Insurance Rate Analysis

Analysis conducted using Excel

Problem & Goal

Problem Statement : Management wants insurance agents to make more informed decisions when estimating rates.

Goal : Provide a guide to help insurance agents estimate rates based on customer characteristics

Key Questions & Task

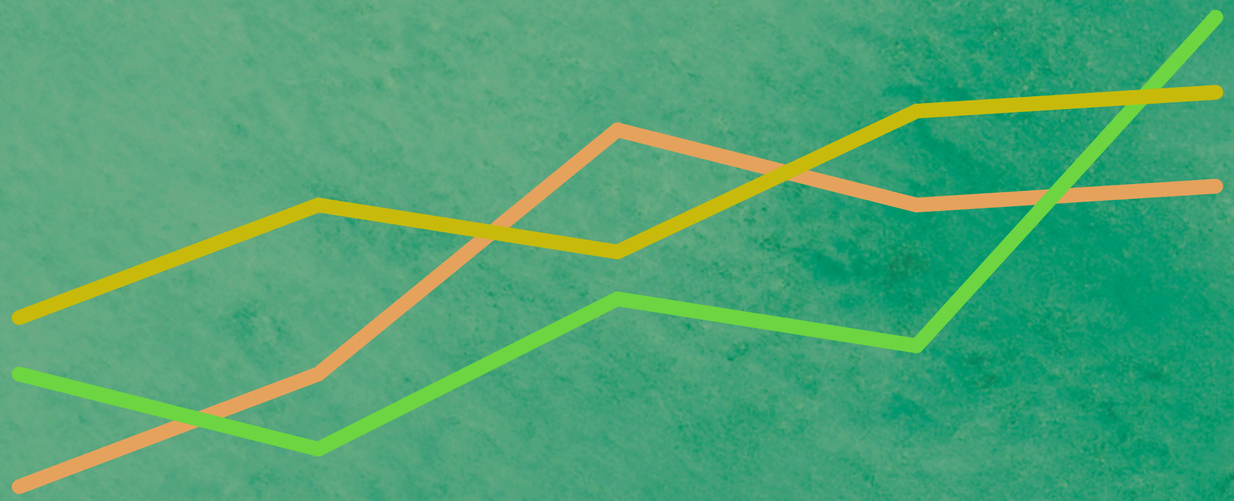
Key Questions :

- What does our typical customer look like?
- What customer traits raise or lower insurance rates?
- Do we typically charge more by gender?
- What is the one trait that skyrockets cost?

Our approach to the task: Analyze customer data, test hypotheses, and craft a compelling data story to uncover key influencers of insurance rates

Through this project, I aim to develop data-driven insights that simulate empowering insurance agents with a comprehensive understanding of the factors influencing insurance rates

What the Data Tells Us



What's the Average Customer Profile ?

