Estimation and Prediction of Hospitalization and Medical

Category: Data Analytics

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1. INTRODUCTION

1.1 Overview

Medical Care Costs is a data analytics project focused on analyzing and forecasting the expenses associated with hospitalization and medical treatments. The primary goal is to develop models that can accurately

estimate the costs incurred by patients and healthcare providers for various medical procedures and hospital stays.

Data Collection and Preprocessing:

- A comprehensive dataset was collected from **Kaggle.**
- Which includes age, sex, region, charges, smoker, BMI.

1.2 Purpose

The Estimation and Prediction of Hospitalization and Medical Care Costs project plays a vital role in data-driven decision-making, cost optimization, and improving patient care in the healthcare industry.

The project of Estimation and Prediction of Hospitalization and Medical outcomes can have significant impacts and benefits across various aspects of the healthcare industry.

2. LITERATURE SURVEY

2.1 Existing problem

Solving the Estimation and Prediction of Hospitalization and Medical Care Costs involves a systematic approach that combines data analysis, model development and evaluation.

2.2 Proposed solution

Proposing a solution for the estimation and prediction of hospitalization and medical care costs involves a combination of data-driven techniques, advanced analytics, and domain expertise.

Collect comprehensive and diverse data related to hospitalization and medical care costs from various sources, including electronic health records, insurance claims, and administrative databases.

3. THEORITICAL ANALYSIS

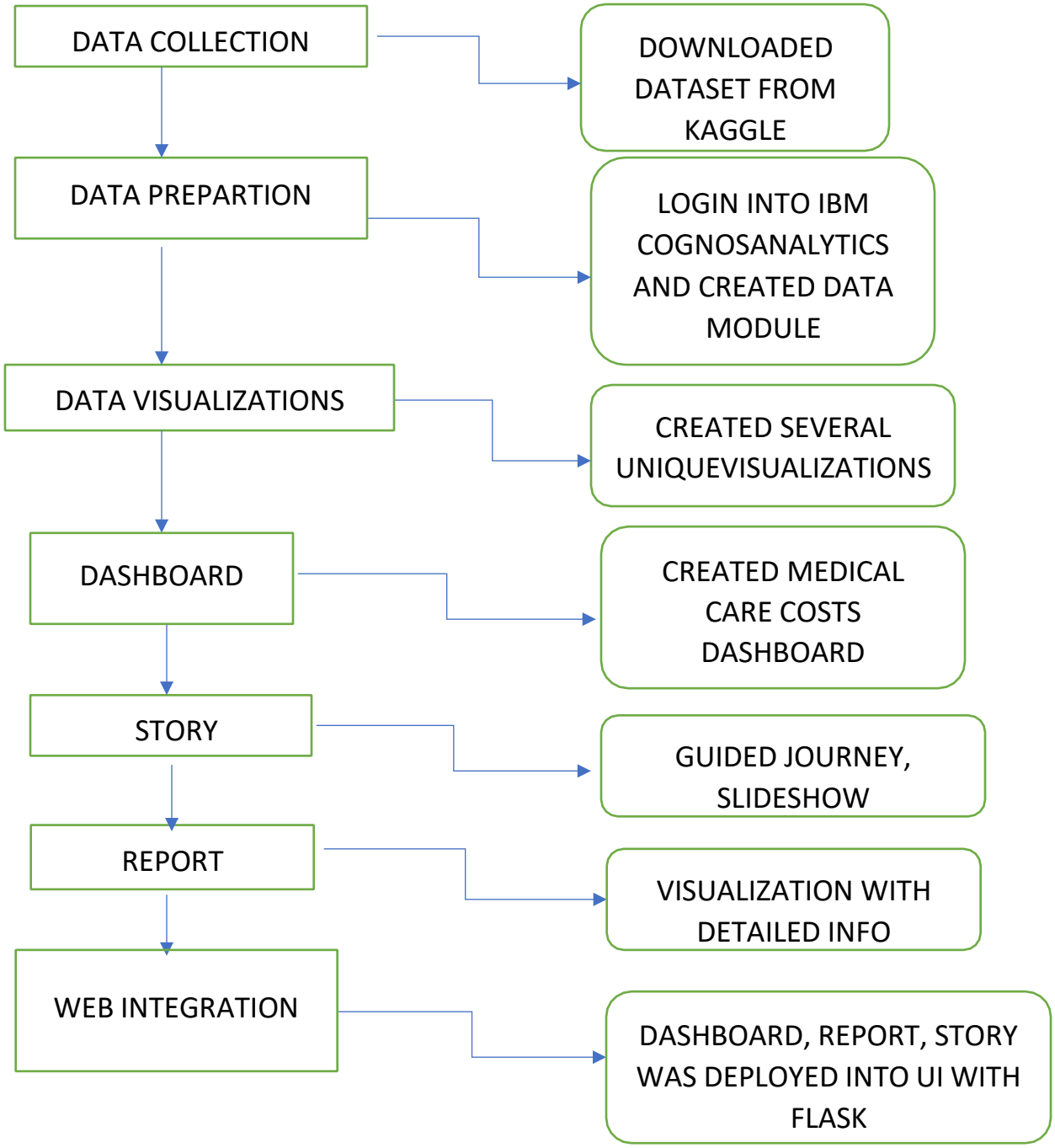
The theoretical analysis section of the Estimation and Prediction of Hospitalization and Medical Care Costs project report provides an in- depth explanation of the project's underlying principles, methodologies, and conceptual framework. It aims to give readers a clear understanding of the theoretical foundation on which the project is built.

