



# Medical Health Insurance

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# Problem Statement

- **How Age Affects Health Insurance Needs:** People of different ages have varying healthcare needs, but it can be challenging to understand how age influences insurance coverage and costs.
- **Higher Insurance Costs for Individuals with High BMI:** Individuals with a high BMI may face higher insurance premiums and out-of-pocket costs due to increased risks of chronic condition and healthcare utilization.
- **Health Insurance Needs for Parents with Children:** Parents with children face unique health insurance considerations related to coverage for their dependents, preventive care, pediatric services, and family healthcare expenses, but they may not always be aware of their options

# Problem Statement

- **Higher Insurance Costs for Parents Who Smoke:** Parents who smoke may face higher insurance premiums and out-of-pocket costs due to increased health risks and healthcare utilization associated with smoking-related illnesses
- **Variations in Healthcare Access and Quality Across Regions:** Different regions may have varying levels of access to healthcare facilities, specialists, and quality of care, leading to disparities in health outcomes and healthcare utilization.

# Proposed Solution

- **How Age Affects Health Insurance Needs:** Provide clear Information about age-related insurance offer clear, easy-to-understand information about how age impacts health insurance coverage, including differences in premiums, benefits, and coverage options at different life stages.
- **Higher Insurance Costs for Individuals with High BMI:** Implement measures to improve affordability for Individuals with high BMI advocate for policies that promote wellness incentives and rewards for individuals who engage in weight management programs, physical activity, nutrition counseling, and healthy lifestyle behaviors.
- **Health Insurance Needs for Parents with Children:** Provide clear information about family health insurance coverage. Offer easy-to-understand explanations about family health insurance plans, including coverage options for children, pediatric services, well-child visits, immunizations, and maternity care.

# Proposed Solution

- **Higher Insurance Costs for Parents Who Smoke:** Implement measures to encourage smoking cessation and reduce costs. Offer smoking cessation programs, nicotine replacement therapies, and counseling services as covered benefits under health insurance plans to support parents who want to quit smoking.
- **Variations in Healthcare Access and Quality Across Regions:** Improve healthcare infrastructure and access. Invest in healthcare infrastructure development in underserved regions, including the establishment of clinics, hospitals, and primary care facilities to improve access to healthcare services.

# Insurance Data Read

## Read Dataset

```
In [2]: A = pd.read_csv("insurance.csv")  
A
```

Out[2]:

	age	sex	bmi	children	smoker	region	charges
0	19	female	27,900	0	yes	southwest	16884,92400
1	18	male	33,770	1	no	southeast	1725,55230
2	28	male	33.000	3	no	southeast	4449.46200
3	33	male	22.705	0	no	northwest	21984.47061
4	32	male	28.880	0	no	northwest	3866,85520
...	...	...	...	...	...	...	...
1333	50	male	30,970	3	no	northwest	10600,54830
1334	18	female	31.920	0	no	northeast	2205.98080
1335	18	female	36,850	0	no	southeast	1629,83350
1336	21	female	25,800	0	no	southwest	2007,94500
1337	61	female	29,070	0	yes	northwest	29141,36030

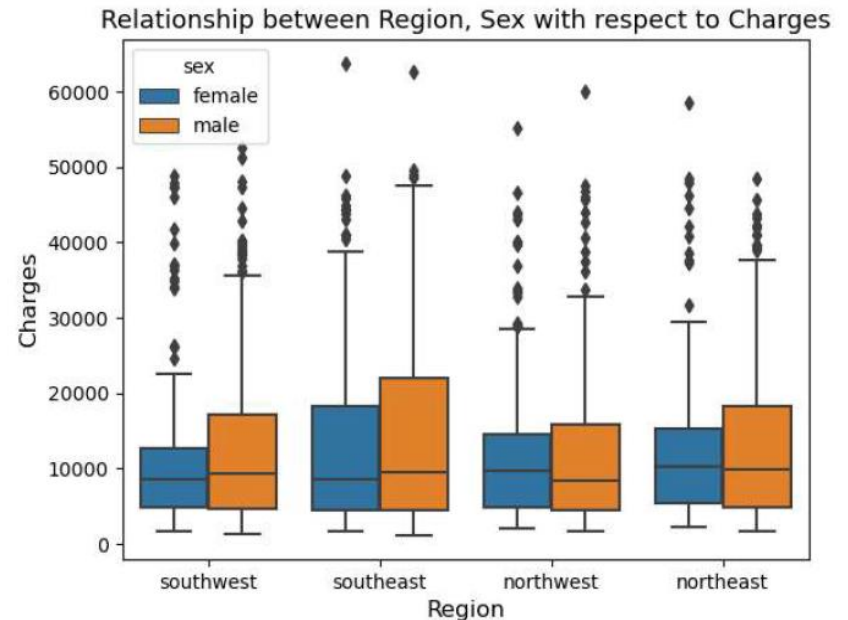
1338 rows × 7 columns

# Data Visualization

## ➤ Medical Insurance charges on sex and region

Medical health insurance charges may differ due to varying healthcare costs and population health. Similarly, sex based difference in insurance charges may reflect difference in healthcare utilization patterns and risk factors between male and female. The variations aim to ensure that insurance premiums align with the specific healthcare needs and risk profiles of different regions and sex, promoting fair and equitable access to healthcare Coverage.

```
: D=sns.boxplot(data=A, x="region",y="charges",hue="sex")  
plt.title("Relationship between Region, Sex with respect to Charges", size=13)  
plt.xlabel("Region", size=12)  
plt.ylabel("Charges", size=12)  
plt.show()
```

