Argo Health Insurance

We protect what
you value most.

Presentation By: M&M

WHO ARE WE?

Established in 2023, Argo is committed to providing comprehensive and reliable insurance solutions.

We work hard to maintain the highest standards in health insurance because we recognize how important health is to each and every person.

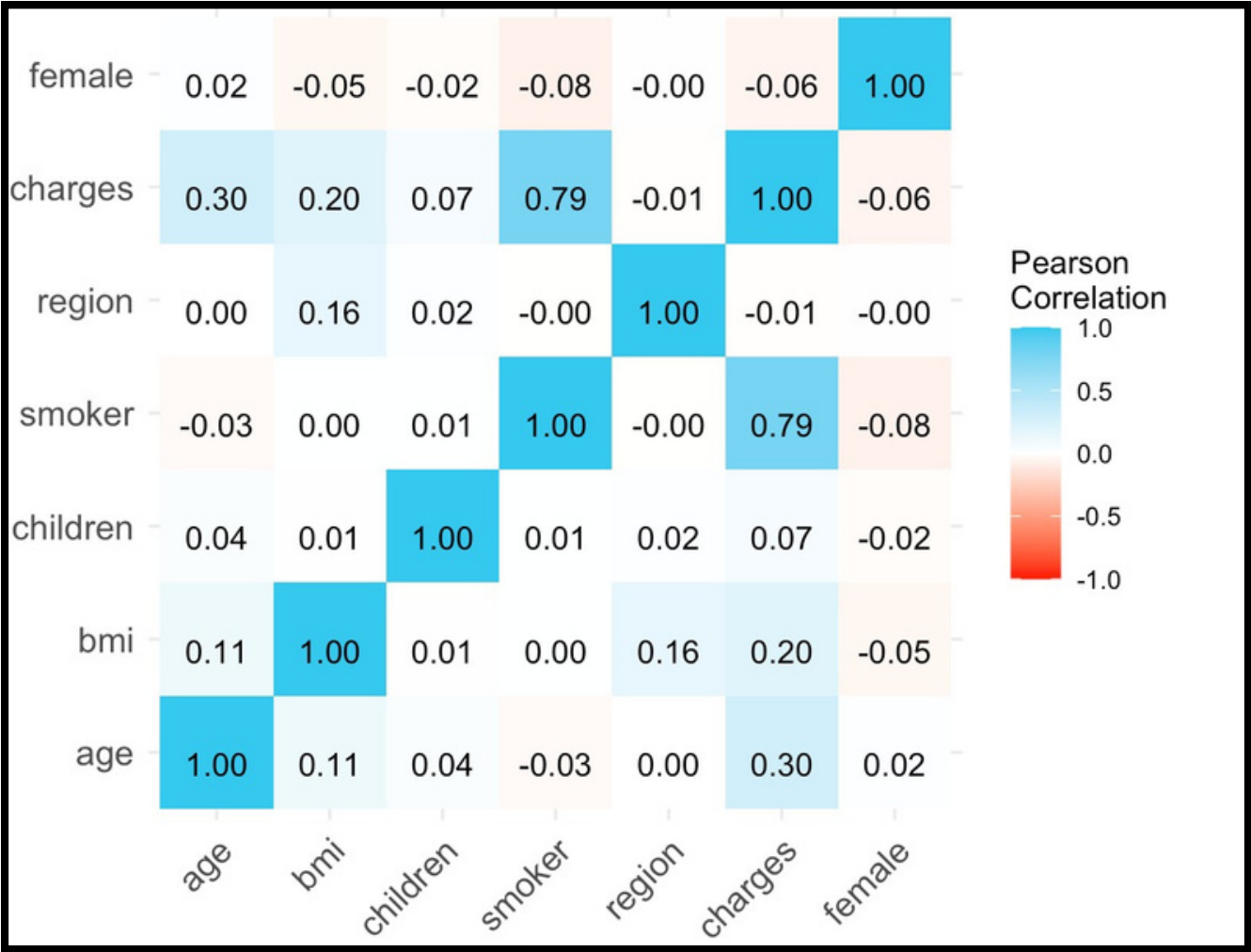We use technology to improve your entire experience, from video consultations to online claim processing.

