SEHAT SAHULAT PROGRAM

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Research on Social (Health) Protection and the Household Economy: Benefits and Costs of the Sehat Sahulat Card for Poor Households in Pakistan

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LIST OF ACRONYMS

BISP	Benazir Income Support Program
CEO	Chief Executive Officer
CHE	Catastrophic Health Expenditure
CVM	Contingent Valuation Method
FGD	Focus Group Discussion
HIES	Household Integrated Economic Survey
IDI	In-Depth Interviews
LMIC	Lower Middle-Income Country
NHA	National Health Report
NSER	National Socio-Economic Registry
Ologit	Ordered Logistic
OOP	Out-Of-Pocket
PHIMC	Punjab Health Initiative Management Company
PIDE	Pakistan Institute of Development Economics
PMNHP	Prime Minister's National Health Program
PMT	Poverty Mean Test
PPP	Purchasing Power Parity
PSM	Propensity Score Matching
SC	Sehat Card
SDG	Sustainable Development Goal
SHP	Sehat Sahulat Program
SLIC	State Life Insurance Company
SSP	Sehat Sahulat Program

SUR	Seemingly Unrelated Regression
UC	Union Council
UHC	Universal Health Coverage
WHO	World Health Organization
WTP	Willingness To Pay

DEFINITIONS

Social Health Protection	A set of policies and programs that aim to ensure that everyone has access to the health care services they need, without suffering financial hardship. It is a broader concept than social health insurance (SHI), which is just one type of SHP program.
Social Health Insurance	Social Health Insurance (SHI) is a system for funding and managing healthcare based on the principle of risk pooling. Individuals, employers, and sometimes the government contribute to a common fund, which is then used to pay for the healthcare needs of all members of the system. This ensures that everyone has access to healthcare, regardless of their income or health status.
Social Welfare	Social welfare refers to the organized system of government support intended to ensure that basic human needs are met for all members of society. This typically includes access to necessities like food, shelter, healthcare, and education.
Sustainable Development Goal	Sustainable Development Goals (SDGs) are a set of 17 global goals adopted by the United Nations in 2015. The SDGs aim to address a range of social, economic, and environmental challenges, including poverty, hunger, inequality, climate change, and peace and security.
Out of Pocket Expenditure	Out-of-pocket payments/ expenditure are payments made by individuals and families themselves for seeking health care services and that are not covered by insurance or other forms of prepayment. OOP payments can be a significant financial burden for households, especially in low- and middle-income countries.
Proxy Means Tests	PMT is a targeted method by which a score for applicant households is generated based on easy -to -observe household characteristics. Test used to determine whether a household is eligible for a government benefit or program. PMTs are typically based on a household's income and assets.

Purchasing Power Parity	Purchasing Power Parity (PPP) is an economic measure that compares the relative prices of goods and services in different countries. PPP is used to adjust for differences in the cost of living between countries.
Universal Health Coverage	Universal Health Coverage (UHC) is the goal of ensuring that all people have access to the health care services they need, without suffering financial hardship.
Willingness to Pay	Willingness To Pay (WTP) is a measure of how much an individual or group is willing to pay for a good or service.
Universal Health Insurance Coverage	Ensuring that all people have access to needed promotive, preventive, curative and rehabilitative healthcare services of sufficient quality to be effective without any financial hardships.
Catastrophic Health Expenditures	Catastrophic health expenditures are (i) percentage of population with household expenditures on health greater than 10% of total household expenditures or income and (ii) percentage of population with household expenditures on health greater than 25% of total household expenditures or income.

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The Sehat Sahulat Program stands as a cornerstone in fostering a healthier, more equitable society. In the context of Punjab, it is imperative to recognize the significance of ensuring access to quality healthcare for all citizens. Such a system not only provides financial protection but also promotes social solidarity and economic stability.

We believe that with continued collaborative efforts and commitment from stakeholders, the vision of universal health insurance in Pakistan can be realized, creating a healthier and more prosperous nation for generations to come.

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EXECUTIVE SUMMARY

This study evaluates the impact of the Sehat Sahulat Program (SSP) on the financial well-being of low-income households in Pakistan, with a focus on two key areas: (i) the reduction of Out-of-Pocket (OOP) health expenditures and its implications for Saving behavior, and (ii) individuals' Willingness to Pay (WTP) for health insurance. To assess these outcomes, advanced statistical techniques are employed, including Propensity Score Matching (PSM) for analyzing OOP expenditures and Saving behavior, and Ordered Logistic Regression (Ologit) for examining WTP.

The first objective is to determine whether the SSP has effectively reduced OOP health expenditures for its beneficiaries while also protecting individual and family health by addressing key determinants of health. These determinants encompass access to healthcare, equality, equity, and the right to a non-discriminatory health protection system. A robust healthcare delivery system—characterized by adequate availability, accessibility, financing, and social health protection—is fundamental to achieving improved health outcomes such as lower mortality, reduced morbidity, and increased life expectancy. These determinants are reflected in the framework of Universal Health Coverage (UHC), particularly in indicator 3.8.1 (access to quality essential health services) and 3.8.2 (financial risk protection).

In Pakistan, OOP health expenditures represent a significant financial burden, particularly for low-income households, where medical costs often lead to catastrophic consequences. The SSP aims to mitigate this burden by providing health insurance coverage to economically vulnerable families. Using PSM, the study compares households enrolled in SSP with those not covered but who experienced hospitalization, thereby ensuring a balanced comparison between the two groups.

The results demonstrate that participation in SSP has significantly reduced OOP health expenditures among beneficiaries and has led to increased utilization of healthcare services. By offering financial protection against healthcare costs, the program enables households to avoid depleting their savings or incurring debt due to health shocks, thereby contributing to greater financial stability.

The second objective of this study is to examine how the reduction in Out-of-Pocket (OOP) expenditures through the Sehat Sahulat Program (SSP) influences the saving behavior of beneficiaries. Savings play a critical role in building financial resilience, particularly for low-income households that are highly vulnerable to economic shocks. This analysis explores whether the financial relief provided by SSP enables households to save more, given that they are no longer required to allocate substantial portions of their income to medical expenses. Using Propensity Score Matching (PSM), the study compares the saving behavior of beneficiaries and non-beneficiaries. The results reveal that SSP participants demonstrate stronger saving behavior compared to non-participants, indicating that reduced OOP expenditures allow households to redirect resources toward savings. This enhanced capacity to save strengthens financial security, lowers vulnerability to future economic shocks, and improves overall household well-being.

The third objective is to assess individuals' Willingness to Pay (WTP) for health insurance, which is a critical factor for the sustainability of health programs such as SSP, especially as the program considers transitioning toward a co-contributory model. This model may involve two forms of contribution: (i) co-payments at the time of treatment and (ii) premium contributions for regular health insurance coverage. Understanding individuals' WTP for both mechanisms is essential for ensuring the program's long-term viability and fostering broad participation, particularly among low-income households.

To investigate these dynamics, the study applies Ordered Logistic Regression (Ologit) to examine the influence of demographic and socio-economic characteristics on WTP. For the co-payment model, the analysis focuses on individuals' willingness to make one-time contributions at the time of receiving treatment. For the premium model, the analysis examines willingness to pay for ongoing, regular health insurance premiums. Both models consider a range of factors, including income, education, family size, health status, and prior healthcare experiences, to identify the determinants of willingness to contribute under different financing arrangements.

A separate regression analysis is conducted for the premium model to better understand the socio-economic factors—such as income, education, and employment status—that influence individuals' ability and willingness to commit to monthly or annual insurance payments. The findings indicate that income, education, and prior healthcare experiences significantly shape WTP for both co-payments and premiums. In particular, individuals with higher income levels, higher educational attainment, and frequent prior healthcare utilization were more likely to express willingness to pay regular premiums. Notable variations in WTP across socio-economic groups highlight the importance of designing contribution structures that are equitable and affordable, thereby ensuring inclusive participation.

Overall, the study provides important insights for policymakers on how to design sustainable health insurance models that incorporate both co-payment and premium-based contributions. It underscores the positive role of SSP in reducing OOP expenditures, improving healthcare access and utilization, strengthening household financial stability, and protecting vulnerable populations from falling deeper into poverty. The findings emphasize the need to consider individuals' WTP in the design of future health financing strategies and recommend expanding SSP alongside complementary initiatives such as financial literacy programs and co-contributory models to enhance its long-term impact and improve the financial resilience of low-income households.

INTRODUCTION

In Pakistan, the household economy represents a critical focus of public policy, particularly for economically vulnerable families. Low-income households face multiple challenges, including limited access to essential services, rising inflation, and increasing health-related expenditures. Among the most pressing concerns is the burden of health shocks. Unexpected illnesses or injuries often result in substantial out-of-pocket (OOP) expenditures, which can push already disadvantaged families deeper into poverty. These financial pressures frequently force households to compromise on other essential needs such as education, nutrition, and shelter, thereby undermining their long-term financial stability.

To address these challenges, the Sehat Sahulat Program (SSP) was introduced as a social health insurance initiative aimed at alleviating the financial strain associated with healthcare costs. By providing coverage for medical expenses, the program seeks to reduce OOP spending and strengthen the economic resilience of beneficiary households. Its potential impact extends beyond healthcare affordability, as financial protection may also enable households to allocate more resources toward savings and other essential needs, thus contributing to improved overall welfare.

This report evaluates the effectiveness of SSP in improving household financial well-being, with a particular focus on two key dimensions: (1) reducing OOP healthcare expenditures and (2) enhancing saving behavior among low-income households. The analysis provides important insights into SSP's role in fostering financial resilience, mitigating poverty, and promoting greater economic stability for vulnerable populations in Pakistan. The subsequent sections present a detailed assessment of these outcomes, offering a comprehensive framework for understanding the program's efficacy and broader policy relevance.

IMPACT ON OUT-OF-POCKET (OOP) EXPENDITURES

Health shocks represent a major source of financial vulnerability for low-income households in Pakistan. When faced with illness, families are often compelled to incur substantial Out-of-Pocket (OOP) expenses to access healthcare services, which can lead to impoverishment. According to the World Health Organization (WHO), OOP expenditures account for a disproportionately high share of healthcare financing in Pakistan. In 2017, OOP spending constituted 68% of total health expenditures—one of the highest levels in the region. Such heavy reliance on OOP payments results in reduced access to healthcare, delayed medical treatment, deterioration in health outcomes, and, in many cases, depletion of household savings or reliance on borrowing. This pattern contributes to a cycle of poverty that is difficult to escape. More broadly, OOP payments are the predominant source of health financing in many low-income countries, particularly in South Asia, where approximately 62% of healthcare costs are paid directly by households. Globally, catastrophic OOP expenditures have pushed nearly 700 million people into extreme poverty.

Pakistan, classified as a Lower Middle-Income Country (LMIC) with a population of 241.5 million (Census 2023), has weak health indicators compared to regional counterparts. Public spending on health remains very low, accounting for less than 3.38% of GDP (NHA 2018–19). According to the National Health Accounts (2021–22), Pakistan's total health expenditures amounted to PKR 1,962 billion. Of this, 48% was financed by general government agents, including social security, Zakat, Baitul Mal, autonomous bodies, and corporations. Government contributions covered 39.8% of total health expenditure, of which 14.9% came from the federal government, including both civilian and military health spending. In contrast, the private sector bore 59.7% of total health expenditures, with an overwhelming 88.6% of this consisting of OOP spending by households. This heavy financial burden not only mirrors global trends in catastrophic health spending (Pakistan UHC Monitoring Report, 2023) but also highlights the precarious situation of Pakistani households, many of whom are forced to reduce consumption of essential goods, incur debt, or forego necessary healthcare.

The consequences are severe: catastrophic health expenditures are a major driver of poverty in Pakistan. A significant share of newly impoverished households can be attributed to healthcare-related costs. According to the Ministry of National Health Services, Regulations & Coordination (MoNHSR&C) UHC Monitoring Report (2024), approximately 13.4 million people are currently at risk of falling into the lowest

income quintile due to catastrophic OOP health expenditures. Pakistan has also been ranked among the most vulnerable nations to poverty risks in the Asia-Pacific region.

Recognizing these challenges, governments worldwide have introduced Social Health Protection (SHP) initiatives to shield vulnerable populations from the devastating effects of OOP expenditures. In Pakistan, both federal and provincial governments have pursued similar efforts, beginning with the launch of the Prime Minister's National Health Program (2015), designed explicitly to reduce the burden of catastrophic OOP expenditures and to improve access to healthcare for low-income households.

SEHAT SAHULAT PROGRAM (SSP)

The Sehat Sahulat Program (SSP) is a publicly funded initiative of the Government of Pakistan, launched in December 2015 under the name Prime Minister's National Health Program (PMNHP). Initially designed as a targeted scheme for the poorest households, the program has progressively expanded in scope, with phased reforms aimed at achieving universal health insurance coverage. Today, it is recognized as the flagship social health protection program of Pakistan.

The SSP is a fully government-financed, non-contributory health insurance program, jointly supported by the federal government along with participating provincial and regional governments. Its core objective is to provide financial protection against catastrophic Out-of-Pocket (OOP) health expenditures—a key driver of poverty in Pakistan. The program delivers hospital-based coverage at the household level, offering up to PKR 1 million in annual hospitalization coverage per family at empaneled public and private hospitals across the country.

At its inception, SSP targeted families living below the poverty line—defined as those earning less than USD 2 per day, equivalent to a Proxy Means Test (PMT) score of 32.5 on the National Socio-Economic Registry (NSER). Over time, the program has expanded significantly. In Phase III, coverage was extended beyond poor households to include other vulnerable groups such as persons with disabilities, transgender individuals, and residents of federal areas and regions including Gilgit-Baltistan, Azad Jammu and Kashmir (AJK), Khyber Pakhtunkhwa (KP), Punjab, and Tharparkar (Sindh).

The program's design reflects a dual focus: (i) lifting families out of poverty by shielding them from catastrophic health costs, and (ii) protecting vulnerable families above the poverty line from falling into poverty due to health shocks. These aims address critical barriers to healthcare in Pakistan, where affordability, limited availability of public health facilities, long waiting times, and shortages of hospital beds often hinder timely access to care.

Global evidence highlights the magnitude of the problem: according to WHO surveys (2017), 86% of households delay or avoid hospital admissions due to affordability constraints, while 70% experience severe financial hardship due to catastrophic health expenditures. In Pakistan specifically, OOP health expenditures accounted for 68% of total health spending in 2017 (WHO, Baseline Health Insurance Survey, 2017).

The primary objectives of SSP are to:

- Improve the health status of the population by ensuring equitable access to quality healthcare.
- Enhance coverage for secondary-level healthcare and the treatment of priority diseases, particularly among poor and vulnerable populations.
- Reduce OOP health expenditures for insured families by providing protection against catastrophic health costs arising from hospitalization.

DESIGN OF THE SEHAT SAHULAT PROGRAM

The Sehat Sahulat Program (SSP) is a cashless social health insurance initiative, designed to provide financial risk protection to vulnerable populations in Pakistan. Beneficiary identification was initially based on the National Socio-Economic Registry (NSER 2010–11), targeting families earning less than USD 2 per day, using the Proxy Means Test (PMT) score of 32.5 as a benchmark.

GOVERNANCE AND IMPLEMENTATION

The program involves multiple stakeholders:

- Federal Government, Benazir Income Support Programme (BISP), NADRA, and international partners—for design and oversight.
- State Life Insurance Corporation (SLIC)—a public-owned entity responsible for implementing health service delivery through empaneled public and private hospitals.
- Financing—Annual premiums are paid by the federal and provincial governments to SLIC against each family.
- Family Definition—NADRA defines a family unit as husband, wife, children under 18 years of age, and unmarried daughters. There is no cap on the number of family members.

Initially, beneficiaries were issued a Sehat Card. With the transition to universal health coverage, however, every adult holding a Computerized National Identity Card (CNIC) is now eligible for hospitalization coverage (self and family), up to PKR 1 million per year.

Governance is managed through the Sehat Sahulat Program Office (MoNHSR&C) at the federal level and respective provincial health departments. In Punjab, the Punjab Health Initiative Management Company (PHIMC) is responsible for program monitoring through a real-time dashboard linked with the Health Management Information System (HMIS) of SLIC. The program also ensures inter-provincial portability, enabling beneficiaries to access services across provinces.

To ensure quality, empaneled hospitals must be registered with the Islamabad Healthcare Regulatory Authority or provincial Healthcare Commissions.

EVOLUTION OF THE SEHAT SAHULAT PROGRAM

TABLE 1: EVOLUTION OF SEHAT CARD

Phase	Features	Gestation Period
Phase 1: Prime Minister National Health Program	- Targeted poor (PMT ≤ 32.5) - Limited to 13 districts of Punjab - 99 empaneled hospitals - Benefit package: PKR 300,000–600,000 - Covered 7% of population - Premium: PKR 1,299.98/family/year	2016–2021
Phase 2: Sehat Sahulat Program (SSP)	• - Targeted poor (PMT ≤ 32.5) - Coverage for transgender persons and persons with disabilities (PWDs) - Expanded to 23+13 districts of Punjab • All permanent residents of DG Khan and Sahiwal decision for one year • Remaining 23 districts +13 districts upon gestation of phase 1 (UHIC) Empaneled Hospitals - 318 empaneled hospitals (Dec 2021) - Benefit package: PKR 360,000–1,080,000	2019–2024

	- Covered 24% of Punjab's population - Premium: PKR 1,998/family/year	
Phase 3A: SSP + Universal Health Insurance	- Universal coverage for ~32 million families in Punjab - All 36 districts covered - 366 empaneled hospitals with 66,500 beds - Benefit package: PKR 460,000–1,000,000 - CNIC serves as the health card - 100% population coverage	2022–2025
Phase 3B: Co-contributory Model	- Pre-registration required - 50% co-payment by beneficiaries at private facilities - Premium: PKR 4,350/family/year	2024

Source: Punjab Health Initiative Management Company (PHIMC)

PUNJAB HEALTH INITIATIVE MANAGEMENT COMPANY (PHIMC)

PHIMC, established by the Government of Punjab, is responsible for facility registration, empanelment, and monitoring, as well as coordination among stakeholders. It also introduces innovations and program reforms to strengthen implementation.

BENEFIT PACKAGE STRUCTURE

TABLE 2: SSP BENEFIT PACKAGE

Components	High-Cost / Priority Care	Low-Cost / Secondary Care
Basic (PKR 460,000)	PKR 400,000/family/year	PKR 60,000/family/year
Excess of Loss (PKR 240,000)	PKR 200,000/family/year	PKR 40,000/family/year
Reserve Fund (PKR 300,000)	PKR 300,000/family/year	–
Total	PKR 1,000,000/family/year	–

Excess of Loss Coverage: continuation of treatment for same episode, life-threatening conditions, maternity cases.

Reserve Fund Coverage: advanced treatments such as kidney transplant, cancer treatment, cardiac care beyond limits, continuation of kidney disease treatment, and any other government-approved treatment.

PROGRAM UTILIZATION AND EMPANELMENT

Since its launch in Punjab (2016), utilization rates have steadily increased, reflecting rising awareness and access.

(Author's illustration using PHIMC data)

Figure 1: Sehat Card Utilization by Years 2016 to 2023 (PHIMC data author's Illustration)

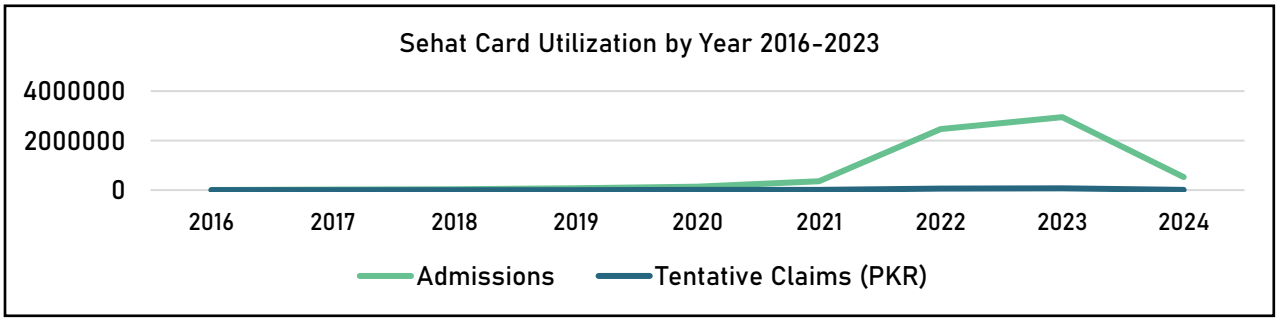


TABLE 3: CURRENT EMPANELMENT STATUS (PUBLIC VS PRIVATE HOSPITAL COMPARISON) (PHIMC)

Current Empanelment Status
Public vs Private Hospital Comparison

Empanelment requirements
i. 24/7 facility
ii. Regular licensed with PHCC
iii. Evaluation of hospital assessment criteria

		Public sector	Private Sector
Total hospitals	366	206 Public hospitals	160 Private hospitals
Total beds	66,605	43,550 Beds	23,055 Beds

The primary responsibility of empanelment lies with the insurance company, ensuring that the supply of hospitals meets the demand of beneficiaries, ensuring easy access to health services.
An insurance company signs a contract with individual empaneled hospitals.

- Primary responsibility of empanelment lies with insurance company ensuring that supply of hospitals meet the demand of beneficiaries ensuring easy to access health services.
- Insurance company signs contract with individual empaneled hospitals.
- Requirements for empanelment include: 24/7 operational capacity, registration with PHCC, and evaluation against hospital assessment criteria.
- Empanelment contracts are signed between the insurance company and individual hospitals, ensuring that healthcare supply meets beneficiary demand and services are easily accessible.

By covering healthcare expenses, the Sehat Sahulat Program (SSP) enables individuals to manage their health needs without the immediate burden of Out-of-Pocket (OOP) costs. However, a critical question arises: does this financial protection directly enable households to accumulate savings in cash, or are the avoided OOP expenses instead reflected in other productive outcomes, such as children's education, improved nutrition, or higher household consumption? Since savings are a cornerstone of financial resilience—particularly for low-income households that are vulnerable to poverty traps caused by unforeseen shocks—it is important to assess how far the SSP contributes to strengthening financial security.

This impact evaluation therefore seeks to determine whether the financial relief provided by the SSP translates into increased household savings and whether such savings are subsequently invested in productive outcomes. Understanding the relationship between reduced healthcare expenditure and the ability to save is crucial for evaluating the program's broader contribution to poverty alleviation and social protection. Specifically, this study investigates how the SSP influences saving behaviors, attitudes, perceptions, and aspirations among its beneficiaries. The central premise is that the reduction in OOP expenditures brought about by the SSP directly enhances households' capacity to save.

The expected outcome is a positive effect on the overall household economy, particularly for the poorest families. By covering healthcare expenses, the SSP enables households to redirect their limited financial resources toward other essential needs, such as food, education, and shelter. This evaluation therefore examines whether the financial relief provided by the SSP has reduced debt accumulation, improved access to essential goods and services, and strengthened the economic well-being of beneficiary households.

In assessing the effectiveness of the SSP in reducing OOP expenditures, it is equally important to evaluate its role in providing broader financial protection in health. The program's cashless health coverage has the potential to shield families from the severe financial shocks often associated with illness and hospitalization. A reduction in OOP spending not only decreases the likelihood of catastrophic health expenditures but also ensures that families are less likely to forego treatment due to financial constraints. Through this evaluation, the study aims to determine the extent to which the SSP has achieved its primary objective of protecting poor and vulnerable households from the economic risks of ill health.

IMPACT ON HOUSEHOLD SAVING BEHAVIOR

While the reduction in Out-of-Pocket (OOP) expenditures is a central outcome of the Sehat Sahulat Program (SSP), its influence on household saving behavior is equally significant. Savings are of critical importance, particularly for low-income households that are highly vulnerable to health-related and other economic shocks. Households with the capacity to save are better positioned to manage financial emergencies and to invest in productive opportunities, such as children's education, small businesses, or housing improvements. In contrast, households unable to save are more likely to fall into poverty traps, relying on debt or the depletion of limited assets to cope with unexpected expenditures.

The SSP seeks not only to reduce the immediate financial burden of healthcare but also to strengthen the long-term financial stability of its beneficiaries. By covering hospitalization costs, the program releases household income that would otherwise be spent on health-related expenses. This financial relief could potentially enable households to build savings, thereby enhancing their resilience to future shocks. The key question, however, is whether reductions in OOP expenditures actually translate into measurable increases in savings.

Evidence from international research suggests that social health insurance programs can positively influence saving behavior by reducing the need for emergency borrowing and by allowing households to reallocate resources previously earmarked for healthcare toward savings or other productive uses. Studies conducted in other contexts demonstrate that households with access to health insurance are more likely to save, as they are shielded from the financial risks associated with health crises (Nguyen et al., 2012; Wagstaff et al., 2009). Yet, the specific impact of the SSP on saving behavior within Pakistan remains an important area for empirical investigation.

This evaluation therefore examines whether the SSP has facilitated greater saving among its beneficiaries by lowering healthcare-related financial burdens. It further explores how these savings are utilized—whether directed toward children's education, home improvements, or business ventures—and whether the program has shaped beneficiaries' financial attitudes, aspirations, and perceptions of security. A critical dimension of this inquiry is the extent to which SSP influences households' ability to plan for the future and to transition from coping strategies toward longer-term financial stability.

In addition, the study investigates the broader effects of reduced healthcare costs on household expenditure patterns. With fewer resources required for health spending, households may increase consumption of essential goods and services such as food, education, and housing, thereby enhancing overall well-being and economic stability. Alternatively, some households may prioritize saving or investing in income-generating activities, contributing to wealth accumulation over time. Understanding these dynamics is crucial for evaluating the SSP's role in shaping household financial behavior and for informing broader policy strategies aimed at poverty alleviation and sustainable development.

WILLINGNESS TO PAY (WTP)

In Pakistan's healthcare system, the pursuit of Universal Health Coverage (UHC) requires exploring sustainable financing mechanisms that can broaden access while addressing fiscal constraints. A critical element in this transition is assessing households' Willingness to Pay (WTP) for health insurance, particularly among low- and middle-income groups. Understanding WTP is essential for designing equitable, sustainable programs as the government gradually shifts from fully subsidized health insurance schemes toward contributory models.

Participation in social health insurance serves as a protective mechanism against unexpected health shocks, ensuring that even the most vulnerable can access necessary healthcare without incurring catastrophic Out-of-Pocket (OOP) expenditures. Beyond immediate protection, such schemes enable households to preserve savings and reduce reliance on debt, thereby preventing further impoverishment (Nguyen et al., 2012; Wagstaff et al., 2009). The Sehat Sahulat Program (SSP) has effectively provided financial relief to beneficiaries, reducing OOP expenditures and strengthening economic security. However, rising fiscal pressures make it increasingly challenging for the government to fully subsidize healthcare for all. Consequently, the future trajectory of the SSP is expected to move toward a contributory Universal Health Insurance model to ensure long-term sustainability, diversity, and flexibility.

This study focuses on two financing approaches:

1. Co-payment model – requiring contributions at the time of treatment.
2. Premium payment model – involving regular contributions to maintain coverage.

Both models present different implications for affordability and equity. Assessing WTP across these models provides crucial insights into how financial contributions can be structured to protect households while addressing resource limitations.

The analysis specifically examines the perspectives of poor and middle-class households, recognizing the diversity of socio-economic capacities and priorities. Advanced statistical methods, including Ordered Logistic Regression (Ologit) and Structural Equation Modelling (SEM), are employed to analyze the determinants of WTP. Key variables include income, education, and employment status, which together shape individuals' readiness to contribute to social health insurance.

Currently, the SSP is entirely government-financed, with no contribution required from beneficiaries. While this has expanded access, it places a heavy fiscal burden on the state. Assessing households' WTP is therefore a policy priority to inform the design of contributory models that are both sustainable and equitable.

Finally, this report situates WTP within the broader economic impact of the SSP. By examining household-level survey data, the study investigates how the program influences savings behavior, expenditure patterns, and overall financial stability among the poorest groups. These findings are expected to guide policymakers in refining health protection mechanisms and in scaling contributory insurance models that balance affordability for households with fiscal sustainability for the state.

SCOPE AND OBJECTIVE OF THE STUDY

The specific objectives of the study are:

A. To evaluate impact on out-of-pocket Health Expenditure of low-income families enrolled in the Sehat Sahulat Program in comparison to the non-enrolled.
B. To evaluate the impact of the health insurance program on savings capacity by the enrolled families of lowest income ranges in the Sehat Sahulat program in comparison to the non-utilizers of the program.
C. To understand the attitude towards willingness to pay for participating in the health insurance program by household of various income ranges.

By addressing these objectives, the study aims to provide a comprehensive evaluation of the SSP's effectiveness. Therefore, this study offers a novel contribution by providing a comprehensive analysis of the Sehat Sahulat Program (SSP) within the context of Pakistan's most economically vulnerable populations. Unlike previous studies that may have focused solely on health outcomes or general financial impacts, this research uniquely examines the dual aspects of savings capacity and Willingness To Pay (WTP) for social insurance among the lowest income populations. By integrating different approaches, the study not only assesses the economic implications of the SSP but also explores the underlying attitudes towards health insurance, thereby addressing gaps in existing literature and informing future program enhancements for equitable access and financial protection. The following sections will present detailed results, interpretations, and policy implications based on the study's findings.

The next section provides a literature review on saving behavior and its determinants, setting the stage for the report by outlining essential background information to contextualize the study.

LITERATURE REVIEW

OUT OF POCKET HEALTH EXPENDITURE

This literature review explores the role of health insurance programs like SSP in reducing OOP expenditures, particularly focusing on low-income families. It examines existing evidence on the relationship between health insurance coverage and financial protection, drawing comparisons between users and non-users of such programs and determinants of utilization and access

Studies have shown that health insurance has increased the likelihood of people seeking outpatient and inpatient care, as well as the volume of care provided. Partly because of this increase in utilization, household out-of-pocket spending on health care does not appear to have been reduced by NCMS (Xu et al., 2003) The results are clear-cut that SHI raises per capita total health spending by 3-4%, (Wagstaff et al., 2009). For low-income families, insurance can be particularly beneficial as it reduces the risk of catastrophic health spending, which can push households further into poverty (Mitra et al., 2017).

There is a positive correlation in health insurance and service utilization. Palmeret al. (2015) find a positive utilization impact for both inpatient and outpatient services. Consistent with Guindon (2014), the authors find a larger impact on outpatient service utilization. Catastrophic spending, thresholds and consumption expenditure types vary from study to study. For instance, Wagstaff and Yu (2007) define it as spending exceeding 10 per cent of total consumption expenditures, which is the most used threshold when total expenditure is used as the denominator.

Results for systematic review of 13 studies (S. Mitra et al 2017) is that insurance helps with financial protection while providing mixed impact on utilization and health outcomes for children. But in contrast, for instance Giedion et al. (2013), finds that insurance tends to increase levels of utilization across all services but has little to no impact on financial protection.

