CLINICCLAIMS CO.

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Overview

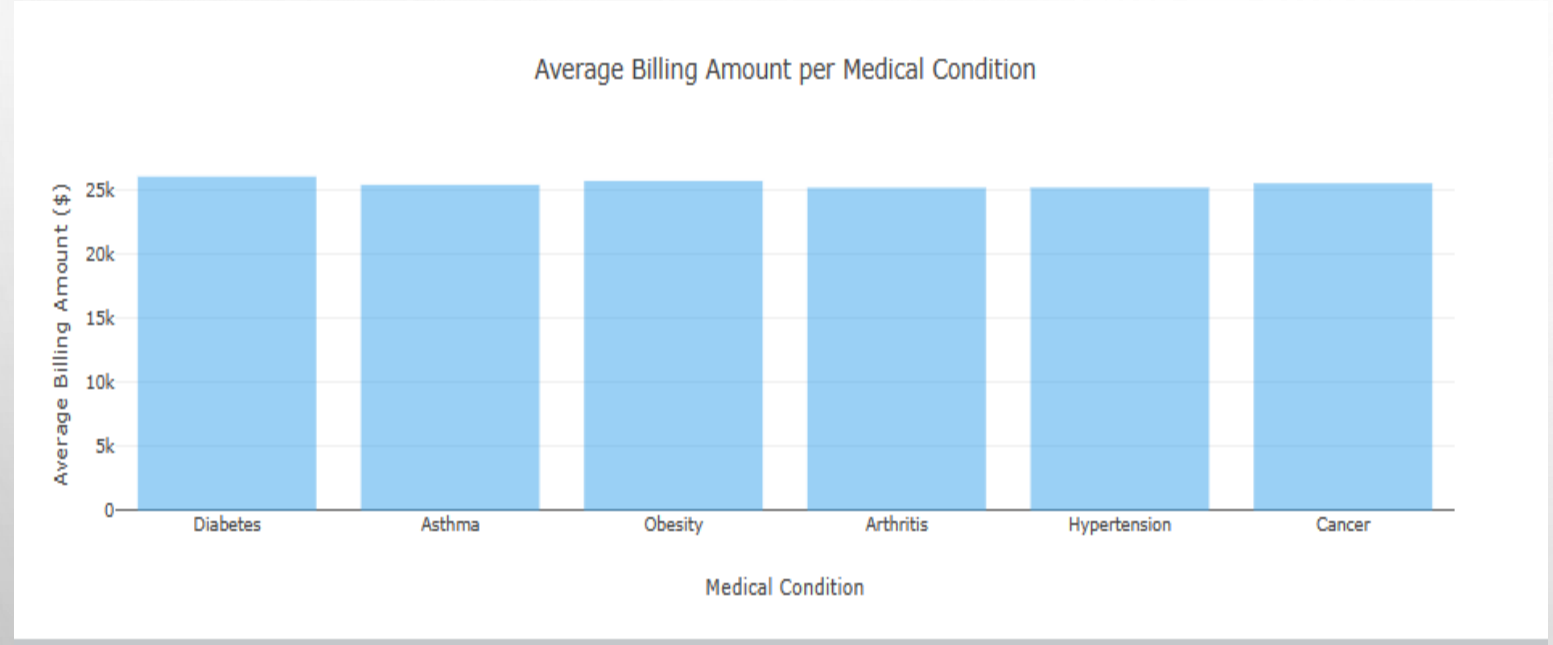
This project aims to analyze healthcare data to gain insights into various aspects of patient care, outcomes, and cost factors. The dataset used for analysis contains information such as patient demographics, medical conditions, treatments, billing amounts, and more.

Research Questions

1. Are there any specific medical conditions that lead to higher billing amounts?
2. Is there a difference in billing amounts between different admission types (emergency, elective, urgent)?
3. What is the relationship between age, gender, and the occurrence of different medical conditions?