3.1 Block diagram

The block diagram illustrates the end-to-end process of estimating and predicting hospitalization and medical care costs, starting from data collection and pre-processing to deploying the final models for cost estimation and future cost prediction.

Estimation and Prediction of Hospitalization and Medical Care Costs

BLOCK DIAGRAM



3.2 Hardware / Software designing Software

Requirements:

- IBM Cognos analytics Tool
- Flask
- Integrated Development Environment (IDE)-Spyder

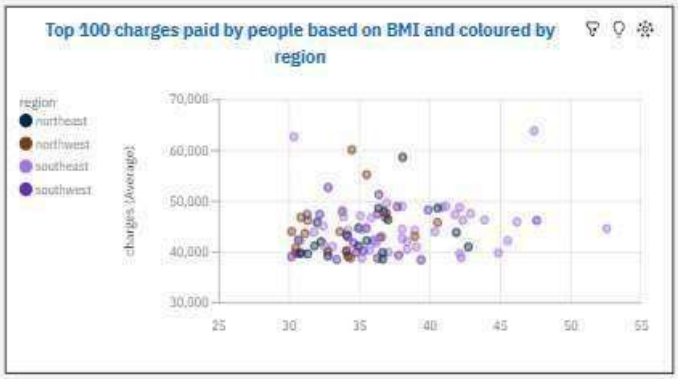
Hardware Requirements:

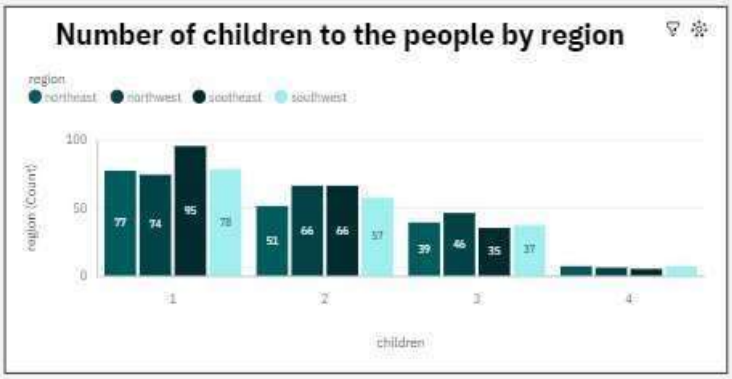
- Minimum System Requirements (RAM-4GB, Quad core Processor Or above).