Larger households spend significantly less than smaller households for outpatient care. This study reveals a significant difference in healthcare utilization between public and private facilities while socioeconomic factors playing the crucial role. And it shows the burden of OOP expenditures is quite high

in specific socioeconomic class (Faraz et al, 2021)[1]. Out-Of-Pocket expenditure on healthcare, representing direct costs borne by individuals at the point of service, carries profound implications for household consumption and livelihoods (Xu et al., 2003). The financial burden of such expenses can constrain disposable income, impacting overall consumption patterns and hindering the allocation of resources to essential needs like education, housing, and nutrition (O'Donnell et al., 2008). Particularly in lower-income households, high out-of-pocket spending on healthcare can exacerbate existing financial challenges and potentially lead to poverty[2].

Noshaba et; all in 2022, emphasizes the crucial role of health insurance in improving health of the children and suggested the need of such program and initiatives to improve health outcome. The study revealed that there is a significant positive impact of insurance on children's health. A study from India, reduction in OOP spending on healthcare by approximately 20-30% among low-income households (Bhatia et al., 2018). Similar findings were reported in Bangladesh, where health insurance was associated with lower financial burdens and reduced rates of catastrophic spending (Chowdhury et al., 2013). Sehat Sahulat Program's impact revealed that non-utilizers faced higher OOP expenses, often resulting in delayed or forgoing necessary medical care due to cost concerns (Ali & Ali, 2022 Pakistan). According to a study by Pakistan Institute of Development Economics (PIDE), households

participating in the SSP experienced a noticeable decrease in their OOP costs compared to those not enrolled in the program (PIDE, 2021). Issues such as program reach, enrolment barriers, and the quality of care covered can impact on the overall effectiveness (Ahuja, 2020). For example, some families may face difficulties in accessing the services covered by the SSP due to geographical or logistical constraints (Khan et al., 2021). Additionally, the adequacy of coverage and the financial sustainability of the program are critical factors that influence its long-term success (Yusuf et al., 2019). Patients who incurred OOP while using SSP had affected their acceptability for the program (khan S, Shahab R, Ayub A, Zahid H, Mughal H. Exploring the implementation barriers in the inpatient care model of large-scale social health protection schemes: A mixed-method case study from Pakistan. Islamabad; 2022.) Accurate estimation of willingness to pay is crucial for understanding consumer preferences, and methods such as the Contingent Valuation Method (CVM) and the Choice Experiment Method are commonly employed for this purpose.

HOUSEHOLD SAVINGS:

This section reviews the existing literature on the dynamics of household savings behavior, emphasizing its importance for economic stability and personal financial health. By synthesizing findings from both developed and developing countries, this review provides a comprehensive understanding of savings behavior and its determinants. It explores recent studies and theoretical perspectives to uncover the complexities and its impact on saving habits. The aim is to highlight the broader implications for financial inclusion and overall economic well-being.

Saving is crucial for both micro and macroeconomic stability, playing a fundamental role in personal financial well-being and national economic growth. While the macroeconomic benefits of aggregate savings include capital formation and reduced reliance on external borrowing, this review focuses primarily on the micro-level impact of savings, which is essential for individual and household financial resilience.

At the micro level, individual savings are critical for personal financial stability and security. By saving a portion of their income, individuals can create a financial buffer that protects against unexpected expenses, such as medical emergencies, and supports long-term financial goals like education or retirement. This financial cushion is especially important in emerging economies like Pakistan, where economic volatility and limited social safety nets heighten the importance of personal savings. The

[1] https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-021-06170-4#Sec13

[2] https://pubmed.ncbi.nlm.nih.gov/21072229/

research suggests that household savings behavior is influenced by a complex interplay of demographic, economic, social, and cultural factors. While income is a primary driver, factors such as education, financial literacy, and household structure also play significant roles. Understanding these factors can help policymakers and financial institutions develop strategies to promote savings and improve financial well-being. Ali and Marwat (2021), Umar Khalid (2023) analyzed how income uncertainty led households to increase savings as a buffer against shocks.

In Pakistan, the low savings rate has been identified as a significant barrier to economic growth at both the individual and household levels (Ali & Hashmi, 2018; Asghar & Nadeem, 2016). Studies focusing on micro-level data reveal that saving behavior is influenced by a range of socio-economic factors. For instance, Rehman et al. (2010, 2011a&b) analyzed saving patterns in Multan using stratified random sampling of respondents. The results showed that household savings are positively associated with participation in economic activities, dependency rates, household income, and landholdings. However, savings tend to decrease with higher education levels of the household head, educational expenditures for children, larger family sizes, existing liabilities, marital status, and the value of the house. This highlights the complex and varied factors influencing household savings behavior, particularly in low-income groups who are more vulnerable to economic shocks.

Household savings are vital for the financial well-being of low-income households, who often face greater risks from external shocks and economic uncertainties. Savings enable these households to accumulate wealth, generate income, maintain consumption levels during periods of scarcity, and ensure financial security during emergencies (Wieliczko et al., 2020). However, several challenges hinder the ability of households, especially in rural areas, to save effectively. Limited financial literacy and access to formal financial institutions force many rural households to rely on informal savings methods, such as livestock, grain storage, and jewelry, which, while accessible, offer less security and liquidity (Lidi et al., 2017).

Health expenditures pose a significant threat to household savings, especially for low-income and rural populations. Health emergencies can quickly deplete savings, pushing households further into poverty. For instance, a study found that 42% of farmers attributed their poverty to their illnesses or a household member (Yang et al., 2020). Such health shocks have a profound negative impact on savings, particularly for those already living on the edge of financial stability.

Recent studies have provided deeper insights into household savings behavior in Pakistan, building on foundational micro-level understandings. Aslam et al. (2022) investigated the saving behavior of urban and rural households using data from the HIES 2018-19. Their research revealed that rural households had higher saving rates compared to urban ones, with income positively influencing savings. However, household demographic characteristics such as age, dependency ratio, and family size were found to negatively impact savings. Notably, households engaged in mixed crop farming and animal production in urban areas saved more than their rural counterparts.

Similarly, Akram (2021) explored the socio-economic factors affecting savings through data from the Household Integrated Income and Consumption Survey 2015-2016. The study identified a positive association between household income and savings, highlighting the specific positive impacts of education and female labor force participation on urban savings. On the other hand, a higher dependency ratio and the age of the household head were found to have adverse effects on urban household savings.

In contrast, Belsky et al. (2005) examined the financial benefits of home-ownership for low-income households, emphasizing that home-ownership provides significant advantages such as wealth accumulation through property value appreciation and reduced housing costs compared to renting. They noted that the decision to rent or own often depends on key factors, including rent costs, house values, and tax benefits. Home-ownership alleviates the burden of rising housing costs, freeing up more income for savings and consumption, and serves as collateral for securing loans, which can further boost household savings (Herbert & Belsky, 2008).

Siddiqi (2020) highlights that household income from various sources—wages, salaries, and remittances—is a primary determinant of savings. Economic theories, such as the permanent income hypothesis and

the life-cycle hypothesis, suggest a correlation between higher income levels and increased savings. Research from countries like India and Pakistan confirms this relationship, showing that income significantly impacts household savings both in the short and long term (Samantaraya & Patra, 2014; Rehman et al., 2010).

Saqib et al. (2016) investigated the role of age as a control variable in analyzing household savings and found that marital status had a less pronounced impact, with some studies showing no significant difference between married and unmarried households. The stability of income sources, whether from formal employment, business income, or agriculture, also plays a crucial role in saving behavior.

Additional research from Pakistan and China supports the idea that employment status significantly affects household savings, with employed households more likely to save compared to those who are unemployed (Saqib et al., 2016; Atella et al., 2014). Employment status is crucial in determining savings and consumption patterns, particularly under financial constraints and current expenditures. Household savings are primarily driven by diverse income sources, including salaries (from public, private, formal, or informal sectors), business income, and agricultural production (Saqib et al., 2016). Factors such as the head of household's occupation, land ownership, education level, family size, and dependency ratio also influence savings behavior (Jamal et al., 2014; Abid & Afridi, 2010).

Studies have shown that the employment status of the household head significantly affects savings behavior. Evidence from Pakistan's Khyber Pakhtunkhwa province (Chitral district) supports this finding, with Saqib et al. (2016) reporting that employed households, whether in rural or urban areas, were more likely to save compared to unemployed households.

Financial literacy plays a crucial role in shaping savings behavior, emphasizing the importance of financial knowledge in influencing saving habits. Azam (2020) found that individuals with higher financial literacy are more actively engaged in saving, although a direct causal link between financial literacy and savings behavior could not be established. Those with greater confidence in their financial capabilities tend to save more effectively. Anand et al. (2021) demonstrated that financial literacy has a significant mediating effect on individuals' ability to manage their finances during a crisis. Similar findings have been observed in other developing countries, where financially literate households are more likely to save, especially concerning healthcare expenses. This increased savings behavior is often attributed to the financial knowledge and planning skills acquired through financial literacy education (Kimaiyo, 2019).

Khatun (2018) examined the impact of financial literacy and parental socialization on savings habits, finding that both factors positively influence savings behavior. Parental socialization was found to have a more pronounced effect than financial literacy. Financial literacy equips individuals to make informed decisions about consumption and savings, particularly with complex financial products such as health insurance (Murendo & Mutsonziwa, 2017). Education is closely related to financial literacy, with higher education levels generally increasing the likelihood of saving (Mahdzan & Tabiani, 2013).

In Pakistan, however, financial literacy remains low, particularly among women in rural areas, which negatively affects their ability to save and invest. Studies indicate that financial literacy and access to formal financial institutions significantly impact household savings behavior (Bhabha et al., 2014; Owen, 2020). Financial inclusion enhances access to financial services, potentially boosting household savings. Nevertheless, research shows that low-income households are generally less likely to engage with formal financial services compared to wealthier counterparts (Bendig et al., 2009). This disparity is often linked to lower levels of financial literacy, which is essential for effective personal finance management.

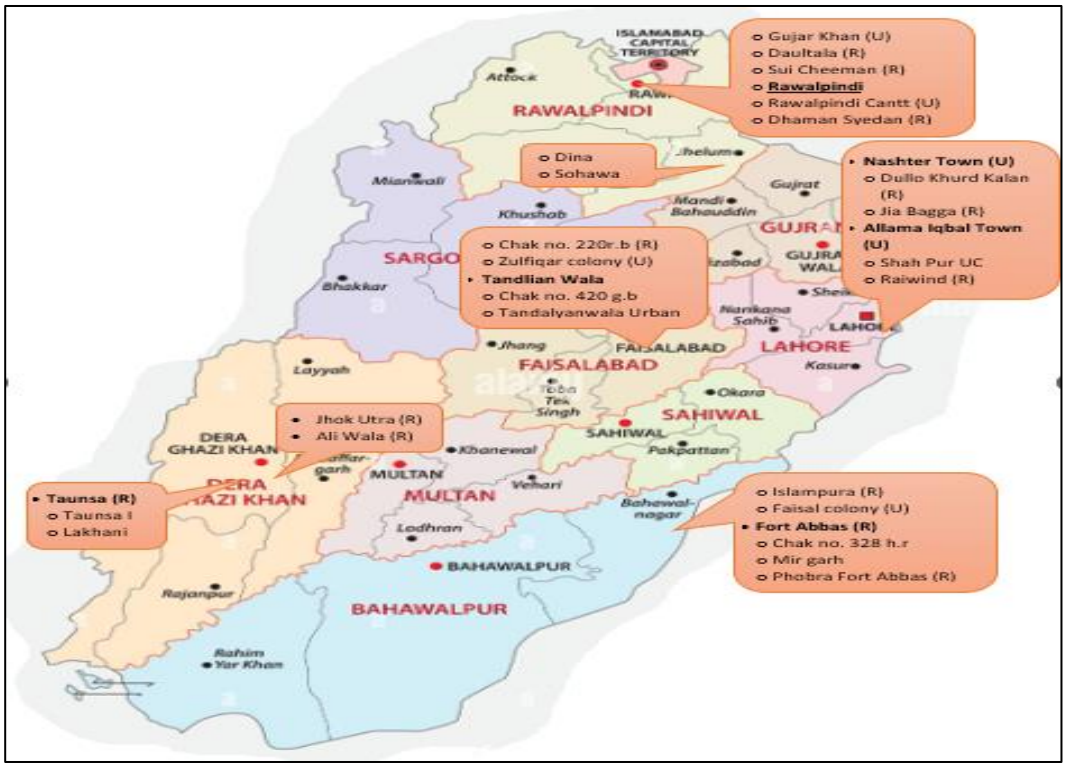
STUDY SITE AND SAMPLE ESTIMATION

This study was conducted in the province of Punjab. With 36 districts, the population of Punjab province according to 2017 census was approximately 110,012,442, of which males accounted for 55,958,974, females were 54,046,759 and 6709, transgender persons. We investigated the research objectives for the lowest two income quintiles (first- and second-income quintiles) for the population till PMT score 32.5, who have been receiving the program for the past 3 years. Hence, the focus of the intended research was to analyse

the poor and the vulnerable (essentially the BISP beneficiaries) in terms of impact concerning OOP and saving behaviors and willingness to pay.

For a representative sample, the province was divided into three clusters: North Punjab, Central Punjab & South Punjab. From each cluster, two districts were selected, based on the implementation period of the program which is 3 years. Additionally, two tehsils from each district were further selected, particularly for the third objective, willingness to pay. As SSP is family-based, enrolled family clusters were identified in consultation with Punjab Health Initiative Management Company (PHIMC) from the available database of PHIMC and SSP. The selected sample was collected from six districts - Rawalpindi, Jhelum, Lahore, Faisalabad, Dera Ghazi Khan and Bahawalnagar - spanning across twelve tehsils, comprising one urban and one rural area each. A sample of 384 respondents were selected in the urban union councils within each district. Thirty-two respondents were interviewed from each tehsil, with the criterion for selection being any household with an average monthly income exceeding PKR 60,000.

Figure 2: Geographical Location of Study Districts



SAMPLING FRAME

The research follows an observational, quasi-experimental design using cross-sectional survey data collected from households enrolled in the SSP and a control group of non-utilizers. This design allows for the comparison of financial outcomes between these groups, providing insights into the program's impact.

The sampling strategy for this study involved selecting respondents from six districts in Punjab, with two districts chosen from the North (Rawalpindi, Jhelum), Center (Lahore, Faisalabad), and South (Dera Ghazi Khan, Bahawalnagar) regions. From each district, two tehsils were randomly selected, totaling 12 tehsils. In each tehsil, two Union Councils (UCs) were chosen, one urban and one rural, resulting in 24 UCs in total.

From each UC, 50 respondents were selected, split equally between 25 utilizers who have been using the program for the past three years and 25 non-utilizers who were eligible but never enrolled. This approach

yielded a sample size of 1,200 respondents, ensuring a balanced representation of program users and non-users across different geographic and socio-economic contexts.

TABLE 4.:SAMPLING FRAME				
Districts	6	North (2) Rawalpindi Jhelum	Center (2) Lahore Faisalabad	South (2) Dera Ghazi Khan Bahawalnagar
Tehsils	12	Two tehsils from each district will be selected randomly		
Ucs	12*2=24	2 UCs from each tehsil (1 Urban and 1 Rural)		
Respondents	24*50= 1200	100 respondents from each UC		
	25 utilizers and 25 non-utilizers of the program • Utilizers using the program for the past three years only • *Non-utilizer eligible but never enrolled.			
	• For the WTP of the higher income group, we selected the data from all districts with 384 responses. • The income bracket for the low-income group was up to PKR 60,000 • The income bracket for high-income groups, ranging from PKR 60,000 to PKR 150,000)			

DATA DIGGING

A structured questionnaire was administered to households across various income quintiles, capturing detailed information on their saving behaviors, Out-Of-Pocket healthcare expenditures, attitudes towards health insurance, and socioeconomic characteristics. The survey was designed to gather both quantitative and qualitative data, ensuring a comprehensive understanding of the respondents' financial behaviors and perceptions.

The data collection process for evaluating the impact of the Sehat Sahulat Program (SSP) on household Out-Of-Pocket (OOP) health expenditures, savings capacity, and willingness to pay for health insurance has been conducted across selected divisions in Punjab, focusing on its 36 districts. Districts have been chosen based on a regional representation strategy, selecting two districts from each of Punjab's North, South, and Center regions.

Within these districts, specific tehsils and Union Councils were targeted, with one rural and one urban Union Council selected from each tehsil. Beneficiaries were randomly chosen, with 50 beneficiaries and an additional control group of 50 individuals from each tehsil.

Beneficiaries were categorized into ultra-poor and poor groups based on Poverty Means Test (PMT) scores, aiding in the identification of Union Councils where welfare interventions had a significant impact. Detailed analyses were conducted in Bahawalnagar, Dera Ghazi Khan, Faisalabad, Lahore, Rawalpindi, and Jhelum districts, examining the distribution of beneficiaries across low and high PMT categories. Notably, Islampura in Bahawalnagar Tehsil had the highest number of beneficiaries. In this study, the control group has been carefully selected to ensure comparability with the treatment group and avoid bias. Control units have been chosen from the same geographic area as the treatment units, sharing similar characteristics such as income levels, demographics, and other socio-economic factors. This

approach minimizes disparities and allows for a more accurate assessment of the causal relationship between variables.

Beneficiaries were identified using data from District-Tehsil-UC (Urban/Rural) tier provided by PHIMC. Control respondents were selected from the same vicinity or village as the treated beneficiaries, ensuring they had a similar socio-economic profile but had not utilized the program. Surveys confirmed that the control group had similar income levels, housing types, and access to utilities and amenities as the treatment group. This similarity has been further validated through cross-tabs and a wealth index was created from survey data, confirming that there is no selection bias between the two groups.

SELECTING WILLINGNESS TO PAY (WTP) ADDITIONAL SAMPLE

In addition to the treatment and control groups, the study includes a sample subgroup of individuals from financially well-off backgrounds who are potentially capable of participating in the co-contributory health program. A golden sample size of 384 respondents from financially better-off households has been determined using probability sampling. This subgroup has been selected, along with the treatment and control groups, to assess the Willingness-To-Pay behavior among households.

METHODOLOGY AND IMPLEMENTATION PLAN

A mixed method approach was adopted for this study. A quantitative component was used to arrive at the impact of the program through Propensity Score Matching (PSM) technique. The standardized quantitative data provided comparability across lowest income quintiles, as well ideal for benchmarking against any future data. The qualitative component is used to understand the “what” and the “how “questions for key issues of the Sehat Sahulat Program.

ANALYTICAL METHODOLOGY

This study employs a rigorous and multifaceted methodological approach to assess the impact of the Sehat Sahulat Program (SSP) on the financial well-being of low-income households, particularly focusing on Savings Capacity and Willingness To Pay for health insurance. The following steps outline the methodology used in this study in accordance to the objectives:

1. **Measuring the Impact of the Sehat Sahulat Program (SSP) on OOP Health Expenditure**: To assess the impact of the Sehat Sahulat Program (SSP) on Out-of-Pocket (OOP) health expenditure among families in the lowest income quintiles, the study employed both empirical and exploratory approaches. The empirical analysis forms the core of the evaluation, using Propensity Score Matching (PSM) to estimate the causal effect of SSP utilization on OOP health expenditure. This method controls for selection bias by matching beneficiaries and non-beneficiaries on observable characteristics. Health expenditures were measured by type: outpatient expenditures were captured over a three-month recall period and annualized for comparability, while inpatient costs included both direct and indirect expenses related to health incidences over a one-year recall period. Inclusion criteria required that all respondents—both SSP users and non-users—had experienced at least one health-related event during the reference period.
2. **Measuring the Impact of the Sehat Sahulat Program (SSP) on households' savings capacity Using Propensity Score Matching (PSM):** This is a robust statistical method designed to create a balanced comparison between those WHO benefited from the program and those who did not. This approach involves matching PARTICIPANTS IN THE SSP WITH NON-PARTICIPANTS WHO SHARED SIMILAR OBSERVABLE CHARACTERISTICS, ENSURING THAT ANY DIFFERENCES in outcomes could be more accurately attributed to the program itself rather than to preexisting differences between the groups. As the primary objective of this analysis is to determine whether increased government spending on healthcare through the SSP has a positive impact on individual health and, consequently, on their ability to save. By matching individuals who received SSP benefits with those who did not, but who were otherwise similar in terms of socioeconomic and demographic factors, we aimed to isolate the program's effect. This method allowed to examine whether the SSP effectively enhances savings by reducing healthcare-related financial burdens, providing a

clearer picture of its impact. The use of PSM ensures that our comparison between the two groups is fair and that our findings accurately reflect the program's effectiveness concerning financial and health outcomes for beneficiaries.

3. **Exploratory Data Analysis (EDA):** Complementing the empirical analysis, an exploratory data analysis was conducted to understand the socio-economic and demographic profiles of respondents, their coping mechanisms for health expenses, and factors influencing willingness to contribute to the financial sustainability of the program. The analysis covered variables such as income, employment status, household size, education level, health-seeking behavior, and awareness and utilization of SSP benefits. Data was presented using descriptive statistics including proportions, percentages, cross-tabulations, and graphical tools to highlight comparisons between program beneficiaries and non-beneficiaries. This helped identify contextual factors shaping financial vulnerability and health expenditure patterns in the study districts, enriching the interpretation of the econometric results.
4. **Measuring Potential interdependence between Out-Of-Pocket health expenditures and individual savings behaviour using Seemingly Unrelated Regression (SUR) model**: The SUR model is chosen for its ability to simultaneously estimate multiple equations that may have correlated error terms. This approach allowed to capture the interplay between healthcare spending and savings behaviour more accurately. By using the SUR model, we could estimate the relationship between Out-Of-Pocket health expenditures and savings behaviour in a way that reflects their mutual influence. For instance, a reduction in OOP expenses due to the Sehat Sahulat Program (SSP) could lead to an increase in savings, while higher savings might also affect how individuals manage their health expenditures. The SUR model accounts for these potential correlations, ensuring that the estimates for each equation are not biased by the unobserved factors influencing both outcomes. This simultaneous estimation provides a more comprehensive understanding of how the SSP impacts both healthcare spending and savings behaviour, offering valuable insights into the program's broader economic effects on individuals and households.
5. **Assessing Willingness to Pay for health services using Linear Regression and Ordered Logistic Regression (Ologit):** These models are carefully designed to capture the relationship between Willingness To Pay (WTP) and various influencing factors, incorporating a comprehensive set of independent variables that include demographic characteristics, socioeconomic status, and SSP participation indicators. The two different models corresponds to the two different types of insurance plans. To measure the WTP for monthly insurance premium Linear Regression is used. Secondly, to measure the WTP for co-insurance insurance plan at the time of treatment Ordered Logistic regression is used. By utilizing the Ologit regression model, we are able to estimate the likelihood that individuals with certain characteristics would fall into different levels of WTP. This approach allowed to identify key factors that influence whether individuals are more or less likely to contribute towards health insurance during treatment. After running the regression, we further explored the results through marginal predictive analysis, focusing on income groups and district-wise differences. This step provides deeper insights into how WTP varies across different economic strata and regions, highlighting potential disparities and areas where the SSP might need to be tailored or expanded to ensure equitable access to health insurance. The combination of Ologit regression and marginal analysis offer a nuanced understanding of the SSP influence on WTP, guiding policy recommendations for enhancing the program's effectiveness.

The impact of the SSP on household savings capacity has been evaluated using the results from the PSM and SUR models. These findings were then triangulated with qualitative data from the survey to provide a comprehensive assessment of the program's effectiveness. By employing these robust analytical techniques, the study provides a detailed evaluation of the SSP's impact on the financial stability of low-income households and offers valuable insights into the future design of health insurance programs in Pakistan.

SECTION 1

IMPACT ON OUT-OF POCKET HEALTH EXPENDITURE

MEASURING THE IMPACT OF THE SEHAT SAHULAT PROGRAM (SSP) ON OOP HEALTH EXPENDITURE

EXPLORATORY DATA ANALYSIS

A. STATUS OF UTILIZATION AND ASSOCIATED SOCIO DEMOGRAPHIC VARIABLES

AGE & GENDER

Most of the beneficiaries from the representative sample were between the ages of 30 to 60 years (68.6%) who utilized the SSP services. Female respondents predominate in non-beneficiaries and 44.73% are in reproductive age group as compared to beneficiaries 44.8% is between 45 to 60 years.

Figure 3: Age Distribution of Beneficiaries Non Beneficiaries in years %age

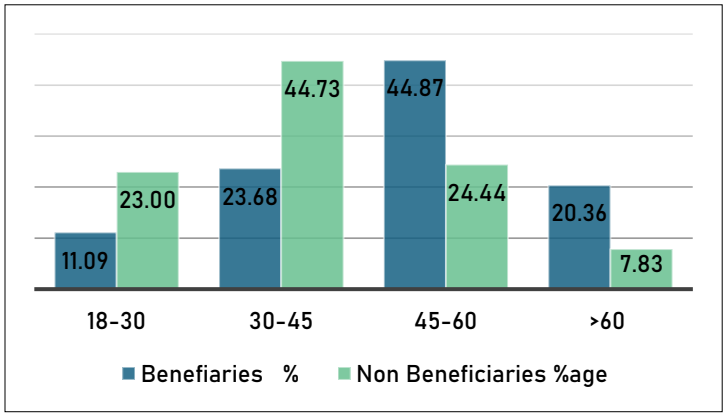
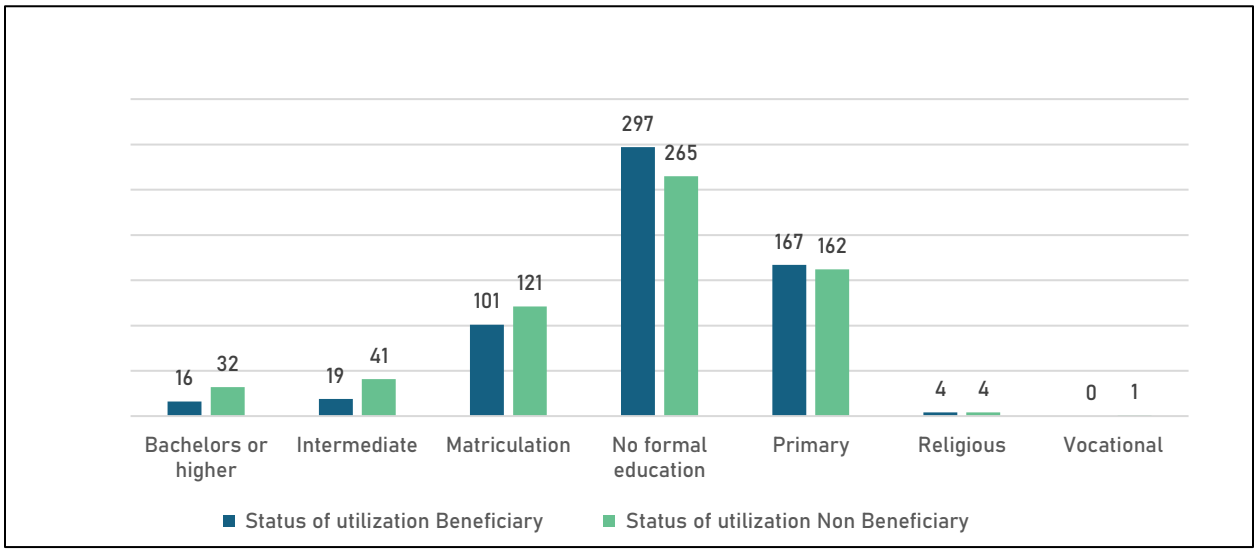


Figure 4: Gender %age Beneficiaries & Non beneficiaries

B. STATUS OF UTILIZATION AND EDUCATIONAL STATUS

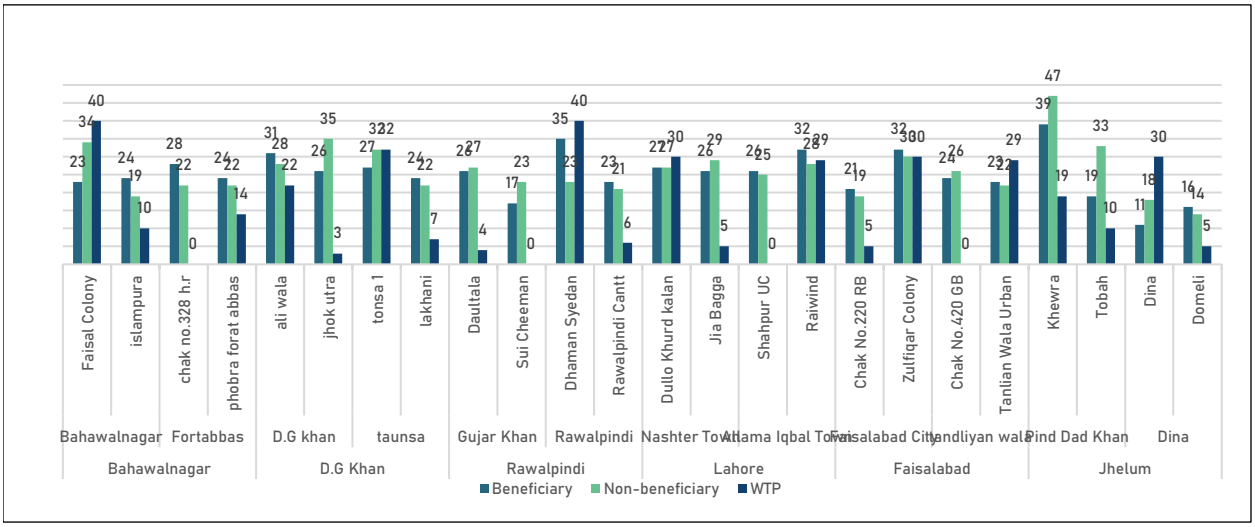
Education is considered one of determinant of health care utilization and access and higher oop expenditure . In this study 48.8 % beneficiaries have no formal education as compared to 43% of non utilizers. Among educational attainments, majority has attained primary level education. 167 attained primary and 101 matriculation out of 604 of utilizers and only 16 beneficiaries has attained intermediate and graduation while more non beneficiaries has attained higher level of education. .

Figure 5: Status of Utilization and Educational Status



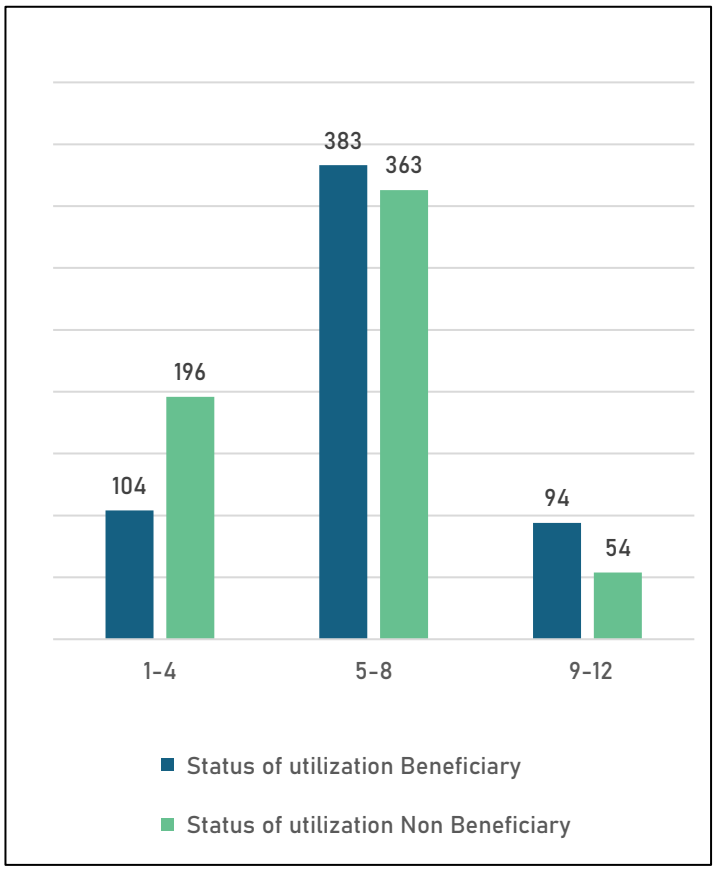
Majority of respondents are from urban UCs this graphical representation is an overview of the sample unit Union council. 52.6 % of beneficiaries are from urban and 47.4% from rural union council.