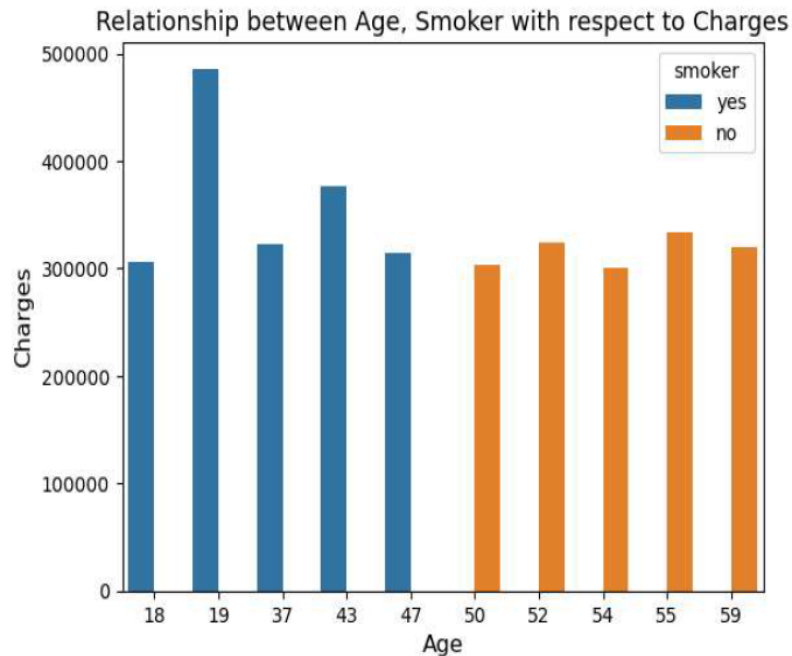


# Data Visualization

## ➤ Medical Insurance charges on age and smoker

Medical health insurance charges are often Influenced by both age and smoking status. As individuals age, insurance charges tend to increase due to higher healthcare needs associated with aging. Additionally, smokers typically face higher insurance charges compared to non-smokers due to the increased health risks associated with smoking, combining age and smoking status, older smokers often encounter the highest Insurance charges, reflecting both age related healthcare needs and the additional risks posed by smoking.

```
B=A.groupby(["age","smoker"], as_index=False)["charges"].sum().sort_values(by=
sns.barplot(data=B,x="age", y="charges", hue="smoker")
plt.title("Relationship between Age, Smoker with respect to Charges", size=13)
plt.xlabel("Age", size=12)
plt.ylabel("Charges", size=12)
plt.show()
```



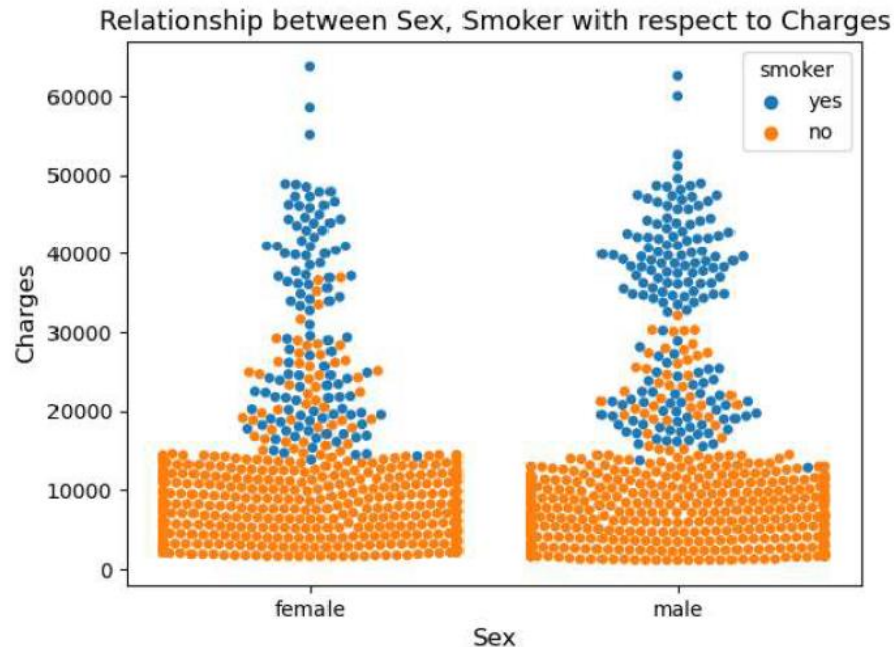


# Data Visualization

## ➤ Medical Insurance charges on sex and smoker

Medical health insurance charges for smokers differ based on sex. In the graph male smokers might face higher premiums compared to female smokers due to statistically higher rates of certain smoking related condition among men. However, Insurance charges for smokers, regardless of sex, Generally lend to be higher than those for non-smokers to cover the increased risk of health issues associated with smoking.

```
sns.swarmplot(data=A, x="sex", y="charges", hue="smoker")  
plt.title("Relationship between Sex, Smoker with respect to Charges", size=13)  
plt.xlabel("Sex", size=12)  
plt.ylabel("Charges", size=12)  
plt.show()
```



# Conclusion

- Age, BMI (Body Mass Index) affects the price of medical charges for individuals.
- Medical charges increase as age and BMI increases.
- Medical charges will always be high if you're a smoker.
- It helps you pay for medical expenses when you're sick or injured. With insurance, you can get treatment without worrying too much about the cost. It's like having a safety net for your health, so having medical health insurance is a smart move to stay protected and financially secure during times of medical need.

# Future Scope

In the future, Medical health insurance helps pay for your doctor visits, hospital stays, and medicine so you don't have to pay everything by yourself. It gives you peace of mind knowing that if you get sick or hurt, you can get the care you need without worrying too much about the cost.