To ensure financial stability and peace of mind, our medical insurance policies are customized to match the various demands of our clients.
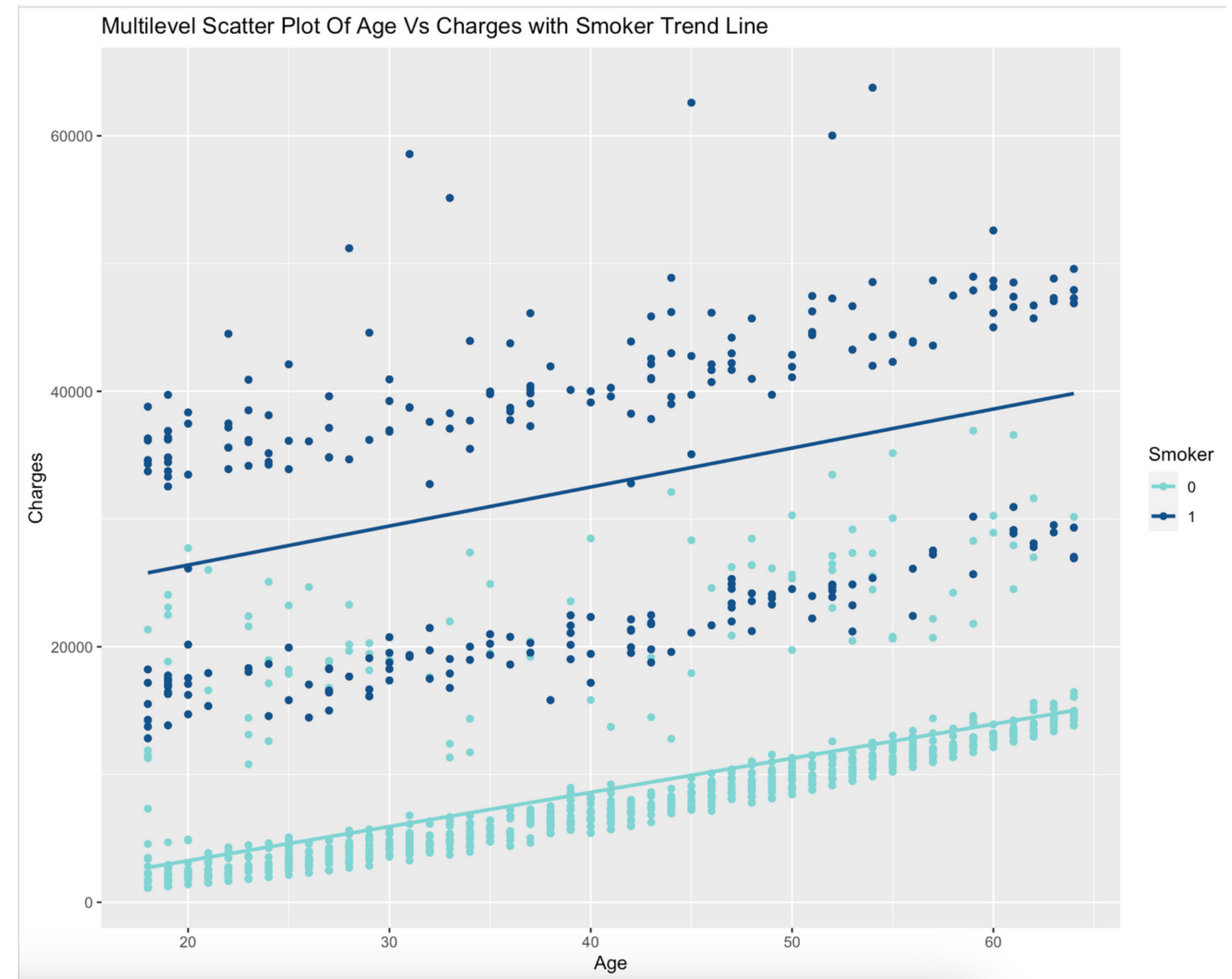
FACTORS AFFECTING CHARGES