Figure 6: District wise No. of Beneficiaries & Non beneficiaries interviewed & their WTP



C. SOCIO DEMOGRAPHICS OF INTEREST

Figure 7: Status of Utilization & Family Size

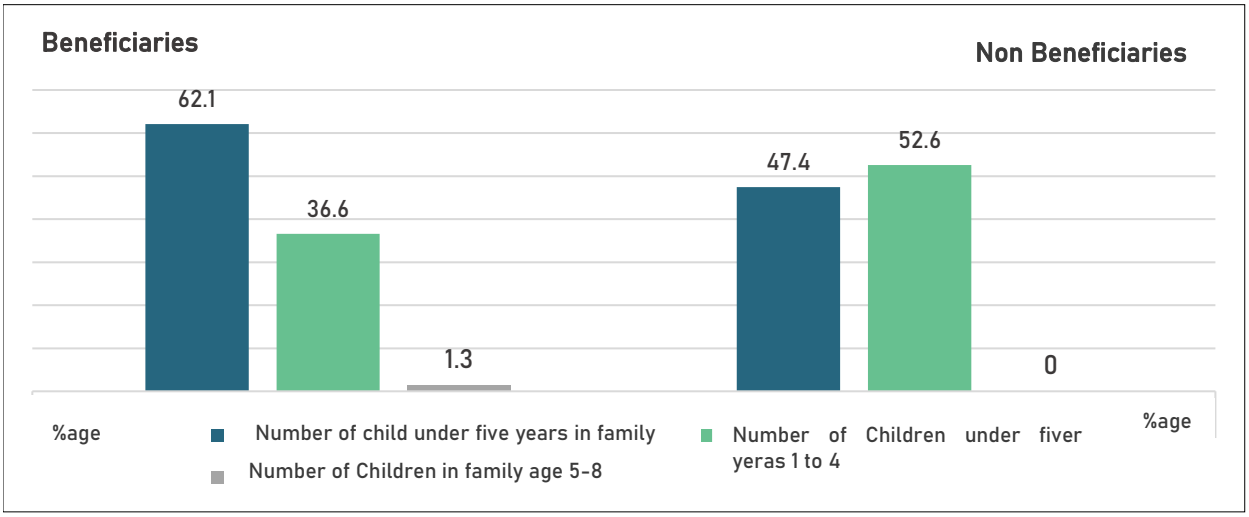


Family size is an important determinant of OOP health Expenditure. Most common family size is 5 to 8 (61% of respondents) and 79% for beneficiaries. Observation is that Beneficiaries has larger families (5 to 12) as compared to non beneficiaries having smaller families(Figure 7)

As we have high %age of malnutrition and is directly linked to access health care. Based on this health insurance is regarded as a viable option for improving health status of children and there is positive association between health insurance and child health . (Aziz et al 2022)

Figure 8 has shown that 62.1 % of beneficiaries and 47.4% of Non - Beneficiaries did not have child under five years and 52.6% of Non beneficiaries has one to four children under five years and 36.6% Beneficiaries

Figure 8: Children under five years



D. SOCIO-ECONOMIC STATUS

This study evaluated socioeconomic status by monthly income of family and expenditure on food, utility bills, accommodation rental, transport and health. This analysis shows that 50% of beneficiaries and 53% of non-beneficiaries fall in income bracket of 20,000 to 40,000 and 31% of beneficiaries and 22% of non-beneficiaries fall into next income brackets (40.000 -75000*). Lowest bracket of less than 20,000 consist of 24% of non-beneficiaries and 17.5% of beneficiaries. Food is the major expenditure, 65% of beneficiaries and 56% of non-beneficiaries spent 10,000 to 30,000 on food and 25% of respondents spend less than 10,000/ month on food.

Figure 9: Status of Utilization & Employment Status

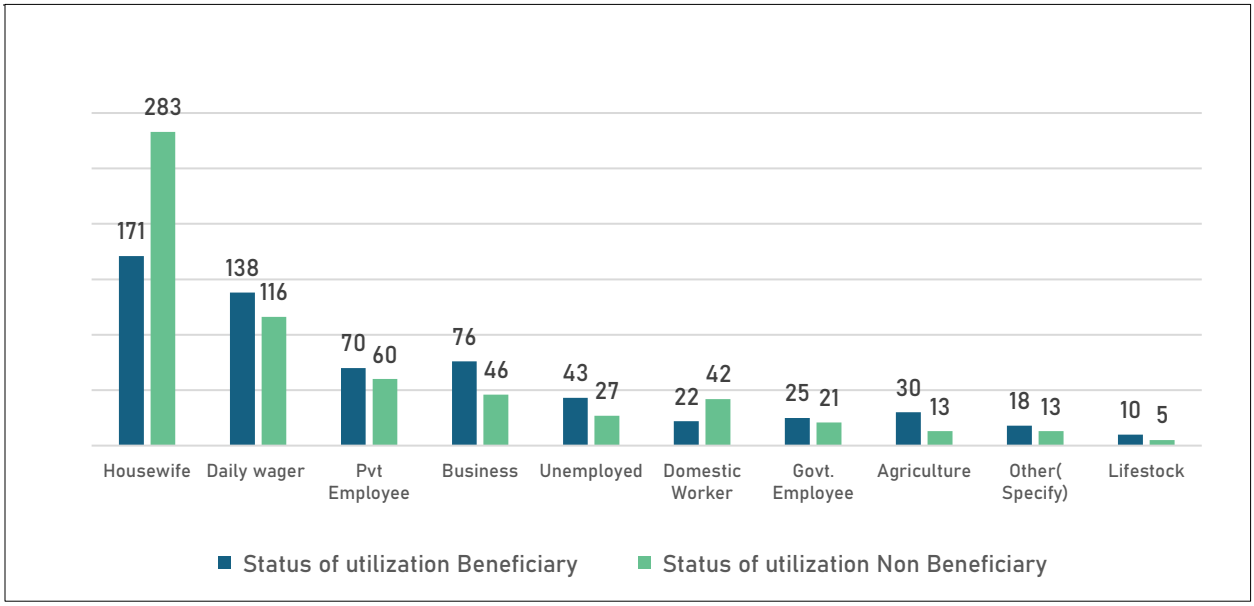
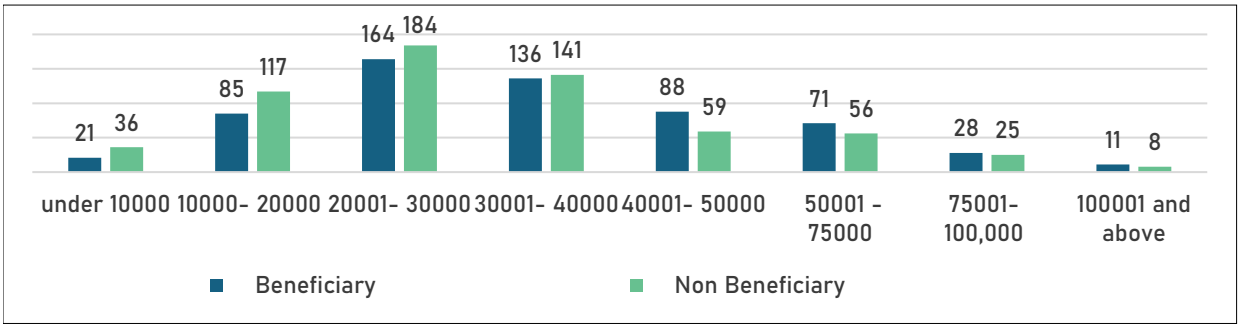
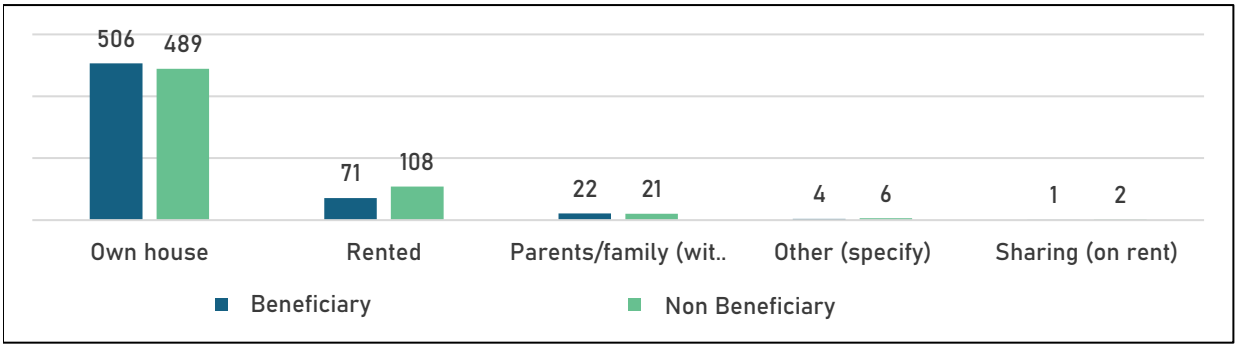


Figure 10: Status of Utilization of SSP & Total Monthly Income



As considering immoveable assets 80% of beneficiaries own a paka house and more than 70% of respondents (treated & Control) own a motor cycle.

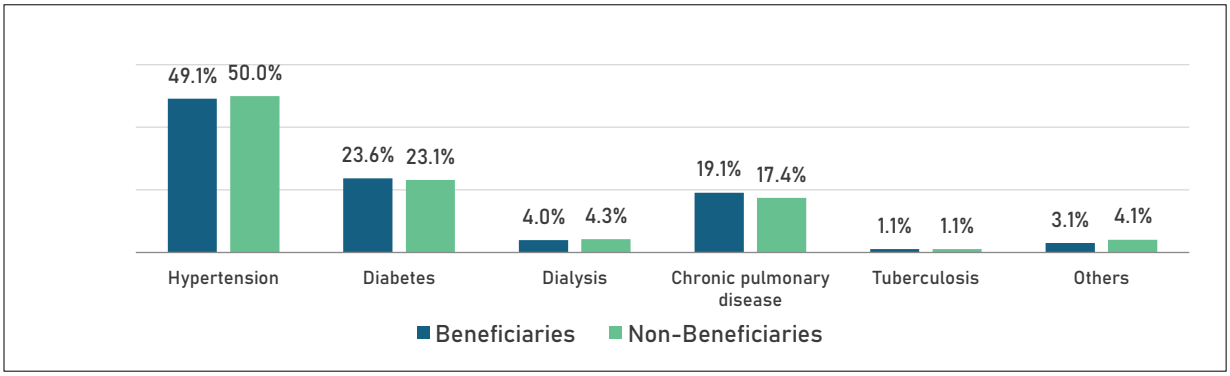
Figure 11: Status of Utilization of SSP & House Ownership



E. HEALTH STATUS AND UTILIZATION OF HEALTH CARE

For exploration of health status of family and utilization of health care, presence of chronic disease in household and number of outpatient visits in last three months and in patient event during last one year were the main indicators. As presence of disability in the family increases health expenditure almost five times so this was explored and how SSP or other programs are providing coverage to family with disability.

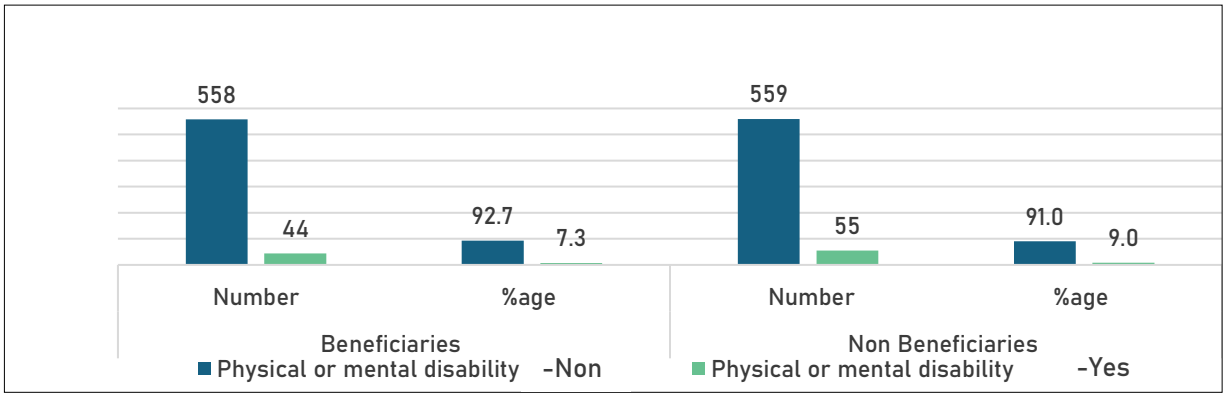
Figure 12: Presence of Chronic Disease in Family of Respondents



Hypertension, Diabetes and Chronic Obstructive Pulmonary Disease is prevalent in respondents with same prevalence in beneficiaries and non-beneficiaries. Co morbidities are common and most common

is hypertension and diabetes (43.5% of Beneficiaries and 45.2% of non-beneficiaries). Need of dialysis represents complicated chronic non communicable disease and require frequent hospital visits. Tuberculosis and chronic pulmonary disease (21.43% beneficiaries VS 17.6% of NB). This is an interesting finding which can be due to the increased diagnosis of disease because of availability of SSP and control group have not reached to get diagnosed due to lack of resources. Incidence of diabetes matched with national incidence, but hypertension is more than national incidence. The presence of chronic disease is a determinant of OOP expenditure(Faraz et al 2021) and review of reports on SSP highlighted that dialysis is treatment the utilizers are benefiting from.

Figure 13: Presence of any Physical or Mental Disability

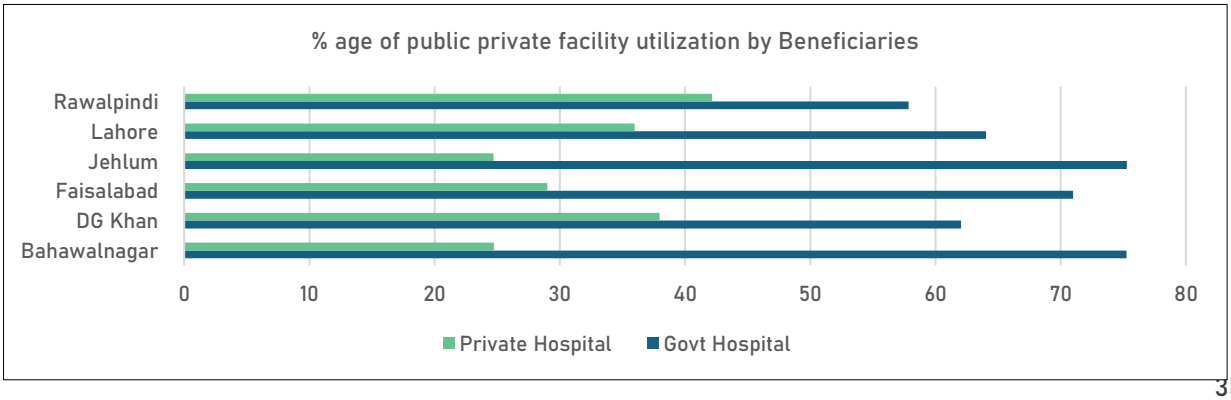


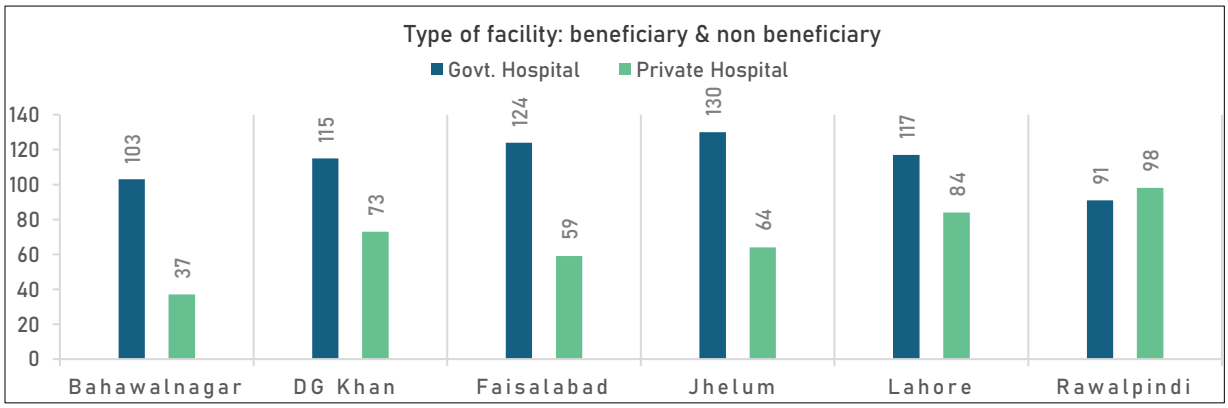
Presence of disability (physical, mental) is a big burden on family resources and determinant of health expenditure. In phase two of SSP family with disability was registered (registered with NADRA) and all family members were eligible to utilize social Health Insurance . In this study 99 families had some kind of disability that is 7.3% and 9% in treatment and control groups respectively. Only 1/4th are registered with SSP and there is minimal any type of insurance or institutional support except SSP.

UTILIZATION OF HEALTH SERVICES

Regarding number of visits 70 % visited health facility between 1 to four times and there is significant correlation between number of visits & OOP health expenditure a known fact (ANOVA p value is significant at all means) . Public sector health facility is preferred by both beneficiaries and non-beneficiaries 64.4% of beneficiaries and 54.7% of non-beneficiaries has utilized public health facilities. Around 31% of beneficiaries and 41.6 % of non-beneficiaries consulted private. This trend is seen in all districts surveyed except Rawalpindi where private health facilities are utilized more by both beneficiaries and non beneficiaries. These results are in contrast to study by Faraz et al (2021) where results suggested preference for private providers both for IP and OPD.

Figure 14: Type of health facility utilized by Beneficiaries

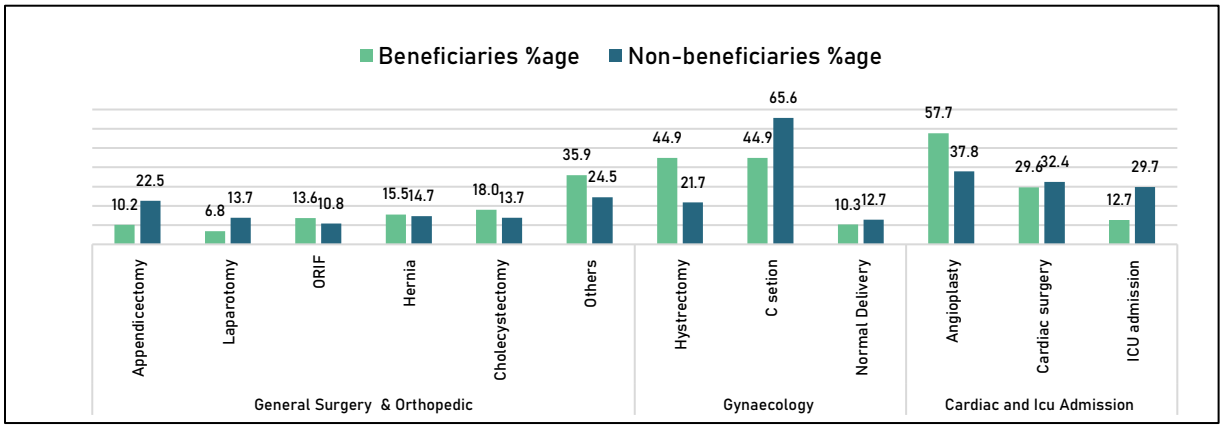




TYPE OF TREATMENT

Type of treatment taken by respondents is recorded in five broader categories general surgery, Gynecological procedures , Cardio pulmonary conditions which needs intervention and are high cost. Renal disease dialysis, ICU admissions and medical treatments like hepatitis, psychiatric illness emergency admissions like injury. This is an overview of treatment taken by beneficiaries and non-beneficiaries and many of them are high-cost treatments. Among beneficiaries/utilizers 57.7% had Angioplasty, 29.6 % had cardiac surgery and 12.7% ICU admissions. These all are high cost procedures and can push the household in poverty. In Focus Group Discussion brain surgery and Open Reduction and Internal Fixation was represented and according to participants there was no OOP expenditure by beneficiaries. The most common surgical treatment taken by the beneficiary patients was cholecystectomy taken by 18% (37) beneficiary participants out of 206 total surgical procedures. 35.9% beneficiaries that is 74 patients were those who have taken other type of treatment like injuries , brain surgeries or other minor surgical procedures. A total of 11 participants were those who have gone through multiple surgical treatments out of which 7 were beneficiaries and 4 were non-beneficiaries. In case of gynecological treatment, Hysterectomy 44.9% was beneficiary as compared to 21 % in non-beneficiary. This is elective procedure, and many women more than 45 years suffer and cannot afford so when offered free of cost so it was done or it may be due to over treatment in private sector. And C-section 20% more in non-beneficiaries. One observation was presence of certain treatment in one district as compared to the other district was different may be due to disease prevalence and expertise of empaneled hospitals like in one region cataract surgery was most common.

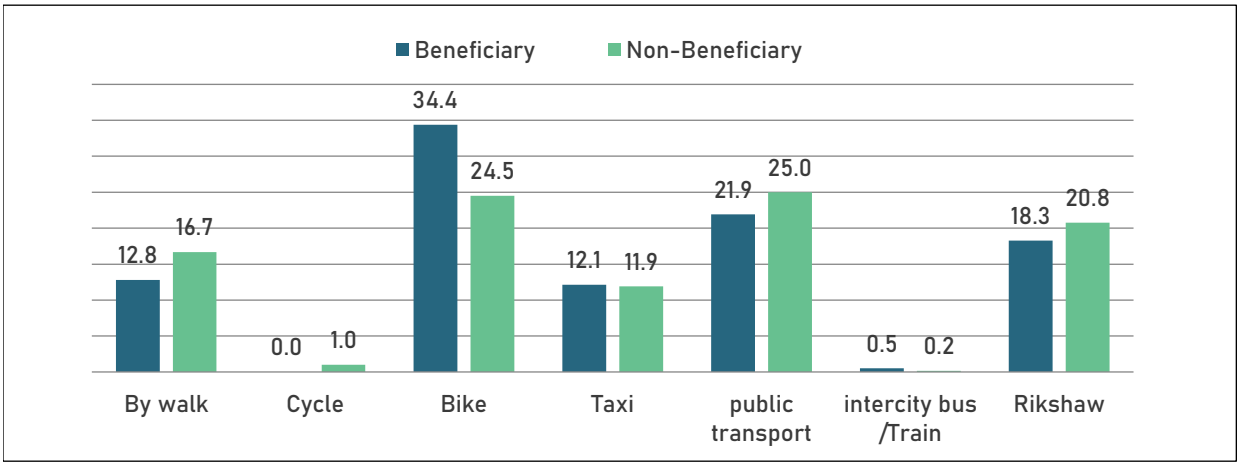
Figure 15: Type of Treatment Beneficiaries and Non-Beneficiaries



F. ACCESS TO HEALTH CARE

Access to Health care is ability to obtain preventive, diagnostic, curative care for disease/ disorder management and other health impacting conditions. There are two main components, geographic access and affordability of health care. In this case OOP expenditure is affordability and geographic distance and availability is also explored. 35% of health facilities are between 1 and 3.00 km and, 33% are more than 5 km, may be from rural areas. But distance is not associated with frequency of health facility visits. Average spending on transport at one trip is 1200 PKR and range up to 3000. Regarding access public health care is the preferred destination by respondents of both groups. Mode of transportation was also explored and following is the choices. Non beneficiaries uses Public transport and rickshaw and by walk while beneficiaries 34.4% of those used, have bikes.

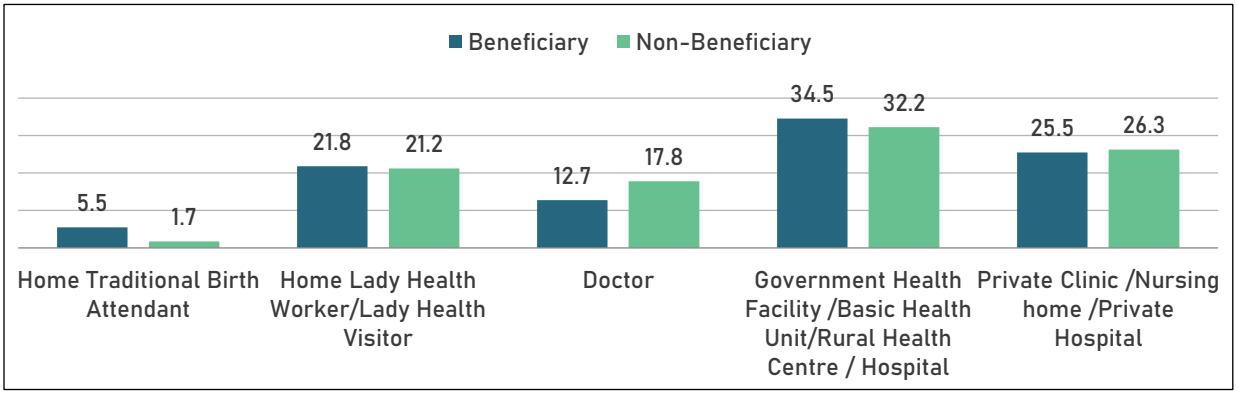
Figure 16: Transport used for access to Health Facility (OPD & In Patient)



TYPE OF HEALTHCARE PROVIDER FOR PERCEIVED ILLNESS

Government healthcare facilities are more often visited for the treatments in case of both beneficiaries and non-beneficiaries, but the percentage of beneficiaries is slightly higher than of non-beneficiaries. This is due to trust on government institutions, accessibility and affordability are main factor for the higher rate of utilization as compared to private sector. Taking advice from LHW/ LHV is also very common instead of visiting the healthcare facility. 21.8% of the beneficiaries are those who takes advice from LHV/ LHW. Percentage of taking traditional treatments or home treatment is very low that is 5.5% of beneficiaries and 1.7% of non-beneficiaries. This shows positive health seeking behavior.[3]

Figure 17: Type of Health Provider visited more often



[3] This question was multiple choice not a single best answer.

G. OUT OF POCKET HEALTH EXPENDITURE AND SEHAT SAHULAT PROGRAM (PUNJAB)

OVERVIEW OF OOP HEALTH EXPENDITURE FOR IN PATIENT / HOSPITALIZATION COMPONENTS AMONG BENEFICIARIES & NON-BENEFICIARIES

Out Of Pocket health expenditure is crucial component of private health expenditure, and it is empirically the largest source of health care financing in developing countries. Measuring OOP expenditure as per study objective can be challenging due to recall bias. For this impact evaluation study three types of questions are asked like.

1. Monthly household expenditure on health, OPD expenditure on health in last three months and health event/ incidence (IPD) cost during last one year.
2. It was particularly explored from treatment group about top up payments for different components of inpatient care and total payment on different components from control group.
3. Both direct and indirect costs are explored.
4. It was realized during the survey that beneficiaries had a good and clear account of OOP while treated for a health event at empaneled hospital.

PROPORTION OF DIFFERENT COMPONENTS OF OOP EXPENDITURES

Broadly OOP health expenditure is direct and in-direct cost. Direct cost components for OPD are cost of medicine, Diagnostic tests and Dr Fee & for IPD treatment Dr Fee is replaced by Cost of surgery /inpatient treatment/ICU cost stratified in beneficiaries and non-beneficiaries.

TABLE 5: PROPORTION OF DIFFERENT COMPONENTS OF OOP EXPENDITURES.

Comparison of %age OOP expenditure for OPD and IPD components among Beneficiaries & Non-Beneficiaries

Categories	%age IPD beneficiaries	%age IPD Non-Beneficiaries	OPD Beneficiary %age	OPD Non-Beneficiary %age
Medicines and supplies	16.89	14.33	45.78	47.09
Diagnostic tests	13.80	15.5	23.8	22.82
Cost of surgery/Admission/ Dr Fee	45.40	55.95	15.26	12.69
Transport	6.94	5.21	15.5	17.4
Food and Accompanied Person (Indirect cost)	16.7	9.01	--	--

The information given in the above table shows the comparison of OOP expenditures for OPD and IPD for both beneficiaries and non-beneficiaries. In OPD treatment medicines and supplies are major component while at IPD cost of surgery and medical treatment makes the major cost (50%) The diagnostic tests cost higher in OPD for both groups. Beneficiaries are spending more (17% VS14.33%) on Medicines and supplies VS non beneficiaries which is due to non-availability of medicines in public sector hospitals and long procedural barriers for local purchase as highlighted by hospital representatives/SSP rep at program desks.

Indirect cost for IPD includes Transport which is between 7 & 8% and in line with previous literature and higher in beneficiaries of SSP, which may be due to increased utilization of health care services and health seeking behaviour and access to urban HCFs for treatment. Indirect cost of food and accompanied person and tips did not show significant difference in treatment and control group.

H. IN PATIENT OOP EXPENDITURE

This is exploratory data analysis for first objective of study, total OOP Expenditure incurred by a family in case of hospitalization from treatment (Beneficiary) and control (Non Beneficiary). As explained earlier direct cost is explored in detail.

OOP EXPENDITURE ON DIFFERENT COMPONENTS OF HEALTH CARE (IMPACT)

As in previous analysis for hospitalization surgical interventions and ICU admissions are the high cost component. This is evident that only 33% beneficiaries top up the cost and 58% of Non-Beneficiaries paid Cost of surgery. Around 62 % of non beneficiaries paid for diagnostic tests and 68.24% paid for medicines while hospitalized. Non beneficiaries spent almost double on hospitalization as compared to beneficiaries protected by Sehat Sahulat Program.