$13,270

Average Rate

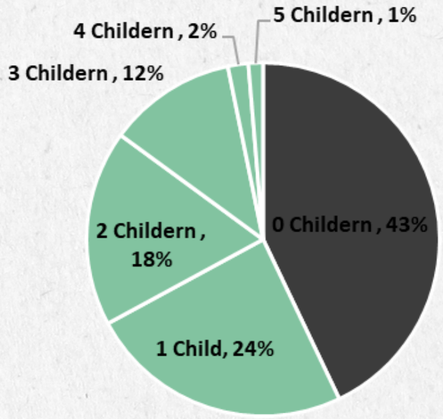
30.6

Average BMI

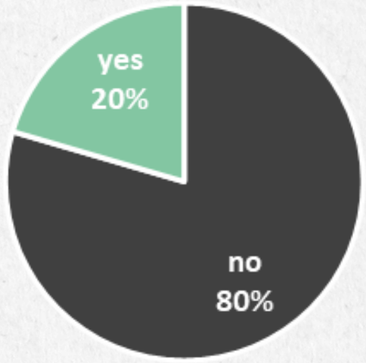
39 yrs

Average Age

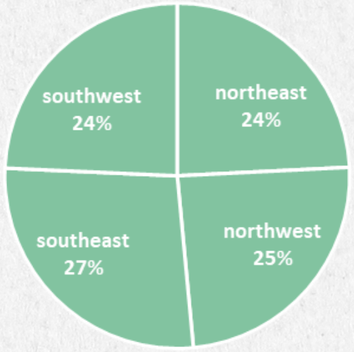
Children



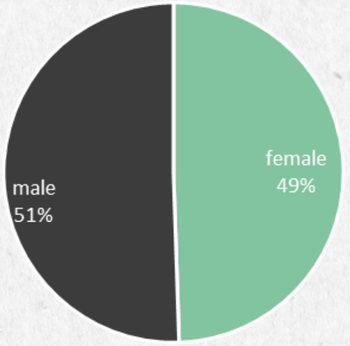
Smoker



Region

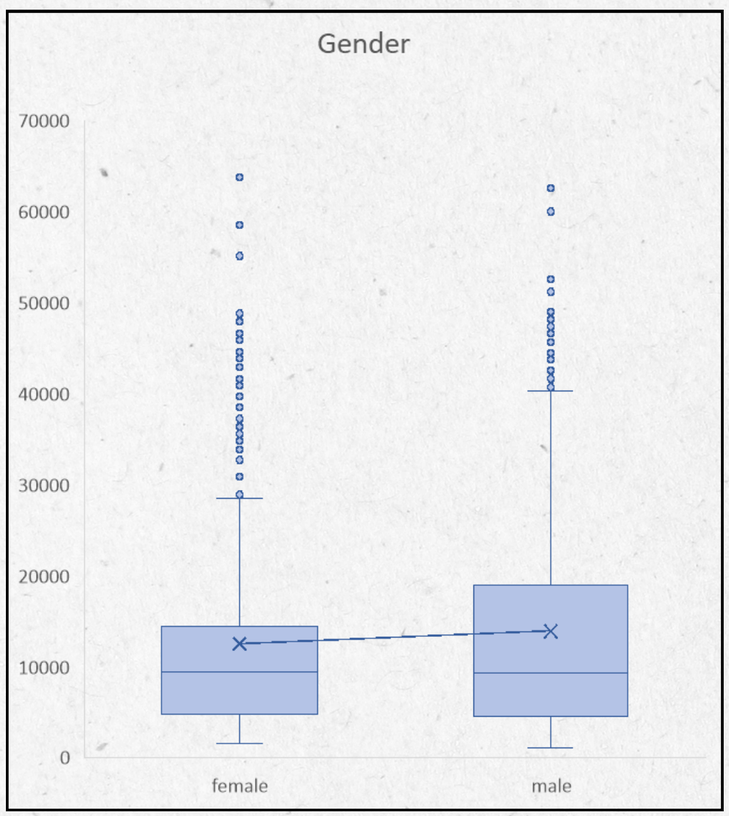


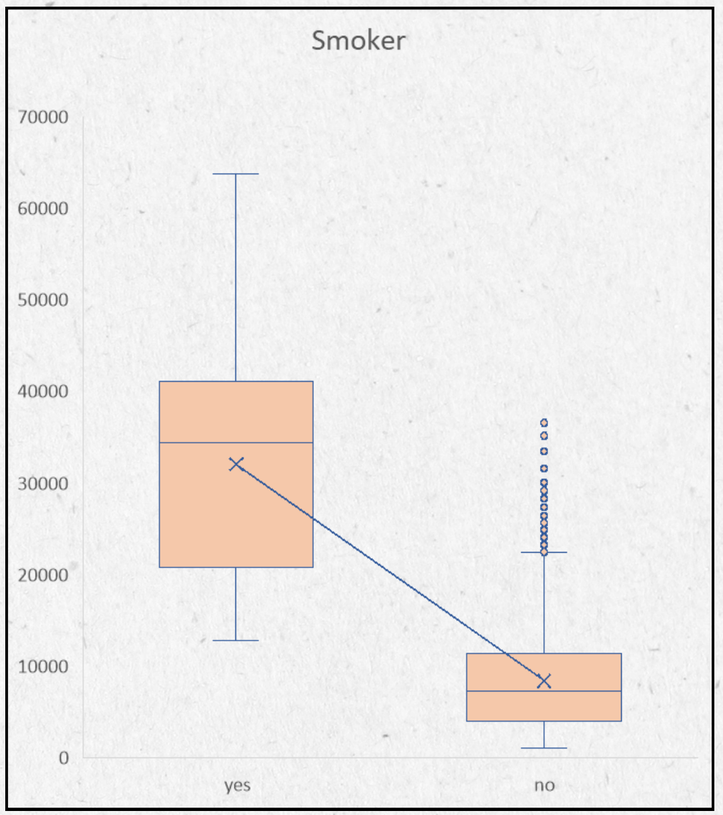
Gender

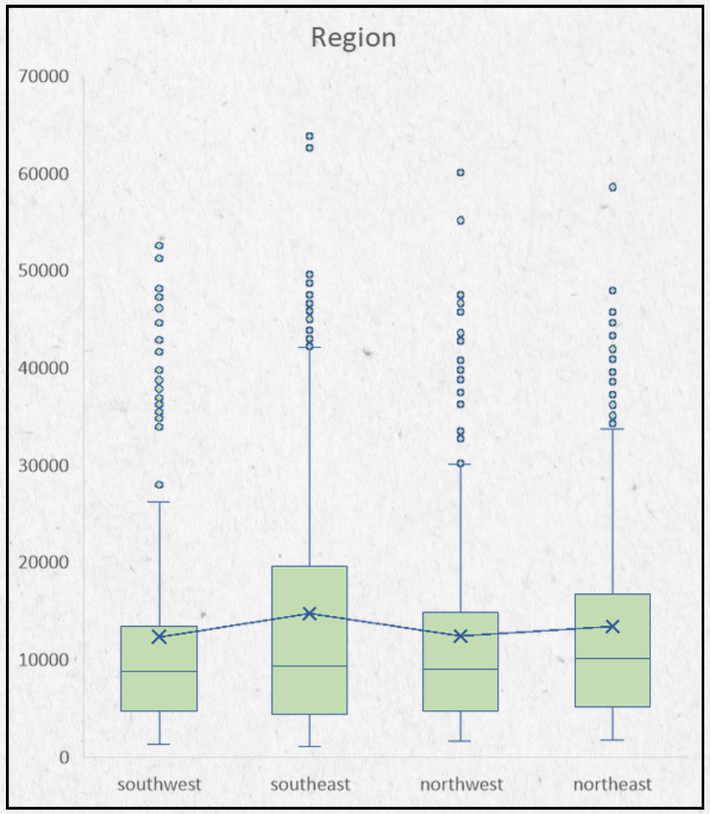


The profile represents the distribution of customers out of our 1,338 sample.

What Categories Have the Highest Charges?





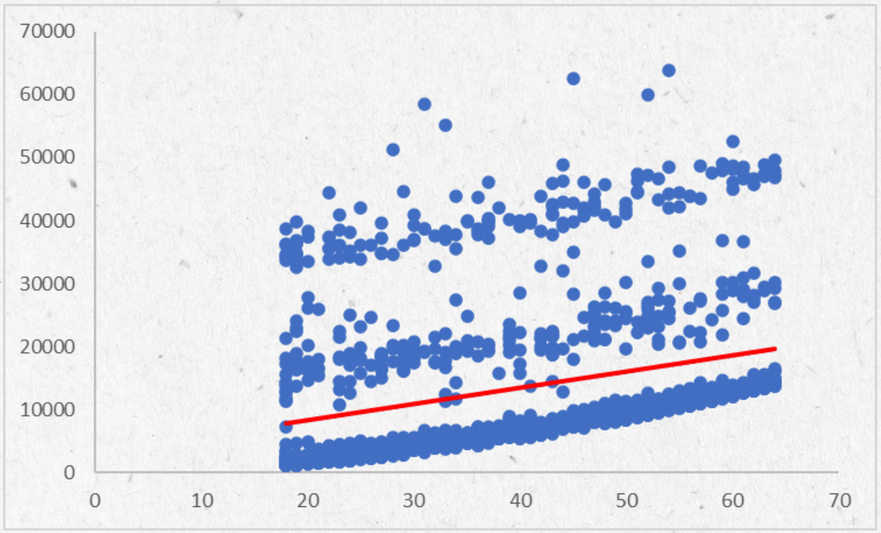


Categories and Charges

Average Smoker Rates are 4X higher.
Average Male Charge for males 10% higher
Southeast has the highest average 14.7k.

Relationship with Charges
What's correlated with increased charges.

AGE



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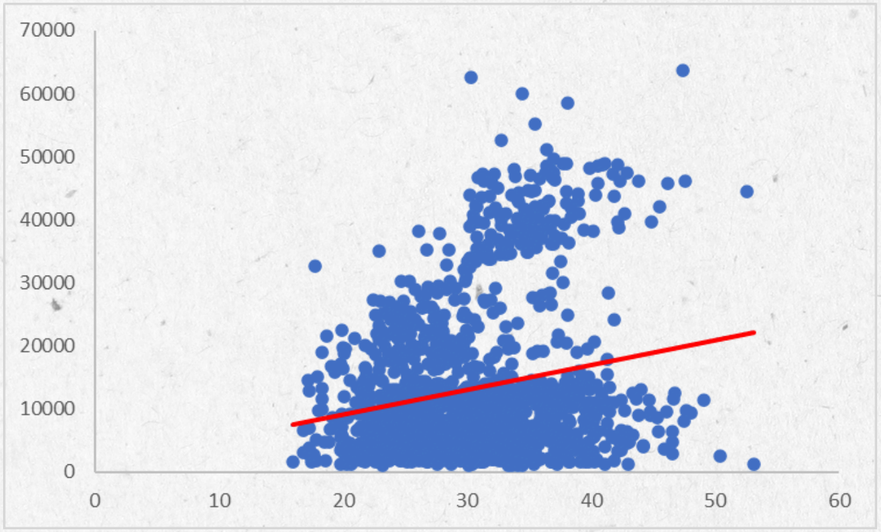
BMI



.29

Exploring Variable Relationships

The data reveals a clear trend: as age and BMI increase, so do insurance charges. Other variables in the dataset may exhibit similar or contrasting effects, offering further insights into the factors influencing insurance costs.

What drives insurance rates upward?

We can use Regression to move from correlation to Causation

Linear regression was used to help explain increase in insurance rates based on the dimension below. These were significant .05 p - value.

Summary & Recommendations

Summary

Although, **there are many factors that correlate with both increases and decreases in insurance rates**
The most significant factors that change insurances rates are:

- **Smoking** (**- $24k ↑**)
- **Children** (**- $475 ↑**)
- **Increase in BMI** (**-$339↑**)
- **Advancing Age** (**- $256↑**)

Per one unit increase

Although there are a combination of factors that increase rates, agents can use these factors to discuss and to give a very general estimate on increases overall rates.