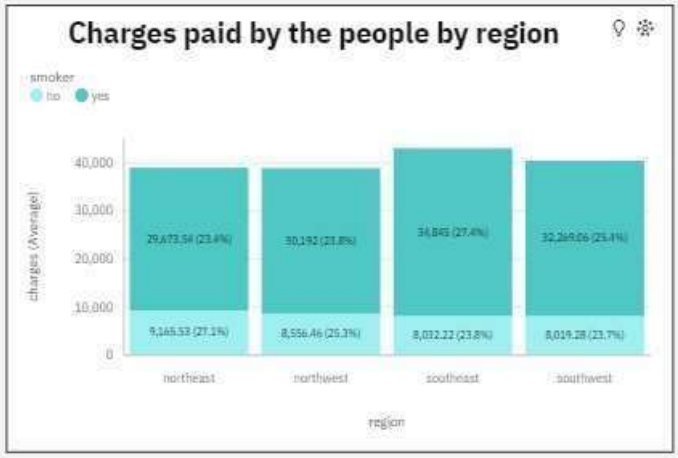
4. RESULT

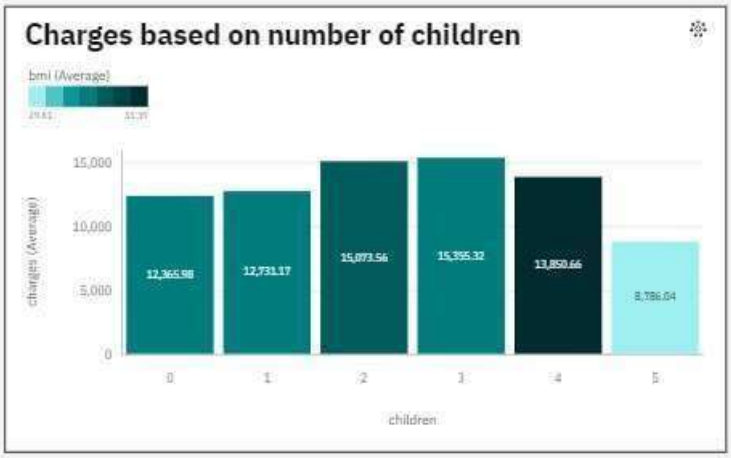
MEDICAL CARE COSTS OF DASHBOARD


Charges paying by people according to their age and somker
smoker
no
yes
charges (Average)
40,000
20,000
0
27,030.15
28,126.72
29,370.77
29,915.19
30,132.32
33,737.07
32,984.96
37,147.59
38,014.37
40,630.7
3,364.78
5,368.1
5,566.96
6,365.35
7,530.77
8,446.84
10,675.69
12,399.95
13,165.66
15,232.71
less than 23
23 to < 28
28 to < 32
32 to < 37
37 to < 41
41 to < 46
46 to < 51
51 to < 55
55 to < 60
60 and...
age (Group)
BMI of a persons by their gender and somker
bmi (Average)
smoker
yes
no
female
male
sex
Charges paid by people according to their gender, region and smoker
charges (Average)
region - smoker
northeast | no
northeast | yes
northwest | no
northwest | yes
southeast | no
southeast | yes
Average BMI of people by gender and region
region
northeast
northwest
southeast
southwest
bmi (Average)
100
50
0
30.06 (49.1%)
31.13 (50.9%)
32.67 (49%)
33.99 (51%)
29.28 (50.1%)
29.12 (49.9%)
29.32 (50.3%)
29.02 (49.7%)
female
male
sex


Top 100 charges paid by people based on BMI and coloured by region
region
northeast
northwest
southeast
southwest
charges (Average)
70,000
60,000
50,000
40,000
30,000
25
30
35
40
45
50
55


Number of children to the people by region
region
northeast
northwest
southeast
southwest
region (Count)
100
50
0
77
74
95
78
51
66
66
57
39
46
35
37
1
2
3
4
children