TABLE 6: OOP HEALTH EXPENDITURE OF BENEFICIARIES AND NON-BENEFICIARIES

	Beneficiaries		Non-Beneficiaries	
	Numbers	%age	Numbers	%age
Diagnostic test	290	48	379	61.7
Medicines & vaccines	316	52.31	419	68.24
Cost of surgery/ Inpatient treatment	201	33.00	353	57.49
Transport	434	71.85	426	69.38

Objective analysis from survey data has shown that 42% (252) beneficiaries has NOT paid/top up from OOP while availing in patient care while non beneficiaries 27% had total free in patient care without any OOP expenditure on a health incidence or health shock during one year of reference period. While on direct question verbal autopsy from beneficiaries 316 (52%) of) beneficiaries had ZERO OOP for Diagnostic tests while 38.3% of non-beneficiaries had free in patient diagnostics. 48.67% (293) beneficiaries were supplied all medicines and supplies and vaccines as compared to 31.86% of non-beneficiaries.

MEAN OOP EXPENDITURE IN PATIENT ADMISSION INCIDENCE

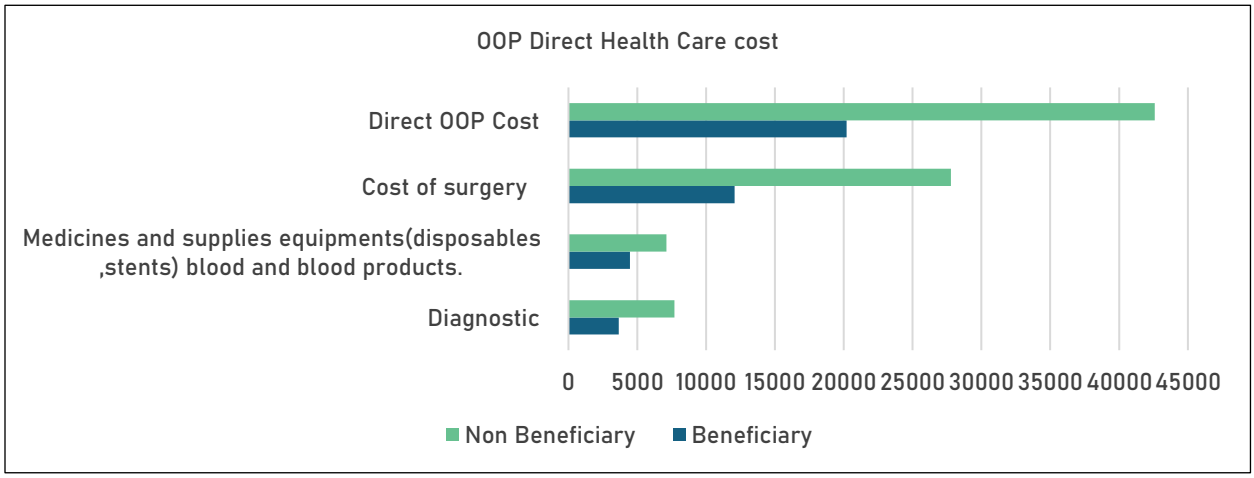
Exploratory data analysis of beneficiaries for average OOP expenditure/top up explored by calculating different components cost , by direct questions is derived and some calculations from string data. The results of all are same on direct costs and indirect costs. Average OOP expenditure by beneficiary is Rs.20,209.00 by summation of diagnostics, medicines and supplies, cost of surgery/ in-patient treatment/ICU admission (direct). On direct question to beneficiaries' direct cost is Rs.23,681.00 and information derived by indirect question about payment by SSP. This was possible because SLIC representatives at hospitals usually explains to the patients about claims and this is average Rs. 20,122.00. OOP. Both direct and indirect average for beneficiaries is Rs. 26,606.00. In comparison , non-beneficiaries has mean OOP expenditure on health event is (direct) is double (Rs.42,590) and total OOP health expenditure is Rs. 49000. This analysis of variance is statistically significant and P value 0.039

(statistics) supports that mean OOP health expenditure, (F statistics W50 and W10 p values 0.0399 and 0.061) supports that mean OOP expenditure is significantly less in beneficiary group as compared to non-beneficiary group and as study objective this difference is considered due to financial protection by SSP. With further exploration as shown in table different components of TOOP expenditure cost of surgery /ICU admission/ medical treatment SSP utilizers paid average Rs.12076.00 (130% less)than non-beneficiaries average Rs. 27,777.56 and is significant difference between two groups (P 0.0034).This is important to mention that 67% of beneficiaries paid no cost of surgery/inpatient while treated in patient 33 % had to pay OOP additionally.

TABLE 7: MEAN OOP EXPENDITURE IN HEALTH EVENT

Components	Mean OOP (PKR)	Mean %age	Mean OOP PKR	Mean %age
	Beneficiaries		Non-Beneficiaries	
Medicines and supplies	4465.00	18.79	7117.15	14.33
Diagnostic tests	3664.00	13.77	7696.24	15.50
Cost of surgery/Admission	12076.00	45.39	27,777.54	55.95
Direct OOP Cost	20, 209.00		42,590	
Transport	2622.3	9,85	2587.41	5.21
Accompanied person	1885	4.45	2305.00	4.64
Food and tips	1903	7.15	2166	4.36
Total OOP In Patient	26,606	100.00	49650.79	100.00

Figure 18: Mean %age OOP by status of Utilization (Direct)



To summarize , the test results suggest that when using the mean, there is no significant difference in variance of OOP expenditures between beneficiaries and non-beneficiaries. However, when using the median and trimmed mean, there may be a significant difference, particularly with the median.Mean %age OOP by status of Utilization and type of Health facility (Beneficiaries)

TABLE 8: MEAN %AGE OOP BY STATUS OF UTILIZATION AND TYPE OF HEALTH FACILITY (BENEFICIARIES)

Components of health care (Beneficiaries)	Public (402) Mean PKR	Private (200) Mean PKR
Diagnostic tests	3312	4412
Medicines and equipment	4058	5347
Cost of Surgery/ inpatient treatment	11352	13674

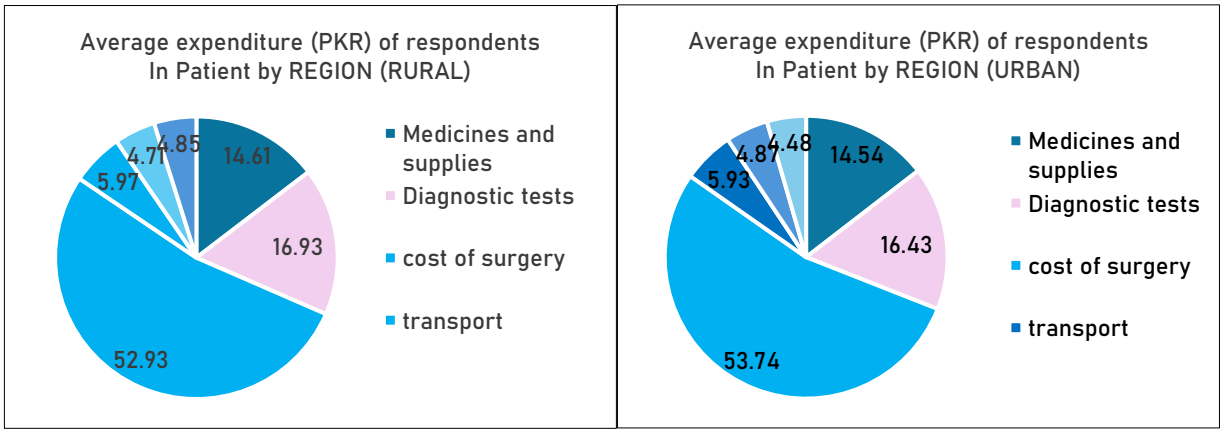
As this table shows difference in cost of surgery ,17% higher in private sector. Literature review has shown 3 to 4 times higher cost in private health facility and not much difference in medical supplies and medicines in both sectors and diagnostic tests are higher in public sector health facilities (Faraz et al 2021). Study findings are not in line with previous literature in Pakistan is probably one of the first studies on such program OOP expenditure. Secondly as program has empaneled private hospitals with treatment packages on lower than market price, agreed upon.

In reference to the previous study 2021 (Faraz et al based on special survey 2013) there is no difference in total cost of treatment in public sector and private health facility, but there are component wise differences.

OOP HEALTH INPATIENT EXPENDITURE & URBAN RURAL AREAS

There is no difference in rural urban areas as far as cost is concerned. 52.7% of respondents are from urban areas both beneficiaries and non-beneficiaries.

Figure 19: Average Expenditures (PKR) of Inpatient by Region



There is not much difference in OOP costs region-wise all components costs in rural and urban settings are not significantly different. Around 316 cases (52%) beneficiaries' respondents are in urban settings, and 47.5% are from rural settings.

AVERAGE TOTAL OOP EXPENDITURE INPATIENT AND MONTHLY INCOME.

TABLE 9: AVERAGE TOTAL OOP EXPENDITURE INPATIENT AND MONTHLY INCOME.

Family Monthly Income (Rs.)	Average Total OOP expenditure in patient Ben & Non-Beneficiaries	Total	Beneficiary	
			Beneficiaries number	Total OOP expenditure Beneficiary
Under 10,000	22999	56	21	16083
10,000 to 20,000	29276.195	195	85	23144
20,001 to 30,000	35568	348	164	25 270
30,001 to 40,000	46970	277	136	30031
40,001 to 50,000	50318	147	88	25740
50,001 to 75,000	69920	127	71	44705
75 ,001 to 100,000	54531	53	28	24287
> than 100,000	74720	19	11	36000
Total mean OOP	43760	1222	604	28 157

Family monthly income is a strong determinant of total OOP expenditure while admitted in hospital as mentioned different categories of income groups like ultra poor, poor and lower middle income groups are significantly associated with each other, higher the income group higher OOP expenditure (significance $p< 0.05$). Most of beneficiaries fall in ultra poor and poor groups. 72% of respondents (33% beneficiaries & 40% non-beneficiaries) fall in poor and ultra-poor groups, Income less than 40, 000 around 30% are in vulnerable group with risk of impoverishment in case of health shock. On average, the wealthiest quintile in beneficiaries has spent 2.4 times as compared the poorest beneficiary. Interesting finding is that higher income group 75000 to 100,000 has spent much less as compared to 50,000 to 75,000 and income groups 50,000 to 75000 is has highest spending in beneficiaries. This shows that burden of OOP expenditure is quite high in poorer socio economic both in beneficiaries and non beneficiaries.

CATASTROPHIC HEALTH EXPENDITURE AND SEHAT SAHULAT PROGRAM

Catastrophic Health Expenditure defined as OOP health incidence expenditure exceeding 10%, 25% of total house hold/family expenditure or income or >40% of non-food expenditure. Globally 11.7% population is at risk catastrophic health expenditure at >10% threshold Latin America 14.8% Asia 12.8% and 2.6% at health expenditure exceeding more than >25% of family income.

In this study Catastrophic Health Expenditure is calculated on two thresholds 25% and 40% of total Expenditure including food. In study instrument monthly expenditure is calculated, annualized for incidence calculation (inpatient treatment) and direct OOP expenditure while admitted and second is TOOP expenditures including out patient cost (OPD)

TABLE 10: IN PATIENT (COST OF SURGERY/ADMISSION) >25% OF FAMILY EXPENDITURE			
Inpatient (cost of surgery/admission) >25% of family expenditure	Beneficiary	Non beneficiary	
No Catastrophic Health	536	517	1053
In patent expenditure, more than 25%of house hold expenditure.	68 (11.25%)	109 (17.4%)	177 (14.4%)
Total	604	626	1230
P value is 0.002			
OOP Inpatient incident +OPD expenditure* more than 25% of family expenditure(annualized)	99 16.4%	167 27%	266 21.62%
No Catastrophic OOP expenditure (IPD+OPD)	505	459	964
Total	604	626	1230

The total sample is 1230 and 177 has faced catastrophic health expenditure (>25% of house hold expenditure ,while had health incidence In patient cost, makes 14.4% in total sample. 17.4% of non-beneficiaries and 11.25% beneficiaries spent > 25% of house hold income when combined with IPD +OPD 27% of Non-beneficiaries spent >25% (P Value of 0.002) so there is association of OOP with status of utilization.

MONTHLY INCOME AND CATASTROPHIC HEALTH EXPENDITURE (HEALTH SHOCK)

TABLE 11: IN PATIENT (COST OF SURGERY & INPATIENT TREATMENT ADMISSION >25% OF EXPENDITURE							
Inpatient (Cost of Surgery & Inpatient Treatment Admission >25% of Expenditure	Under 10,000	10,000	20,000	30,000	40,000	50,000	75000 and above
No	43	165	301	240	128	108	68
Yes	14	37	47	37	19	19	4
	32.5%	22%	15.6%	15.4%	14,8%	17.5%	5.5%

It is seen in this table that poorest of the poor are effected more as compared to other groups. CHE is linked with taking debt as coping mechanism and 583 respondents took loan during last 12 months and 86 respondents who had CHE took loan out of which 62 respondents took loan due to catastrophic health expenditure ie 72% coped with CHE by taking loan. Furthermore 46.9% are beneficiaries who took loan for health and 59% of non-beneficiaries were under debt due to health expenditure.

CATASTROPHIC HEALTH EXPENDITURE IPD + OPD EXPENDITURE

Another expenditure which can lead to Catastrophic Health Expenditure in addition to in patient incident. In this case 21.6% of respondents had catastrophic expenditure at threshold of more than 25% of household expenditure. In this case Non beneficiaries are effected 1.5X as compared to beneficiaries (16.4% vs 26%) It is important to mention that OPD expenditure has contributed towards higher effects. This has a policy relevance to include OPD for wider protection because of two reasons. As PHC is covered and beneficiaries will not progress to condition where admission is required and also debt burden will be decreased.

There is an association of CHE (IPD+OPD) 52% utilized Public health and 37% were treated at private Health facility. It is significantly associated with type of treatment 63.5% was treated indoor and OPD and 33% were treated as outpatient only and only 3.6% were treated as in patient. This gives two insights that as SSP is covering in patient care so it is protective secondly OPD is a significant determinant of CHE. 25% of families who spent more than 25% of family expenditure OOP on health have a chronic disease in family , 11.5% had disability in family and 1/3rd are enrolled with SSP . Jhelum district is most effected, daily wagers are most effected. (These %ages are calculated out of 266 who had catastrophic IPD+OPD) majority of family consist of 4 to 7 family members. Most of beneficiaries were enrolled for 3 to 4 years probably due to frequent visits and improved Health Seeking Behaviour.

As coping mechanism most frequent is support from family or friends then charity (zakat Baitul mal 113 (0.030), then own saving and minority opted for loan and selling assets. While compared with other components 72% took loan for health.

Health expenditure exceeding 25% of family income is health shock which is used for further economic modelling for impact evaluation.

SUMMARY

It is observed that main drivers of OOP health expenditure for inpatient care for non-beneficiaries is diagnostic tests and cost of surgery / inpatient admission at private settings and medicines and supplies are same. Beneficiaries are utilizing the public sector health facility and SSP has positive impact on cost of surgery and diagnostics. While 7% OOP is contributed by transport for beneficiaries as compared to 5% for non-beneficiaries and beneficiaries are protected on food and tips as well.

MEASURING THE IMPACT OF THE SEHAT SAHULAT PROGRAM (SSP) ON OOP HEALTH EXPENDITURE USING PROPENSITY SCORE MATCHING (PSM):

To evaluate the impact of the Sehat Sahulat Program (SSP) on out-of-pocket (OOP) healthcare expenditures for beneficiaries , a Propensity Score Matching (PSM) approach was employed. This analysis aims to assess how enrolment in the SSP provides access to healthcare services, affects the financial burden of healthcare costs for the program's utilizers compared to non-utilizers. By focusing on households with limited financial means, the evaluation seeks to determine whether the SSP effectively reduces OOP expenditures, thereby enhancing financial protection for the most vulnerable groups in society. Broadly, the SSP aims to protect Pakistan's population living below the poverty line from catastrophic OOP health expenditures—those exceeding 10% to 25% of total household income—and to improve health outcomes and their associated benefits.

The goal of the PSM model is to create a comparable sample of SSP utilizers and non-utilizers by matching individuals based on key characteristics, thus controlling for potential confounding factors that could influence the relationship between SSP enrolment and OOP health expenditures. The matching process reduces selection bias, ensuring that the two groups (utilizers and non-utilizers) are statistically similar in terms of observable characteristics such as age, gender, household size, financial literacy, and prior healthcare access. After matching, differences in OOP health expenditures between the two groups were analysed to isolate the impact of SSP enrolment on reducing healthcare costs for the poorest households. This approach ensures that any observed reduction in OOP health expenditures can be attributed to the program, providing a more accurate understanding of its effectiveness in alleviating the financial burden on low-income families.

PSM Methodology

Propensity Score Matching (PSM) is used t o evaluate the **impact on OOP health expenditure** of families of lowest income quintiles, enrolled in the Sehat Sahulat Program in comparison to the non -utilizers of the program.

Co Variates

Socio demographic & Economic age ,gender ,education ,marital status , employment status ,family income
Family Characteristics Family size ,presence of elderly ,child under five , family income
Health status Health incidence ,health shock, chronic disease ,disability ,previous health care experience
Program utilized Awareness of program, trust in govt institutions ,affordability , recommendation by friends or family ,trust in private institutions

Variable of Interest **Status of Utilization (SSP)**

Outcome /Dependent variable **Out of Pocket Health Expenditure**

IDENTIFICATION OF COVARIATES

Identifying relevant covariates is crucial for accurate estimation. In our Propensity Score Matching (PSM) analysis, treated and untreated individuals were matched based on several key covariates to ensure comparability between the groups. The first step of PSM involves estimating the probability of being selected for the program by applying logistic regression, where the dependent variable is "utilizer." The

covariates used for this matching include age, gender, educational background, employment status, urban/rural union council, marital status, household size, presence of elderly members, and presence of children under five, chronic disease , previous healthcare experiences. These covariates were chosen to control for confounding factors that might influence both the likelihood of enrolling in the Sehat Sahulat Program (SSP) and the outcome of interest, which is out-of-pocket healthcare expenditure. By accounting for these variables, we aimed to create a balanced comparison group, thus isolating the impact of the SSP on reducing healthcare costs. This rigorous matching process enhances the validity of our findings, offering a more accurate evaluation of the program's effectiveness. The corresponding logistic regression equation is presented below:

$$logit(p/(1-p))= \beta_0+ \beta_1 (age)+ \beta_2 (Gender)+ \beta_3 (education)+ \beta_4 (Emp-status)+ \beta_5 (UC)+\beta_6 (Marital)+\beta_7 (Household\ Size)+ \beta_8 (Elderly)+\beta_9 (Child\_5)+\beta_{10} (disease)+et$$

LOGIT MODEL

Propensity scores, denoting the probability of receiving the treatment given observed covariates, are estimated through logistic regression. This model considers the treatment indicator as the dependent variable and includes the identified covariates as independent variables.

TABLE 12: RESULTS OF LOGISTIC REGRESSION

Utilized	Coefficients	t-value	p-value	95% Confidence Interval		Sig
Age	.046	7.74	0.00	.034	.058	***
Gender	-.873	-5.78	0.00	-1.169	-.577	***
Educational years	-.022	-1.51	.131	-.051	.007	
Employment status	.204	1.49	.137	-.065	.472	
Union council	.032	0.25	.802	-.219	.284	
Marital Status	-.278	-2.63	.009	-.485	-.071	***
Household size	.775	5.70	0.00	.509	1.042	***
Elderly	-.207	-1.40	.162	-.496	.083	
Child_5	-.48	-3.48	0.00	-.75	-.21	***
Disease	-.006	-0.15	.884	-.092	.079	
Constant	-.221	-0.44	.661	-1.208	.767	
Mean dependent variable	0.495	SD dependent variable			0.500	
Pseudo r-squared	0.139	Number of observations			1217	

Chi-square	234.701	Prob > chi2	0.000
Akaike crit. (AIC)	1474.280	Bayesian crit. (BIC)	1530.426
*** p<.01, ** p<.05, * p<.1			

The logistic regression results, as shown in the table 12 above, were used to match beneficiaries (SSP utilizers) and non-beneficiaries. Several covariates were found to significantly influence the likelihood of program enrolment. Among the significant variables, age has a positive and statistically significant effect on the probability of SSP utilization. For each additional year of age, the likelihood of enrolling in the program increases. Similarly, household size positively affects the probability of utilization, indicating that larger households are more likely to utilize SSP services. In contrast, gender negatively influences SSP utilization, meaning that males are less likely to enroll in the program compared to females. Marital status also has a negative and significant impact, showing that married individuals are less likely to utilize SSP services. Additionally, households with children under the age of five are less likely to enroll, as indicated by the negative and statistically significant effect of this variable. On the other hand, the following variables were found to be statistically non-significant: educational years, employment status, union council (rural/urban), presence of elderly members, and chronic disease status. These factors did not significantly influence the likelihood of program enrolment.

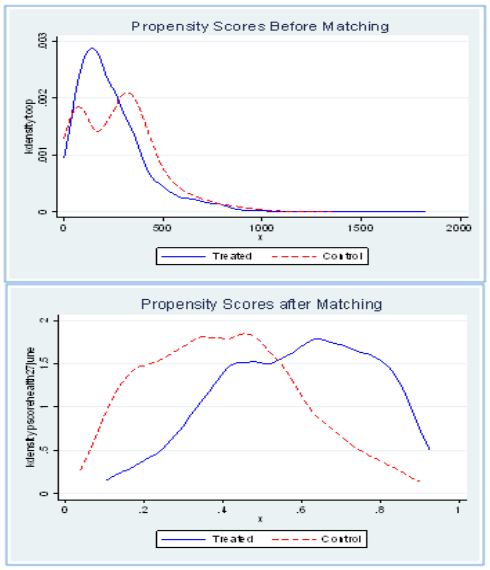


Figure 1: Propensity Scores before & After Matching

These results guided the matching process by controlling for key characteristics, ensuring that the matched groups of beneficiaries and non-beneficiaries are comparable based on observable factors. This careful matching enhances the validity of the impact evaluation by reducing potential selection bias.

The model has a Pseudo R-squared of 0.139, indicating that approximately 13.9% of the variance in the dependent variable is explained by the independent variables. This shows that a large portion of variation is still unexplained in the data. While, the Chi-square test statistic is 234.721 with a p-value of 0.000, indicating that the model as a whole is statistically significant. Therefore, although less variation is there but it is significant, that is the above mentioned variables have an effect on health card utilization.

PROPENSITY SCORE DISTRIBUTION BEFORE AND AFTER MATCHING

Figure presents the distribution of propensity scores for the Sehat Sahulat Program (SSP) utilizers (treated group) and non-utilizers (control group) before and after applying Propensity Score Matching (PSM). The purpose of this analysis is to compare the two groups on a common scale and ensure that they are statistically comparable for further analysis.

In the top panel (before matching), there is a noticeable disparity between the propensity scores of the treated and control groups. The distribution curves show significant differences, indicating that the groups were not comparable in terms of their observed characteristics prior to matching. This suggests a high level of initial selection bias.

The bottom panel (after matching) shows an improved alignment of propensity score distributions between the treated and control groups. Most of the observations fall within the range of common support, meaning that the PSM model has successfully balanced the two groups by matching individuals with similar characteristics. By excluding observations from the treated group that fall outside the range of

the control group, the matching process enhances the comparability of the groups. This improves the reliability of the subsequent analysis, allowing for a more accurate assessment of the impact of SSP on out-of-pocket healthcare expenditures. The successful balancing of propensity scores after matching indicates that the model effectively reduced bias, making the treated and control groups more comparable.

DISTRIBUTION OF PROPENSITY SCORES AFTER MATCHING

The histogram shows the distribution of propensity scores for the treated and untreated (control) groups after matching. The horizontal axis represents the propensity scores, which are the estimated probabilities of being in the treated group given the observed covariates. And the vertical axis represents the frequency of observations within each propensity score bin. Bars above the horizontal axis represent the treated group, while bars below represent the control group. The relatively balanced red (treated) and blue (control) bars indicate that the matching process has successfully aligned the distributions of propensity scores between the treated and control groups, ensuring comparability.

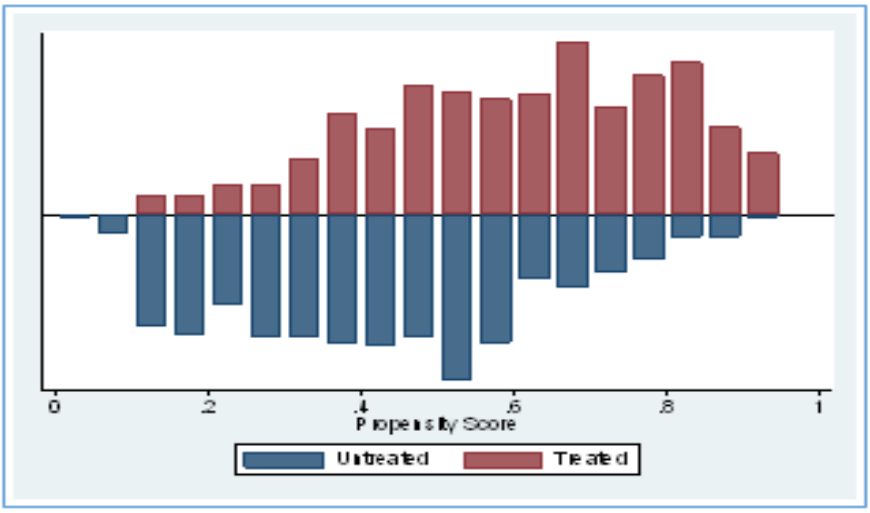


Figure 20: Frequency Distribution of PSM Treated &Untreated Groups

The entropy balance test confirms that the covariate means are well-aligned post-matching, reinforcing the robustness of the results. Additionally, the variance test shows that the spread of covariates between the two groups has been effectively minimized.(Annex 2)

*Detailed Balance test results Annex- 2

PROPENSITY SCORE MATCHING (PSM) RESULTS

The table below presents the results from the Propensity Score Matching (PSM) analysis, comparing the out-of-pocket (OOP) healthcare expenditures between beneficiaries (treated) and non-beneficiaries (controls) of the Sehat Sahulat Program (SSP):

TABLE 13: AFTER TREATMENT MATCHING RESULT

Variable	Sample	Treated	Controls	Difference	S. E	T-stat
OOP	Unmatched	239.769	277.621	-37.852	11.508	-3.290

ATT	239.769	291.481	-51.712	19.180	-2.700

Note: S.E. does not take into account that the propensity score is estimated.

The results demonstrate a significant reduction in out-of-pocket (OOP) health expenditures for SSP beneficiaries compared to non-beneficiaries:

BEFORE MATCHING (UNMATCHED SAMPLE

- The mean OOP expenditure for the treated group was 239.769, while for the control group it was 277.621.
- The difference of -37.852 was statistically significant with a t-statistic of -3.290, indicating that even before matching, the treated group spent significantly less on OOP healthcare.

AFTER MATCHING (ATT):

- The mean OOP expenditure for the treated group remained 239.769, while it increased to 291.481 for the control group after matching.
- The difference of -51.712 between the treated and control groups after matching was statistically significant with a t-statistic of -2.700.
- This confirms that the SSP effectively reduces OOP expenditures for beneficiaries, providing financial relief from healthcare costs.

AVERAGE TREATMENT EFFECT ON THE TREATED (ATT)

The ATT value indicates that SSP participants spent an average of 51.71 units less on healthcare than non-participants after accounting for covariate differences. When squared, this difference represents approximately 2,674.46 PKR, implying that the SSP reduced OOP expenses by this amount for each beneficiary. The analysis included 1,214 observations (602 treated and 612 controls), all within the range of common support, ensuring that the propensity scores of the treated and control groups sufficiently overlapped. If we combine descriptive analysis it make 10% difference in total OOP health expenditure & 13% in direct OOP health care cost between beneficiaries and non-beneficiaries.

DETERMINANTS OF IMPACT:

- For each additional year of age there is 4.6% addition in OOP for utilizer.
- Household size: is significant determinant of utilization of SSP and OOP expenditure . Larger house holds inclined to higher utilization &OOP (77.5%).
- Child under 5 years Having a child under 5 years old has decreases OOP by 4.8% when SSP is utilized and this is significant impact.
- Gender is a significant and negatively associated, meaning that males are less likely to utilize the program and decrease in OOP by 87.3%.
- Being Married has significant impact by 27.5% reduction in OOP & negative impact on utilization.

Non significant: Being elderly and presence of elderly in household, presence of Chronic disease, and increase in education year all impact OOP expenditure negatively (reduction) when utilized but it has not reached level of significance. On the other hand being, employed and living in Rural UC has positive impact on utilization but not reached to level of significance.

IMPACT OF SSP ON REDUCING OOP HEALTHCARE COSTS

The primary finding is that the SSP significantly reduces OOP healthcare expenditures for its beneficiaries, particularly the poor. This aligns with national research, such as Aziz et al. (2022), which highlights ongoing challenges but supports the potential of social health insurance (SHI) programs in Pakistan to alleviate financial barriers. Cultural barriers and disparities in enrolment based on education, gender, and

age are noted as significant issues affecting SHI programs in Pakistan (Kevari, 2012; Mulenga, 2021). Research by Farooq (2022) further supports the effectiveness of SSP in reducing catastrophic health expenditures and preventing poverty related to healthcare costs. Similar programs globally, such as India's National Health Insurance Scheme (NHIS) and Mexico's Seguro Popular, have shown comparable reductions in OOP spending and improvements in healthcare access among low-income populations (Wagstaff & Doorslaer, 2003; Savedoff et al., 2012; Ahuja & Chhibber, 2016). The substantial reduction in OOP costs for SSP recipients compared to non-recipients confirms the robustness of the program's impact, demonstrating that it significantly lessens the financial burden of healthcare for its beneficiaries. These global examples reinforce the effectiveness of SSP in reducing financial barriers to healthcare, supporting healthcare equity for vulnerable populations.

SEEMINGLY UNRELATED REGRESSION (SUR) MODEL :

A Seemingly Unrelated Regression (SUR) model was employed to simultaneously analyse the determinants of total out-of-pocket expenditure (loop) and saving amount (lsav). The SUR model accounts for potential correlations between the error terms of the two equations, providing more efficient and robust estimates compared to separate regression models. (Technical details of this model is in section on objective 2 Impact on Household Economy and Saving Behaviour).

By accounting for the potential correlation between the residuals of the equations, SUR provides more efficient and consistent parameter estimates than estimating each equation separately.

RESULT AND DISCUSSION

The SUR model demonstrated a reasonable fit for both dependent variables. The R-squared values for the loop and lsav equations were 0.0628 and 0.1069, respectively, indicating that the models explain a portion of the variation in the dependent variables. The Chi-square test for both equations was highly significant ($p < 0.001$), suggesting that the overall model is statistically significant. The summary of SUR Model Fit is given in Table 14. The detail of SUR model regression results are shown in Table 14

TABLE 14: SUR MODEL FIT

SUR Model regression	Coefficients	Z	P>z
Out of Pocket expenditure			
Utilized	-0.199	-2.37	0.018
Age	0.002	0.69	0.493
Gender	-0.07	-0.8	0.426
Year of Education	0.035	3.94	0
Type of Union Council	-0.171	-2.22	0.027
Marital Status	-0.18	-2.77	0.006
household size	0.048	0.59	0.553
elderly	0.175	1.98	0.047

Child_under5	0.136	1.64	0.101
disease binary	0.11	4.18	0
disability	-0.179	-1.3	0.194
_cons	8.254	27.89	0

TABLE 15: SUR MODEL REGRESSION RESULTS

Equation	Obs	Parms	RMSE	R-sq	chi2	P
loop	1,141	11	1.285242	0.0628	76.46	0
lsav	1,141	10	1.406363	0.1069	136.91	0

OUT-OF-POCKET EXPENDITURE RESULTS (SUR)

The analysis reveals that participating in the Sehat Sahulat Program is associated with a significant reduction in out of pocket expenses. Specifically, those who availed SSP services experienced a decline of 19.9% in total out-of-pocket expenditure. This outcome is partially consistent with the program's objective (60% reduction) of minimizing financial burden related to health care on low-income households through free or subsidized health services.

