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4/22/2024

Insuring Health:

A Statistical Analysis of Coverage, Costs, and Care

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Department of Statistics
INSTITUTE OF SCIENCE
BANARAS HINDU
UNIVERSITY

PROJECT REPORT

Submitted for the partial fulfillment of the
Bachelors of Science in Statistics
Session 2023-24

UNDER THE SUPERVISION OF:

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DEPARTMENT OF STATISTICS
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Certificate:

This is to certify that the project titled "**Insuring Health: A Statistical Analysis of Coverage, Costs, and Care**" submitted by Arunansh Yadav (Exam roll no. 21220STA019) for the partial fulfillment of B.Sc. (Hons.) Statistics for the session 2023-2024, has been originally completed by him. This project showcases dedication of Arunansh in collection and analysis of primary data for advancing awareness and knowledge in healthcare.

Dr. Rajesh Singh

Department of Statistics

Institute of Science

BANARAS HINDU UNIVERSITY

Acknowledgement:

In the pursuit of scholarly exploration, I extend my heartfelt appreciation to **Dr. Rajesh Singh**, whose unwavering guidance and sagacious mentorship have been instrumental. His erudition has steered our course, ensuring precision and purpose in our research.

Secondly, to the **Head of the Department**, whose endorsement and allocation of resources facilitated the successful culmination of this project.

Thirdly, to the responders of the Google Form, whose insights—like constellations—have guided our navigation. Each choice, each comment, illuminated the path toward understanding. Your contributions matter—a brushstroke on our canvas.

Lastly, to our family and friends, the silent collaborators. Their unwavering encouragement reverberates within our hearts. Their belief in our capabilities has been a perpetual wellspring of motivation.

Arunansh Yadav

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Abstract:

Health insurance is a fundamental pillar of modern healthcare systems, ensuring that individuals have access to necessary medical services while mitigating financial risks. In this study, we focus on young adults aged 15-29, investigating their health insurance preferences, behaviors, and challenges.

Our comprehensive survey collects data on various dimensions, including age, gender, education, income, and the type of health insurance coverage. By analyzing this rich dataset, we aim to uncover patterns and insights that inform policy decisions and enhance insurance offerings for this demographic.

Key questions addressed include demographics and enrollment, understanding policy terms, claim denials and coverage gaps, and additional coverage and out-of-pocket costs. Our statistical approach involves univariate and multivariate analyses, as well as chi-square association tests. Visual representations, including bar charts, line graphs, and pie charts, succinctly convey our findings. By bridging statistical insights with practical implications, we contribute to better-informed decision-making and improved healthcare access for young adults.

Introduction:

Health insurance serves as a critical tool in mitigating the financial risks associated with medical expenses. In an era marked by escalating healthcare costs, the importance of health insurance cannot be overstated, particularly for young adults aged 15-29 years who are often in a transitional phase of life. Understanding the dynamics of health insurance is essential for individuals in this demographic, yet awareness and comprehension may be lacking. Hence, the statistical project "Insuring Health: A Statistical Analysis of Coverage, Costs, and Care" has been undertaken to explore the landscape of health insurance coverage, costs, and care within the 15-29 age group.

Rationale for the Project:

The selection of this topic is grounded in several compelling reasons:

1. **Vulnerability of Young Adults:** Young adults aged 15-29 years are susceptible to experiencing gaps in health insurance coverage as they transition from dependency to independence. This demographic may lack access to employer-sponsored plans or may age out of parental coverage, leaving them exposed to financial risks associated with healthcare expenses.
2. **Awareness and Understanding:** Health insurance concepts can be complex, and young adults may not possess adequate knowledge to make informed decisions about coverage options. By conducting a statistical analysis, the project aims to illuminate the current state of health insurance among young adults, identify knowledge gaps, and propose strategies to enhance awareness and understanding.
3. **Financial Implications:** Unforeseen medical expenses can exert a significant financial strain on young adults who are uninsured or underinsured. By quantifying the financial implications of different insurance scenarios, the project seeks to underscore the importance of having adequate coverage and the potential long-term consequences of being uninsured.
4. **Policy Implications:** The findings of this statistical analysis hold relevance for policymakers and healthcare stakeholders. By elucidating the challenges faced by young adults in accessing and affording health insurance, the project can inform the development of policies aimed at improving insurance affordability and accessibility for this demographic.

In conclusion, the statistical project "Insuring Health: A Statistical Analysis of Coverage, Costs, and Care" addresses a critical need to examine the dynamics of health insurance coverage, costs, and care within a demographic that is often overlooked in healthcare discussions. By shedding light on the challenges faced by young adults and proposing actionable insights, the project endeavors to contribute to a more comprehensive understanding of health insurance and advocate for policies that promote equitable access to healthcare for all individuals in this age group.

Statement of the Problem:

Young adults aged 15-29 encounter formidable obstacles in navigating the realm of health insurance, manifesting in gaps in comprehension, accessibility, and sustainability of coverage. Insufficient awareness of insurance fundamentals, compounded by financial constraints and intricate policy terms, contributes to a landscape where many remain underinsured or uninsured. This demographic's vulnerability to unforeseen medical expenses underscores the urgency of addressing these challenges. Furthermore, disparities in coverage exacerbate disparities in healthcare utilization and outcomes, perpetuating inequities in access to quality care. Thus, there is a critical imperative to scrutinize the complexities surrounding health insurance for young adults, aiming to elucidate barriers and devise strategies for fostering comprehensive coverage and healthcare security within this demographic.

Scope of the Study:

This study examines the relationship between demographic factors and health insurance engagement among young adults aged 15-29 years. By analyzing variables such as age, gender, education level, employment status, and income, the study aims to understand how these factors influence awareness, enrollment, coverage adequacy, and utilization patterns of health insurance. The scope extends to identifying disparities in access and understanding based on demographic characteristics, informing targeted interventions and policies to improve insurance literacy and coverage accessibility within this demographic.

Objectives:

Our study aims to achieve several key objectives:

1. Assess Awareness, Coverage, and Costs:

- Evaluate young adults' awareness of health insurance concepts and their confidence in understanding policy terms.
- Determine the proportion and types of health insurance coverage among young adults.
- Analyze the financial implications of health insurance, including premiums and out-of-pocket expenses.

2. Examine Healthcare Utilization and Outcomes:

- Examine healthcare utilization patterns and outcomes among insured and uninsured young adults.

3. Identify Barriers and Facilitators to Coverage:

- Determine reasons for enrolling in health insurance and identify barriers to coverage.

4. Evaluate Satisfaction and Recommendations:

- Evaluate satisfaction with current health insurance providers and likelihood of recommendation.

Research Methodology:

Research methodology in statistics refers to the systematic approach used to design, conduct, analyze, and interpret research studies or experiments. It encompasses the techniques, procedures, and tools employed by researchers to gather and analyze data, draw conclusions, and make inferences about the population or phenomenon of interest. This study employs a quantitative research methodology to systematically investigate the relationship between demographic factors and health insurance engagement among young adults aged 15-29 years.

Nature of Research:

The research adopts a descriptive and analytical approach, aiming to both describe the current state of health insurance among young adults and analyze the associations between demographic variables and insurance engagement.

Research Design:

A cross-sectional research design is utilized, collecting data at a single point in time to capture a snapshot of health insurance awareness, coverage, and utilization patterns among young adults.

Sampling Technique:

The study likely employs stratified random sampling, dividing young adults aged 15-29 years into demographic strata. Participants are then randomly selected from each stratum. This method ensures representation across diverse demographic characteristics, enhancing the generalizability of findings to the broader population of young adults.

Nature of Data:

Primary data is collected through structured surveys using google forms from young adults within the target age group. The data includes demographic information (age, gender, education level, employment status, income) and variables related to health insurance awareness, coverage, costs, and utilization.

Data Representation:

Data is represented using frequency tables, illustrating the distribution of responses for each variable. Univariate analysis is conducted to examine the characteristics of individual variables, while bivariate analysis explores relationships between demographic factors and health insurance engagement.

Diagrammatic Representation:

Diagrammatic representations, such as bar graphs or pie charts, are utilized to visually depict patterns and trends in the data, facilitating interpretation and comparison across different demographic groups.