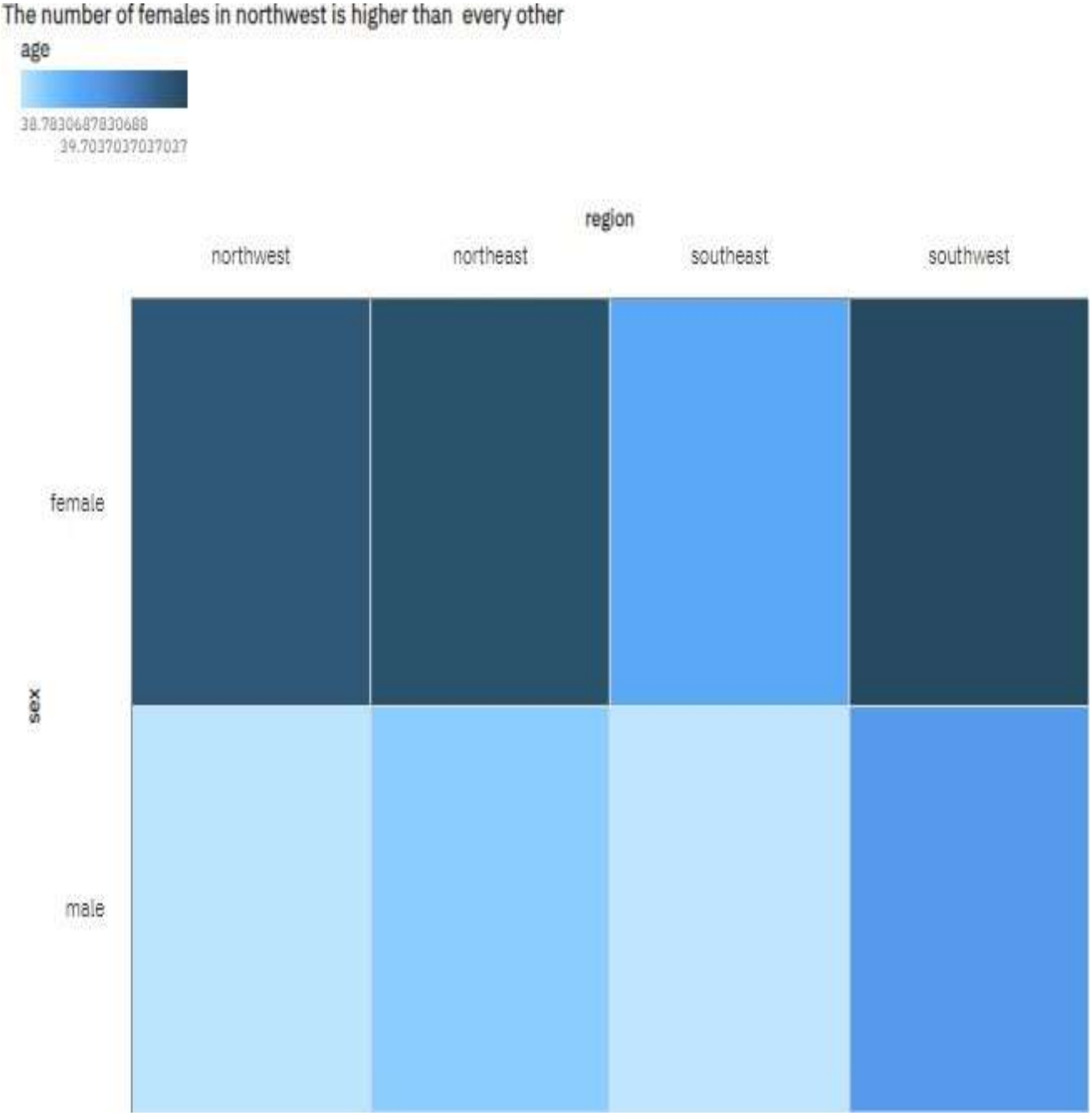

Charges paid by the people by region
smoker
no
yes
charges (Average)
40,000
30,000
20,000
10,000
0
29,673.54 (23.4%)
30,192 (23.8%)
34,845 (27.4%)
32,269.06 (25.4%)
9,165.53 (27.1%)
8,556.46 (25.3%)
8,032.22 (23.8%)
8,019.28 (23.7%)
northeast
northwest
southeast
southwest
region


Charges based on number of children
bmi (Average)
charges (Average)
15,000
10,000
5,000
0
12,365.98
12,731.17
15,073.56
15,395.32
13,850.66
8,786.04
0
1
2
3
4
5
children

MEDICAL CARE COSTS REPORT

PAGE 1

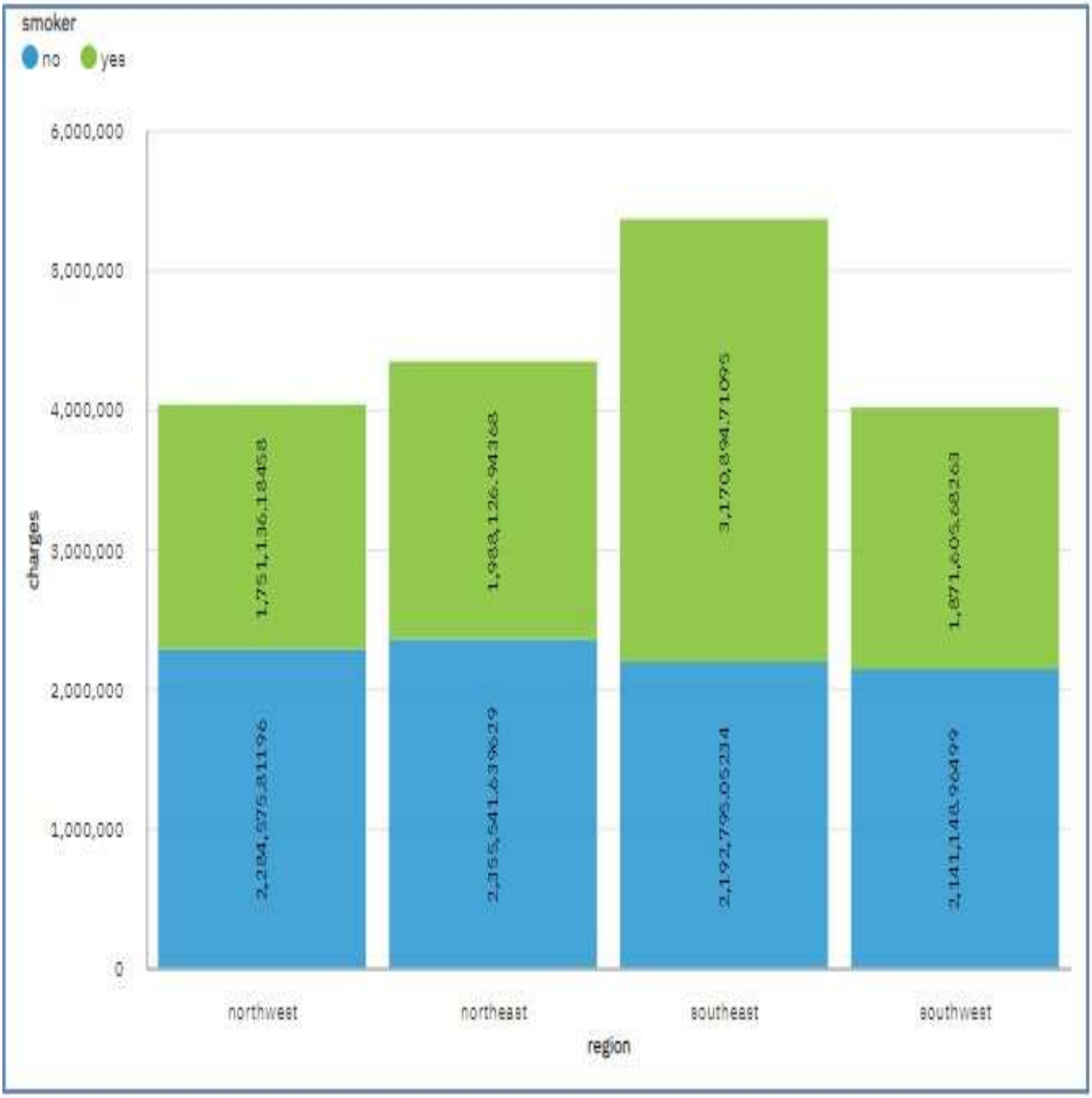
The number of females in northwest is higher than every other



