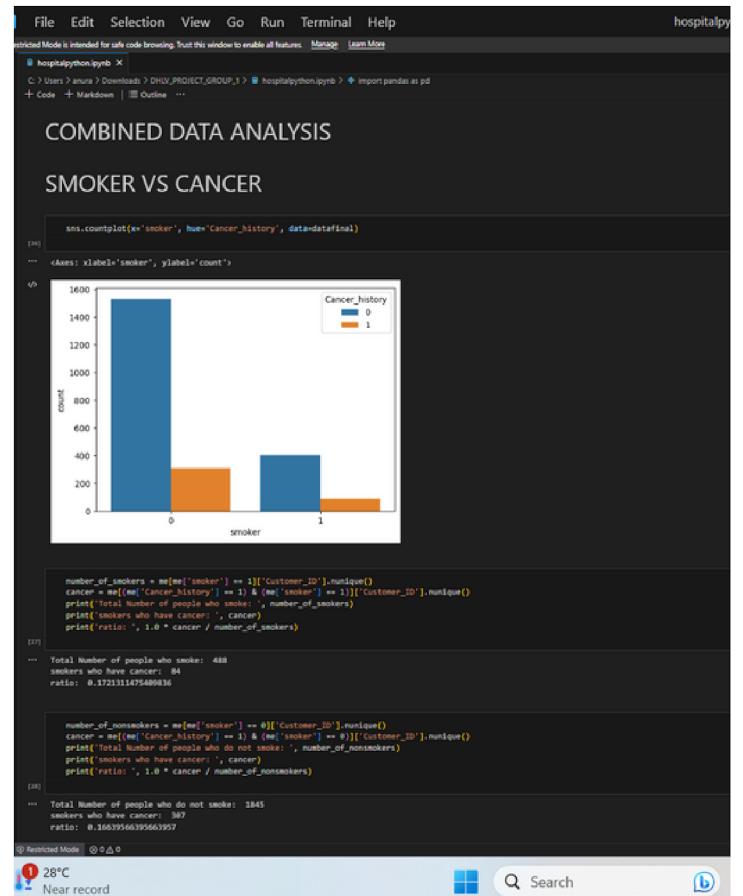
DISTRIBUTION OF TYPES OF HOSPITALS IN DIFFERENT TYRES OF CITY

```
sns.barplot(x='Hospital_Tier', y='charges', data=dataFinal)
```

City\_Tier vs Hospital\_Tier

```
sns.countplot(x='City_Tier', hue='Hospital_Tier', data=dataFinal)
```

28°C Near record 12:17 22-07-2023



-> Borderline people have more chances of having heart issues

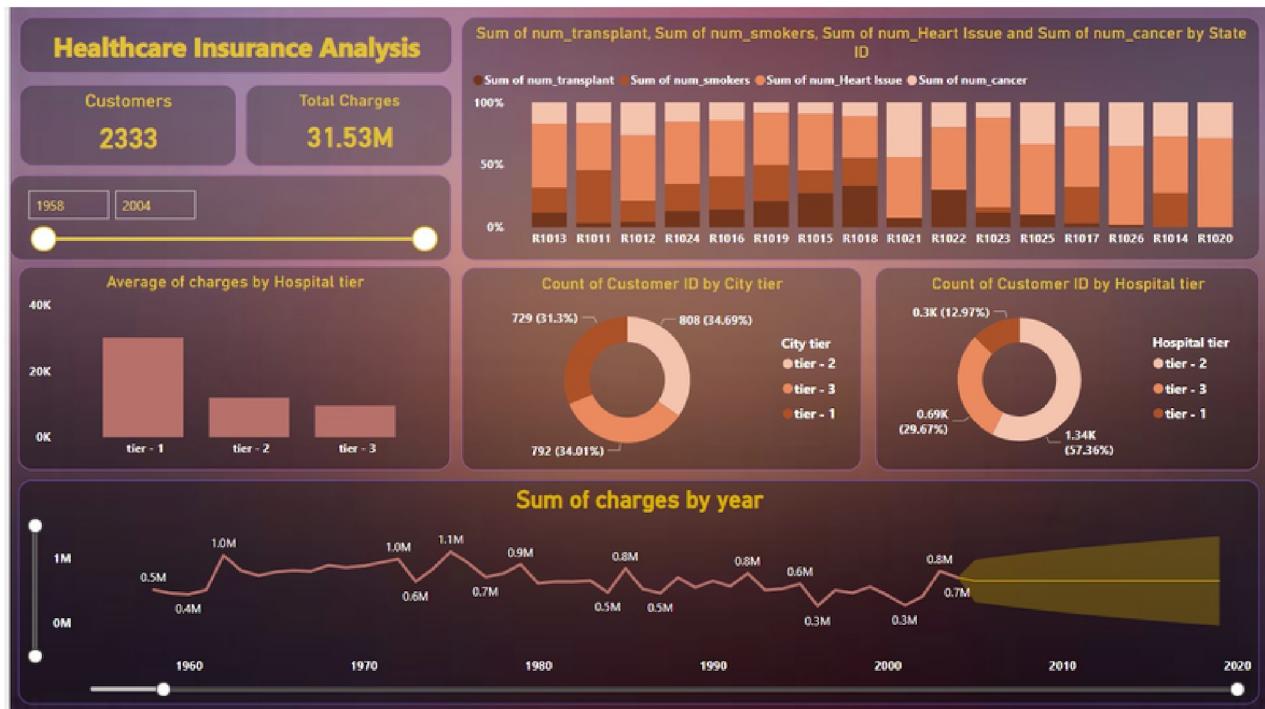
-> excellent BMI people should be charged more for transplant