Chi-Square Association Tests:

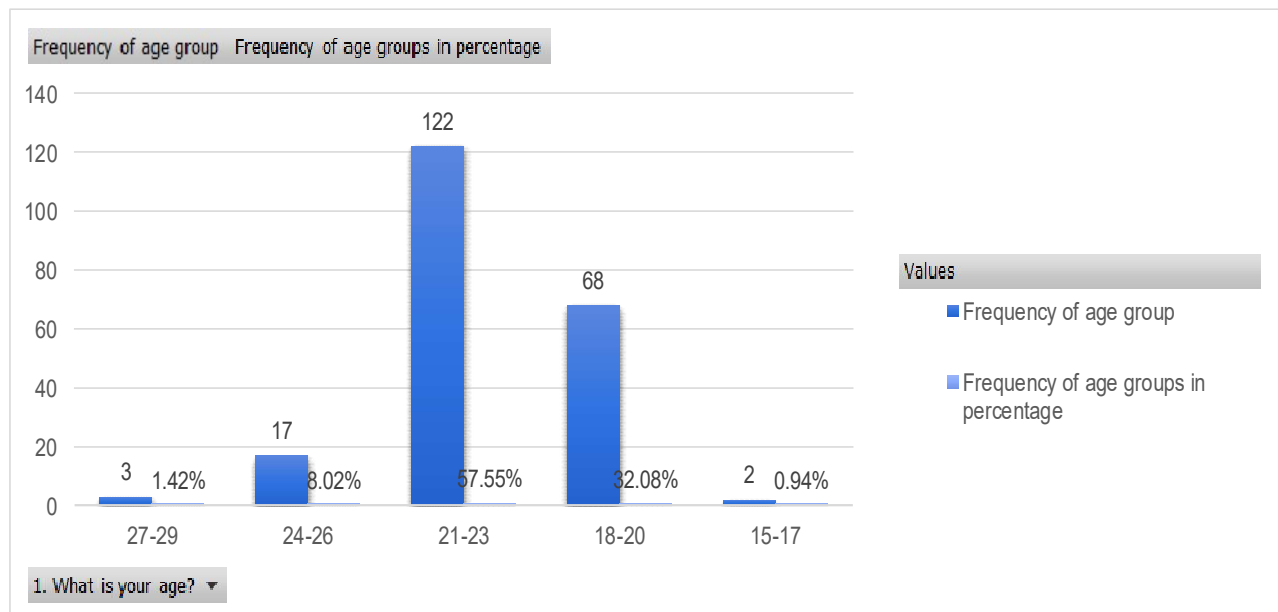
Chi-square tests of association are employed to assess the statistical significance of relationships between categorical variables, such as the association between age groups and health insurance coverage status. This statistical analysis helps identify significant associations and disparities in insurance engagement across demographic categories.

Tabulation and Graphical Interpretations:

TABLE 1.1 Distribution of age groups

Age group	Frequency of age groups	Percentage of age groups
27-29	3	1.42%
24-26	17	8.02%
21-23	122	57.55%
18-20	68	32.08%
15-17	2	0.94%
Grand Total	212	100.00%

Graphical Representation



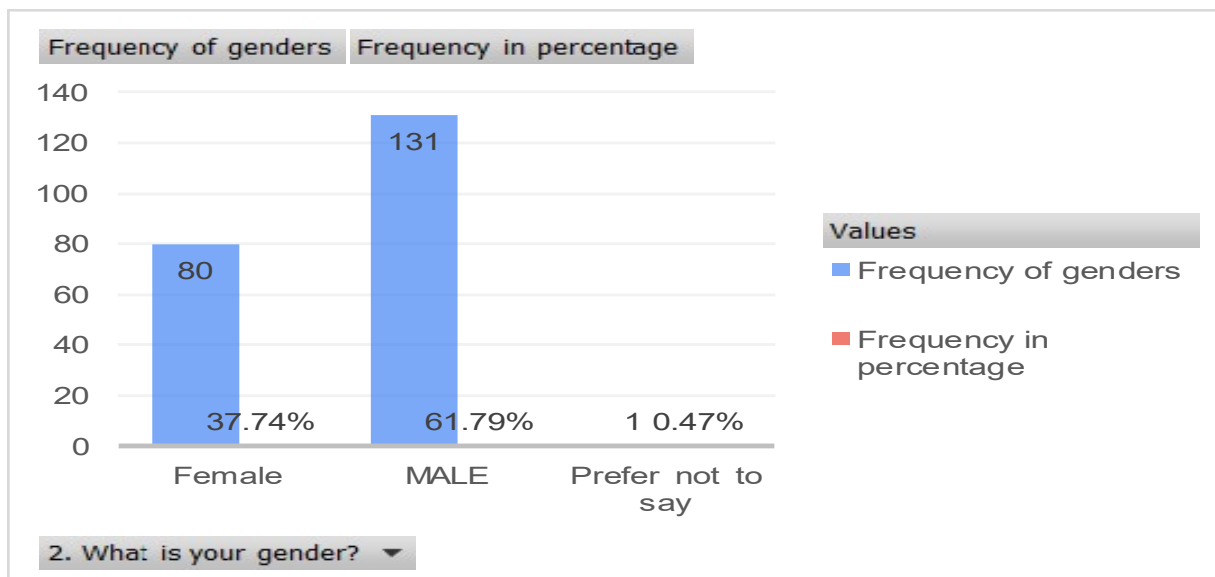
Interpretation

The majority of individuals in the dataset (57.55%) fall into the age group 21-23, followed by 18-20 (32.08%) and 24-26 (8.02%). The remaining age groups (15-17 and 27-29) comprise smaller proportions of the dataset.

TABLE 2.1 Gender representation

Gender	Frequency of each gender	Frequency in percentage
Female	80	37.74%
Male	131	61.79%
Prefer not to say	1	0.47%
Grand Total	212	100.00%

Graphical representation



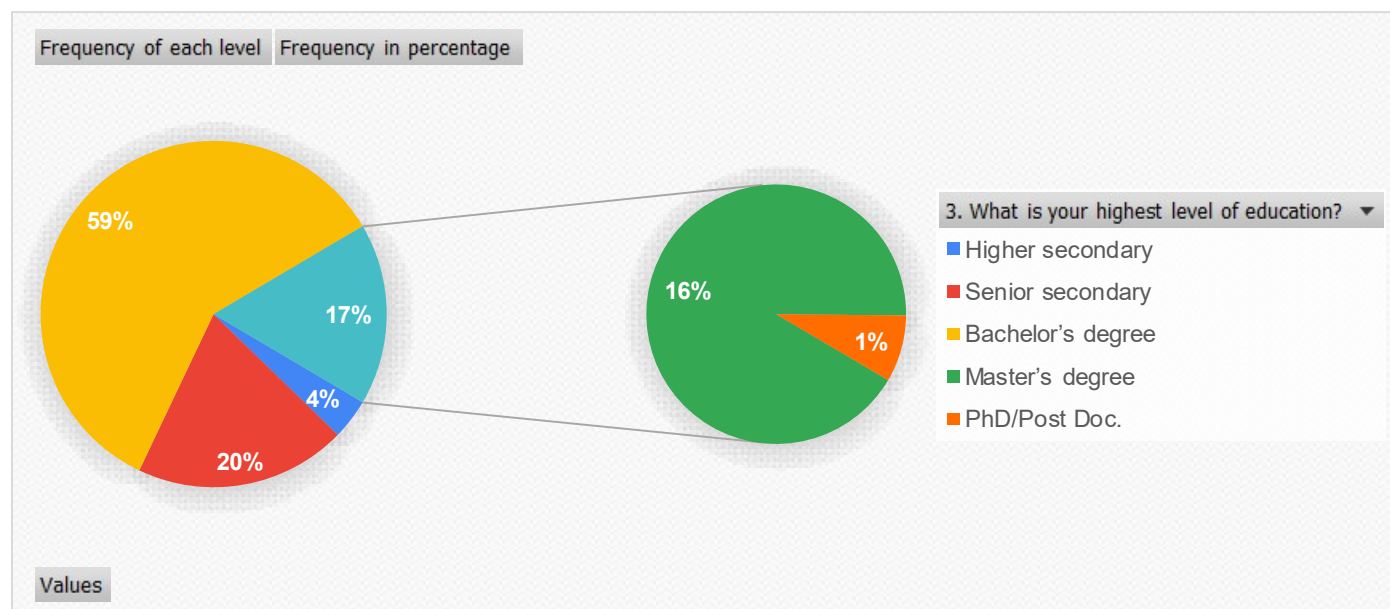
Interpretation

The gender distribution in the dataset is notably skewed towards males, who constitute the majority at 61.79%. Females make up a significant portion at 37.74%. Additionally, there is a very small percentage (0.47%) of individuals who prefer not to disclose their gender.