PAGE 2


region
northwest
northeast
southeast
southwest
22,000
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
bmi
4,869.8
5,717.47
4,721.215
4,801.585
5,074.1
6,424.11
4,731
4,688.345
female
male
sex

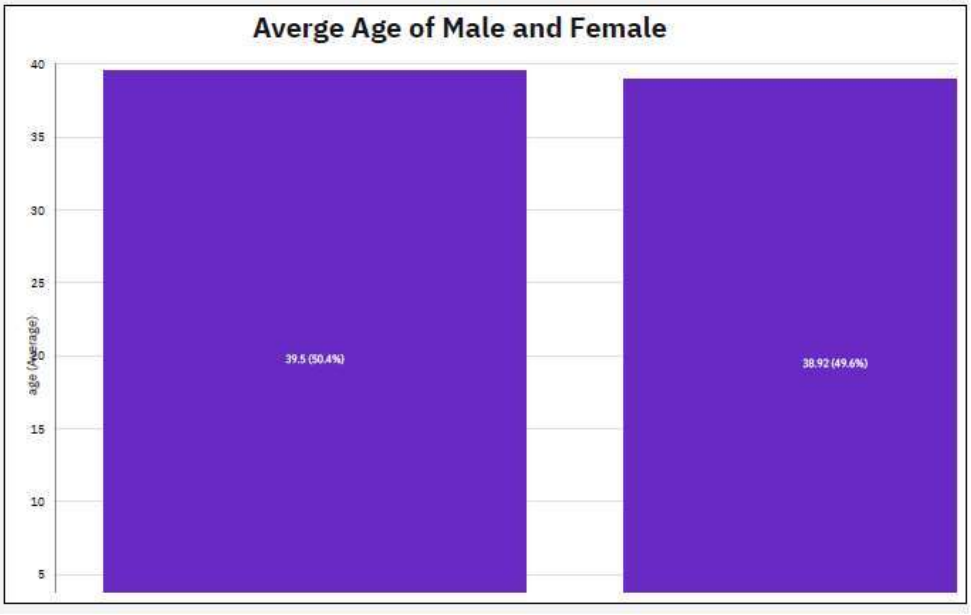
PAGE3


smoker
no
yes
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
charges
1,751,136.13453
1,933,126.94363
3,170,894.71095
1,871,605.68263
2,284,575.81196
2,355,541.63629
2,192,795.05234
2,141,143.99499
northwest
northeast
southeast
southwest
region