DETERMINANTS OF OOP EXPENDITURE :

Interestingly, higher education levels are found to have a direct relation with healthcare costs. Each additional year of education is associated with a 3.5% increase in total out-of-pocket expenditure. The reason could be explained by Xu et al. (2003) who suggested that educated individuals are more likely to avail health care services which lead to higher medical costs.

Residing in a rural area is associated with a 17.1% decrease in total out-of-pocket expenditure, suggesting that individuals in rural areas have lower healthcare expenses. This might be due to limited access to healthcare facilities and services in such regions, consequently resulting in lower out-of-pocket costs. Although Descriptive analysis of this has shown higher OOP expenditure in rural population for in patient care. Price of medicines and diagnostics are higher and considerable transport cost , as health facility availed may not be in same Union Council.

The analysis also shows that being married is associated with an 18% decrease in total out-of-pocket expenditure, indicating that married individuals tend to have lower healthcare costs. This could be due to the reason that married individuals often exhibit better health outcomes due to mutual care and shared resources (Schoenborn, 2004).

Lastly, the presence of a disease(chronic) is associated with an 11.0% increase in total out-of-pocket expenditure, suggesting that individuals with diseases incur higher healthcare costs. It is an expected outcome as individuals with chronic conditions require ongoing medical treatment subsequently impacting their financial well-being (Zweifel and Breyer, (1997).

CONCLUSION

In summary the Sehat Sahulat Program (SSP) effectively reduces healthcare-related financial stress for low-income households and increased access to health care. In descriptive analysis there is significant difference in OOP of beneficiaries and non beneficiaries for in patient care (50% difference in direct cost (Rs.20,212 VS Rs 42.500)) As PSM results has shown significant SSP utilization on OOP expenditure on beneficiaries (around 13% on Direct cost and 10 % on TOOP) The Propensity Score Matching (PSM) analysis, supported by a logit model application, effectively aligns the treated (SSP utilizers) and control (non-utilizers) groups by balancing key covariates such as age, gender, and household size. The logit model was used to estimate the propensity scores, which represent the likelihood of enrolling in the Sehat Sahulat Program (SSP) based on observed characteristics. This rigorous matching process addresses potential biases, ensuring comparability between the groups.

Seemingly Unrelated Regression model result shows 19.9% reduction in OOP expenditure. As per PSM results, Age ,gender, marital status ,house hold size and presence of under five child are determinant /predictors (positive/negative) of SSP utilization. On the other hand educational status, presence of chronic disease increase OOP, while gender, rural living marital status reduces OOP in SUR model. Overall there is impact of SSP on OOP expenditure of variable degree.

These findings affirm that the SSP significantly alleviates the financial burden of healthcare for low-income households. The reduction in OOP costs highlights the program's effectiveness in enhancing financial protection and access to essential healthcare services. This aligns with global research on social health insurance programs, demonstrating the SSP's role in improving healthcare equity and providing a model for similar interventions aimed at reducing financial barriers to healthcare.

SECTION 2

IMPACT ON HOUSEHOLD ECONOMY

METHODOLOGY

This study employs a rigorous and multifaceted methodological approach to assess the impact of the Sehat Sahulat Program (SSP) on the financial well-being of low-income households, particularly focusing on savings capacity and Willingness To Pay for health insurance. The following steps outline the methodology used in this study in accordance with the objectives:

MEASURING THE IMPACT OF THE SEHAT SAHULAT PROGRAM (SSP) ON HOUSEHOLD ECONOMY

To evaluate the impact on OOP health expenditure of families of the lowest income quintiles, enrolled in the Sehat Sahulat Program, in comparison to the non-utilizers of the program. The analysis bifurcates into two main categories: descriptive statistics and econometric modelling /inferential analysis by Propensity Score Matching (PSM) and Seemingly Unrelated Regression (SUR) for impact evaluation of Social Health Insurance on Out-of-Pocket health expenditure.

Exploratory Data Analysis (EDA): Exploratory Data Analysis (EDA) has been performed to gain additional insights into the data. EDA involved summarizing the key variables through descriptive statistics, visualizing data distributions, identifying patterns, and detecting any anomalies or outliers. This step was crucial in understanding the overall structure of the data and in preparing the dataset for subsequent modelling. The EDA also helped in identifying any potential issues, such as missing data or multicollinearity, that could affect the analysis.

EXPLORATORY DATA ANALYSIS FINDINGS

Exploratory Data Analysis (EDA) reveals insights about the saving behaviour of the respondents. Nearly, 80% of both beneficiaries and non-beneficiaries reported saving some money. Monthly saving has been the most preferred saving pattern for both categories, followed by saving at random intervals (see Figure 21). In addition, many respondents (63.7% of beneficiaries and 68% of non-beneficiaries) reported to have some savings (see Figure 23). The primary purpose for both groups (over 45%) was to supplement household expenditures (see Figure 24). Other common goals included medical emergencies, children's education, and children's marriage.

When asked about their saving partner, 'saving alone' was the most chosen option by both groups, followed by saving with their spouse (Figure 22). Despite the availability of banking services, more than 60% of respondents in both groups kept their savings at home (in line with the extensive evidence of 'Under-the-mattress saving' in developing countries), indicating a preference for immediate and accessible liquidity (see figures 22 and 23). Very few utilized bank accounts and financial institutions for their savings, reflecting perceived difficulties with banking services, such as lack of accessibility, distrust in formal financial institutions, and concerns about fees and documentation.

Exploratory Data Analysis (EDA): Exploratory Data Analysis (EDA) has been performed to gain additional insights into the data. EDA involved summarizing the key variables through descriptive statistics, visualizing data distributions, identifying patterns, and detecting any anomalies or outliers. This step was crucial in understanding the overall structure of the data and in preparing the dataset for subsequent modelling. The EDA also helped in identifying any potential issues, such as missing data or multicollinearity, that could affect the analysis.

Figure 21: Saving Behavior: Frequency of Saving

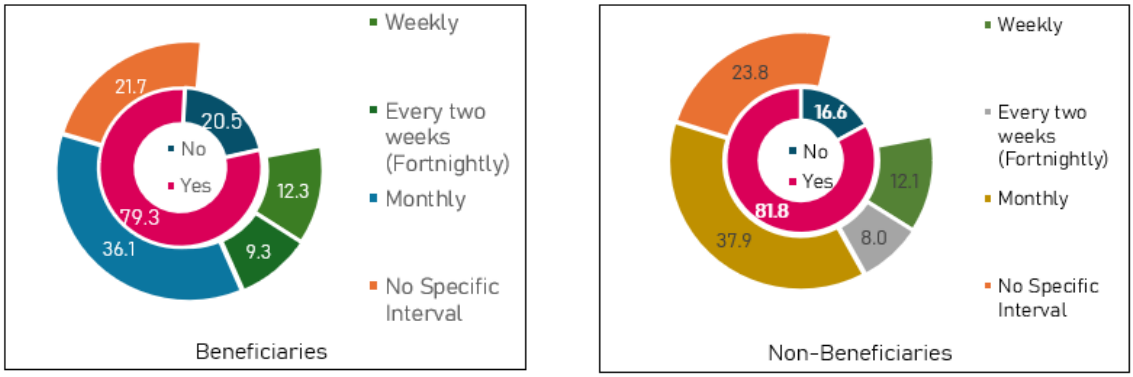


Figure 22: Saving Behavior: Saving Partner

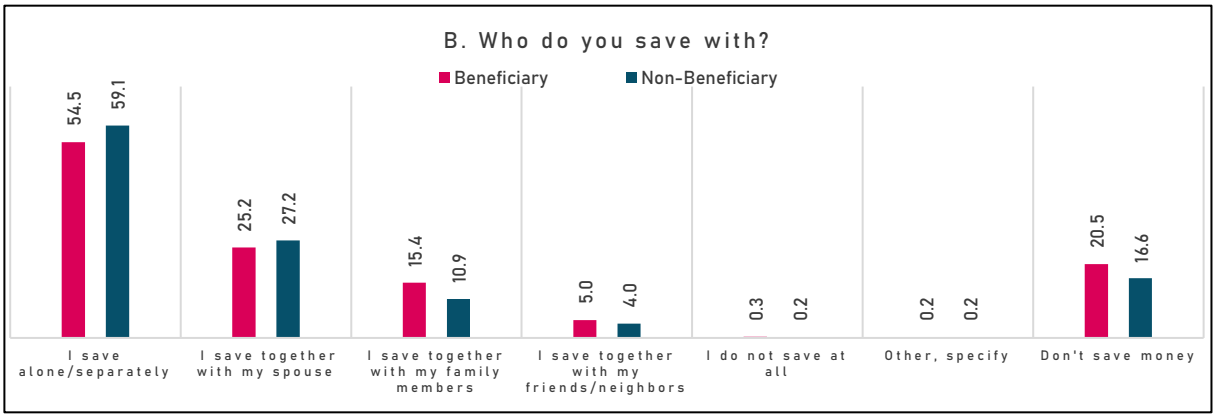


Figure 23: Saving Behavior: Current Savings and Storage

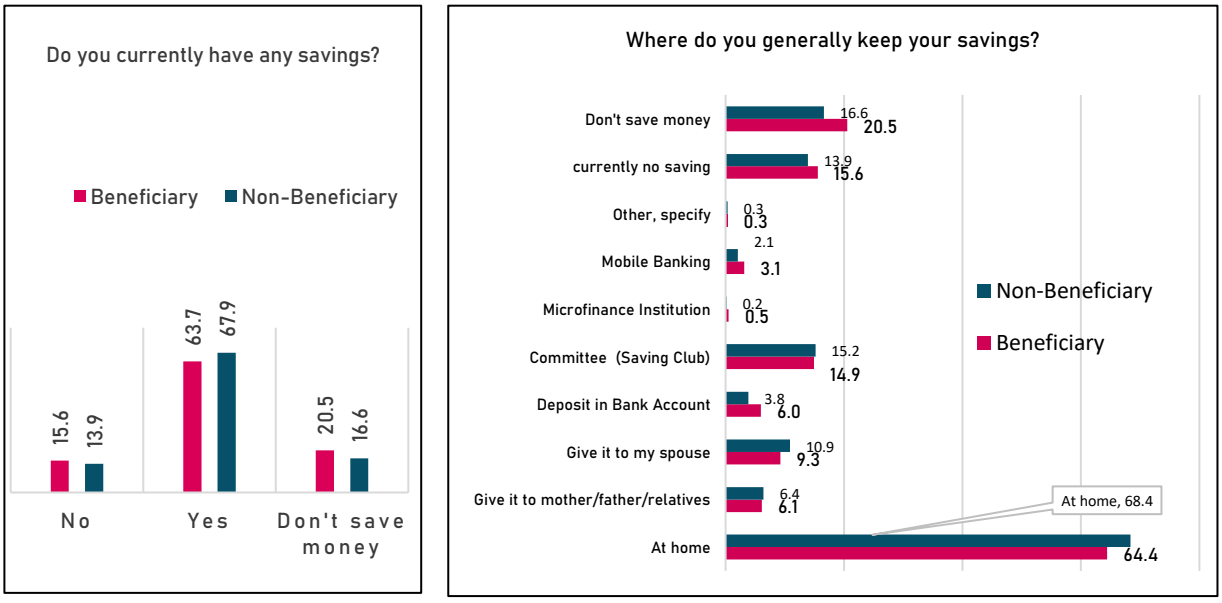
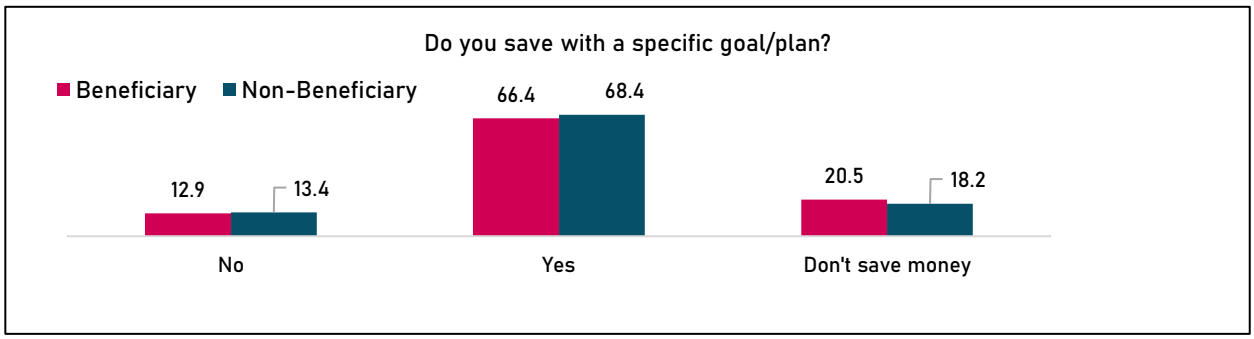
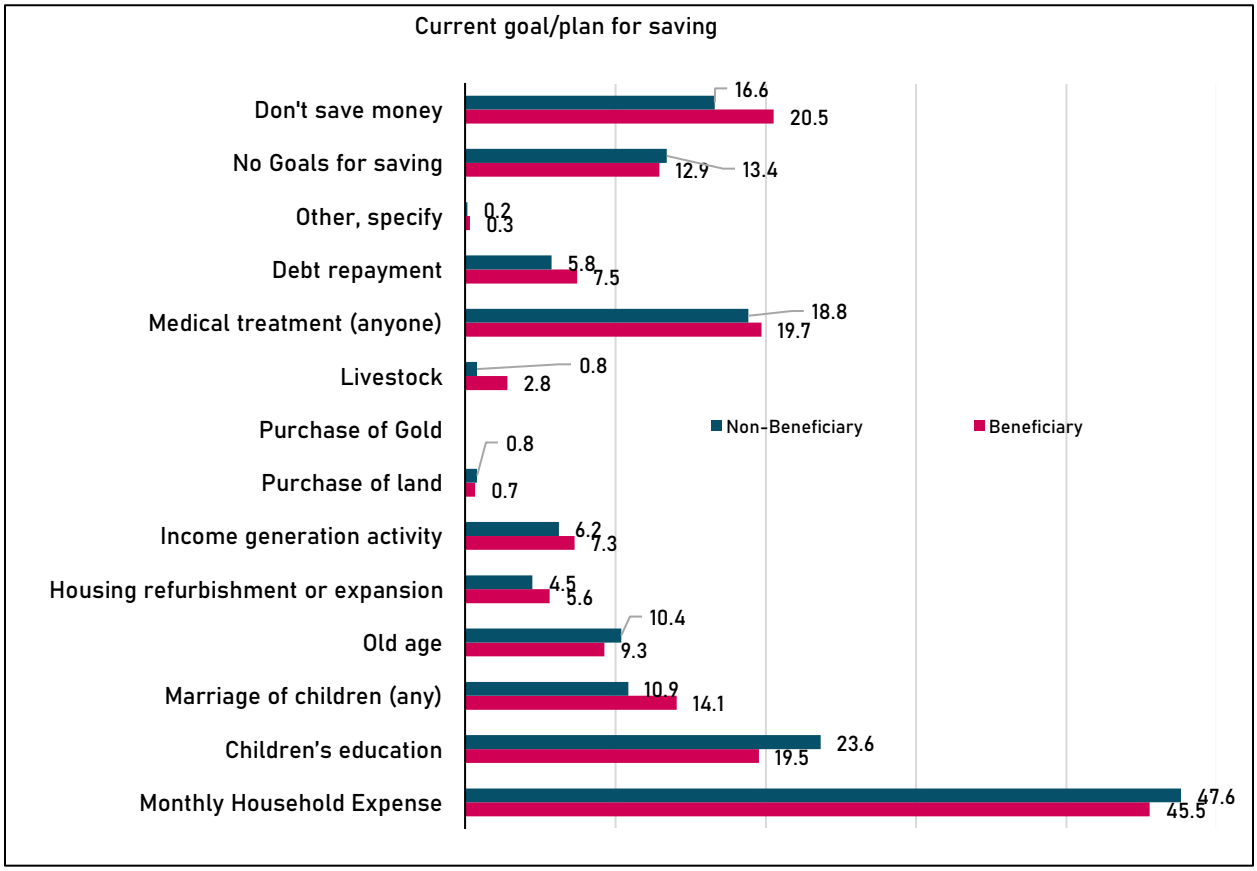


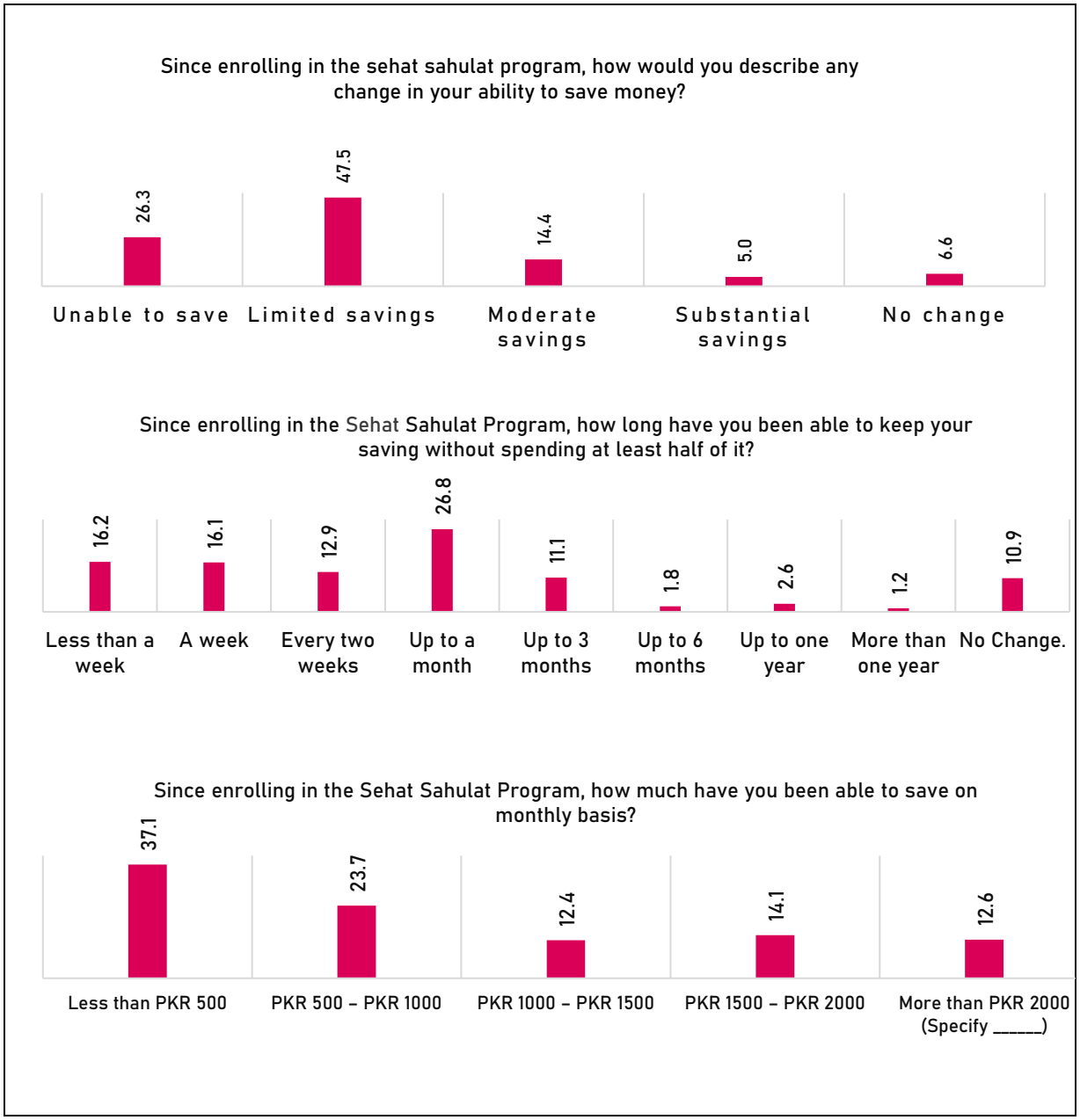
Figure 24: Saving Behavior: Goal of Saving





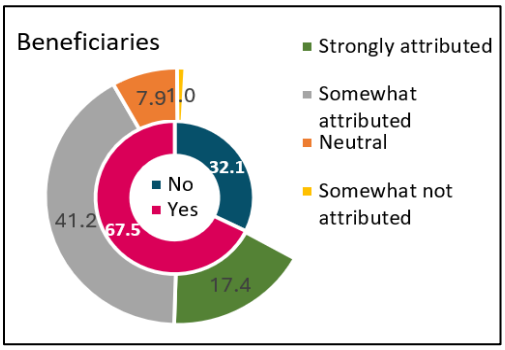
The impact of the Sehat Sahulat Program on beneficiaries is also noteworthy. The program has had a positive effect on beneficiaries' savings capacity, with 67% improved saving abilities, and 67% saving more than 500 rupees per month after the program enrollment (see Figure 25). However, nearly 40% respondents reported retaining half of their savings, without spending for only 1 to 3 months. This highlights the program's role in enhancing savings but also points to ongoing challenges in long-term financial stability.

Figure 25: Impact of Sehat Sahulat Program



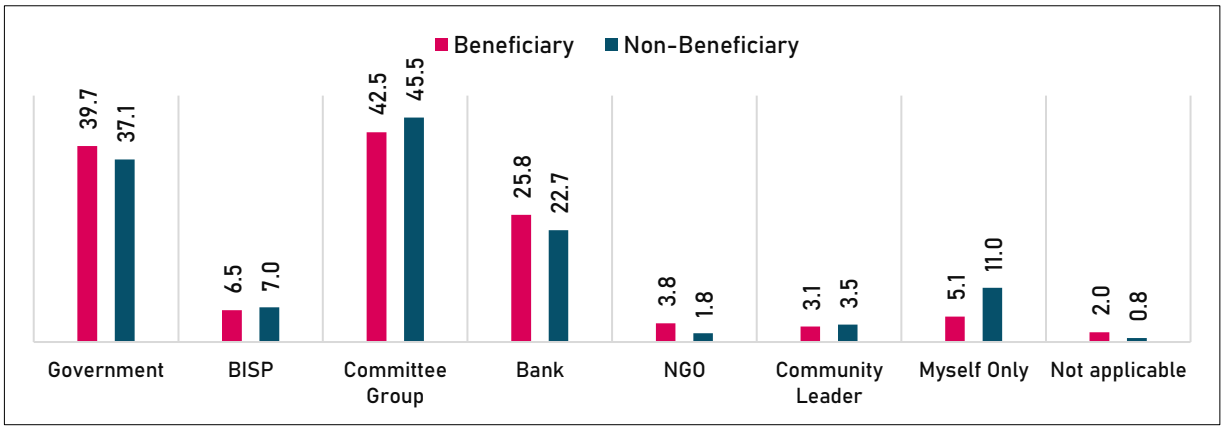
When asked about any changes in their saving behaviors, 67.5% of beneficiaries responded affirmatively. Nearly, 57% of these respondents attributed these changes to their enrollment in the Sehat Sahulat Program. This suggests that the program has had a significant impact on their financial habits, encouraging more disciplined and consistent saving practices. When questioned about whom they trust with their savings, most beneficiaries expressed trust in the government and community groups (Figure 27). Since the respondents of the 'treatment group' were essentially BISP beneficiaries, who had a considerable footprint of receiving the social protection program overtime, they trust the government with their savings.

Figure 26: Any Changes in Financial Habits or Savings Strategies



The researchers also included survey questions about shock experiences to study how recent shocks affected the financial dynamics of respondents. Majority of respondents (60.6% of beneficiaries and 57% of non-beneficiaries) reported not facing any recent shock. Among those who did experience shock, health expenses and job loss are the most frequently reported incidents by both groups.

Figure 27: Who would you trust your money with for saving purposes?



Recovery from shocks was slow for most households in both groups, with only 2% reporting immediate recovery. Nearly 12% of the households indicated that they are still recovering (see Figure 28). More than 20% of households expressed hope that they could recover over time if a similar shock were to occur again (see Figure 29).

When asked about managing the financial aspects of these shocks, more than 70% of both beneficiaries and non-beneficiaries reported borrowing money from friends and family (see Figure 30). This reliance on informal borrowing underscores the need for accessible and reliable financial support mechanisms to help households better cope with financial shocks.

Figure 28: Of the following options, which best describes how the household coped with the shock?

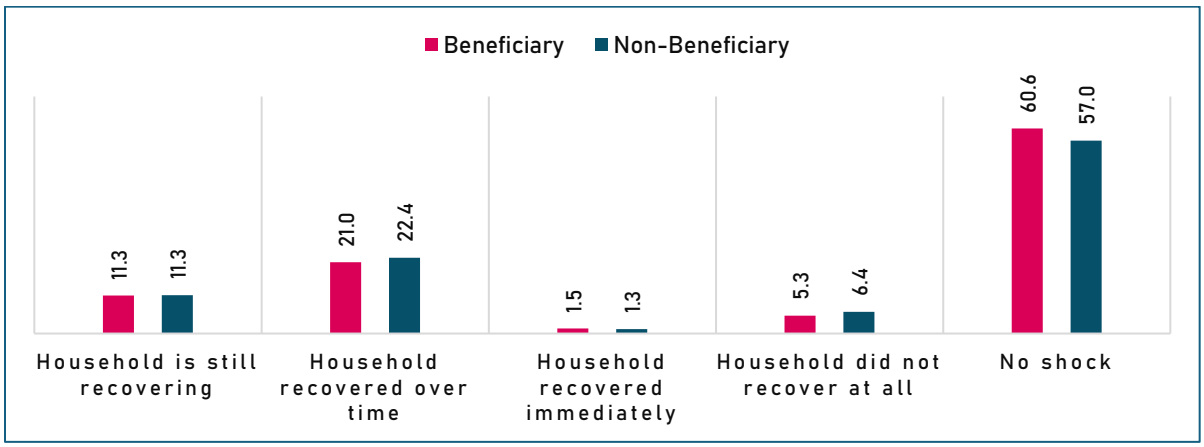


Figure 29: What would happen if the same shock happened today?

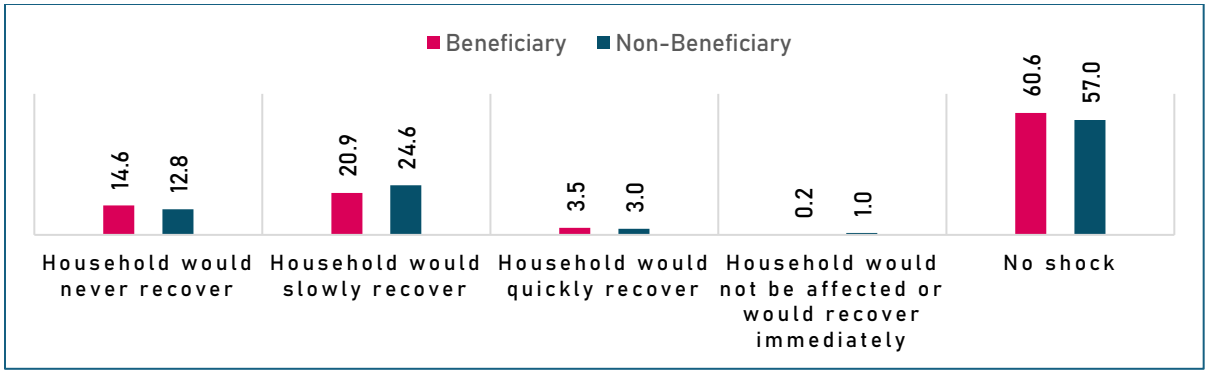
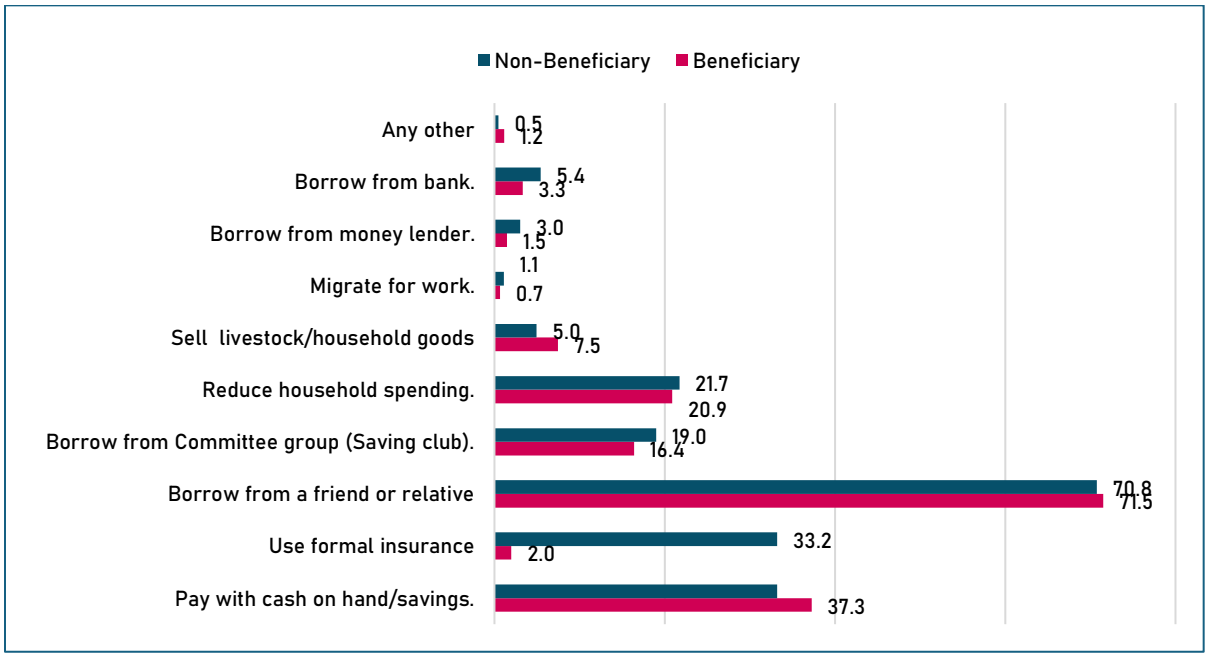


Figure 30: How would you cope with the financial aspect of the shock?