TABLE 3.1 Highest educational qualification

Education level	Frequency of each level of education	Frequency in percentage
Higher secondary	8	3.77%
Senior secondary	42	19.81%
Bachelor's degree	126	59.43%
Master's degree	33	15.57%
PhD/Post Doc.	3	1.42%
Grand Total	212	100.00%

Graphical Representation



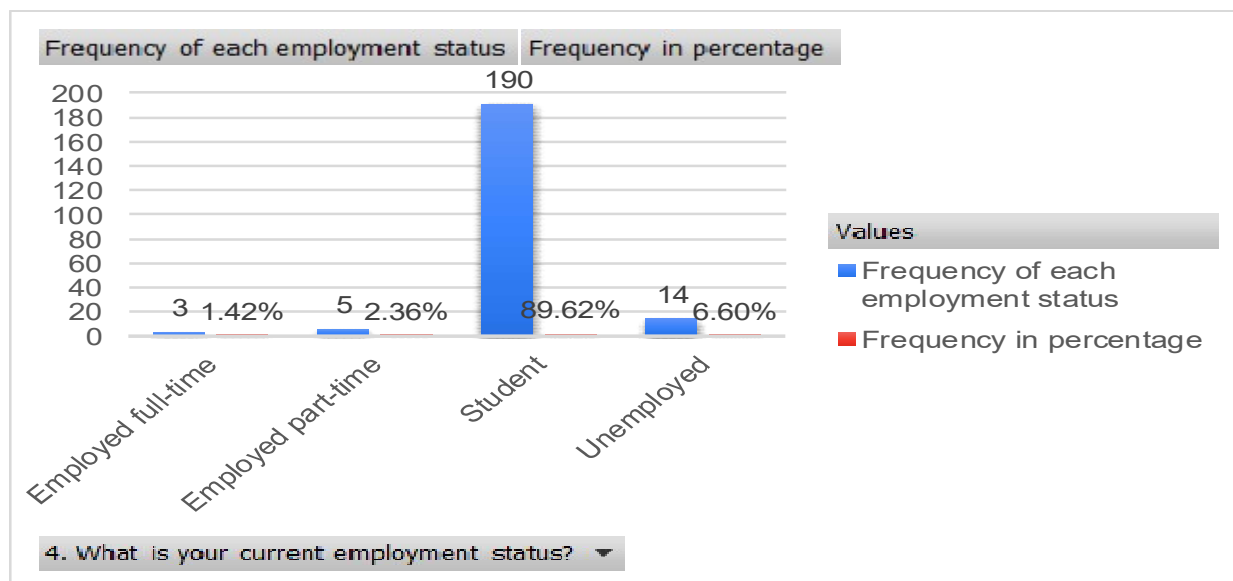
Interpretation

The majority of individuals in the dataset hold Bachelor's degrees, constituting 59.43% of the total. Following Bachelor's degrees, Senior secondary education is the next most common category at 19.81%. Master's degrees account for 15.57% of the dataset, while Higher secondary education and PhD/Post Doc. qualifications are relatively less common, at 3.77% and 1.42% respectively. This breakdown provides a clear understanding of the educational background of the individuals in the dataset, highlighting the prevalence of Bachelor's degrees among them.

TABLE 4.1 Employment status

Employment status	Frequency of each employment status	Frequency in percentage
Employed full-time	3	1.42%
Employed part-time	5	2.36%
Student	190	89.62%
Unemployed	14	6.60%
Grand Total	212	100.00%

Graphical representation



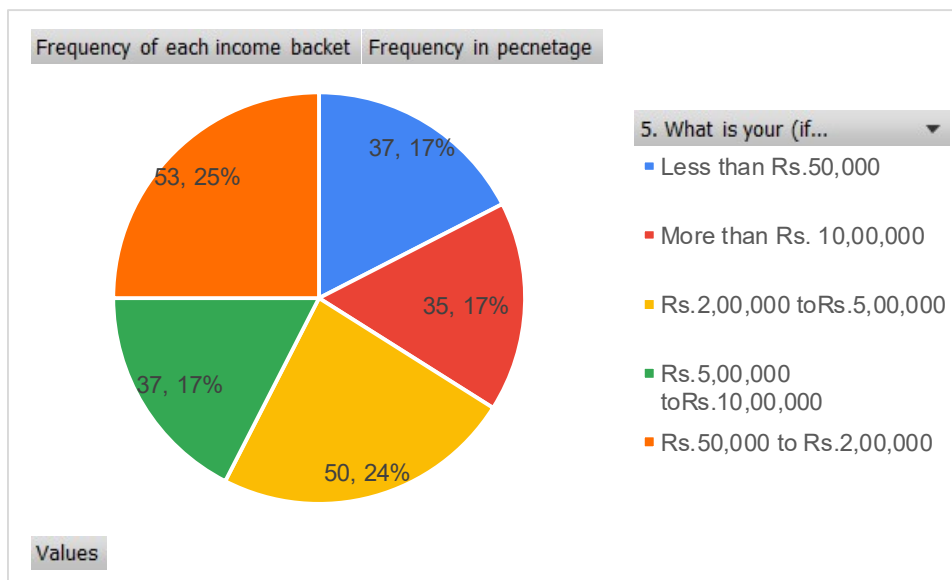
Interpretation

The majority of individuals in the dataset are students, comprising a significant 89.62% of the total. This suggests that the dataset likely represents a population primarily composed of students.

TABLE 5.1 Income distribution

Annual income bracket	Frequency of each income bracket	Frequency in percentage
Less than Rs.50,000	37	17.45%
More than Rs. 10,00,000	35	16.51%
Rs.2,00,000 toRs.5,00,000	50	23.58%
Rs.5,00,000 toRs.10,00,000	37	17.45%
Rs.50,000 to Rs.2,00,000	53	25.00%
Grand Total	212	100.00%

Graphical representation



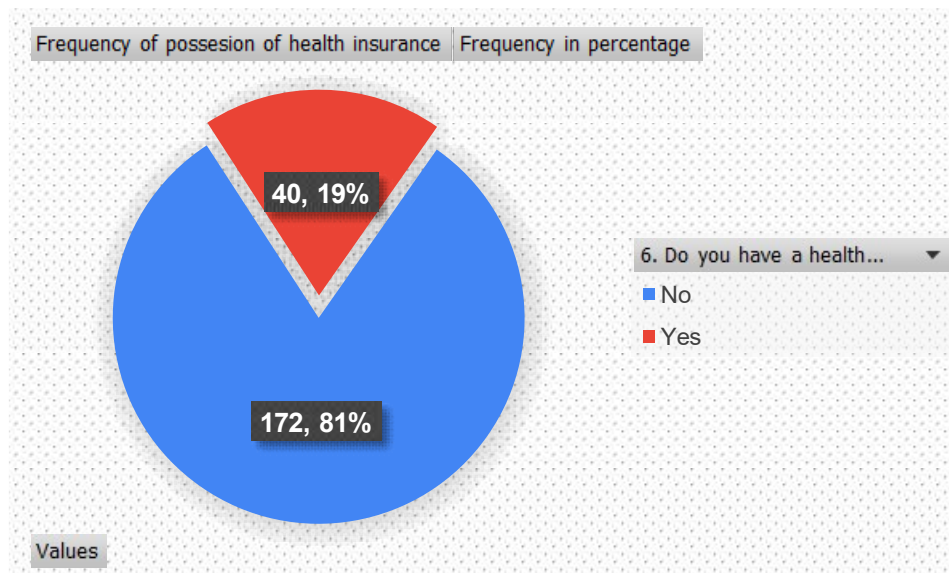
Interpretation

The dataset presents a diverse distribution of annual income brackets, reflecting various economic statuses among the individuals surveyed. It's notable that a substantial portion falls within the middle-income brackets, such as Rs.50,000 to Rs.2,00,000 and Rs.2,00,000 to Rs.5,00,000, comprising 25.00% and 23.58% respectively. Additionally, there's significant representation in the higher-income brackets, with 16.51% earning more than Rs.10,00,000 annually. On the other hand, there's also a notable presence in the lower-income bracket of "Less than Rs.50,000," accounting for 17.45%. This diverse income distribution underscores the importance of considering socioeconomic factors in analysis of this dataset.

TABLE 6.1 Health insurance status

Health insurance status	Frequency of possession of health insurance	Frequency in percentage
No	164	77.36%
Yes	48	22.64%
Grand Total	212	100.00%

Graphical representation



Interpretation

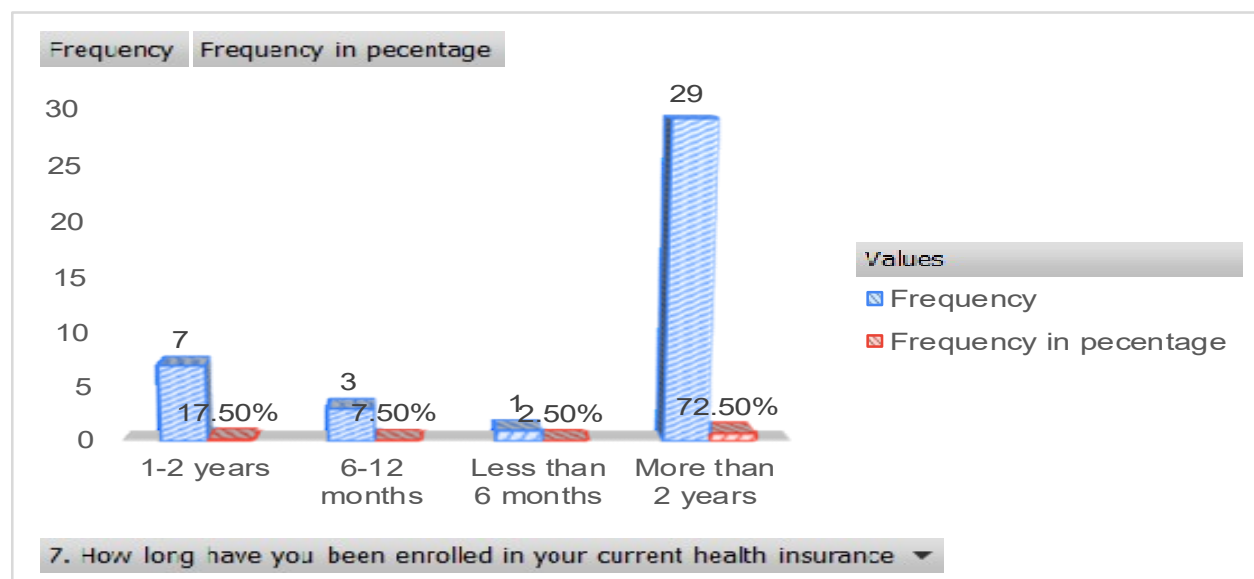
The majority of individuals in the dataset, comprising 77.36%, do not possess health insurance. This suggests a significant portion of the population may potentially face financial risks associated with healthcare expenses.