MEDICAL CARE COSTS STORY

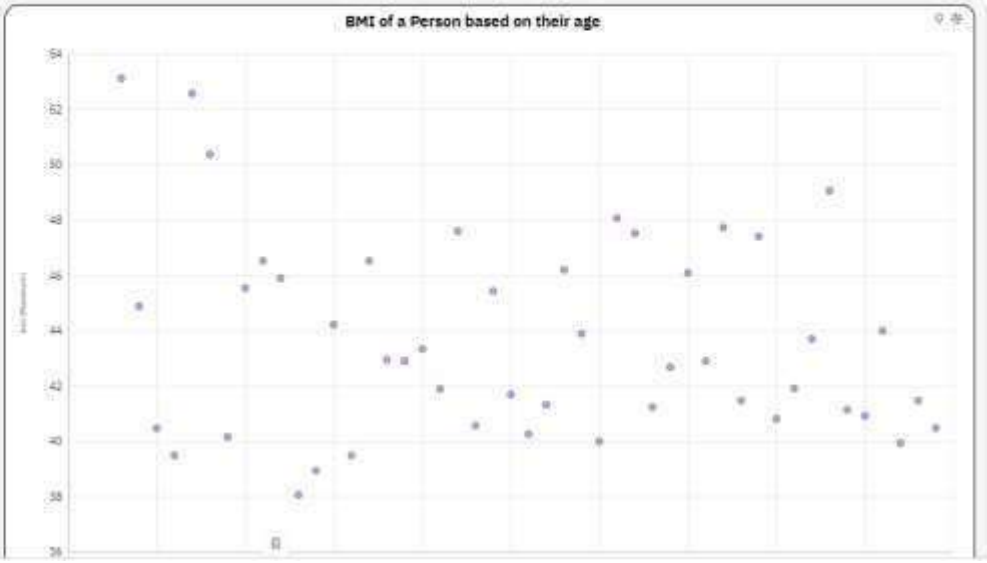
Medical Care Costs story

- This graph mainly represents the average age of males and females and as we the female average is higher.
- The average age of females is higher despite having a little bit less number of females in the overall dataset.



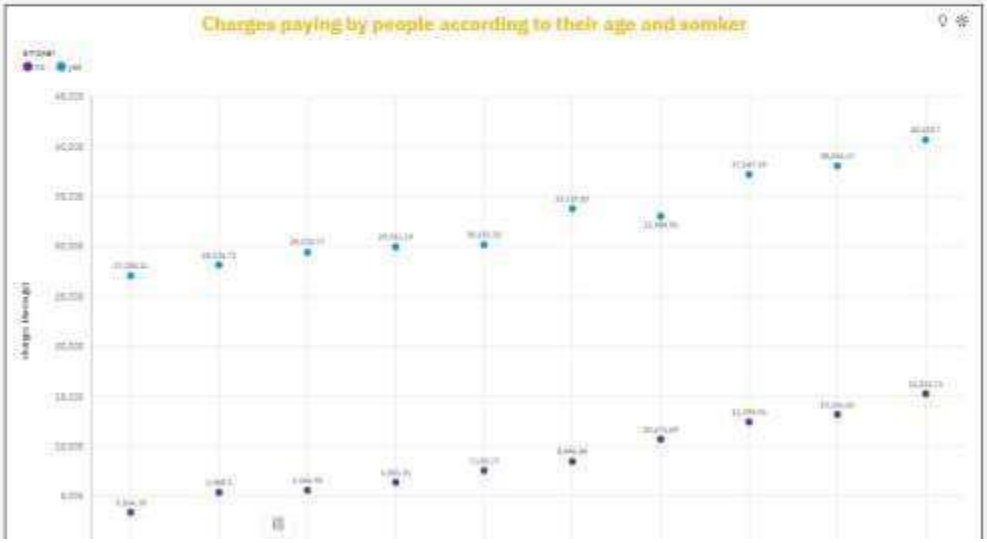
Medical Care Costs Story

- As age is incressing average BMI of persons is also increases. this means BMI and age are linearly proportional.
- The maximum value of BMI by is like in middle age group its little bit higher but is age increases the BMI value is getting decreased.