Covariance

	age	bmi	children	smoker	region	female
female	0.15	-0.14	-0.01	-0.02	-0.00	0.25
region	0.03	1.06	0.02	-0.00	1.22	-0.00
smoker	-0.14	0.01	0.00	0.16	-0.00	-0.02
children	0.72	0.09	1.45	0.00	0.02	-0.01
bmi	9.36	37.19	0.09	0.01	1.06	-0.14
age	197.40	9.36	0.72	-0.14	0.03	0.15

0.79	SMOKER & CHARGES
0.30	AGE & CHARGES
0.20	BMI & CHARGES
9.36	AGE & BMI

Correlation

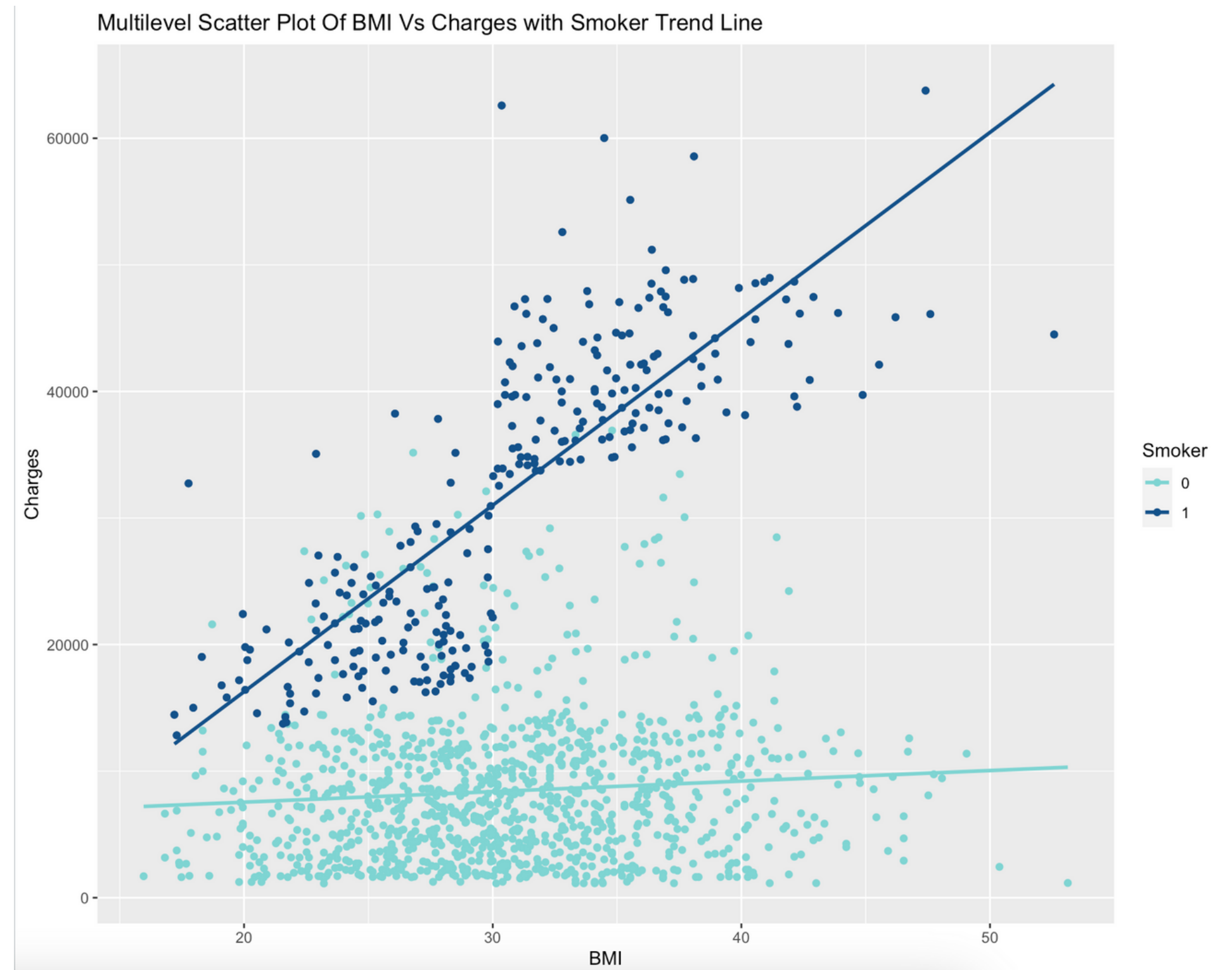|	age	bmi	children	smoker	region	charges	female
female	0.02	-0.05	-0.02	-0.08	-0.00	-0.06	1.00
charges	0.30	0.20	0.07	0.79	-0.01	1.00	-0.06
region	0.00	0.16	0.02	-0.00	1.00	-0.01	-0.00
smoker	-0.03	0.00	0.01	1.00	-0.00	0.79	-0.08
children	0.04	0.01	1.00	0.01	0.02	0.07	-0.02
bmi	0.11	1.00	0.01	0.00	0.16	0.20	-0.05
age	1.00	0.11	0.04	-0.03	0.00	0.30	0.02