-> According to the dataset provided, HBA1C patients who are borderline, getting worse and critical should be charged more for premium since they require more medical attention and are charged more by hospitals for surgeries

-> The more the customer's BMI, more the premium he should be charged

# Insights

# DASHBOARD ANALYSIS



-> Patients suffering from heart issues are very high whereas we have least count of patient suffering from cancer and also number of transplant is less.

-> The count of customers in tier 1 hospital is very less compared to that of tier 2 and tier 3 hospitals.

-> The average charge in tier 1 hospitals is as much as double to that of tier 2 hospitals.

-> In year 1995 the sum of charges invested were around 6M , in year 2003 it was around 8M and the estimated sum of charges we will need in coming years is estimated based on these years data.

## Insights

# RECOMMENDATIONS

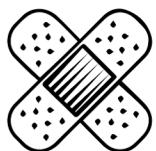
Currently we have total 2333 customers and we already spent 31.54M during the period . This section can identify the specific targets we should be prioritizing, how they align with our own strategy and goals.

## No. 01 —



Patients suffering from cancer due to cause of smoking should be given 80 % insurance charge from the hospital as their treatment cost is high and needs many tests and sessions of treatment. They themselves need to understand the after affects of smoking on their health and financial loss they need to face.

## No. 02 —



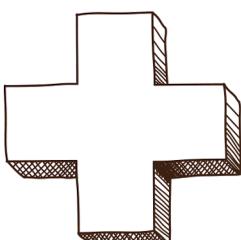
The money which is invested in tier 1 hospitals must be reduced to 75% because the patients in tier 1 hospital are very much financially stable and with this saved money we can invest it in tier 2 and tier 3 hospital to increase the facilities their and also because most of patients prefer tier2 and tier 3 hospitals over tier 1

## No. 03 —



The patients who have more than single child and have more than one major surgeries must be charged with more premium as they may require more medical attention.

## No. 04 —



HBA1C patients who are t borderline, whose conditions is getting worse and critical should be charged more for premium since they require more medical attention and are charged more by hospitals for surgeries. The more the customers BMI they should be charged more.

# CONCLUSION

As the Data Analyst assigned to the insurance agency, we have conducted several analyses and identified key insights and some recommendations which could be beneficial for both the customers and the organization.



- Increase awareness about benefits and need of taking life insurance in the areas where citizens are financially weak and don't even have any idea about insurances



- Reducing giving more than required financial support to tier 1 hospital and using that saved money in tier 2 and tier 3 hospitals to provide more facilities to customers who are financially weak and really can't afford for the treatments of these severe health issues.

# VISION

"To be the leading and most trusted healthcare insurance agency, committed to providing comprehensive and innovative insurance solutions for individuals and families. We envision a future where everyone has access to high-quality medical care without financial burden, ensuring peace of mind and security for our valued policyholders."