On the other hand, 22.64% of individuals do have health insurance, indicating a minority who have taken measures to mitigate healthcare-related financial risks.

TABLE 7.1 Length of period enrolled for health insurance

Length of period enrolled for health insurance	Frequency	Frequency in percentage
1-2 years	7	17.50%
6-12 months	3	7.50%
Less than 6 months	1	2.50%
More than 2 years	29	72.50%
Grand Total	40	100.00%

Graphical representation



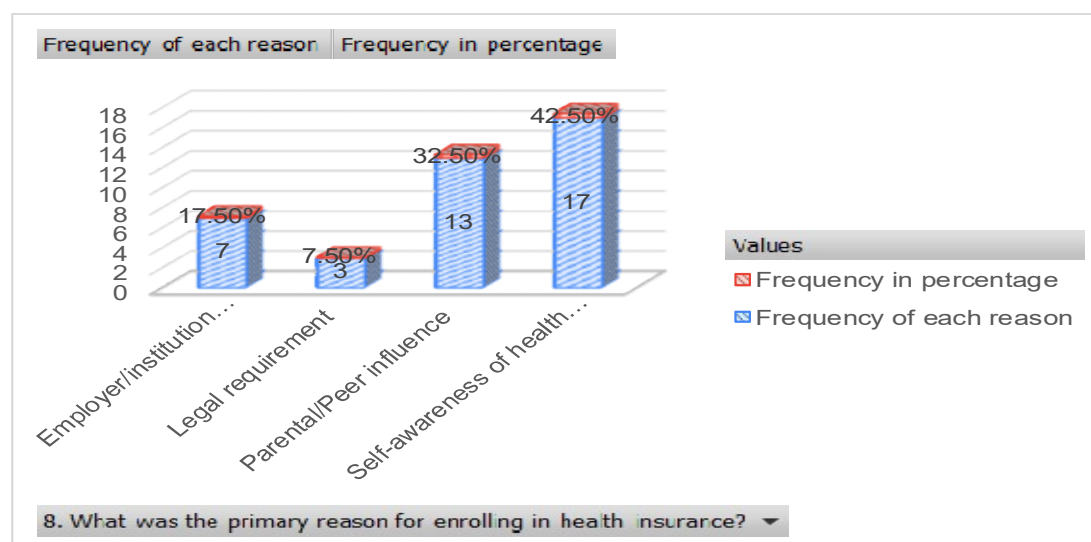
Interpretation

Understanding the length of enrollment in health insurance is essential for assessing the stability and continuity of coverage for individuals, which can impact their access to healthcare services and financial protection against medical expenses. The majority of individuals (72.50%) have been enrolled in health insurance for more than 2 years, indicating a significant portion of long-term insurance coverage and 17.50% of individuals have been enrolled for 1-2 years, while smaller percentages include 7.50% for 6-12 months and 2.50% for less than 6 months.

TABLE 8.1 Reason behind enrolling for health insurance

Reason for enrollment	Frequency of each reason	Frequency in percentage
Employer/institution provided	7	17.50%
Legal requirement	3	7.50%
Parental/Peer influence	13	32.50%
Self-awareness of health needs	17	42.50%
Grand Total	40	100.00%

Graphical representation



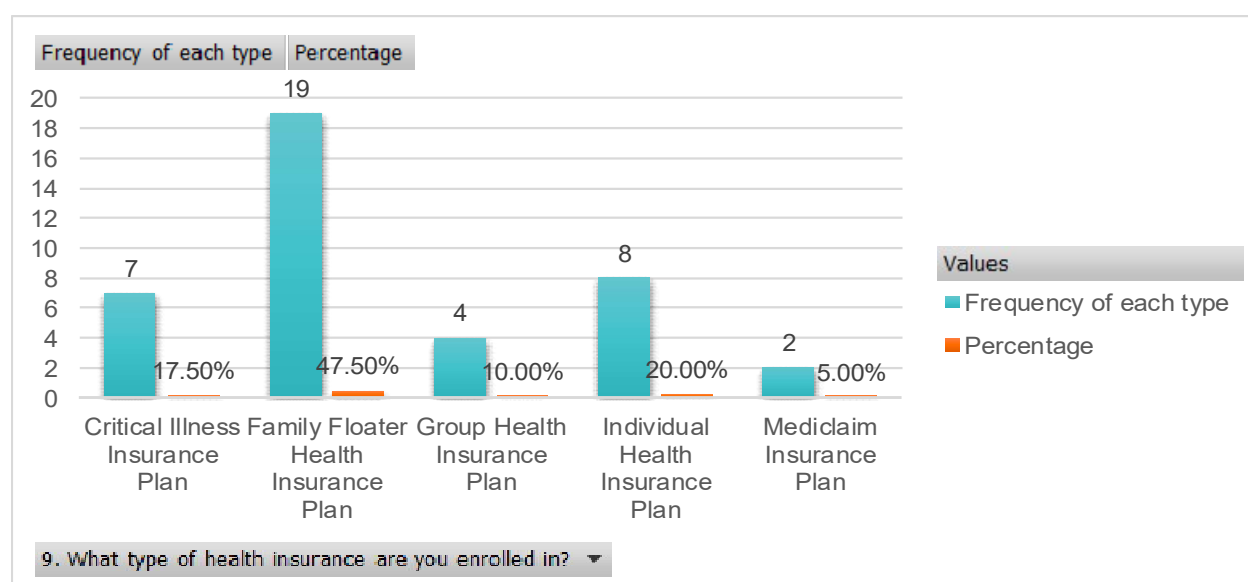
Interpretation

The most common reason for enrollment, cited by 42.50% of individuals, is self-awareness of health needs. This suggests that a significant portion of the population proactively sought out health insurance coverage based on their understanding of their own health requirements. Additionally, parental or peer influence is a notable factor, with 32.50% of individuals enrolling due to influence from family members or peers. This highlights the importance of social networks and familial support in healthcare decision-making. A smaller proportion of individuals enrolled in health insurance due to employer or institution-provided coverage (17.50%) or legal requirements (7.50%). Understanding the reasons for enrollment may lead to informed policy-making and healthcare service provision.

TABLE 9.1 Type of health insurance plan

Type of insurance plan	Frequency of each type	Percentage
Critical Illness Insurance Plan	7	17.50%
Family Floater Health Insurance Plan	19	47.50%
Group Health Insurance Plan	4	10.00%
Individual Health Insurance Plan	8	20.00%
Medicaid Insurance Plan	2	5.00%
Grand Total	40	100.00%

Graphical representation



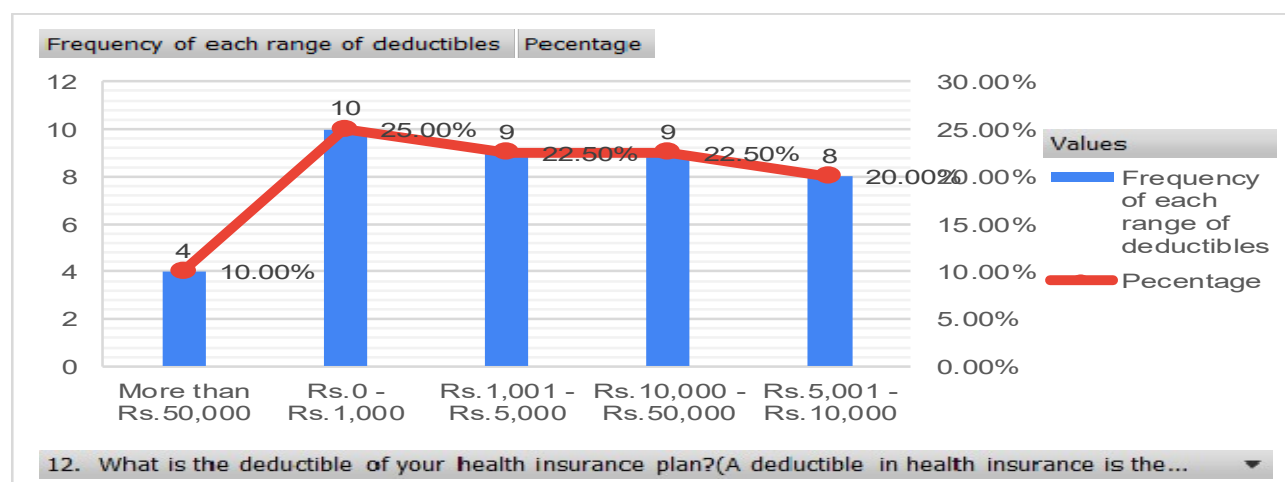
Interpretation

The most common type of insurance plan among the individuals surveyed is the Family Floater Health Insurance Plan, with 47.50% of individuals opting for this coverage. This suggests a preference for comprehensive coverage that extends to family members. Individual Health Insurance Plans are also popular, Critical Illness Insurance Plans and Group Health Insurance Plans are less common and Medicaid Insurance Plans are the least prevalent. Understanding the types of insurance plans chosen by individuals provides insights which can inform decision-making and policy development in the insurance sector.