AGE AFFECTING CHARGES

- Trend line starts at approx. $25,000 for smokers and increases as the age increases.

- Trend line starts at approx. $5,000 for non-smokers and increases as the age increases.

Multilevel Scatter Plot Of Age Vs Charges with Smoker Trend Line

BMI AFFECTING CHARGES

- As the BMI increases, for smokers the trend line increases significantly.

- The trend line remains mostly stagnant for non-smokers as the BMI increases.

Multilevel Scatter Plot Of BMI Vs Charges with Smoker Trend Line

LINEAR MIXED EFFECTS MODEL

Factorize The Categorical Variables

1

Understanding The Levels Of Data And Data Cleaning

2

Identified The Variable Interaction Effects

3

Created Train, Validation and Test Sets

4

Making Predictions On The Test Set

5

Calculating Performance Of Model Using RMSE & MAE

6

MODEL JUSTIFICATION

1

2

3

SMOKERS VS CHARGES

There is a high correlation between smoking and charges.

AGE & BMI

There is an interaction between age and BMI.

SMOKERS & BMI

There is an interaction effect between BMI and smokers.

PERFORMANCE INDICATORS

1		**2**
TRAIN SET		**TEST SET**

TRAIN SET		TEST SET
3206.8	**MAE**	2281.6
5027.4	**RSME**	2863.0
25.9%	**MAPE**	23.1%

CONDITIONAL R-SQUARED: 0.906

USER INTERFACE

- **The potential clients can input data through the dashboard, and the Shiny app subsequently displays an estimated quota derived from our model.**

- **This can enable them to compare prices and also connect with our agents instantly if they require.**

Get a Quote!

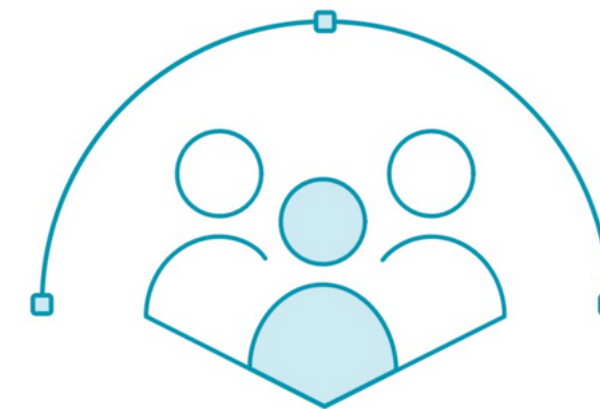**Age**

18

Gender

Female

BMI

20

How many children do you have?

0

Do you smoke?