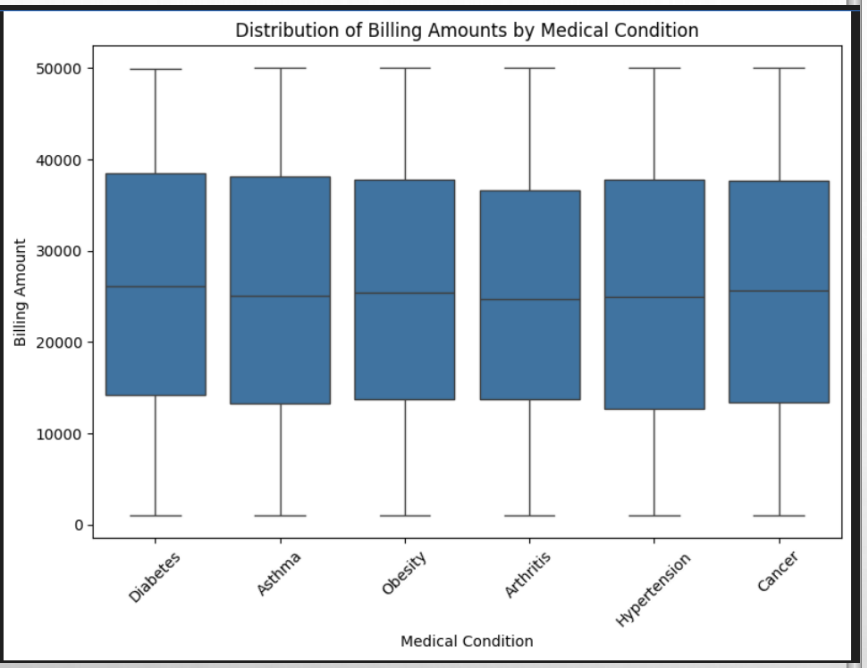
Dataset

https://www.kaggle.com/datasets/prasad22/healthcare-dataset



Are there any specific medical conditions that lead to higher billing amounts?

STATISTICAL TESTING



T-test to compare billing amounts between different medical conditions

Significance level: 0.05

Null hypothesis: There is no difference in billing amounts between different medical conditions

Alternative hypothesis: There is a difference in billing amounts between different medical conditions

Result: There is no significance difference in billing amounts between all the pairs of different medical conditions being compared.

Conclusion: The lack of statistical significance indicates that, based on the available data and the statistical t-test conducted, there is limited evidence to suggest that the different medical conditions has a strong association with the billing amounts. In other words, the differences in billing amounts observed between patients with different medical conditions may be due to random chance rather than a true difference related to their medical condition.