TABLE 10.1 Financial source for enrollment of health insurance

Financial source	Frequency of each source	Frequency in percentage
Employer contribution	2	5.00%
Government subsidy	5	12.50%
Out-of-pocket	5	12.50%
Parental assistance	28	70.00%
Grand Total	40	100.00%

Graphical representation



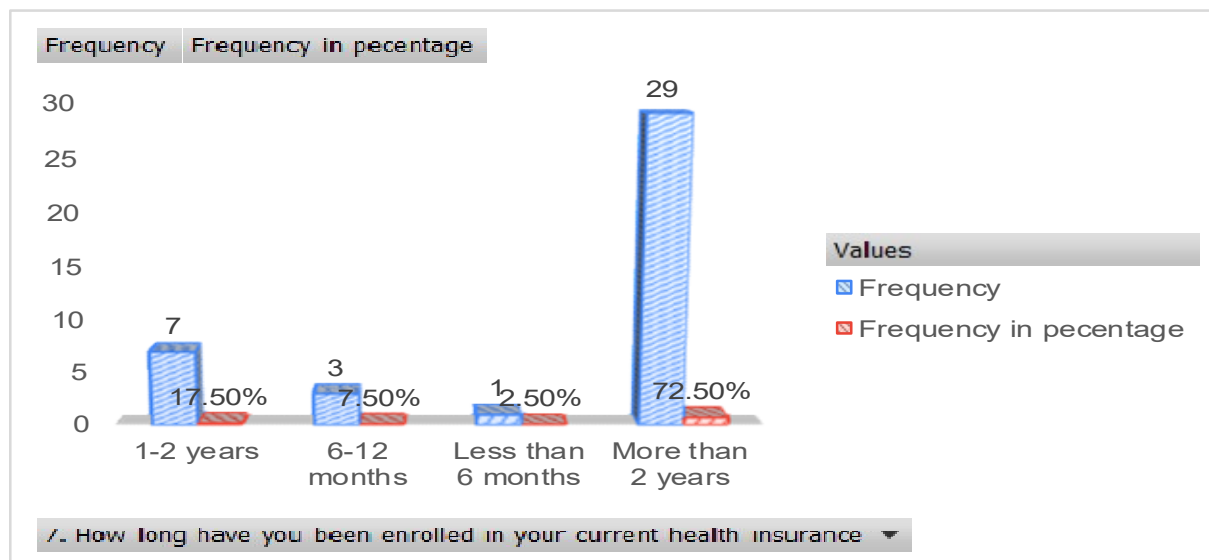
Interpretation

The suggests that a considerable portion of the surveyed individuals, family support, particularly parental assistance, plays a crucial role in securing health insurance coverage. This reliance on parental assistance underscores the importance of familial financial support in ensuring access to healthcare services, especially among younger individuals. Additionally, the relatively lower contribution from government subsidies, out-of-pocket payments, and employer contributions indicates potential gaps in these areas, which could be addressed through policy interventions to enhance healthcare affordability and accessibility.

TABLE 11.1 Frequency of payment of premiums for each insurance plan

Frequency of premium payments	Count of frequency of premiums	Count in percentage
Annually	24	60.00%
Monthly	2	5.00%
Only once for the complete coverage	4	10.00%
Quarterly	5	12.50%
Semi-annually	5	12.50%
Grand Total	40	100.00%

Graphical representation



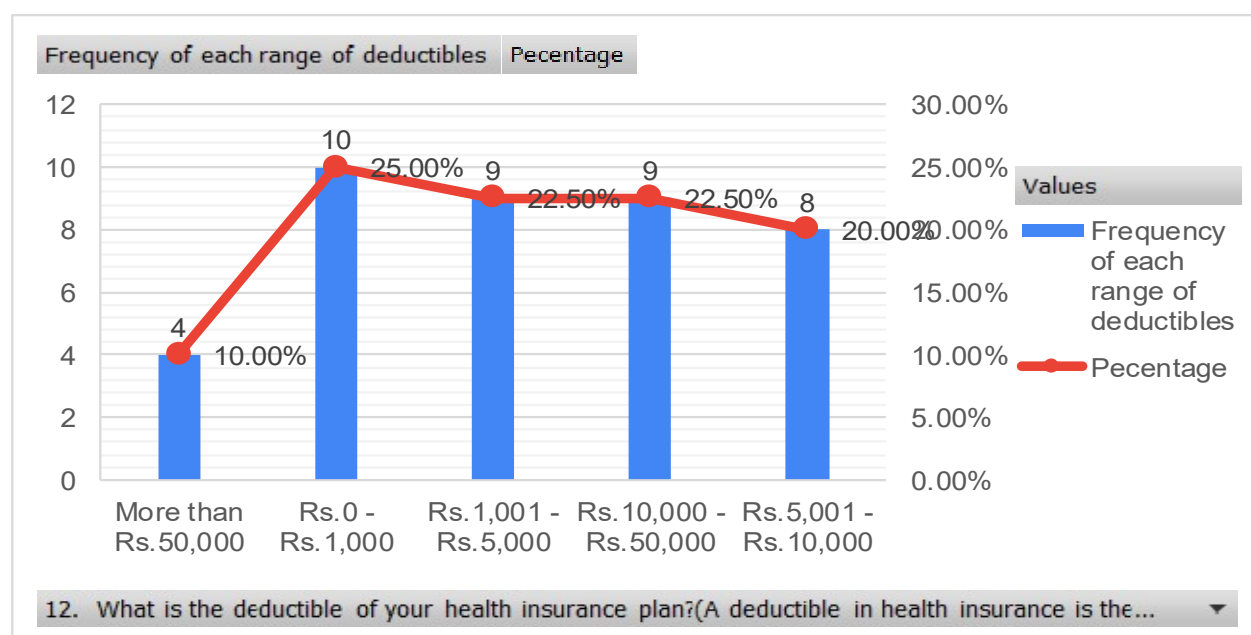
Interpretation

The data reveals that the majority of individuals (60.00%) prefer to pay their insurance premiums annually, suggesting a preference for a once-a-year payment schedule. Quarterly and semi-annual payments each represent 12.50% of the total, indicating a preference for spreading payments out over the year. Monthly payments are the least common, chosen by only 5.00% of individuals, while 10.00% opt for a one-time payment for complete coverage. Understanding the frequency of premium payments provides insights into individuals' preferences for managing their insurance costs and can inform insurers about the most popular payment options among their clientele.

TABLE 12.1 Amount of deductibles for each individual for the plan

Range of deductibles	Frequency for each range of deductibles	Percentage
More than Rs.50,000	4	10.00%
Rs.0 -Rs.1,000	10	25.00%
Rs.1,001 -Rs.5,000	9	22.50%
Rs.10,000 -Rs.50,000	9	22.50%
Rs.5,001 -Rs.10,000	8	20.00%
Grand Total	40	100.00%

Graphical representation



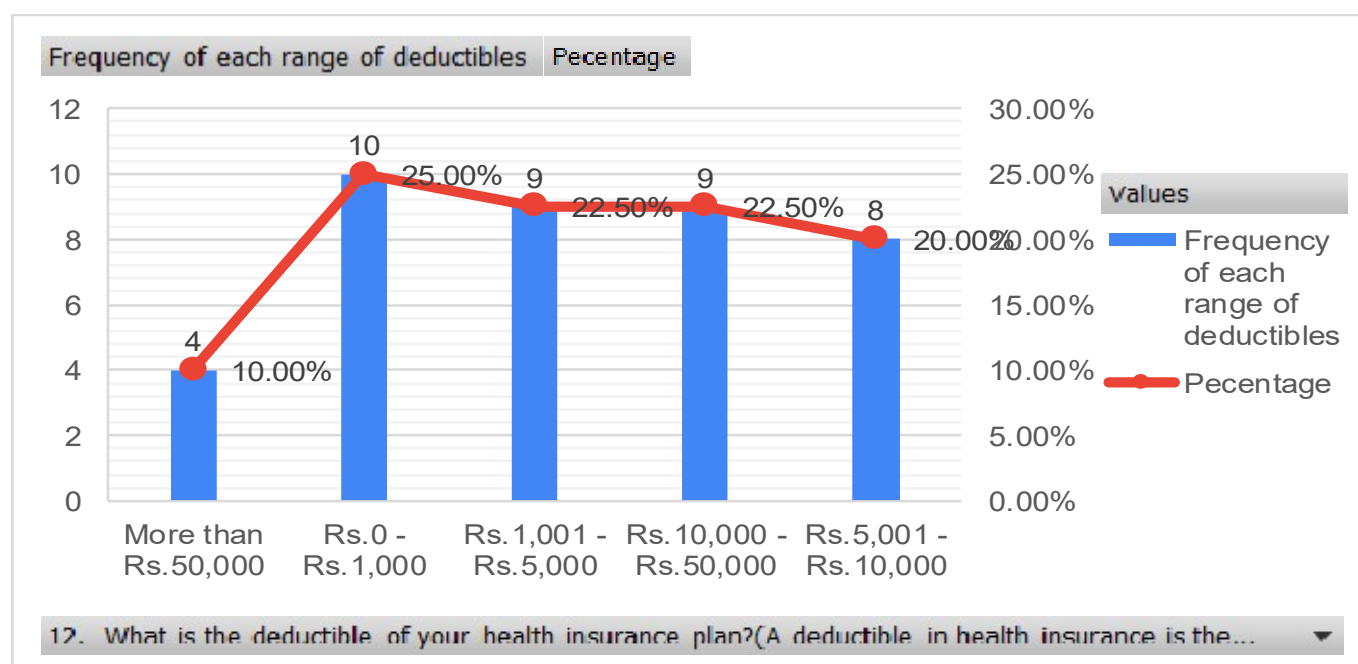
Interpretation

The data suggests a varied distribution of deductibles among individuals with health insurance coverage, with a notable portion opting for minimal or no deductibles. The distribution indicates diverse preferences regarding deductible levels, potentially reflecting individual risk tolerance, financial capabilities, and coverage needs.