No

What region of the U.S. do you reside in?
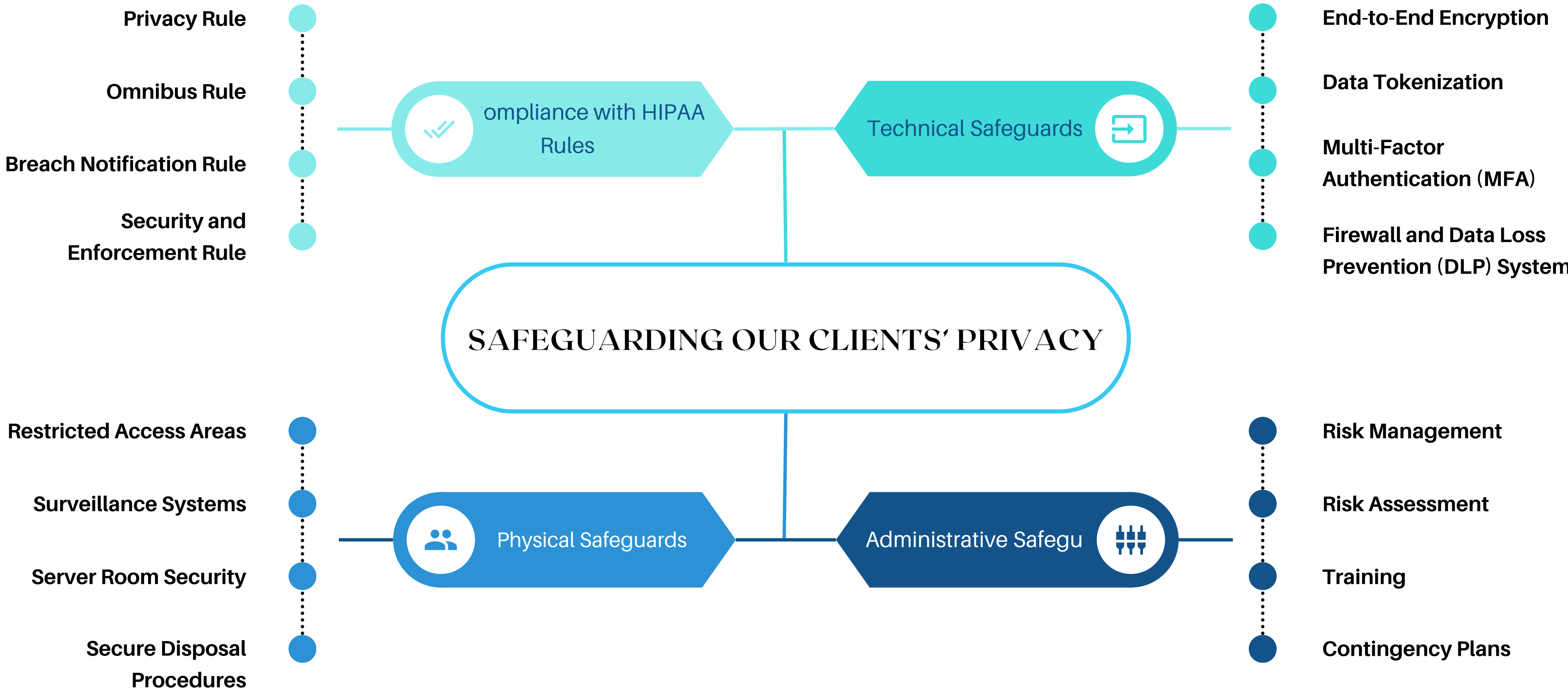
SouthEast