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No significant difference in billing amounts between Diabetes and Asthma: p-value = 0.19092443569842035
No significant difference in billing amounts between Diabetes and Obesity: p-value = 0.4905409681311237
No significant difference in billing amounts between Diabetes and Arthritis: p-value = 0.07245106748139886
No significant difference in billing amounts between Diabetes and Hypertension: p-value = 0.07822851366817599
No significant difference in billing amounts between Diabetes and Cancer: p-value = 0.2851002033367627
No significant difference in billing amounts between Asthma and Obesity: p-value = 0.5365532348905022
No significant difference in billing amounts between Asthma and Arthritis: p-value = 0.6368161417096003
No significant difference in billing amounts between Asthma and Hypertension: p-value = 0.6544150468506069
No significant difference in billing amounts between Asthma and Cancer: p-value = 0.8017629939295012
No significant difference in billing amounts between Obesity and Arthritis: p-value = 0.2723277529058402
No significant difference in billing amounts between Obesity and Hypertension: p-value = 0.28552143000760216
No significant difference in billing amounts between Obesity and Cancer: p-value = 0.7092606705017184
No significant difference in billing amounts between Arthritis and Hypertension: p-value = 0.98282126823354
No significant difference in billing amounts between Arthritis and Cancer: p-value = 0.46509761769488045
No significant difference in billing amounts between Hypertension and Cancer: p-value = 0.48160233060190993
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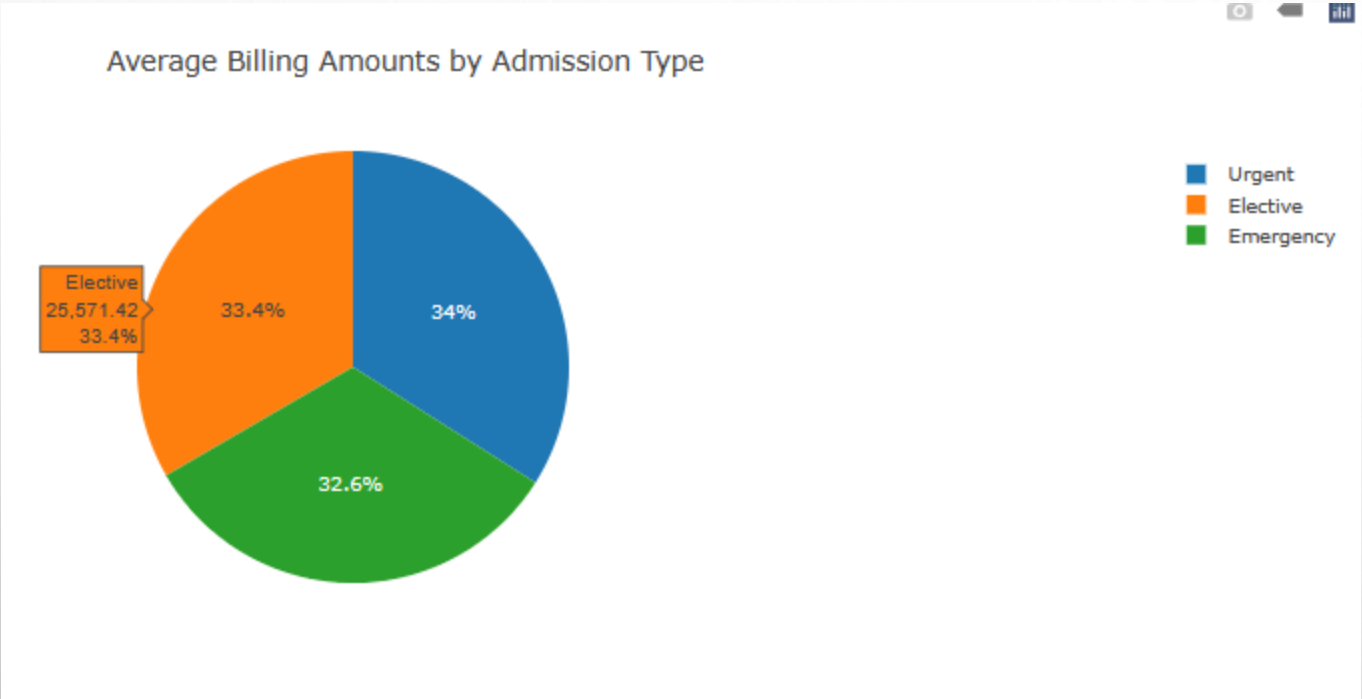


*screenshot of medical condition 'Cancer' by admission type by avg cost.

Is there a difference in billing amounts between different admission types (emergency, elective, urgent)?

STATISTICAL TESTING

T-test to compare billing amounts between different aadmission types (emergency, elective, urgent)