TABLE 13.1 Confidence in understanding of terms and conditions of the plans

Understanding of terms and conditions	Frequency	percentage
Neutral	17	42.50%
Not confident at all	2	5.00%
Not very confident	4	10.00%
Somewhat confident	14	35.00%
Very confident	3	7.50%
Grand Total	40	100.00%

Graphical representation



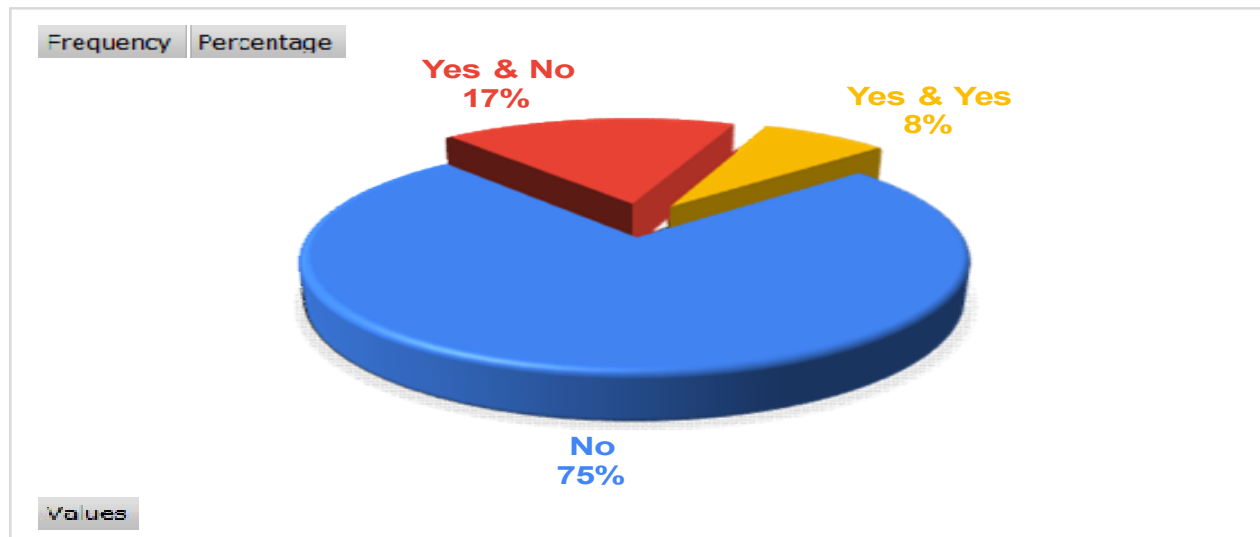
Interpretation

While a substantial portion feel neutral or somewhat confident, there are still individuals who express less confidence in their understanding. Enhancing clarity and communication regarding policy terms and conditions could help improve individuals' understanding and confidence in their insurance coverage. Hence, there is a need to improve communication and transparency in insurance policies, ensuring that consumers are better equipped to make informed decisions about their coverage.

TABLE 14.1 Instances of claims denied by provider or declined by individual

Claims denied or declined	Frequency	Percentage
No	33	82.50%
No	26	65.00%
Yes	7	17.50%
Yes	7	17.50%
No	4	10.00%
Yes	3	7.50%
Grand Total	40	100.00%

Graphical representation



Interpretation

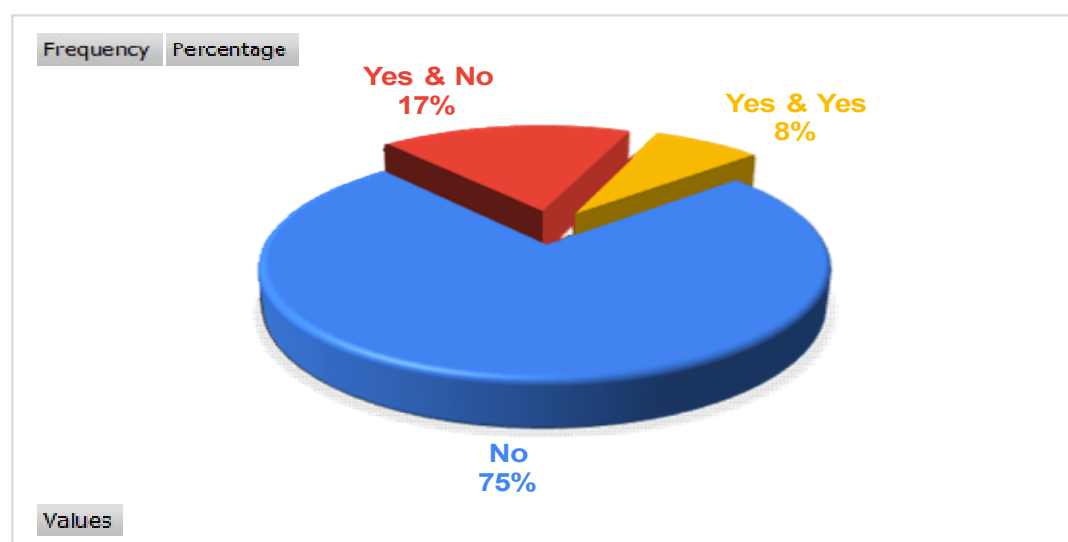
The majority of individuals surveyed have not experienced claim denials or declines. A notable proportion of individuals have experienced either claim denials or declines, with equal percentages for each.

Further analysis into the reasons for claim denials or declines could provide insights into potential issues with the insurance coverage or claims processing procedures.

TABLE 15.1 Chronic conditions and their coverage under the plan

Chronic condition & it's coverage	Frequency	Percentage
No	30	75.00%
Yes & No	7	17.50%
Yes & yes	3	7.50%
Grand Total	40	100.00%

Graphical representation



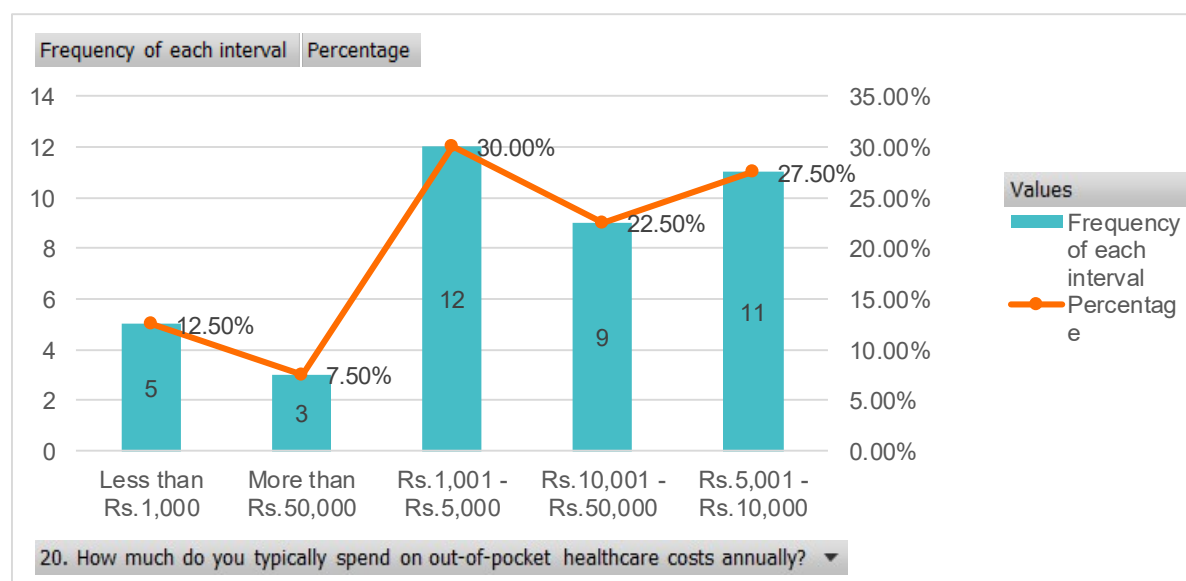
Interpretation

Majority, 75% of the individuals, does not suffer from any chronic conditions and only 8% of the individuals have their conditions covered under their plans. Rest, 17% individuals, are still un-insurance against severe health conditions in spite of having a health insurance.