Predict

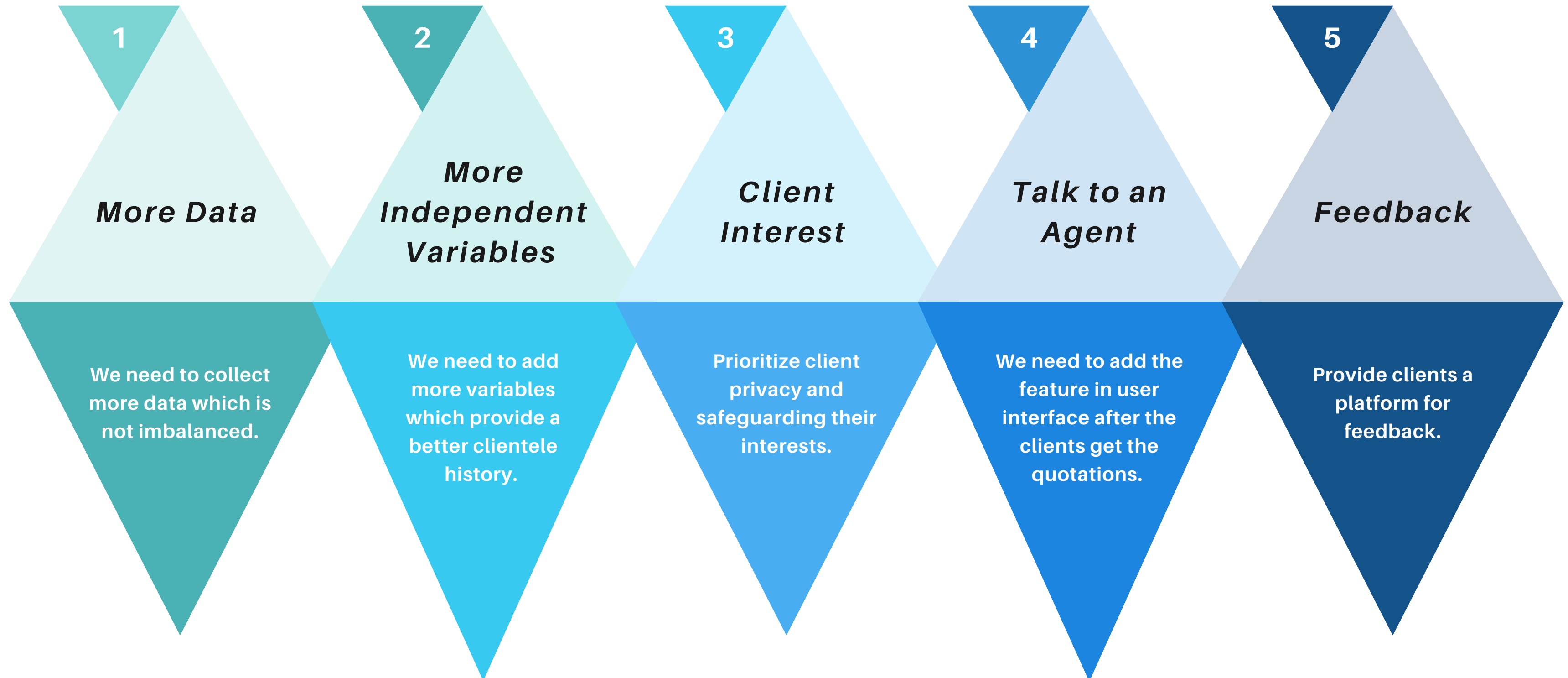Estimated Quote: $2724

ARGO HEALTH INSURANCE

We protect what you value most.

ETHICAL CHALLENGES

01 *Risk Selection and Underwriting Practices*

Ensuring fair access to insurance, safeguarding customer privacy, and balancing profit motives with social responsibility are critical considerations.

02 *Claims Denial and Coverage Limitations*

Maintaining the moral obligation to offer essential healthcare services without arbitrarily rejecting legitimate claims while maintaining a strict budget.

03 *Transparency and Communication*

Maintaining confidence and enabling policyholders to make educated decisions that depends on accurate and comprehensive information.

04 *Access to Affordable Coverage*

Avoiding actions that worsen healthcare inequities and working to keep insurance affordable for a range of socioeconomic groups.

05 *Data Privacy and Security*

Preserving client confidentiality is an essential ethical duty that calls for stringent compliance with privacy laws and strong data security protocols.

SAFEGUARDING OUR CLIENTS' PRIVACY

Compliance with HIPAA Rules
- Privacy Rule
- Omnibus Rule
- Breach Notification Rule
- Security and Enforcement Rule

Technical Safeguards
- End-to-End Encryption
- Data Tokenization
- Multi-Factor Authentication (MFA)
- Firewall and Data Loss Prevention (DLP) System

Physical Safeguards
- Restricted Access Areas
- Surveillance Systems
- Server Room Security
- Secure Disposal Procedures

Administrative Safeguards
- Risk Management
- Risk Assessment
- Training
- Contingency Plans

RECOMMENDATION

1

More Data

We need to collect more data which is not imbalanced.

2

More Independent Variables

We need to add more variables which provide a better clientele history.

3

Client Interest

Prioritize client privacy and safeguarding their interests.

4

Talk to an Agent

We need to add the feature in user interface after the clients get the quotations.

5

Feedback

Provide clients a platform for feedback.

THANK YOU!