Significance level: 0.05

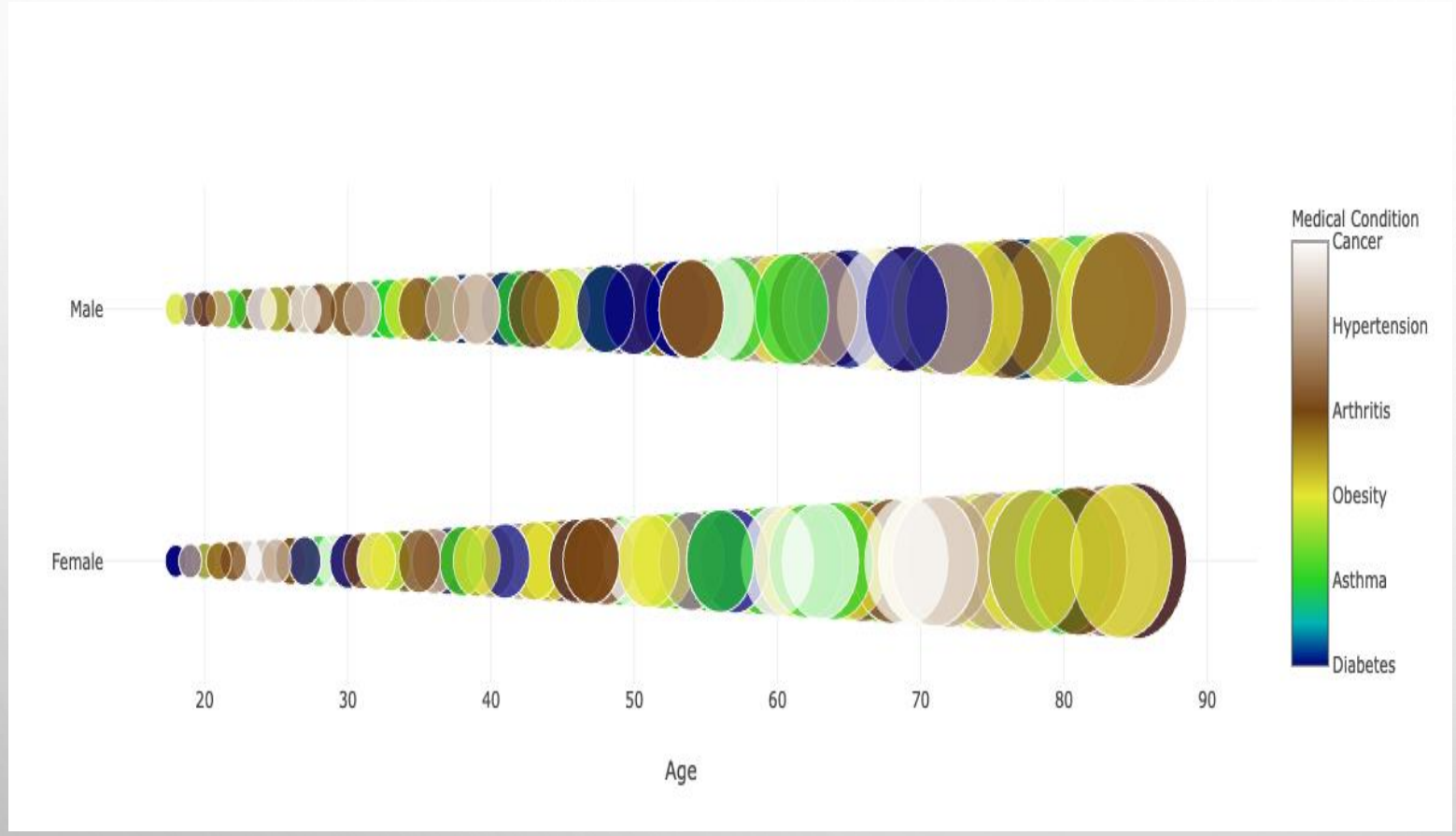
Null hypothesis: There is no difference in billing amounts between different admission types

Alternative hypothesis: There is a difference in billing amounts between different admission types

Result:

```
Significant difference in billing amounts between Emergency and Elective admission types. p-value = 0.000705426263148236
Significant difference between Emergency and Urgent admission types. p-value = 0.0002382104089960848
No significant difference between Elective and Urgent admission types. p-value = 0.8407592623969811
```

The significant differences in billing amounts between Emergency and Elective admission types, as well as between Emergency and Urgent admission types, suggest that there are variations in healthcare costs associated with different levels of urgency in admissions, which could be attributed to the immediate and critical nature of Emergency cases.



What is the relationship between age, gender, and the occurrence of different medical conditions?

STATISTICAL TESTING

Chi-squared test to examine whether there is a significant association between age, gender, and the occurrence of medical conditions.

Significance level: 0.05

Null hypothesis: There is no association between the variables (age, gender, medical conditions)

Alternative hypothesis: There is association between the variables (age, gender, medical conditions)

Result:

```
There is no significant association between age, gender, and medical conditions. p-value = 0.5887709044268347
```

The lack of statistical significance suggests that there is no meaningful relationship between age, gender, and the occurrence of medical conditions within the dataset. In other words, the prevalence of medical conditions does not appear to be influenced by either age or gender.

CONCLUSION

- Prioritized ethics even with synthetic patient data.
- We (theoretically) kept data anonymous and restrict access.
- Analysis results are aggregated and anonymized to prevent misuse.
- Our commitment to ethics is consistent, protecting data integrity and patient privacy.

Our analysis compares the billing amounts across different medical conditions and admission types. Additionally, it compares the relationship between age, gender, and the occurrence of medical conditions. As we unravel the dataset, it becomes evident how crucial it is in shaping healthcare decisions and resource management. The billing data provides valuable insights for healthcare providers, administrators, and policymakers alike. These insights emphasize the necessity of tailored care approaches that accommodate the diverse needs and challenges presented by different patients. With the aid of data-driven insights, stakeholders in healthcare can effectively navigate the complexities of care delivery. That will ensure that patient outcomes are optimized while maintaining financial viability.

THANK YOU!