TABLE 16.1 Out of pocket expenditure of insured individuals

Range of out-of-pocket expenditure	Frequency of each interval	Percentage
Less than Rs.1,000	5	12.50%
More than Rs.50,000	3	7.50%
Rs.1,001 - Rs.5,000	12	30.00%
Rs.10,001 - Rs.50,000	9	22.50%
Rs.5,001 - Rs.10,000	11	27.50%
Grand Total	40	100.00%

Graphical representation



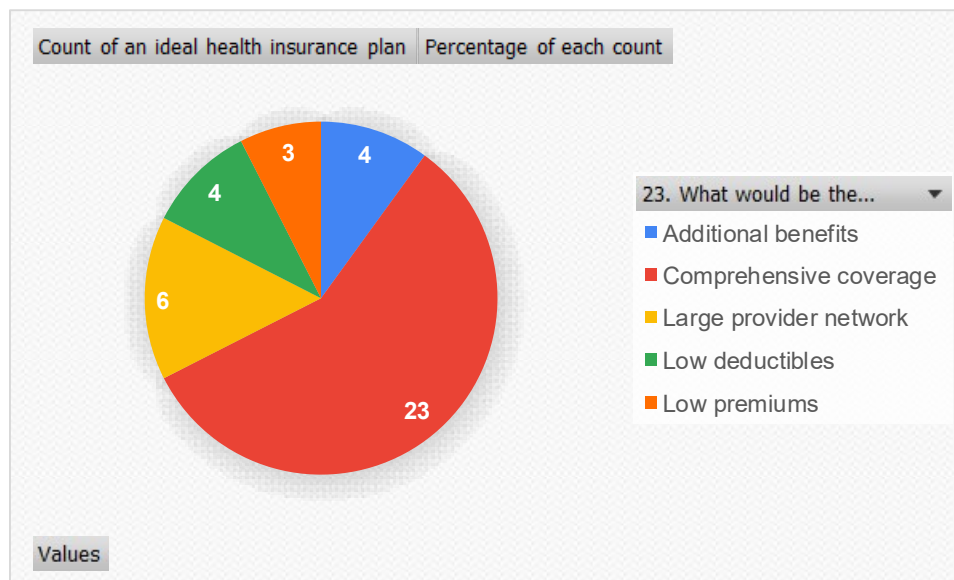
Interpretation

The majority of individuals surveyed incur moderate out-of-pocket expenses, with the most common range being Rs.1,001 to Rs.5,000. A significant portion of individuals also experience higher out-of-pocket costs, with expenses ranging from Rs.5,001 to Rs.50,000. A smaller proportion of individuals have either minimal out-of-pocket expenses (less than Rs.1,000) or very high expenses (more than Rs.50,000).

TABLE 17.1 Features of an ideal health insurance plan

Feature of an ideal plan	Count of an ideal health insurance plan	Percentage of each count
Additional benefits	4	10.00%
Comprehensive coverage	23	57.50%
Large provider network	6	15.00%
Low deductibles	4	10.00%
Low premiums	3	7.50%
Grand Total	40	100.00%

Graphical representation



Interpretation

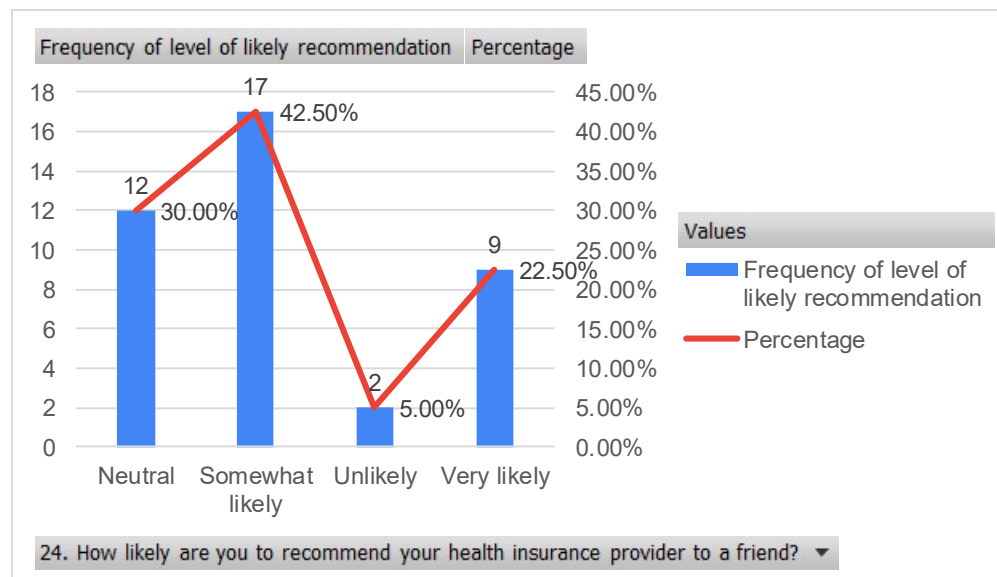
The majority of individuals surveyed prioritize comprehensive coverage in an ideal health insurance plan, emphasizing the importance of robust coverage for various medical needs. A significant portion also value a large provider network, indicating the importance of having access to a wide range of healthcare providers.

Additional benefits and low deductibles are also desirable features for some individuals, albeit to a lesser extent. Low premiums, while still desired, are the least prioritized feature, suggesting that individuals may be willing to pay higher premiums for more extensive coverage and benefits.

TABLE 18.1 Chances of recommendations of the insurance plans to others

Chances of recommendation	Frequency of level of likely recommendation	Percentage
Neutral	12	30.00%
Somewhat likely	17	42.50%
Unlikely	2	5.00%
Very likely	9	22.50%
	40	100.00%

Graphical representation



Interpretation

The majority of individuals surveyed express a positive sentiment towards recommending the health insurance plan, with a significant portion being somewhat likely to do so. A smaller but still notable proportion are very likely to recommend the plan, indicating a strong endorsement. The percentage of individuals who are unlikely to recommend the plan is relatively low, suggesting overall satisfaction or positive experiences with the plan.

Data Analysis:

Based on the information collected from 212 responses and performing tests on the collected data the results found are as below. We also show the percentage variation in the attributes from collected responses followed by analysis for testing some associations:

Level of significance (α) for all tests is 5%.

CROSS TABLE 1.1 Age v/s Insurance status

H0: There is no association between insurance status and age.

H1: There is significant association between insurance status and age.

Age bracket	Observed data	Health insurance status		
		No	Yes	Grand Total
	15-17	0	2	2
	18-20	53	15	68
	21-23	105	17	122
	24-26	14	3	17
	27-29	0	3	3
	Grand Total	172	40	212

chi square values	
calculated	23.908
degree of freedom	4
tabulated	9.487

Interpretation

The result indicates that the calculated value of chi-square is 23.908 which is greater than the tabulated value (=9.487) of the chi-square with 4 degrees of freedom at 5% level of significance. Thus, the null hypothesis is rejected, that means, there is significant association between insurance status and age.

CROSS TABLE 2.1 Income v/s Insurance status

H0: There is no association between insurance status and income.

H1: There is significant association between insurance status and income.

	Expected values	Health insurance status		
		No	Yes	Grand Total
Income	Less than Rs.50,000	29	8	37
	More than Rs. 10,00,000	22	13	35
	Rs.2,00,000 toRs.5,00,000	42	8	50
	Rs.5,00,000 toRs.10,00,000	27	10	37
	Rs.50,000 to Rs.2,00,000	52	1	53
	Grand Total	172	40	212

chi square values	
calculated	19.680
degree of freedom	4
tabulated	9.487

Interpretation

The result indicates that the calculated value of chi- square is 19.680 which is greater than the tabulated value (=9.487) of the chi-square with 4 degrees of freedom at 5% level of significance. Therefore, the null hypothesis is rejected that means there is significant association between income and age

CROSS TABLE 3.1 Income v/s Deductible

H0: There is no association between deductible and income.

H1: There is significant association between deductible and income.

	Observed values	Deductible					
		More than Rs.50,000	Rs.0 - Rs.1,000	Rs.1,001 - Rs.5,000	Rs.10,000 - Rs.50,000	Rs.5,001 - Rs.10,000	Grand Total
Income	Less than Rs.50,000	2	0	4	1	1	8
	More than Rs. 10,00,000	2	4	3	2	2	13
	Rs.2,00,000 toRs.5,00,000	0	3	1	3	1	8
	Rs.5,00,000 toRs.10,00,000	0	2	1	3	4	10
	Rs.50,000 to Rs.2,00,000	0	1	0	0	0	1
	Grand Total	4	10	9	9	8	40

chi square values	
calculated	17.777
degree of freedom	16
tabulated	26.296

Interpretation

The result indicates that the calculated value of chi- square is 17.777 which is smaller than the tabulated value (=26.296) of the chi-square with 16 degrees of freedom at 5% level of significance. Therefore, the null hypothesis is failed to reject, i.e., there is no significant association between income and deductible.