MEASURING THE IMPACT OF THE SEHAT SAHULAT PROGRAM (SSP) ON HOUSEHOLDS' SAVINGS CAPACITY USING PROPENSITY SCORE MATCHING (PSM)

This is a robust statistical method designed to create a balanced comparison between those who benefited from the program and those who did not. This approach involves matching participants in the SSP with non-participants who shared similar observable characteristics, ensuring that any differences in outcomes could be more accurately attributed to the program itself rather than to preexisting differences between the groups. The primary objective of this analysis is to determine whether increased government spending on healthcare through the SSP has a positive impact on individual health, consequently, on their ability to save. By matching individuals who received SSP benefits with those who did not, but who were otherwise similar in terms of socioeconomic and demographic factors, we aimed to isolate the program's effect. This method allowed us to examine whether the SSP effectively enhances savings by reducing healthcare-related financial burdens, providing a clearer picture of its impact. The use of PSM ensures that our comparison between the two groups is fair and that our findings accurately reflect the program's effectiveness concerning financial and health outcomes for beneficiaries.

Seemingly Unrelated Regression (SUR) model: Using this model we measure the potential interdependence between out-of-pocket health expenditures and individual savings behavior. The SUR model is chosen because it can estimate multiple equations simultaneously that may have correlated error terms. This approach enabled to investigate the interplay between healthcare spending and savings behavior more accurately. By using the SUR model, we could estimate the relationship between Out-Of-Pocket health expenditures and savings behavior in a way that reflects their mutual influence. For instance, a reduction in OOP expenses due to the Sehat Sahulat Program (SSP) could lead to an increase in savings, while higher savings might also affect how individuals manage their health expenditures. The SUR model accounts for these potential correlations, ensuring that the estimates for each equation are not biased by the unobserved factors influencing both outcomes. This simultaneous estimation provides a more comprehensive understanding of how the SSP affects both healthcare spending and savings behavior, offering valuable insights into the program's broader economic effects on individuals and households.

Assessing Willingness to Pay for health services using Linear Regression and Ordered Logistic Regression (Ologit): These models are carefully designed to capture the relationship between Willingness to Pay (WTP) and various influencing factors, incorporating a comprehensive set of independent variables that include demographic characteristics, socioeconomic status, and SSP participation indicators. The two different models correspond to the two different types of insurance plans. To measure the WTP for monthly insurance premium Linear Regression is used. Secondly, to measure the WTP for co-insurance at the time of treatment insurance plan at the time of treatment Ordered Logistic regression is used. By utilizing the Ologit regression model, we can estimate the likelihood that individuals with certain characteristics would fall into different levels of WTP. This approach allowed us to identify key factors that influence whether individuals are more or less likely to contribute towards health insurance during treatment. After running the regression, we further explored the results through marginal predictive analysis, focusing on income groups and district-wise differences. This step provides deeper insights into how WTP varies across different economic strata and regions, highlighting potential disparities and areas where the SSP might need to be tailored or expanded to ensure equitable access to health insurance. The combination of Ologit regression and marginal analysis offers a nuanced understanding of the SSP influence on WTP, guiding policy recommendations for enhancing the program's effectiveness.

The impact of the SSP on household savings capacity has been evaluated using the results from the PSM and SUR models. These findings were then triangulated with qualitative data from the survey to provide a comprehensive assessment of the program's effectiveness. By employing these robust analytical techniques, the study provides a detailed evaluation of the SSP's impact on the financial stability of low-income households and offers valuable insights into the future design of health insurance programs in Pakistan.

VARIABLE CONSTRUCTION & THEORETICAL LINKAGES OF OTHER VARIABLES WITH SAVING BEHAVIOR

The saving behavior of individuals is influenced by a range of socioeconomic and demographic variables. These include gender, age, education level, rural/urban character, marital status, household size, children age, income, financial literacy, employment status, savings goals, financial access, and assets. As per theory, these variables are recognized as key determinants of how individuals save.

AGE AND SAVING BEHAVIOR

Age significantly influences savings behavior through various stages of life. The relationship between age and savings can be understood through the life-cycle hypothesis, which posits that savings behavior develops as individuals progress through different life stages. Recent studies, such as those by Agarwal et al. (2009), show that financial decision-making tends to peak around middle age (approximately 53 years), with effectiveness declining thereafter due to cognitive ageing. Research by Deetlefs et al. (2023) further highlights that age-related cognitive decline can affect saving effectiveness in later years.

GENDER AND SAVING BEHAVIOR

Gender significantly influences savings behavior because of societal roles, income disparities, and financial responsibilities. Women often approach savings with more caution, driven by longer life expectancy, perceived economic insecurity, and specific goals such as funding their children's education or setting up emergency funds. Men, in contrast, may have different saving patterns influenced by income levels, investment preferences, and personal financial goals. Both social and economic factors shape these gender-based differences in saving behavior.

Financial literacy and saving behavior are also affected by gender. Women frequently face lower financial accessibility and various challenges, which can lead to reduced participation in saving activities. Foundational research by Lusardi and Mitchell (2008) highlighted these issues, and more recent studies by Hasler and Lusardi (2021) continue to underscore the ongoing gender gap in financial literacy and savings. This disparity is particularly evident in low-income countries, where traditional gender norms further complicate the situation.

RURAL/URBAN CHARACTER AND SAVING BEHAVIOR

The profile, whether rural or urban, significantly influences savings behavior due to variations in access to financial services, economic opportunities, and living costs. Urban areas offer more opportunities for higher income and savings due to better access to banks, investment options, and financial education. In contrast, rural areas may have lower living costs but limited access to financial services, which can affect the savings rate. Therefore, the type of Union Council can shape both the level and manner of savings. Recent research by Allen et al. (2022) builds upon the work of Demirgüç-Kunt et al. (2013), highlighting ongoing challenges in enhancing financial access in rural regions and its impact on savings behavior.

MARITAL STATUS AND SAVING BEHAVIOR

Marital status affects saving behavior through its impact on income, household size, and financial decision-making. Married individuals frequently face greater financial responsibilities, which can both encourage and limit their saving behavior. Foundational studies have identified these trends, while more recent research, such as Addo (2020), offers nuanced insights into how marital status and household dynamics continue to influence saving practices, especially in diverse cultural contexts.

EDUCATION

Individuals with higher education are better equipped to understand financial planning, investment opportunities, and risk management, which fosters more disciplined and goal-oriented saving habits. Research supports this positive relationship between education and savings. For instance, Lusardi and Mitchell (2014) found that higher education is associated with improved financial knowledge and planning

abilities, which enhance savings behavior. Additionally, studies conducted by Gerber and Stewart (2018) have demonstrated that individuals with higher levels of education are more likely to engage in effective financial management and save more effectively for future needs.

CHILDREN AND SAVING BEHAVIOR

Households with children under 5 often face higher expenses related to childcare, healthcare, and early education, which can strain their ability to save. These additional financial demands can limit the household's savings capacity. However, the presence of young children also motivates families to save for future needs, such as education and emergency funds, influencing their overall savings behavior. Lovenheim (2011) highlighted these trends, and more recent research by Behrman et al. (2021) further explores how child-related expenses impact household savings, particularly among low-income families.

INCOME AND SAVING BEHAVIOR

Income is a critical determinant of saving behavior. Higher income levels lead to increased savings. Studies by Lusardi and Tufano (2009) and more recent work by Chetty et al. (2020) continue to emphasize the strong link between income and saving behavior, particularly in income inequality.

EMPLOYMENT STATUS AND SAVING BEHAVIOR

Employment status is directly related to income stability, which affects saving behavior. Employed individuals with regular income are more likely to engage in systematic financial planning and saving. Kapsos et al. (2014) laid the groundwork for understanding this link, and recent analyses by Deaton and Stone (2021) further highlight how employment affects saving behavior.

In conclusion, these variables are intricately linked to saving behavior, collectively shaping how individuals approach savings. By addressing these factors, it is possible to foster better saving practices, benefiting individuals, families, and broader communities.

FINANCIAL LITERACY

Individuals with higher financial literacy are better equipped to understand the importance of saving, explore various savings instruments, and make informed financial decisions. Research by Lusardi and Mitchell (2014) supports this link, showing that greater financial literacy leads to more informed and disciplined saving practices. Additionally, studies by Grohmann and Menkhoff (2015) highlight how financial literacy improves financial decision-making and savings outcomes.

SAVING WITH GOALS

Having specific saving goals generally leads to more disciplined saving behavior. Individuals with clear financial objectives are more likely to save consistently to achieve their goals. Research by Hira and Loibl (2008) demonstrates that setting specific savings goals enhances individuals' saving habits and increases their commitment to saving. Additionally, studies by Fernandes, Lynch, and Netemeyer (2014) show that goal setting is a key factor in motivating people to save more effectively.

SAVING PURPOSE

The purpose of saving—whether for emergencies, investments, or future consumption—significantly influences both the amount and frequency of savings. Individuals saving for emergencies or retirement are often more consistent in their saving habits compared to those saving for short-term goals. This distinction in saving purposes affects how and why individuals approach their savings behavior. Research by puri and robinson (2007) highlights that specific saving purposes, such as preparing for emergencies, lead to more disciplined and regular saving patterns. Additionally, studies by thaler and benartzi (2004) emphasize that individuals with well-defined savings goals tend to exhibit better saving habits due to their clear motivations.

FINANCIAL ACCESS

Access to financial services, such as banks, credit facilities, and savings instruments, directly affects savings behavior. \ Research by Demirgüç-Kunt and Klapper (2013) illustrates that improved access to financial services enhances savings behavior by providing more opportunities for secure and productive saving. Additionally, studies by Allen et al. (2020) show that increased financial access leads to greater savings rates and financial inclusion.

ASSETS

The level of assets owned by an individual or household can significantly influence their savings behavior. Individuals with more assets may feel more financially secure and might save less for emergencies, focusing instead on future investments or wealth accumulation. In contrast, those with fewer assets are often more inclined to prioritize building their asset base and may save more aggressively to achieve financial stability. Research by Hurst and Lusardi (2004) highlights that wealthier individuals often have different saving priorities compared to those with lower asset levels, reflecting their varying financial security and investment strategies. Additionally, studies by Bricker et al. (2014) show that asset accumulation affects savings patterns, with wealthier households focusing on long-term financial goals while those with fewer assets prioritize short-term needs and asset growth.

MEASURING THE IMPACT OF THE SEHAT SAHULAT PROGRAM (SSP) ON HOUSEHOLDS' SAVINGS CAPACITY USING PROPENSITY SCORE MATCHING (PSM):

Propensity Score Matching (PSM) estimates the causal effect of treatment on the outcome variable by addressing confounding factors that influence both treatment assignment and the outcome. This method reduces selection bias by matching treated and control individuals with similar propensity scores, creating a quasi-experimental design. Propensity scores, representing the probability of an individual receiving the treatment based on observed covariates, are estimated using a logistic regression model. The logit model for estimating these scores is specified as follows:

$$\log(p/(1-p)) = \beta_0 + \beta_1 Assets + \beta_2 Child\_Under5 + \beta_3 Elderly + \beta_4 Employment\ Status +$$

$$\beta_5 Financial\ Access + \beta_6 Financial\ Literacy + \beta_7 Gender + \beta_8 Household\ Size + \beta_9 Income +$$

$$\beta_{10} Marital\ Status + \beta_{11} Rural\ Urban + \beta_{12} Savings\ Purpose + \beta_{13} Years\ of\ Education + \epsilon$$

Where p is the probability of receiving the treatment, βi represents the intercept and the coefficients associated with the covariates, and ϵ is the error term. The covariates included in the model in detail are covered in the prior variable construction section.

To measure the factors affecting the treatment assignment and outcome, which is basically the participation in the SSP, a large set of variables was selected. The chosen variables are demographic variables like age and gender, as well as socioeconomic indicators like income and education level. Additionally, variables such as household size, marital status, and the presence of children under the age of 5 years are considered, as these factors can significantly influence participation in SSP. Factors related to financial behavior, such as financial literacy, access to financial services, and individual asset ownership, are also included to account for economic circumstances. Each selected variable is chosen based on its theoretical relevance and empirical evidence linking it to treatment assignment, aiming to effectively balance the groups and minimize bias. The results of logistic regression are shown in Table 16. The results indicate that participation in the SSP is affected by several factors. Demographic characteristics, such as age, gender, and marital status, influence enrollment. Age is found to have a positive association with participation, indicating that older individuals are more likely to utilize social health insurance schemes. The reason is that older individuals perceive higher health risks as compared to younger individuals (Levy, 2004; Bonin et al. 2006).

TABLE 16: PSM LOGISTIC REGRESSION RESULTS		
Utilized	Coef.	t-value
Age	.042***	6.41
Gender	-.866***	-5.17
Years of Education	-.039**	-2.29
Union Council Type	-.01	-0.07
Marital Status	-.225*	-1.94
household size	.626***	4.12
child_under5	-.533***	-3.45
Income	.283*	1.86
employment status	-.017	-0.11
Financial literacy	.058**	1.99
Saving with goals	-.174	-0.74
Saving purpose	.109	1.19
Financial access	.031	0.14
Assets	.096	1.22
Constant	-3.4**	-1.97

Gender and marital status are found to have a significant but negative relationship with the participation in SSP. This shows that women and particularly those who are married are less likely to participate in such programs. Moyer & Agyeman-Duah, (2015) explored this gender disparity in their study in Africa. They found that women are less likely to participate in social health insurance scheme as compared to men primarily because of inequalities in income, education and decision-making power within households. Similar outcomes were observed by Sunil et al. (2013) in India where it was observed that lack of financial independence and cultural norms that prioritize men's health needs over women's particularly married women's were the major causes.

Socioeconomic factors, including education level, household size, income, and employment status, also played a role. Among these, education level and employment status are negatively associated with the participation in the SSP indicating employed and educated individuals are less likely to utilize social health insurance schemes. The reason being that educated and employed individuals may have access to better

employment benefits, including private health insurance or can afford healthcare Out-Of-Pocket (Palacios and Desai, 2011).

Household size and income significantly and positively influence the utilization of SSP. Larger households exhibit a higher probability of health-related issues because of having more members. In India, Gumber (2002) found that larger households were significantly more likely to enroll in the SEWA (Self-Employed Women's Association) health insurance scheme. Similarly, individuals with comparatively higher incomes in the community can pay for health care services, which makes participation in insurance schemes more attractive (Asfaw and von Braun, 2004).

Among the factors related to financial behavior, financial literacy emerged as a significant predictor of SSP participation. It is because individuals who better understand the financial concepts are more likely to recognize the value of health insurance and thus are more likely to participate in social insurance schemes (Cole et al. 2011).

While variables like union council type, saving goals, saving purpose, financial access, and asset ownership did not significantly predict SSP participation in this model. However, their inclusion in the propensity score matching process is still valuable to control for potential confounding effects.

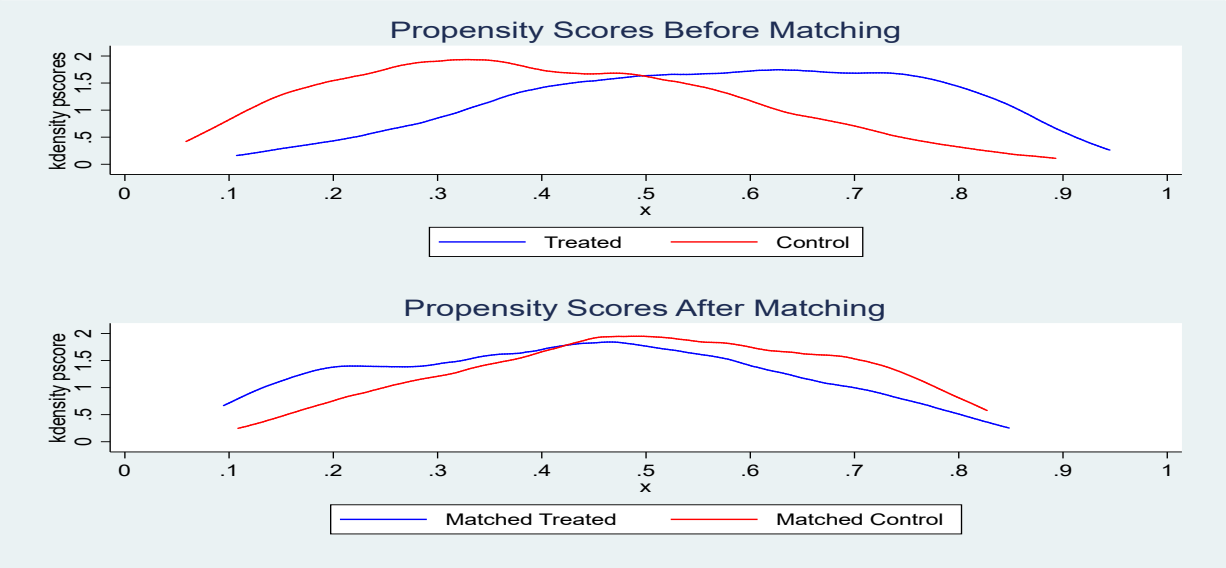
MATCHING PROCEDURE

After estimating the propensity scores, we implement the 'Matching procedure' to pair treated and control individuals with similar propensity scores. Several matching algorithms can be used, including nearest-neighbour matching and kernel matching. The choice of the matching algorithm is based on the need to balance trade-offs between bias and variance in the estimation of the treatment effect.

Before controlling for potential confounding factors through propensity score matching, individuals who utilized the SSP card exhibited a significantly higher average saving behavior score (2.318) compared to those who did not (1.984). This difference of 0.334 points suggests a potential positive impact of the SSP card on saving behavior. The large t-statistic of 6.17 strongly supports the statistical significance of this difference.

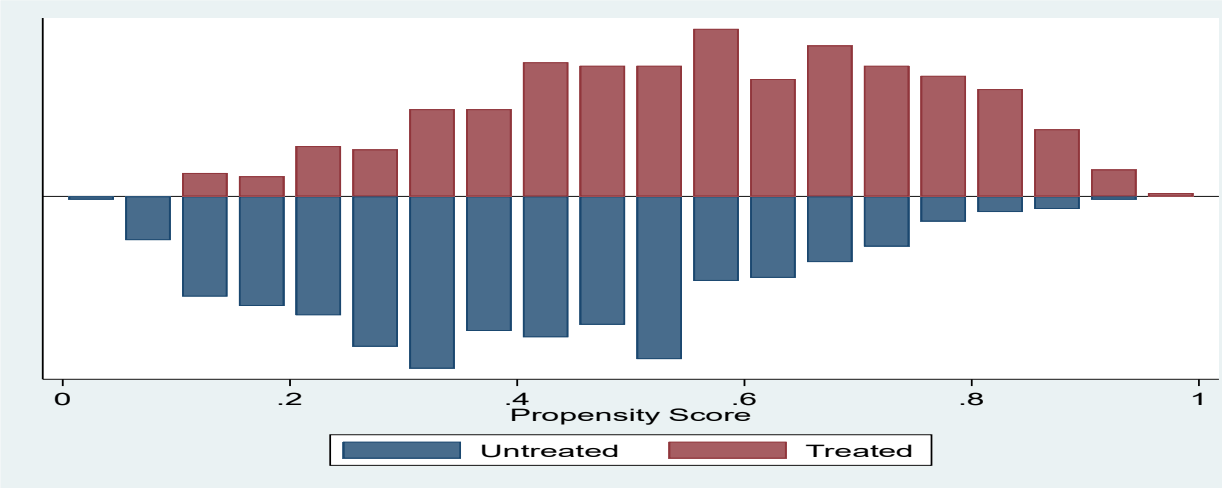
After employing propensity score matching to create more comparable groups, the average saving behavior scores for SSP card users remained higher at 2.318. The matched control group exhibited a slightly increased average saving behavior score of 2.008 compared to the unmatched control group. Despite this, the difference between the treated and matched control groups remained statistically significant, with a difference of 0.310 points and a t-statistic of 4.09.

Figure 31: Density Curves



A substantial overlap between the density curves (Figure 1) indicates that the matching process has successfully reduced imbalances in observable covariates

Figure 32: Propensity Score Histogram



The propensity score histogram (Figure 2) represents the distribution of estimated treatment probabilities for both the treatment and control groups after matching. Hence, the horizontal axis displays the propensity scores, ranging from 0 to 1, while the vertical axis represents the frequency of observations within specific propensity score intervals. The overlapping distributions of the treated and control groups are depicted by bars extending above and below the horizontal axis, respectively.

A well-balanced histogram, with similar distributions for both groups, indicates successful propensity score matching. This visual inspection suggests that the matching process has effectively created comparable groups, reducing the likelihood of confounding biases. Consequently, the subsequent analysis can proceed with greater confidence in the causal inference drawn from the treatment effect.

ASSESSING MATCHING QUALITY

To evaluate the quality of the matching process, we assess the balance of covariates between the treated and control groups before and after matching. The matching procedure successfully created comparable groups, which is indicated by the minimization of mean differences in covariates between the two groups after matching.

TABLE 17: PSM MEAN TABLE

	Before		After	
Variable	Treat Mean	Control Mean	Treat Mean	Control Mean
child_under5	0.378	0.524	0.378	0.378
elderly	0.275	0.272	0.275	0.275
household size	0.629	0.471	0.629	0.629
employment status	0.617	0.485	0.617	0.617
income	10.550	10.440	10.550	10.550
Gender	0.527	0.785	0.527	0.527
Marital Status	0.992	1.068	0.992	0.992
years of education	3.922	4.920	3.922	3.922
Financial Literacy	5.928	5.598	5.928	5.928
Financial Access	5.717	5.898	5.717	5.717
Savings purpose	1.033	1.020	1.033	1.033
assets	1.795	1.579	1.795	1.795
Rural / Urban	0.380	0.526	0.380	0.380

Before matching, significant differences were observed between the treated and control groups across several key variables. The presence of children under 5 was more common in the control group (0.524) compared to the treated group (0.378). Household size also differed, with a mean of 0.629 for the treated group compared to 0.471 for the control group. Employment status was higher in the treated group (0.617) than in the control group (0.485), and there was a noticeable gender disparity, with the treated group having a more balanced ratio (0.527) compared to the control group (0.785). Additionally, the control group had a higher average number of years of education (4.920) compared to the treated group (3.922), and the rural/urban distribution showed that 38% of the treated group were from rural areas, compared to 52.6% in the control group.

TABLE 18: PSM VARIANCE TABLE

	Before		After	
Variable	Treat Variance	Control Variance	Treat Variance	Control Variance
child_under5	0.235	0.250	0.235	0.235
Elderly	0.200	0.198	0.200	0.200
household size	0.234	0.250	0.234	0.234
employment status	0.237	0.250	0.237	0.237
Income	0.282	0.296	0.282	0.289
Gender	0.250	0.169	0.250	0.250
Marital Status	0.215	0.201	0.215	0.203
years of education	20.400	25.130	20.400	19.890
Financial Literacy	6.010	6.677	6.010	5.975
Financial Access	2.450	2.245	2.450	2.147
Savings purpose	1.082	0.970	1.082	0.988
Assets	0.863	0.857	0.863	0.968
Rural / Urban	0.236	0.250	0.236	0.236

After applying Propensity Score Matching (PSM), the means of the treated and control groups became identical across all variables, indicating a successful matching process. This balance suggests that the treated and control groups are now comparable in terms of observed characteristics, meaning that any differences in outcomes between the groups can be more confidently attributed to the Sehat Sahulat Program rather than pre-existing differences. The matching process effectively eliminated the initial disparities, creating well-balanced groups essential for a valid estimation of the program's impact.

Before matching, there were noticeable differences in variance between the treated and control groups across several variables, reflecting disparities in the distribution and variability of key characteristics. For example, the treated group exhibited slightly lower variance in the presence of children under 5 (0.235 vs. 0.250) and employment status (0.237 vs. 0.250), indicating less variability in these characteristics compared to the control group. Additionally, the treated group showed higher variability in marital status (0.215 vs. 0.201) and financial access (2.450 vs. 2.245), while the control group had a notably higher variance in years of education (25.130 vs. 20.400) and financial literacy (6.677 vs. 6.010). Gender distribution also differed significantly, with the treated group showing greater variability (0.250 vs. 0.169).

After applying Propensity Score Matching (PSM), the variances between the treated and control groups became either identical or very close for most variables. For instance, the variance in the presence of

children under 5, household size, and rural/urban distribution became identical, indicating successful balancing of these characteristics. Gender variance in the control group increased to match the treated group's variance (0.250), and disparities in years of education and financial literacy decreased, improving overall balance. The alignment of variances suggests that PSM effectively balanced both the central tendency and dispersion of key characteristics, ensuring that the treated and control groups are comparable not only in their average values but also in their variability. This balance is essential for a reliable estimation of the Sehat Sahulat Program's impact.

ESTIMATION OF TREATMENT EFFECTS

Finally, the average treatment effect on the treated (ATT) is estimated by comparing the outcomes of the treated individuals with those of the matched control individuals. The ATT provides an estimate of the causal effect of the treatment on the outcome variable for the treated population.

IMPACT ON SAVING BEHAVIOR:

'The Average Treatment Effect on the treated (ATT) was analyzed after propensity score matching, as summarized in Table 19. The findings indicate that individuals who utilized the SSP card (treated individuals) exhibit higher average saving behavior compared to those who did not (control individuals), both in unmatched and matched samples. Even after matching, the difference in saving behavior remains significant, suggesting that SSP participation positively affects saving behavior. Although the magnitude of the difference slightly decreased after matching, the statistical significance persisted, showing that SSP utilization leads to an increase in saving behavior. The slightly reduced difference after matching (from 0.334 to 0.310) suggests that some of the initial disparity was due to observable characteristics, but the treatment effect of SSP remains substantial and significant. It's important to note that the standard errors (S.E.) do not account for the estimation of the propensity score, which may affect the precision of these results. These findings are also consistent with the results of Sheu & Lu (2014) and Atella et al. (2014), who found that participating in health insurance programs can potentially lead to increased savings. Similarly, Banov (2005) demonstrated that health insurance can act as a mediator in smoothening consumption patterns, thereby enhancing savings and asset accumulation among individuals.

TABLE 19: DIFFERENCES IN THE SAVING BEHAVIORS BETWEEN TREATED INDIVIDUALS AND CONTROL INDIVIDUALS

Saving behavior	Treated	Controls	Difference	S.E.	T-stat
Unmatched	2.318	1.984	0.334	0.054	6.170
ATT	2.318	2.008	0.310	0.076	4.090

Note: S.E. does not take into account that the propensity score is estimated

Table 23 presents the results of the Propensity Score Matching (PSM) analysis, specifically focusing on the common support region for treatment assignments. The table shows that all 990 observations, comprising 512 untreated and 478 treated individuals, fall within the common support region. This indicates that the propensity scores for both treated and untreated groups overlap sufficiently, allowing for a meaningful comparison between the two groups. The presence of all observations within the common support region ensures that the matching process has successfully identified comparable individuals across the treatment and control groups, which strengthens the validity of the treatment effect estimation.

TABLE 20: COMMON SUPPORT TREATMENT ASSIGNMENT		
Treatment Assignment	Common Support on Support	Total
Untreated	512	512
Treated	478	478
Total	990	990

SECTION 3

SUR MODEL INTERDEPENDENCE BETWEEN OUT OF POCKET EXPENDITURE & SAVING BEHAVIOR

MEASURING POTENTIAL INTERDEPENDENCE BETWEEN OUT-OF-POCKET HEALTH EXPENDITURES AND INDIVIDUAL SAVINGS BEHAVIOUR USING SEEMINGLY UNRELATED REGRESSION (SUR) MODEL:

A Seemingly Unrelated Regression (SUR) model has been employed to analyze the determinants of total Out-Of-Pocket expenditure (loop) and saving amount (lsav) simultaneously. The SUR model accounts for potential correlations between the error terms of the two equations, providing more efficient and robust estimates compared to separate regression models.

By accounting for the potential correlation between the residuals of the equations, SUR provides more efficient and consistent parameter estimates than estimating each equation separately.

MODEL SPECIFICATION

The SUR model consists of the following two equations:

Equation 1:

$$Saving\ Behavior = \beta_0 + \beta_1 Assets + \beta_2 Child\_Under5 + \beta_3 Elderly + \beta_4 Employment\ Status + \beta_5 Financial\ Access + \beta_6 Financial\ Literacy + \beta_7 Gender + \beta_8 Household\ Size + \beta_9 Income + \beta_{10} Marital\ Status + \beta_{11} Rural\ Urban + \beta_{12} Savings\ Purpose + \beta_{13} Years\ of\ Education + \epsilon_1$$

Equation 2:

$$Total\ out\ of\ Pocket = \beta_0 + \beta_1 Child\_Under5 + \beta_2 Elderly + \beta_3 Employment\ Status + \beta_4 Gender + \beta_5 Household\ Size + \beta_6 Marital\ Status + \beta_7 Rural\ Urban + \beta_8 Years\_of\_Education + \beta_9 Disease\ Binary + \beta_{10} Disability + \epsilon_1$$

EXPLANATION OF VARIABLES

Saving Behaviour: The dependent variable in the first equation, representing the individual's saving habits or behaviour.

Total Out-of-Pocket Expenditure: The dependent variable in the second equation, representing the total amount spent by individuals on health-related expenses that are not covered by insurance or other means.

The SUR model is estimated using the Generalized Least Squares (GLS) method, which accounts for the potential correlation between the error terms of the two equations. This correlation might arise due to unobserved factors that simultaneously influence both saving behaviour and total Out-Of-Pocket expenditure. The key advantage of using the SUR model is its ability to account for correlations between the error terms of multiple equations, leading to more efficient parameter estimates. This is particularly important when the dependent variables in different equations are likely influenced by some common unobserved factors.

By using SUR, s a comprehensive understanding of the determinants of saving behaviour and Out-Of-Pocket expenditure can be obtained, while also considering the interdependence between these two aspects. The SUR model demonstrated a reasonable fit for both dependent variables. The R-squared values for the loop and lsav equations were 0.0628 and 0.1069, respectively, indicating that the models explain a portion of the variation in the dependent variables. The chi-square test for both equations was highly significant ($p < 0.001$), suggesting that the overall model is statistically significant. The summary of SUR Model Fit is given in Table 21. The details of SUR model regression results are shown in Table 21.

TABLE 21: SUR MODEL FIT.

Equation	Obs	Parms	RMSE	R-sq	chi2	P
loop	1,141	11s	1.285242	0.0628	76.46	0.000
lsav	1,141	10	1.406363	0.1069	136.91	0.000

TABLE 22: SUR MODEL REGRESSION.

Variables	Coef.	z	P>z
Out of Pocket Expenditure			
Utilized	-0.199	-2.37	0.018
Age	0.002	0.69	0.493
Gender	-0.07	-0.8	0.426
Year of Education	0.035	3.94	0
Type of Union Council	-0.171	-2.22	0.027
Marital Status	-0.18	-2.77	0.006
household size	0.048	0.59	0.553
elderly	0.175	1.98	0.047
Child_under5	0.136	1.64	0.101
disease binary	0.11	4.18	0
disability	-0.179	-1.3	0.194
_cons	8.254	27.89	0
Savings			
utilized	-0.101	-1.09	0.274
Age	0.006	1.66	0.096

Gender	-0.354	-3.46	0.001
Year of Education	0.024	2.37	0.018
Marital Status	-0.099	-1.41	0.159
household size	-0.086	-0.96	0.335
child_under5	0.068	0.76	0.45
income	0.521	6.18	0
employment status	0.35	3.84	0
Financial literacy	-0.051	-3.1	0.002
_cons	3.366	3.74	0

IMPACT ON OUT-OF-POCKET EXPENDITURE

The analysis reveals that participating in the Sehat Sahulat Program is associated with a significant reduction in out-of-pocket expenses. Specifically, those who availed SSP services experienced a decline of 19.9% in total Out-Of-Pocket expenditure. This outcome is consistent with the program's objective of minimizing financial burden related to health care on low-income households through free or subsidized health services. It is also supported by Wagstaff and Lindelow (2008) who observed a significant reduction in out-of-pocket spending among beneficiaries through social health insurance schemes.