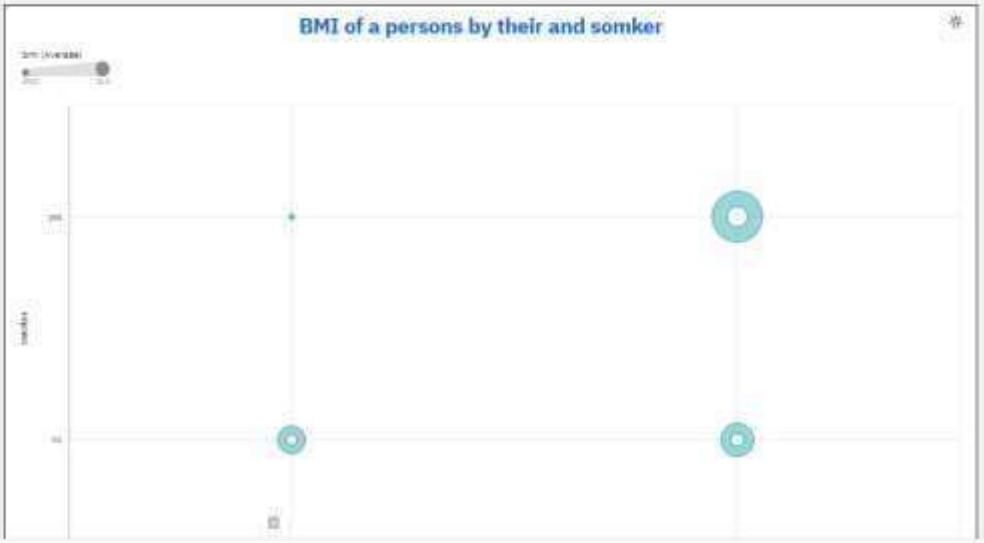
Medical care costs Story

- Smokers of any age are paying more than non-smokers, the value is also almost 3 to 5x higher.
- charger are getting increased as the age is also increasing in both scenarios.



Medical care costs Story

- Males and smokers have the highest average BMI value compared to all.
- Females and smoker have the less average BMI value compared to all.
- Increase non-smokers irrespective of gender their average BMI is almost similar.



Medical care costs Story

- Southeast region people, both men and women are paying more charges compared to other regions.
- south-east region smokers a the ones who paying more charges.
- out of all as we have seen smokers tend to pay more irrespective of region.

WEB INTEGRATION

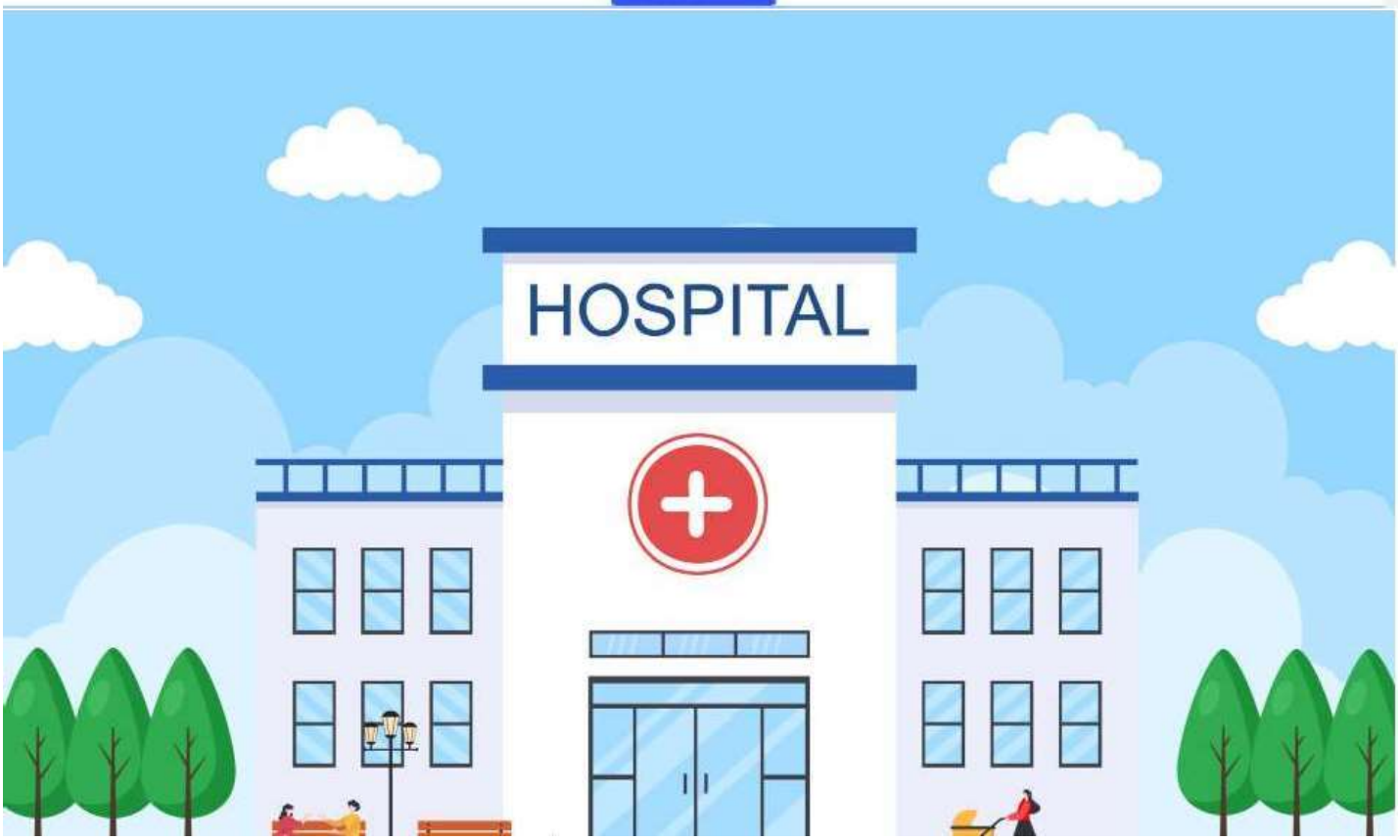
Medical Care Costs in India

Home Dashborad Story Report Contact

Medical Care Costs Analysis in India

Indians are struggling with healthcare costs, so much so that its rise is pushing 5.5 crore Indians below the poverty line1. India's per capita expenditure on health remains among the lowest in the world. India still spends only around 1.5% of its budget on health. Medical Care is Key For Developement Nation