CROSS TABLE 4.1 Income v/s Out-of-pocket healthcare expenditure

H0: There is no association between out-of-pocket healthcare expenditure and income.

H1: There is significant association between out-of-pocket healthcare expenditure and income.

	Observed values Row Labels	Out-of-pocket healthcare expenditure					
		Less than Rs.1,000	More than Rs.50,000	Rs.1,001 - Rs.5,000	Rs.10,001 - Rs.50,000	Rs.5,001 - Rs.10,000	Grand Total
Income	Less than Rs.50,000	2	1	2	3	0	8
	More than Rs. 10,00,000	2	1	3	2	5	13
	Rs.2,00,000 toRs.5,00,000	1	0	2	1	4	8
	Rs.5,00,000 toRs.10,00,000	0	1	4	3	2	10
	Rs.50,000 to Rs.2,00,000	0	0	1	0	0	1
	Grand Total	5	3	12	9	11	40

chi square values	
calculated	12.438
degree of freedom	16
tabulated	26.296

Interpretation

The result indicates that the calculated value of chi- square is 12.438 which is smaller than the tabulated value (=26.296) of the chi-square with 16 degrees of freedom at 5% level of significance. Therefore, the null hypothesis is failed to reject, i.e., there is significant association between income and out-of-pocket healthcare expenditure.

Limitations:

In the pursuit of knowledge, it is imperative to recognize that every endeavor is bound by its inherent limitations. Just as a ship navigates through turbulent waters, so too does research encounter obstacles that shape its course. In the exploration of health insurance dynamics among young adults aged 15-29 years, this study is no exception. Let us delve into these limitations, acknowledging them as waypoints in the journey of understanding.

Small sample size:

The study's sample size of 212 participants may limit the generalizability of findings to the broader young adult population. A larger sample size would provide more representative insights into health insurance dynamics.

Restricted age group (15-29):

Focusing solely on young adults aged 15-29 years may overlook important variations in health insurance patterns across different age groups, limiting the study's applicability to older demographics.

Online surveys only:

Relying solely on online surveys may introduce selection bias, as it excludes individuals without internet access or those who prefer other modes of participation, potentially skewing the sample's demographics.

Small time frame/snapshot:

The study's limited time frame may capture only a snapshot of health insurance behavior, failing to account for temporal variations or long-term trends in coverage, costs, and utilization patterns.

False answers as people are unaware of their insurances:

Participants' lack of awareness regarding their health insurance coverage may lead to inaccurate responses, potentially affecting the reliability and validity of the data collected.

Biased responses:

Respondents may provide biased or socially desirable responses, particularly when answering sensitive questions about insurance coverage and healthcare utilization, impacting the accuracy of the study's findings.

Conclusion:

The study "Insuring Health: A Statistical Analysis of Coverage, Costs, and Care" has provided valuable insights into the complex landscape of health insurance among young adults. Through rigorous analysis of coverage, costs, utilization patterns, and demographic factors, we have gained a deeper understanding of the challenges and opportunities inherent in ensuring healthcare access and affordability for this demographic.

The data from the study reveals a concerning trend regarding health insurance coverage among young adults aged 15-29 years. Among the 212 individuals surveyed, only 40 respondents, constituting approximately 18.86% of the sample, reported having health insurance. This low percentage is particularly alarming given that the majority of respondents, roughly 80%, were college students who typically have access to institutional health insurance coverage through their educational institutions.

The discrepancy between the expected coverage among college students and the actual reported coverage highlights a significant issue: a lack of awareness and understanding regarding health insurance among young people. Despite being part of a demographic that is often considered relatively privileged and well-informed, the data suggests a widespread gap in knowledge and literacy regarding health insurance options and benefits.

This finding underscores the urgent need for targeted educational campaigns aimed at raising awareness about health insurance among young adults. These campaigns should focus not only on the importance of health insurance but also on the various options available, including government-based subsidies such as Ayushman Bharat and Corona Kavach. By providing clear and accessible information about these programs, young adults can make more informed decisions about their healthcare coverage and access the support they need to safeguard their health.

Furthermore, the low response rate for health insurance coverage, especially in the wake of a global pandemic, serves as a stark reminder of the importance of proactive health management. The COVID-19 pandemic has highlighted the vulnerability of individuals without adequate health insurance coverage, and the data from this study underscores the need for proactive measures to address this issue.

In conclusion, the findings from the study point to a critical need for increased health insurance literacy and awareness among young adults. By implementing targeted educational campaigns and providing accessible information about available resources, we can empower young people to take control of their health and ensure access to essential healthcare services. In essence, the journey towards insuring health in young adults is ongoing, but with continued dedication, collaboration, and innovation, we can strive towards a brighter and healthier future for all.

Questionnaire:

1. **What is your age?**
 - A) 15-17
 - B) 18-20
 - C) 21-23
 - D) 24-26
 - E) 27-29
2. **What is your gender?**
 - A) Male
 - B) Female
 - C) Non-binary/Other
 - D) Prefer not to say
3. **What is your highest level of education?**
 - A) Higher secondary
 - B) Senior secondary
 - C) Bachelor's degree
 - D) Master's degree
 - E) PhD/Post Doc.
4. **What is your current employment status?**
 - A) Employed full-time
 - B) Employed part-time
 - C) Unemployed
 - D) Student
5. **What is your (if unemployed, your family's) annual income?**
 - A) Less than Rs.50,000
 - B) Rs.50,000 to Rs.2,00,000
 - C) Rs.2,00,000 toRs.5,00,000
 - D) Rs.5,00,000 toRs.10,00,000
 - E) More than Rs. 10,00,000
6. **Do you have a health insurance?**
 - A) Yes
 - B) No
7. **How long have you been enrolled in your current health insurance plan?**
 - A) Less than 6 months
 - B) 6-12 months
 - C) 1-2 years
 - D) More than 2 years
8. **What was the primary reason for enrolling in health insurance?**
 - A) Employer/institution provided
 - B) Parental/Peer influence

- C) Self-awareness of health needs
 - D) Legal requirement
9. **What type of health insurance are you enrolled in?**
- A) **Individual Health Insurance Plan**
 - B) **Family Floater Health Insurance Plan**
 - C) **Critical Illness Insurance Plan:** Offers financial protection against expensive treatment for critical illnesses.
 - D) **Group Health Insurance Plan:** Coverage for a group of people e.g. company's employees, often provided as an employment benefit
 - E) **Mediclaime Insurance Plan:** Covers in-patient expenses like surgeries, room rent, etc.
 - F) **Disease-specific Plans:** Coverage for a specific health condition, like the Corona Kavach policy for COVID-19.
10. **How did you finance your health insurance premium?**
- A) Out-of-pocket
 - B) Employer contribution
 - C) Parental assistance
 - D) Government subsidy
 - E) Other
11. **How often do you usually pay your health insurance premiums?**
- A) Monthly
 - B) Quarterly
 - C) Semi-annually
 - D) Annually
12. **What is the deductible of your health insurance plan?** (A deductible in health insurance is the amount you pay out of pocket for covered healthcare services before your insurance plan starts to pay.)
- A) Rs.0 -Rs.1,000
 - B) Rs.1,001 -Rs.5,000
 - C) Rs.5,001 -Rs.10,000
 - D) Rs.10,001 -Rs.50,000
 - E) More than Rs.50,000
13. **How confident are you in understanding the terms and conditions of your health insurance policy?**
- A) Very confident
 - B) Somewhat confident
 - C) Neutral
 - D) Not very confident
 - E) Not confident at all
14. **Have you ever had a claim denied by your health insurance?**
- A) Yes
 - B) No
15. **Have you ever declined a recommended medical procedure because it was not covered by your insurance?**
- A) Yes

- B) No
- 16. **Do you have any chronic conditions that require ongoing medical care? Are those conditions covered by your current health insurance plan?**
 - A) Yes& Yes
 - B) Yes & No
 - C) No
- 17. **Do you feel that your health insurance adequately covers preventative care services?**
 - A) Yes
 - B) No
- 18. **Do you have any additional health coverage (e.g., dental, vision, supplemental insurance)?**
 - A) Yes
 - B) No
- 19. **Would you consider purchasing additional health insurance for better coverage?**
 - A) Yes
 - B) No
- 20. **How much do you typically spend on out-of-pocket healthcare costs annually?**
 - A) Less than Rs.1,000
 - B) Rs.1,001 - Rs.5,000
 - C) Rs.5,001 - Rs.10,000
 - D) Rs.10,001 - Rs.50,000
 - E) More than Rs.50,000
- 21. **Do you feel that health insurance is more important as one gets older?**
 - A) Yes
 - B) No
- 22. **Have you ever used your health insurance while travelling out of state or abroad?**
 - A) Yes
 - B) No
- 23. **What would be the most important feature of an ideal health insurance plan for you?**
 - A) Low premiums
 - B) Low deductibles
 - C) Comprehensive coverage
 - D) Large provider network
 - E) Additional benefits (e.g., gym membership, wellness programs)
- 24. **How likely are you to recommend your health insurance provider to a friend?**
 - A) Very likely
 - B) Somewhat likely
 - C)Neutral
 - D)Unlikely
 - E) Very unlikely

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