Interestingly, higher education levels are found to have a direct relation to healthcare costs. Each additional year of education is associated with a 3.5% increase in total Out-Of-Pocket expenditure. The reason could be explained by Xu et al. (2003) who suggested that educated individuals are more likely to avail health care services, which leads to higher medical costs.

Residing in a rural area is associated with a 17.1% decrease in total Out-Of-Pocket expenditure, suggesting that individuals in rural areas have lower healthcare expenses. This might be due to limited access to healthcare facilities and services in such regions, consequently resulting in lower out-of-pocket costs. Peters et al. (2008) explored the disparities in healthcare access between urban and rural areas and found lower healthcare spending in rural population, whether due to traditional or informal healthcare providers.

The analysis also shows that being married is associated with an 18% decrease in total Out-Of-Pocket expenditure, indicating that married individuals tend to have lower healthcare costs. This could be because married individuals often exhibit better health outcomes because mutual care and shared resources (Schoenborn, 2004).

Lastly, the presence of a disease is associated with an 11.0% increase in total Out-Of-Pocket expenditure, suggesting that individuals with diseases incur higher healthcare costs. It is an expected outcome as individuals with chronic conditions require ongoing medical treatment, subsequently affecting their financial well-being (Zweifel and Breyer, (1997).

IMPACT ON SAVINGS

The analysis shows a strong positive relationship between income and savings, with a 52.1% increase in saving amount. The result is consistent with the notion that higher income levels provide individuals with the capacity to save more. Asfaw and von Braun (2004) found that higher income enables greater savings, allowing households to accumulate wealth and prepare for future financial needs.

Being employed is associated with a 35.0% increase in saving amount, indicating that employed individuals tend to save more. This result aligns with the general understanding that employment security allows individuals to save more. This positive impact of employment is well-documented, with studies like those by Lusardi et al. (2011) indicating that regular income from employment is a key determinant of household savings.

An unexpected finding is the negative association between financial literacy and saving amount, with higher financial literacy is associated with a 5.1% decrease in saving amount. This counterintuitive outcome may suggest that financially literate people are more aware of alternate investment or consumption opportunities, leading them to allocate their funds elsewhere rather than saving. Cole et al. (2011) discussed this complex behavior between financial literacy and saving, suggesting that sometimes traditional savings are reduced in favor of other financial strategies.

Finally, the analysis reveals that participation in the SSP (Sehat Sahulat Program) does not have a significant impact on individuals' ability to save. This result may be attributed to the fact that when the impact is estimated separately through PSM, it shows a positive and significant effect. However, when integrated into the Seemingly Unrelated Regression (SUR) model, the results change, suggesting that consolidating a number of variables from both the pillars of OOP and saving behavior variables may obscure the true impact. This could be due to the way interactions within the SUR model are perceived, which might create an impression that SSP does not affect savings. The PSM impact evaluation and SUR technique highlight the need for a more in-depth investigation to uncover the true effects. While the combined results may suggest minimal impact, separate analyses indicate a significant effect.

Opponents of the SSP argue that the program does not effectively support the poor, often relying on a single analytical technique that may not capture the full scope of the program's benefits. In contrast, our approach utilizes both separate and combined techniques to provide a more comprehensive assessment of the program's impact. This broader evaluation reveals that health facilities under the SSP provide substantial relief and benefits. The initial hypothesis—that SSP has a powerful impact on the household economy and benefits the poorer segments of society—remains valid. It underscores the importance of the government to continue providing such basic facilities, either for free or with co-contribution, to support the economically disadvantaged and enhance overall well-being. As explored by Dror et al. (2007), while social health programs can alleviate immediate financial burdens, their impact on long-term financial behavior, such as savings, may be less direct and harder to detect.

In summary, the Sehat Sahulat Program (SSP) effectively reduces healthcare-related financial stress for low-income households. Although SSP participants showed increased saving behavior, this effect was not statistically significant. Higher income leads to more savings, but higher financial literacy was associated with lower savings, possibly due to alternative financial strategies. Willingness to pay for health insurance varies with income, and families with young children are more willing to pay for comprehensive coverage compared to those with elderly members. The SSP lowers Out-Of-Pocket health costs and is more effective among those with higher education and urban residents. However, gender, marital status, and rural living negatively affect participation. The study highlights the need for continued improvements to enhance SSP's impact and encourage greater participation among low-income households.

SECTION 4

WILLINGNESS TO PAY

ASSESSING WILLINGNESS TO PAY FOR HEALTH SERVICES USING LINEAR REGRESSION AND ORDERED LOGISTIC REGRESSION (OLOGIT):

Various factors influence willingness to pay for social health insurance. In this study, we explore these factors by examining two types of health insurance plans. The first is a co-insurance at the time of the treatment plan, where participants receive a contribution that covers a specific percentage of their healthcare costs at the time of treatment. The second is a premium insurance plan, which offers two types of coverage: Inpatient coverage (IPD) and combined Inpatient and Outpatient coverage (IPD+OPD). Exploratory data analysis and empirical data analysis were conducted to better understand the willingness to pay.

EXPORATORY DATA ANALYSIS - WILLINGNESS TO PAY

The findings from the field assessment show that the majority prefer a contribution of 30%, as it strikes a good balance between affordability and comprehensive coverage. However, the policymakers must consider whether this approach will effectively sustain the program's funding while ensuring it remains accessible to a wide range of beneficiaries.

Both beneficiaries and non-beneficiaries favor a contributory health program. When asked about their willingness to participate in a government-launched health insurance program, more than 90% of respondents from both groups expressed their willingness to contribute (see figure 33).

The primary motivators for willingness to contribute included security against high healthcare costs and access to healthcare services. Additionally, peace of mind in case of unexpected health issues is the third most cited reason for participation (see figure 34). The perceived benefits and coverage of the program are the primary factors influencing the decision to participate in such a program for most beneficiaries and non-beneficiaries. Among those who are unwilling to contribute, the main reasons are a lack of affordability and a lack of trust in the scheme. This indicates a strong demand for contributory health insurance programs, driven by the need for financial protection and access to healthcare.

Figure 33: Willingness to participate in a contributory health insurance program

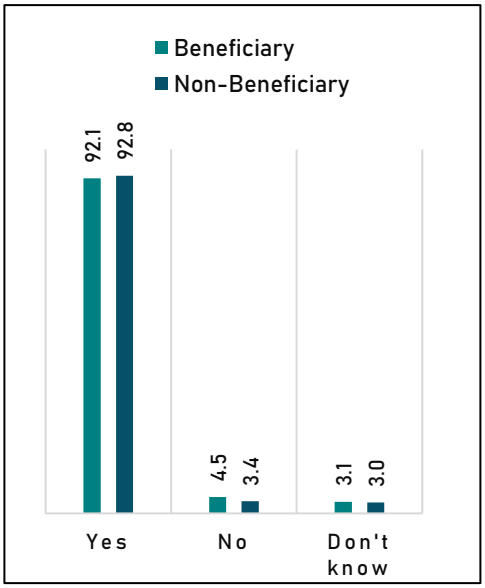
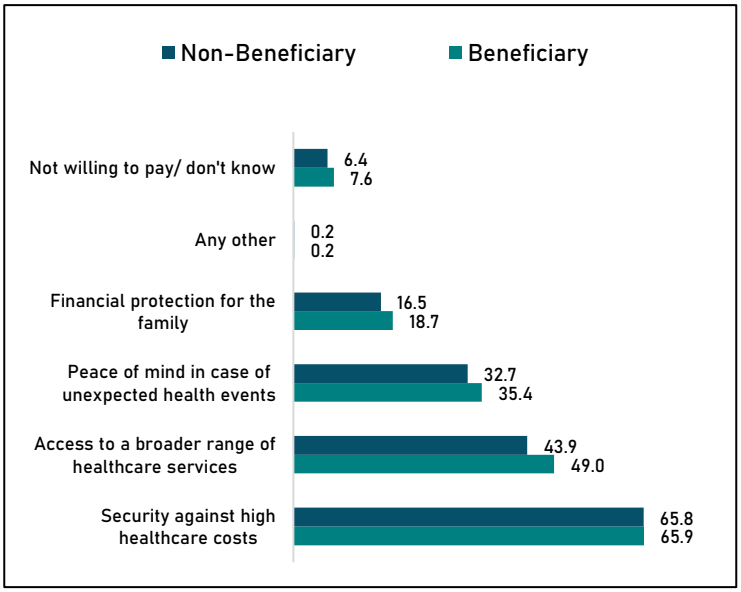


Figure 34: Motivation behind the willingness to pay for health insurance coverage



Most participants in both groups supported co-contribution at the time of treatment. Nearly 90% of beneficiaries and non-beneficiaries expressed willingness to participate in such a program by paying a portion of the health insurance costs (see Figure 35). Specifically, approximately 80% of both groups were willing to pay up to 30% of the total cost (see Figure 36).

Figure 35: Willing to contribute 'at the time of treatment' in a co-contribution model by paying a portion of the health insurance

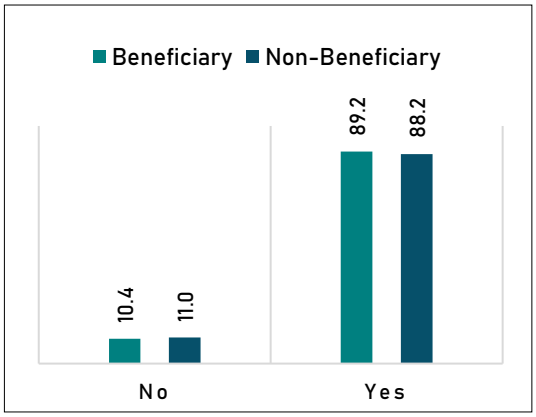
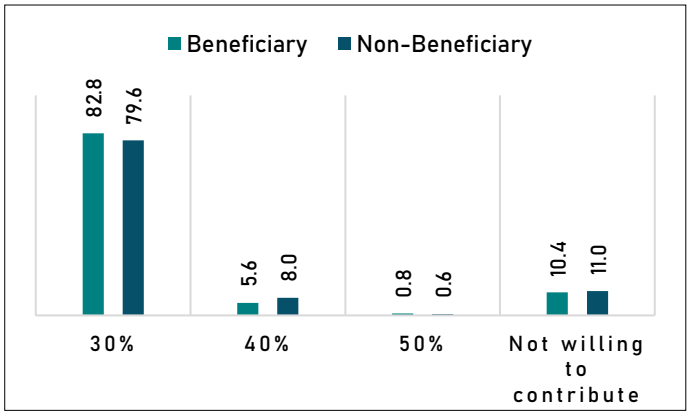


Figure 36: The maximum percentage willing to contribute



When asked about their willingness to pay a health insurance premium, more than 90% of both groups responded affirmatively (see Figure 37). Responses regarding the frequency of payments are mixed (see Figure 38). The most favored contributory amount by both beneficiaries and non-beneficiaries was PKR 200 per month (see Figure 39). Annually, most participants were willing to pay PKR 2500 at a minimum (see Figure 10).

Figure 37: Willingness to contribute to the health insurance premium

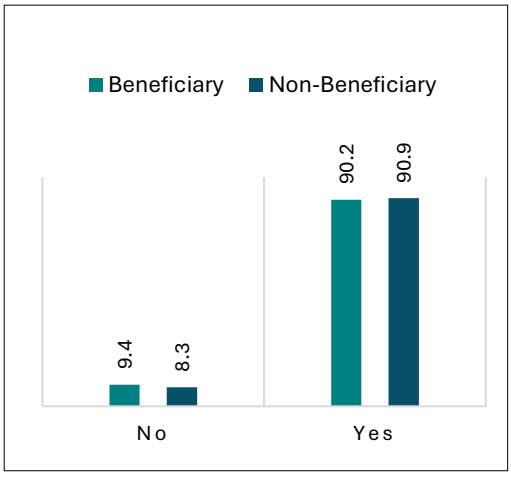


Figure 38: Most convenient frequency of payment

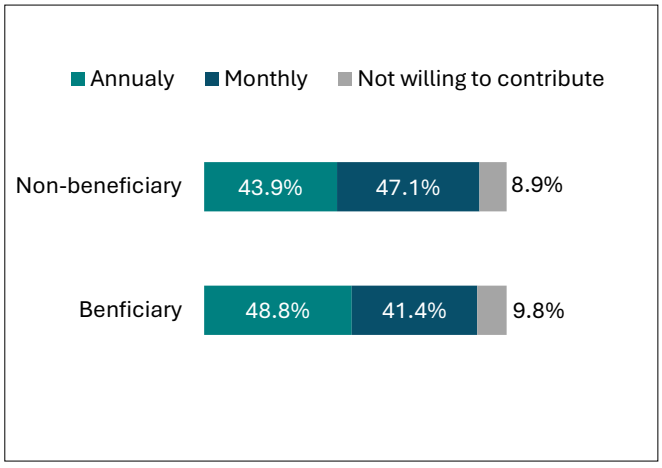


Figure 39: Willingness to pay monthly

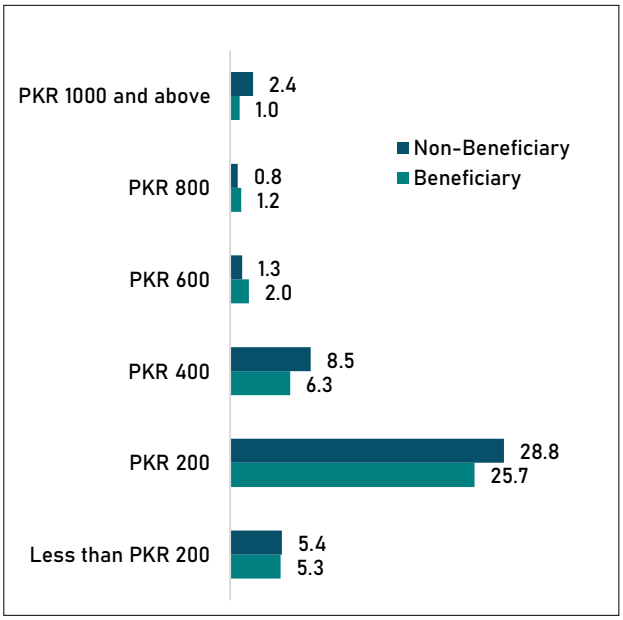


Figure 40: Willingness to pay annually

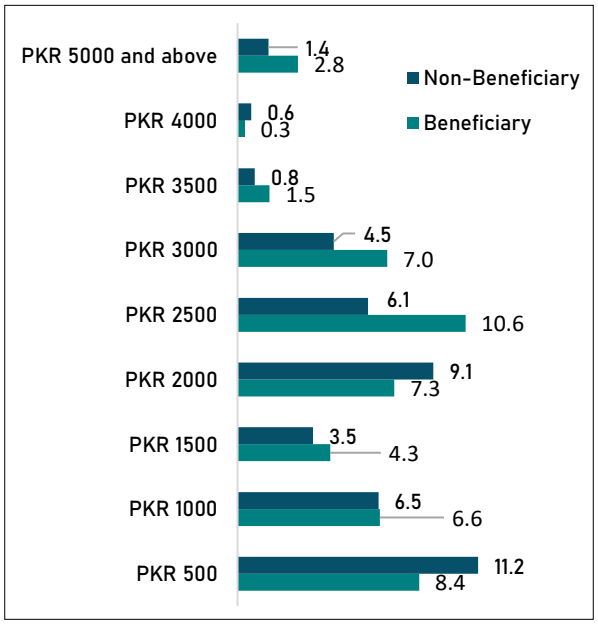


Figure 41: What factors influence your decision on the frequency of payments?

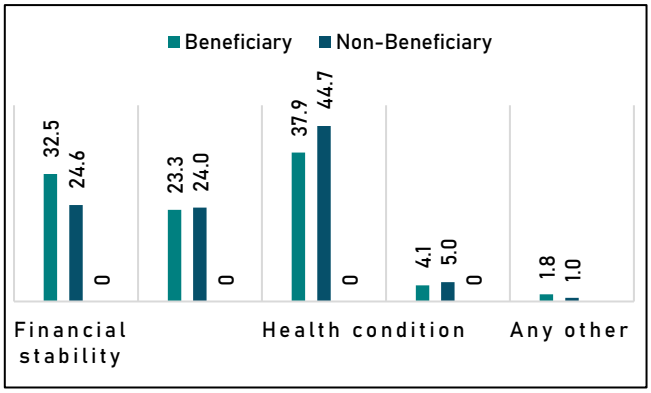
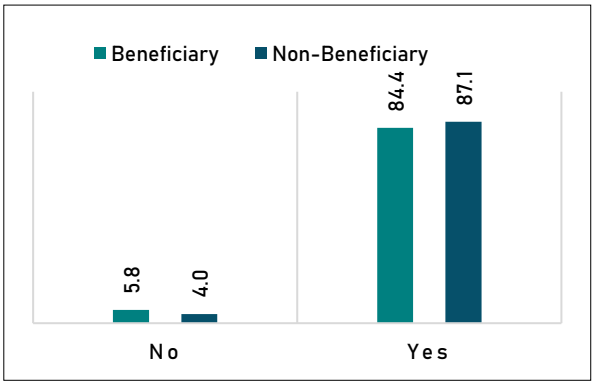


Figure 42: Willingness to pay for the treatment if OPD is added



The primary factors influencing decisions regarding the frequency of payments were healthy condition and financial stability for both groups (see Figure 41).

Both groups highly appreciated the addition of Outpatient Department (OPD), with over 80% of beneficiaries and non-beneficiaries expressing willingness to contribute if such a program were introduced (see Figure 42). The majority indicated a willingness to pay an additional PKR 300 per month or more than PKR 1,000 annually for the inclusion of this facility (see Figures 43 & 44).

Figure 43: Willingness to pay monthly (OPD+IPD)

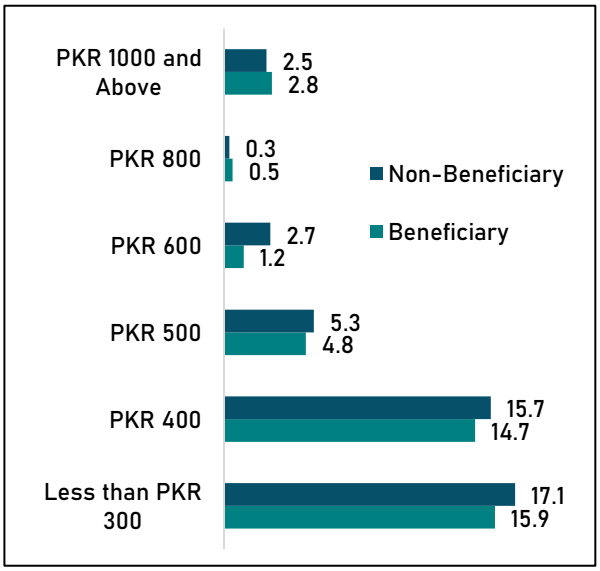
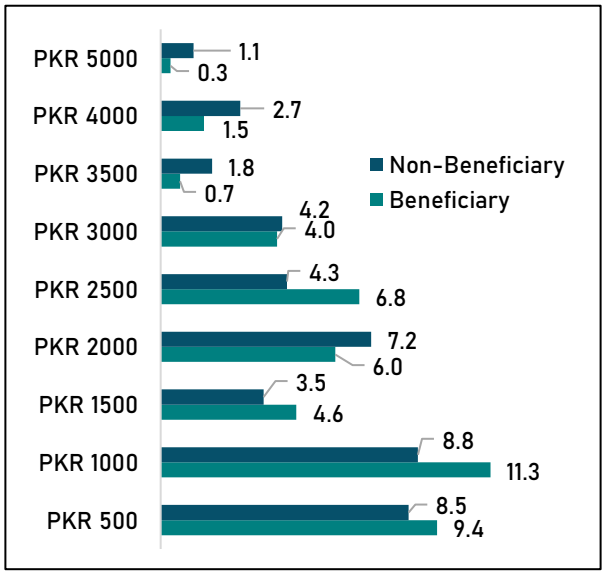


Figure 44: Willingness to pay annually (OPD+IPD)



Preferences for the mode and timing of payments were also surveyed. Over 30% of both beneficiaries and non-beneficiaries preferred to make payments in cash. Other favored payment methods included mobile money wallets and point of sale (POS) systems (see Figure 45). Most participants are open to making payments at any time of the year (see Figure 46).

Figure 45: How would you prefer to make your contribution in a co-contribution health program?

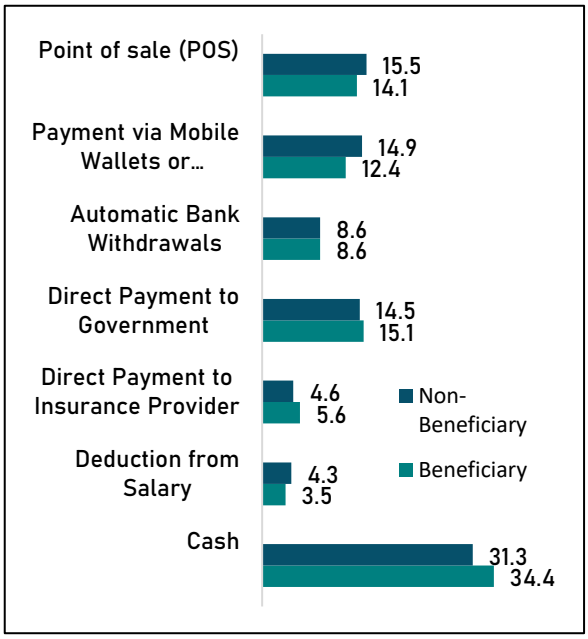
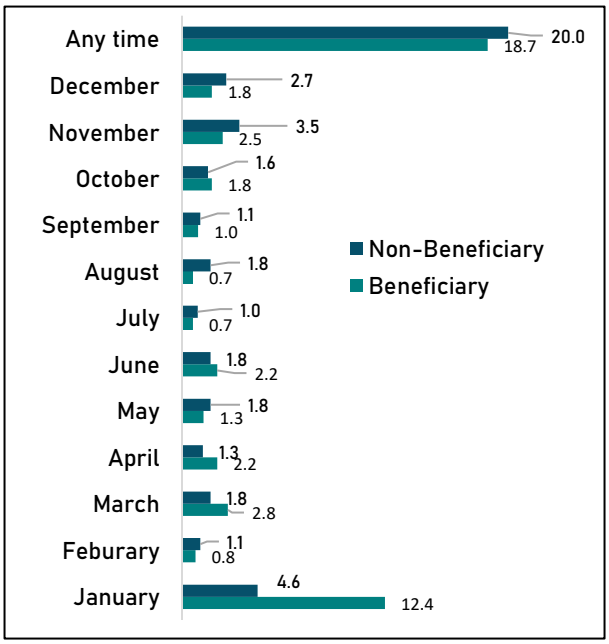


Figure 46: What is the best time of the year to make the annual contribution?



An enhancement in willingness to pay for the scheme is seen as feasible by participants. Most of both groups identified improvements in healthcare services and the expansion of coverage as key factors that would enhance their willingness to contribute (see Figure 47). Additionally, over 80% of respondents from both groups expressed confidence in the government's ability to manage their financial contributions effectively if such a scheme is to be implemented (see Figure 48)

Figure 47: What factors would increase your willingness to pay for health expenses?

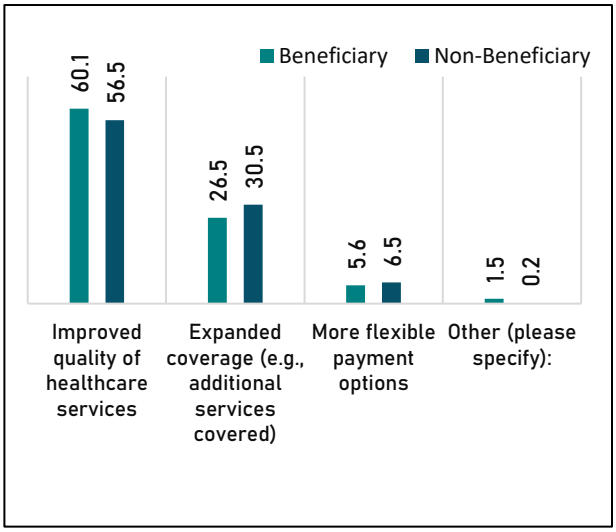
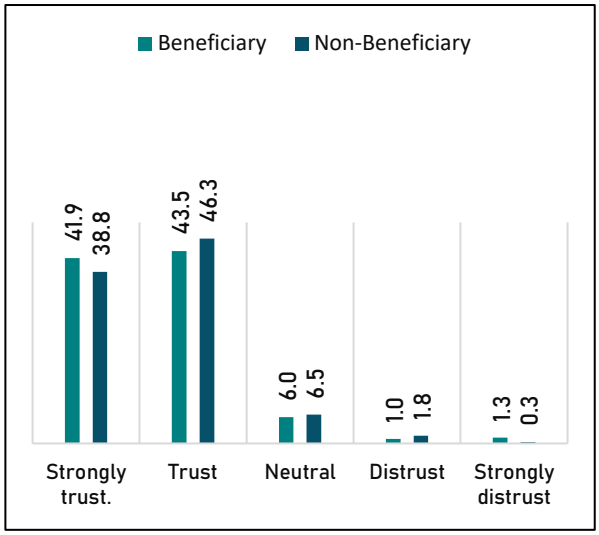


Figure 48: Do you trust that if you contribute financially for health, the government?



These findings indicate strong support for a co-contribution health insurance model among both beneficiaries and non-beneficiaries, with a significant portion of participants willing to contribute regularly. The preferred payment frequencies and amounts highlight the importance of designing flexible and affordable contribution schemes to ensure broad participation and financial sustainability of the health insurance program.

Females are twice as willing to pay as males, particularly when OPD services are included—63% of females showed willingness compared to 31% of males ($p = 0.03$; $n = 1,115$). Education level shows a negative but non-significant correlation with willingness to pay, with lower-educated individuals more likely to contribute—possibly because most respondents belong to the informal education category. The majority of positive responses came from those aged 44–60 years; interestingly, most rejections also came from this age group, which typically includes independent and decision-making individuals ($p = 0.060$).

The willingness to participate is highest in the northern districts of Punjab, particularly Rawalpindi and Jhelum, compared to the southern region. This difference may be attributed to demographic variations and better access to services in the north.

Figure 49: WTP for Premium for OPD

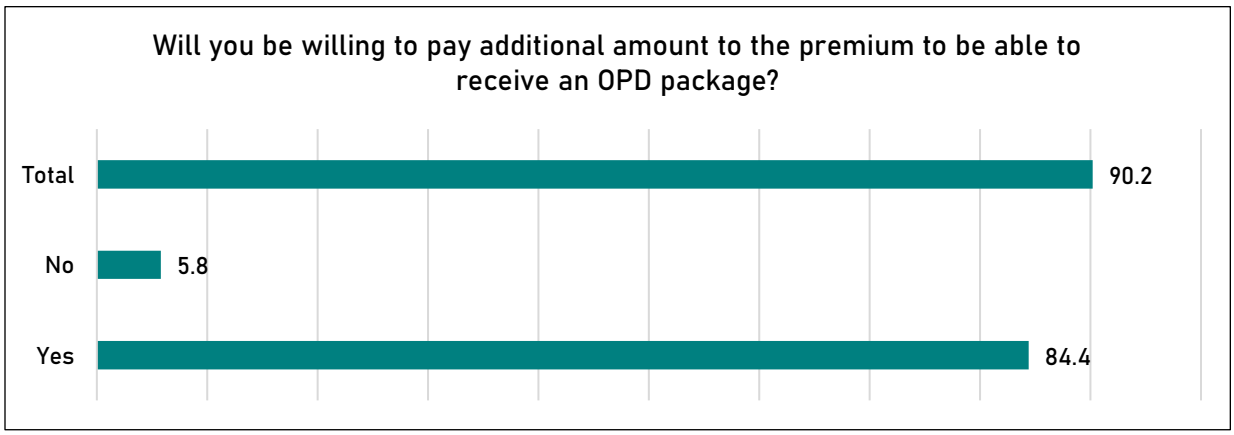


Figure 45: District wise no. of Beneficiaries & Non beneficiaries & their WTP

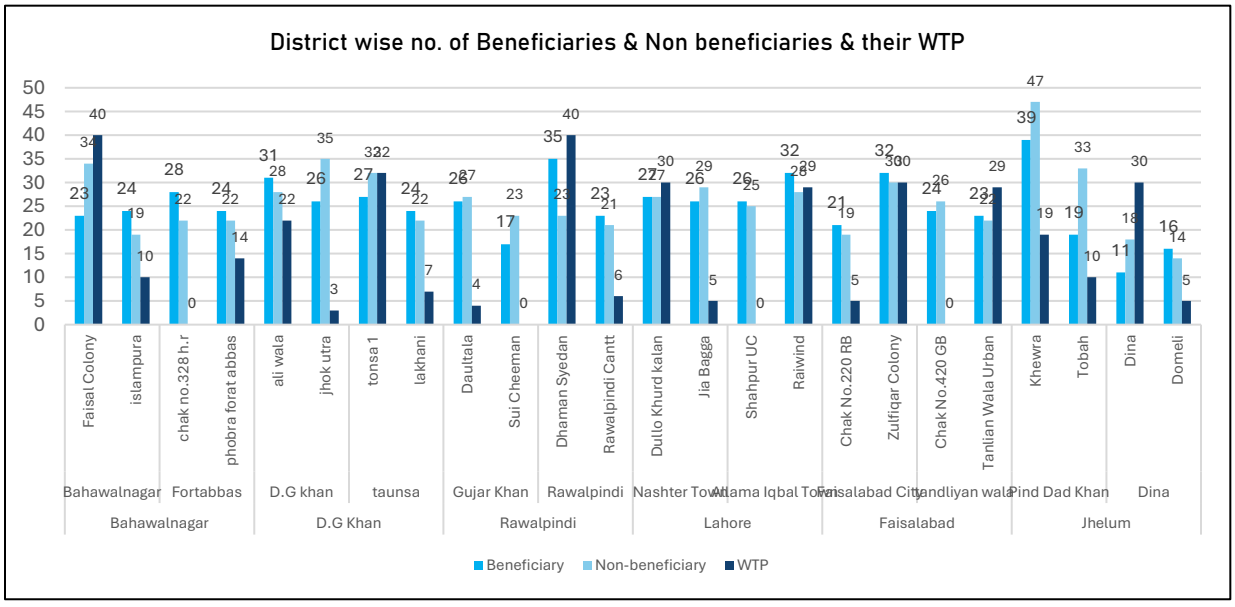
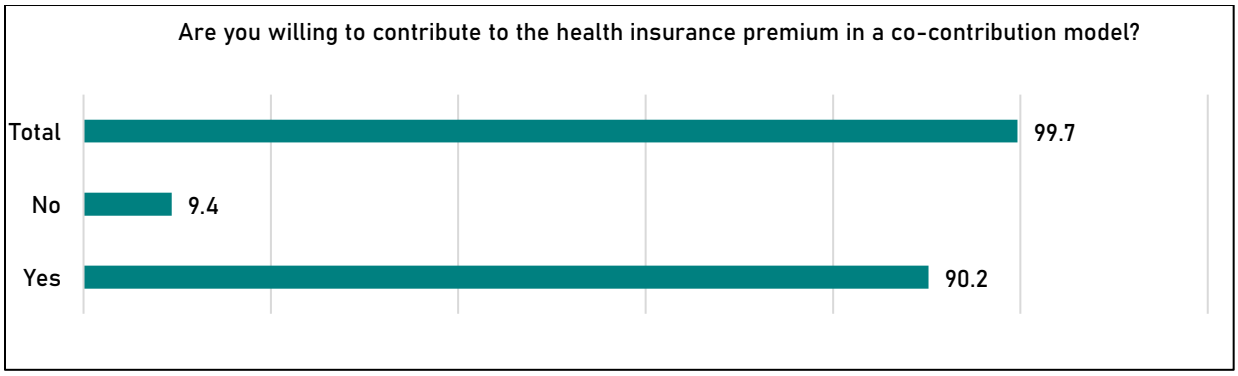


Figure 51: WTP for Premium for Health Insurance Premium



WILLINGNESS TO PAY FOR CO-INSURANCE AT THE TIME OF TREATMENT

For a deeper insight regarding willingness to pay, four empirical analyses were conducted for both types of insurance with varying variables. These variables include employment status, gender, education level, income, household size, assets, financial literacy, and saving behavior, along with several program-related factors. Specifically, the model considers awareness of the program, perceived benefits and coverage of the program, trust in the program's effectiveness, affordability, previous healthcare experiences, and recommendations from friends or family.

$$log(P(Y < j)) = \beta_0 + \beta_1 Assets + \beta_2\ Income\ Levels + \beta_3\ Employment\ Status + \beta_4\ Gender + \beta_5\ Saving\ Behavior + \beta_6\ Financial\ Literacy + \beta_7\ Years\ of\ Education + \beta_8\ Security\ against\ high\ healthcare\ costs + \beta_9\ Access\ to\ a\ broader\ range\ of\ healthcare\ services + \beta_{10}\ Peace\ of\ mind\ in\ case\ of\ unexpected\ health\ events + \beta_{11}\ Financial\ protection\ for\ the\ family + \beta_{12} Program\ Awareness + \beta_{13}\ Perceived\ Benefits + \beta_{14}\ Trust\ in\ Program + \beta_{15}\ Affordability + \beta_{16}\ Healthcare\ Experience + \beta_{17}\ Recommendations\ from\ Friends\ and\ Family + \beta_{18}\ Districts + \beta_{19}\ TRUST + \epsilon$$

We adopted Ordered Logistic Regression to explore the factors affecting Willingness to Pay for co-insurance at the time of the treatment health scheme. The dependent variable in co-insurance at the time of treatment percentage plan is the maximum percentage that the participants are willing to contribute (30%, 40%, 50%). Mathematical equations are as follows:

The empirical findings displayed in Table 23 indicate that individuals of all income groups show a willingness to contribute. Also, among demographic and socio-economic variables, a positive saving behavior along with asset ownership significantly increases the willingness to pay for a higher contribution. Individuals with comparatively more assets have a high willingness to pay for a co-insurance health scheme. It is because with greater assets they are better able to afford health care services, thereby increasing their willingness to pay (Asfaw and von Braun, 2004), (Cole et al., 2011). Also, individuals who save can pay for health care services and hence are more likely to contribute to the health insurance.