Get Started



Medical Care Costs in India

Home Dashboard Story Report Contact

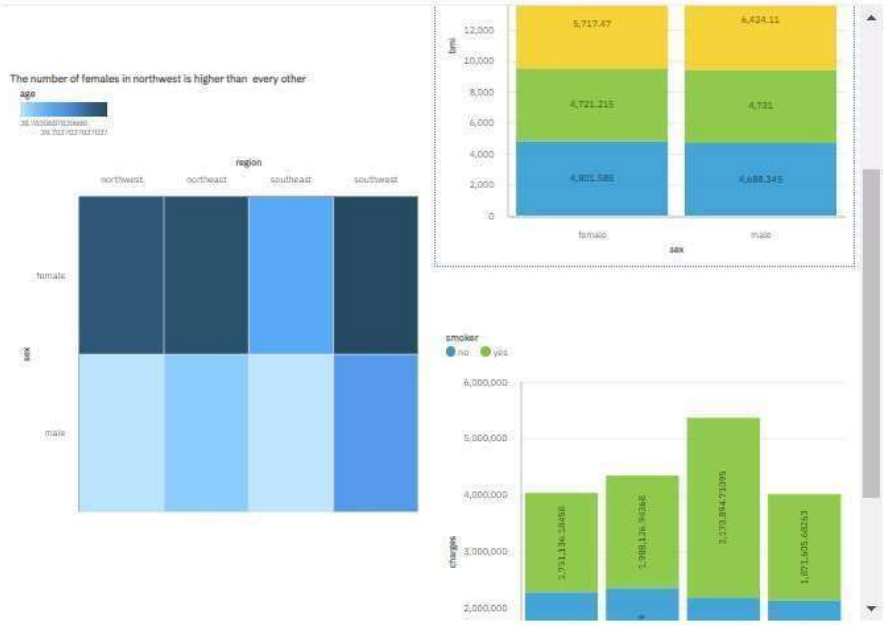
Dashboard

Medical Care Costs in India

Home Dashboard Story Report Contact

Story

Report



Contact

Magnam dolores commodi suscipit. Necessitatibus eius consequatur ex aliquid fuga eum quidem. Sit sint consectetur velit. Quisquam quos quisquam cupiditate. Et nemo qui impedit suscipit alias ea. Quia fugiat sit in iste officiis commodi quidem hic quas.

Our Address

A108 Adam Street, New York, NY 535022

Email Us

info@example.com
contact@example.com

Call Us

+1 5589 55488 55
+1 6678 254445 41

Your Name

Your Email

Subject

Message

Send Message

5. ADVANTAGES & DISADVANTAGES

ADVANTAGES

- Financial Planning
- Resource Allocation
- Patient Awareness
- Patient Awareness
- Research and Development
- Cost Reduction

DISADVANTAGES

- Complexity and Uncertainty
- Data Availability and Quality
- Ethical Concerns
- Limited Predictive Power
- Overemphasis on Cost
- Sensitivity to Assumptions.

6. APPLICATIONS

The solution of Estimation and Prediction of Hospitalization and Medical Care Costs can be applied in various areas within the healthcare industry. The predictive models and decision support system developed in this project can offer valuable insights and benefits.

- Healthcare Resource Planning
- Patient Triage and Prioritization
- Chronic Disease Management
- Preventive Care and Early Intervention
- Health Insurance and Payer Applications
- Public Health Planning
- Financial Planning for Healthcare Organizations

Overall, the Estimation and Prediction of Hospitalization and Medical Care Costs solution can have far-reaching applications, benefitting healthcare providers, patients, insurance companies, public health authorities, and policymakers.

7. CONCLUSION

In conclusion, the estimation and prediction of hospitalization and medical care costs offer significant advantages and present certain challenges in the healthcare industry. This analytical approach plays a pivotal role in financial planning, resource allocation, and policy development for healthcare facilities, insurance companies, policymakers, and patients.

8. FUTURE SCOPE

To enhance the Estimation and Prediction of Hospitalization and Medical Care Costs report in the future.

The future scope of estimation and prediction of hospitalization and medical care costs will involve a convergence of advanced technologies, data-driven insights, and a patient-centric approach.