Education level is found to be a significant determinant of willingness to pay in both empirical analyses. The results signify that individuals with higher education levels are willing to contribute more. This might be due to their ability to understand the financial benefits of health schemes/insurances (Cole et al. 2011).

Among program-related factors, the perceived awareness of the program and its affordability are not statistically found to influence the willingness to contribute. However, trust in the program's effectiveness, perceived benefits and recommendations from friends and family play a crucial role in increasing the willingness to contribute. This direct influence makes individuals feel that their contributions will be well – utilized and result in benefits when needed (Carrin and James, 2005). Moreover, peer influence facilitates overcoming skepticism and reinforcing perceived benefits of participation (Zhang et al. 2021).

In contrast with the above findings, there is a lack of trust in the government to provide health care facilitie even if individuals contribute. The results of both empirical analyses indicate distrust as a slightly significant factor of willingness to contribute. Schneider and Diop (20014) found that individuals who had experienced poor health services often doubt the ability of contributory social programs to deliver on their promise.

Employment Status, Financial Literacy, Access to a broader range of healthcare services, Peace of mind in case of unexpected health events and financial protection for the family did not show a statistically significant relationship with the willingness to contribute to the co-insurance at the time of treatment health scheme. This indicates that while these factors might influence general attitudes towards health insurance, they do not play a decisive role in determining the specific level of contribution participants are willing to make.

TABLE 23: WILLINGNESS TO PAY FOR CO-INSURANCE AT THE TIME OF TREATMENT		
Variables	Model	
Willingness to Contribute (%)	Coef.	p-value
Education Level	1.366	0***
Gender	2.126	0***
Employment Status	.826	.333
Saving Behavior	7.357	0***
Financial Literacy	1.105	.212
Income base Ultra Poor	1	.
Poor	3.442	0***
Lower Middle	10.364	0***
Upper Middle	21.328	0***
Assets	1.425	0***
Security against high healthcare costs	.645	.017**
Access to a broader range of healthcare services	.796	.209
Peace of mind in case of unexpected health events	1.199	.312
Financial protection for the family	1.111	.588
Program Awareness	.962	.836
Perceived Benefits	1.488	.034**
Trust in Program	1.516	.02**
Affordability	.93	.714
Healthcare Experience	1.309	.147
Friends And Family	2.929	.085*

District :	1	.
D.G khan	.529	.038**
Rawalpindi	.153	0***
Lahore	.42	.008***
Faisalabad	.492	.021**
Jhelum	.207	0***
If you contribute financially, do you trust the Government to provide healthcare facilities?	1	.
Trust	1.176	.36
Neutral	.82	.586
Distrust	3.014	.053*
Strongly distrust	.071	.016**

WILLINGNESS TO PAY FOR MONTHLY INSURANCE PREMIUM PLAN

We adopted Linear Regression to explore the factors affecting Willingness to Pay for premium amounts. Two separate models were constructed using two different dependent variables:

1. WTP the premium for only IPD
2. WTP the premium for both IPD and OPD

The independent variables were the same in both models. The following equation was administered to measure the factors affecting the WTP:

$$WTP\ (Premium) = \beta_0 + \beta_1 Assets + \beta_2\ Income\ Levels + \beta_3\ Employment\ Status + \beta_4\ Gender + \beta_5\ Saving\ Behaviour + \beta_6\ Financial\ Literacy + \beta_7\ Years\ of\ Education + \beta_8\ Affordability\ Concerns + \beta_9\ Lack\ of\ trust\ in\ the\ program + \beta_{10}\ Covered\ by\ another\ insurance + \beta_{11}\ Perceived\ as\ unnecessary + \beta_{12} Program\ Awareness + \beta_{13}\ Perceived\ Benefits + \beta_{14}\ Trust\ in\ Program + \beta_{15}\ Affordability + \beta_{16}\ Healthcare\ Experience + \beta_{17}\ Recommendations\ from\ Friends\ and\ Family + \beta_{18}\ Districts + \beta_{19}\ Household\ Ownership +$$

Table 24 highlights the determinants of the IPD premium amount for a combined in-patient and out-patient (OPD) health insurance plan. Two separate models were developed to explore these factors for a more nuanced understanding. Model 1 explores the factors affecting only the IPD premium, while Model 2 highlights the factors affecting a combined OPD and IPD premium plan.

TABLE 24: WILLINGNESS TO PAY FOR MONTHLY INSURANCE PREMIUM PLAN				
	Model 1		Model 2	
Variables	In-Patient Premium Amounts (IPD)		OPD + In-Patient Premium Amounts (IPD)	
	Coef.	p-value	Coef.	p-value
Education Level	.088	0***	.081	0***
Gender	-.041	.478	.104	.067*
Age	.001	.671	-.001	.689
Marital Status	.048	.241	.042	.286
Employment Status	-.14	.012**	-.247	0***
Saving Behavior	.245	.001***	.232	.001***
Financial Literacy	.117	0***	.096	0***
Income Levels	0	.	0	.
Ultra-Poor	-.214	.277	-.292	.141
Poor	-.386	.056*	-.529	.009***
Lower Middle	-.428	.066*	-.65	.005***
Upper Middle	-.48	.273	-.52	.219
Household Ownership	-.012	.77	.001	.977
Assets	.137	0***	.127	0***
Program Awareness	.041	.413	-.141	.004***
Perceived Benefits	.035	.482	-.006	.895
Trust in Program	.035	.465	-.062	.194
Affordability	.138	.014**	-.089	.107
Healthcare Experience	-.162	.002***	-.025	.628

Friends And Family	.16	.417	.132	.507
Q9. District:	0	.	0	.
D.G khan	-.132	.135	-.279	.001***
Rawalpindi	-.036	.681	.184	.032**
sLahore	.164	.073*	.246	.006***
Faisalabad	.132	.143	.201	.022**
Jhelum	.115	.207	.344	0***
Affordability Concerns	-.204	.293	.198	.359
Lack of trust in the program	-.311	.119	-.591	.003***
Covered by another insurance	.083	.822	-.497	.196
Perceived as unnecessary	-.104	.78	.478	.214
Other (please specify):	-1.747	.046**	0	.
Constant	7.478	0***	7.539	0***

Similar to the results of the previous analysis of co-insurance at the time of treatment percentage contribution insurance, the results indicate that among demographic and socio-economic variables, assets, education level, employment status, saving behavior and financial literacy are all found to be significant determinants in both models.

Conversely, employment status is found to have a significant negative relation with the willingness to pay for both types of insurance plans. Also, lack of trust in the program negatively influences the willingness to pay in both models, indicating that individuals lacking trust are less likely to pay premium amounts. The reason is that they believe that their contributions might not be utilized effectively. Jang, S. et al. (2017) discovered the same reason in their study. They found that a lack of trust leads to a lower willingness to pay for health care services.

Lastly, age, marital status and all program-related factors are found to have no significant impact on the willingness to contribute to either of the plans.

TABLE 25: INCOME GROUPS AND CONTRIBUTION LEVELS

predict	Margin	Std.Err.	Z	P>z	[95%Conf.	Interval]
Low – 30%	0.808	0.011	71.860	0.000	0.786	0.831
High – 30%	0.829	0.042	19.730	0.000	0.746	0.911

Low – 40%	0.140	0.009	14.780	0.000	0.121	0.158
High – 40%	0.127	0.028	4.480	0.000	0.071	0.182
Low – 50%	0.052	0.006	8.310	0.000	0.040	0.064
High – 50%	0.045	0.015	3.000	0.003	0.015	0.074

Further extending the analysis, the predicted probabilities were calculated to better understand the willingness of the lowest and highest income group individuals. The results in Table 25 show that 80.8% of individuals lowest income group are willing to contribute 30% to the insurance scheme. However, as the contribution level increases to 40%, the probability dramatically falls to 14% and then further to 5 % for a 50% contribution. This indicates that, except for a very few, the majority of people in low-income groups are comfortable contributing 30%. Similar to this, 82.9% of individuals in the higher income group are willing to contribute 30%. The probability of a 40% contribution is 12.7% and for a 50% contribution, it is 4%. Table 26 also highlights similar findings in absolute terms.

TABLE 26: WILLINGNESS TO CONTRIBUTE FOR CO-INSURANCE AT THE TIME OF TREATMENT INSURANCE ACCORDING TO INCOME GROUPS

Average Family Monthly Income (Rs.)	Maximum percentage willing to contribute			
	30%	40%	50%	Total
Under 10,000	47	2	0	49
10,000 to 20,000	159	11	0	170
20,001 to 30,000	300	15	2	317
30,001 to 40,000	241	12	4	257
40,001 to 50,000	136	21	5	162
50,001 to 75,000	154	66	16	236
750,001 to 100,000	94	44	17	155
100,001 to 125,000	22	18	16	56
125,001 to 150,000	18	9	9	36
150,001 and above	5	9	3	17
Total	1176	207	72	1455

FACTORS INFLUENCING WILLINGNESS TO PAY

HEALTH STATUS AND WILLINGNESS TO PAY

Willingness to participate in a contributory mechanism with a previous frequency of health facility visits, 71 % with a positive response, is those who visited the health facility one to four times in the last year. (P value 0.038) 9% were WTP who never visited, and the same trend when OPD is added. Previous h/o utilization like OPD /in patient/ or combined is significantly associated with willingness to participate (P 0.021) 56 % of positive responses have utilized OPD, and 40% experienced both (OPD/inpatient) only 3.6 % has utilized indoors.

Prevalence of chronic disease in our sample is 36.48% which is aligned with national level (HTN, Diabetes, COPD, Dialysis, cancers) and out of these, 83.55% are willing to participate in this type of initiative. Presence of disability in the family is also positively associated with WTP.

FACTORS INFLUENCING DECISION

It is important to note that respondents are significantly concerned /and prioritize health while making choices, and the three most frequent considerations for WTP for health Insurance are related financial protection. 71.24 % of respondents consider it a security against high health care costs, 50% of respondents expect improved access and range of health care, while 63.5% rejected that health insurance will be a source of peace of mind in case of health emergency and for 19% it is a source of financial protection for the family.

Factors influencing decision making for WTP for contributory health insurance. Awareness about the program (11.94%) and perceived benefits and coverage 17.25%), and trust in the program effectiveness are the leading factors for decision making. On the other hand, though a very small number have rejected the option and factors such as affordability, doubts on program benefits and qualitative components, some insights are particularly from beneficiaries are that health is the government responsibility and SSP has enough money allocated to each family and saved, so no need to go for contributory. SSP program utilization rate is less than 10%.

Figure 52: Factors influencing Decision Making for Health Insurance

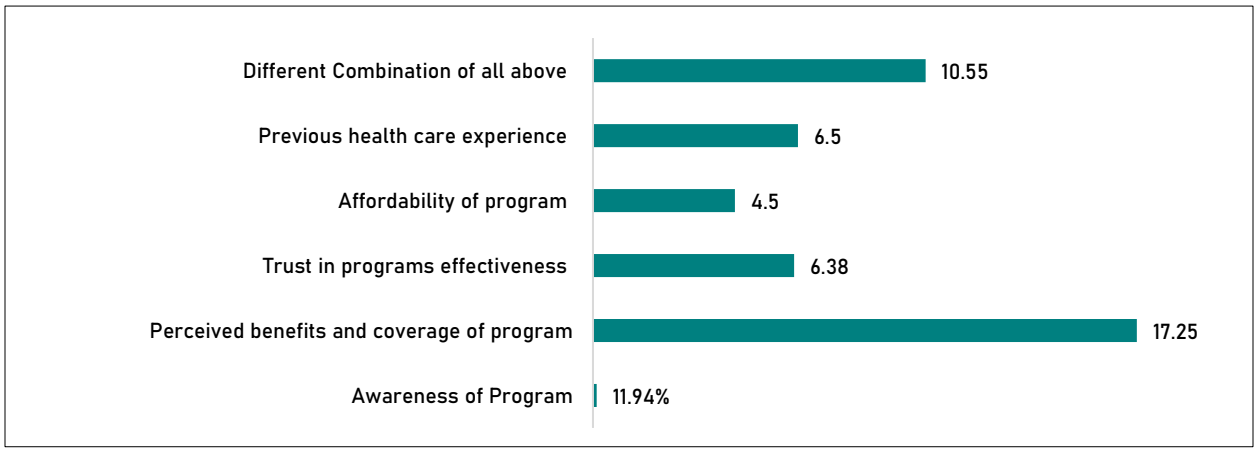
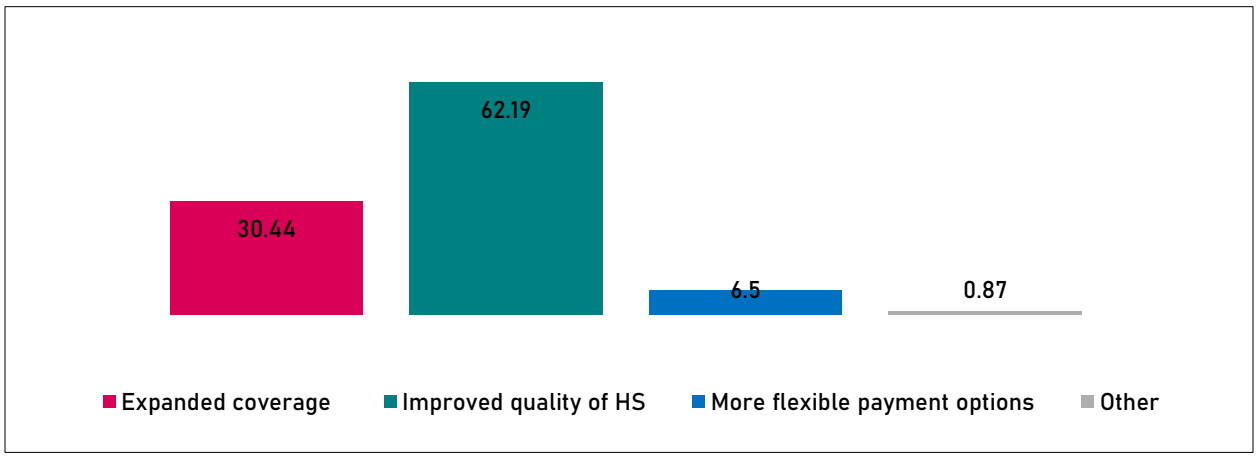


Figure 53: Factors increasing WTP for Health Expenses



PROMOTORS OF WILLINGNESS TO PAY

Improved quality of health care (62.9%) and expanded coverage (30%) and flexible premium payment schedule are promoters of contributory insurance uptake. Although there is increased WTP when OPD is added.

Financial stability and Health condition of the family are most important factors influencing the frequency of premium payment either monthly or annual. For 24% of respondent's budgetary preferences will lead the frequency of premium payment either monthly or annual.

Figure 54: Factors influencing the Decision on the frequency of Payments in %age

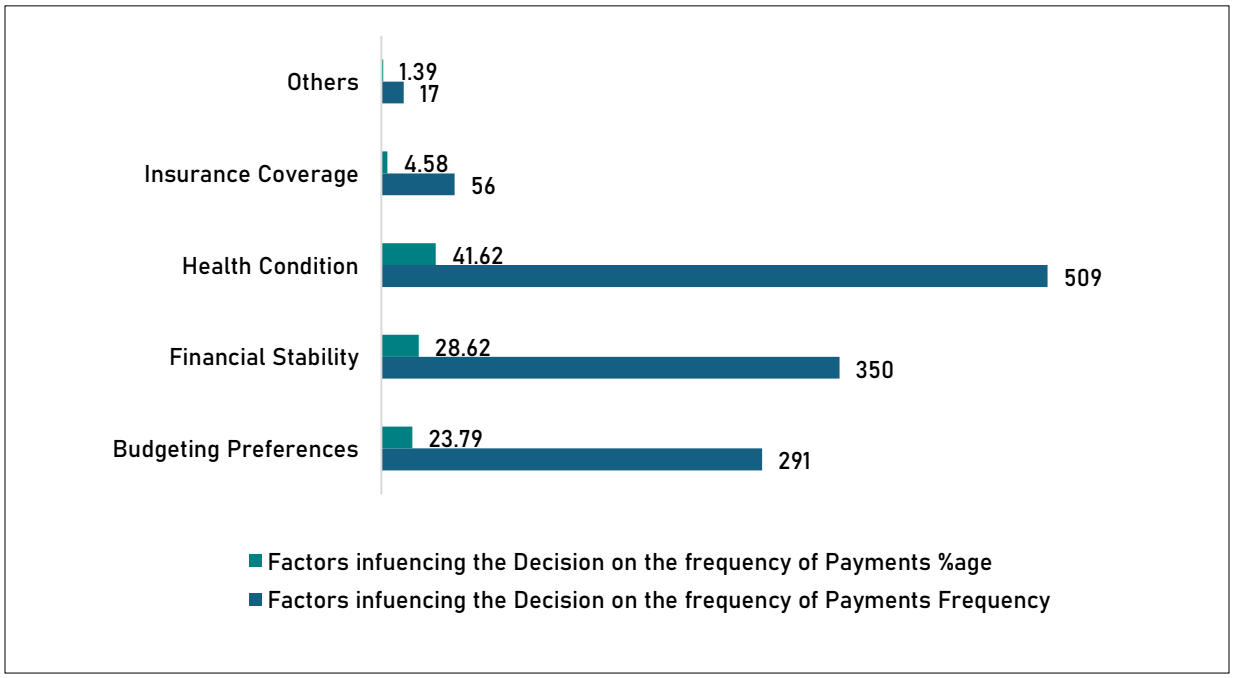
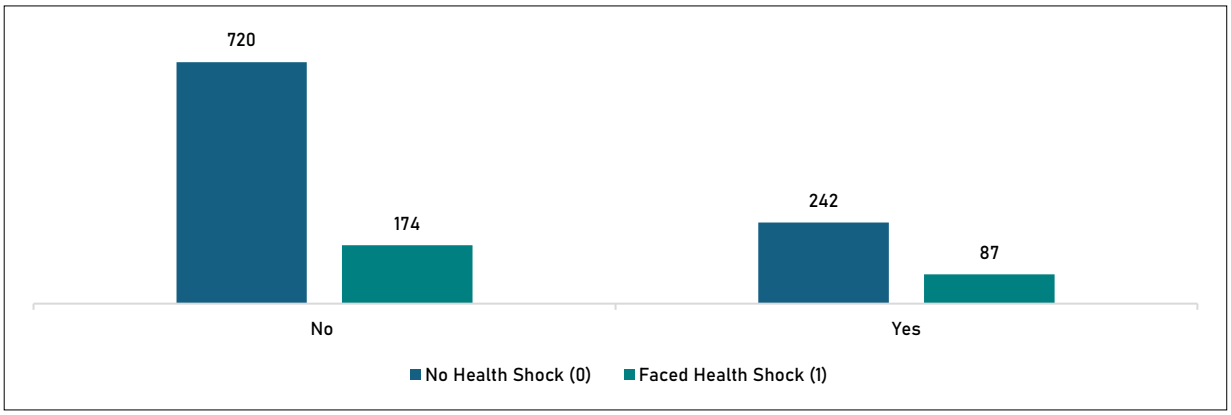


Figure 55: Previous Healthcare Experience



WILLINGNESS TO PAY AND HEALTH SHOCK

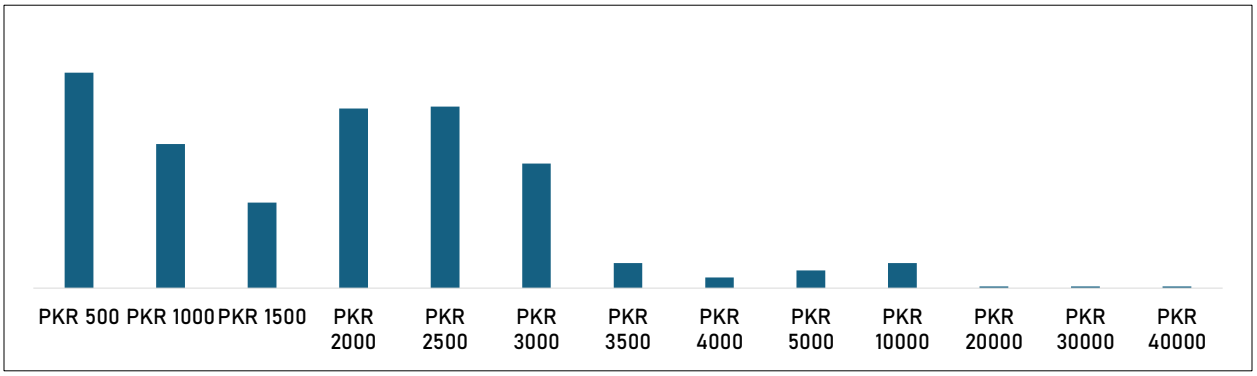
Catastrophic Health Expenditure is a significant predictor of adopting contributory health insurance. In this study, 90% of respondents who had CHE (IPD +OPD) are willing to pay for the annual premium, and 78% of respondents willing to pay did not face catastrophic Health Expenditure.

Monthly income and appropriation of household expenditure for health care are significant predictors of the premium amount. 42% compromised on food costs, 30% on utility bills and 10 % social obligations are willing to pay between 200 to 400 monthly premiums. (p value is 0.018). Respondents were asked if they had difficulty in spending on food, utility bills, house rent and social obligations due to health care costs in a month.

ANNUAL PREMIUM PACKAGE AND PAYMENT MODALITIES.

The annual premium package offered to the respondents ranged from 1000 to 5000 with the option to pay monthly or annually. 50% of respondents opted for annual payment, and 50% monthly payment. Monthly payments range from 300 to 3500 with OPD, and > 75% of responses are willing to pay between 300 to 400 monthly, and affordability is the key reason for low contributory amount expressed in different ways. 35% of respondents are willing to pay between 2000 and 2500 annually, which makes around 200 per month.

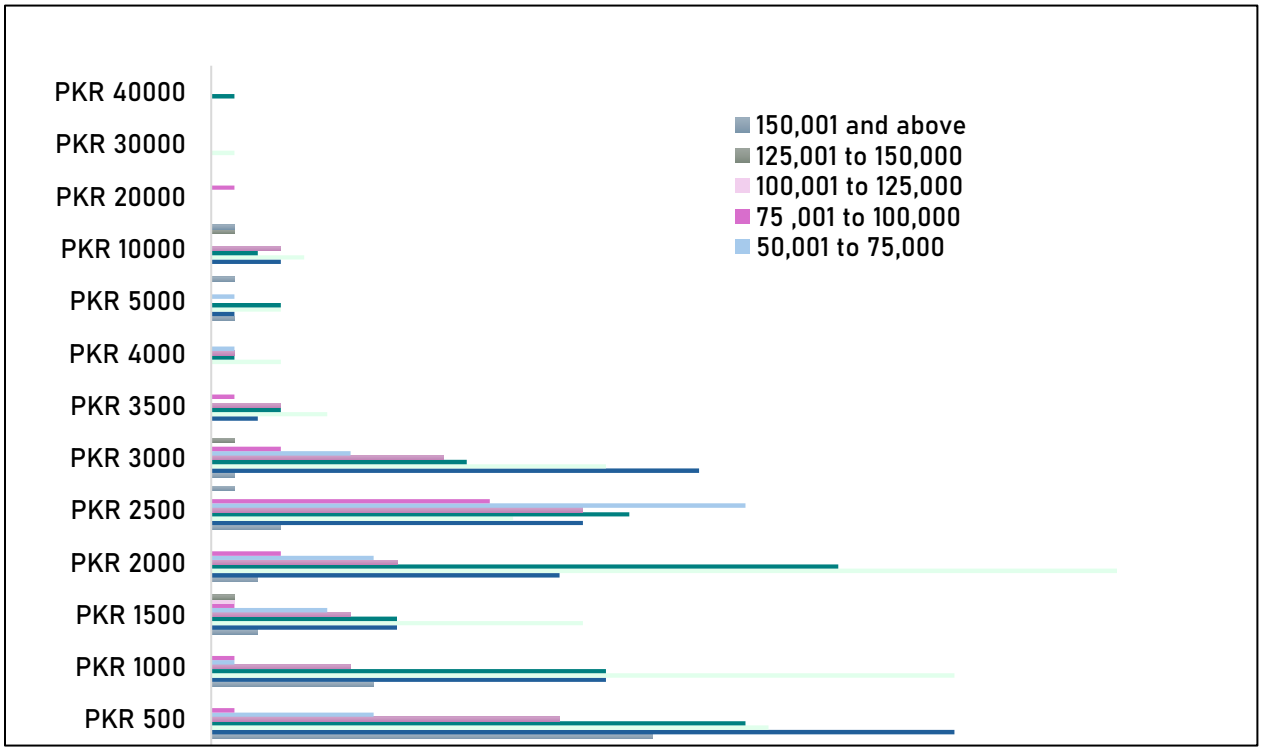
Figure 56: Maximum amount willing to pay annually for coverage



The amount of the annual premium payment is associated with the monthly family income. On analysis, it is observed that 2000 to 2500 is the most frequent option among families earning 20,000 to 30,000 and 50,000 to 75000 per month. 50% of respondents paying a 500 annual premium are from the lowest income quantile, 10,000 to 20,000 and 22.4% have agreed on a Payment of 500 annual premium among the lowest income to 30,000 to 40,000.

To summarise, descriptive analysis shows that perceived benefits and coverage of health insurance are the most important factors in decision-making for WTP for contributory health insurance. Expanded coverage and improved quality of health services are two main factors to increase willingness to pay. 83% with chronic disease and 35% had a health shock 35% and 24% had catastrophic health expenditure & inclusion of PHC is linked with increased willingness to pay for contributory premium-based health insurance.

Figure 57: Annual Premium by income brackets



CONCLUSION

The findings of this study provide valuable insights for policymakers in three key areas: reducing out-of-pocket (OOP) health expenditures, improving saving behaviors, and understanding individuals' willingness to pay (WTP) for health insurance

Firstly, the Sehat Sahulat Program (SSP) has significantly reduced OOP health expenditures for low-income households, contributing to improved financial stability. By covering healthcare costs, SSP alleviates the burden of catastrophic health spending, which can lead to forgone health care and push families further into poverty. The study highlights that there is a reduction in OOP on one hand, and increased access and utilization of health care on other hand. This program has provided health care with equity and dignity and ownership of this program by beneficiaries has educational side towards demand of health as a right. This study highlighted the regional disparities in supply side on one hand but has provided some high-end treatment choices for beneficiaries like Cancer, cardiac surgery, and transplant surgeries. Although it does not have a direct impact but functional requirements of this program have improved the public sector management (HMIS) and private sector clinical health care capacity. Reduction in OOP expenses is crucial for improving the financial well-being of beneficiaries, allowing them to manage healthcare needs without jeopardizing their economic security.

Secondly, the study found that the reduction in OOP health expenditures has a positive effect on saving behaviors. By decreasing the immediate financial burden of healthcare costs, beneficiaries are better able

to save, thus enhancing their overall financial resilience. The findings suggest that the SSP program indirectly encourages savings, which can contribute to long-term economic stability and poverty alleviation.

The ordered logistic regression analysis highlights that willingness to pay for health insurance is significantly influenced by income, employment status, and trust in government institutions. Higher income increases willingness to pay, while those with employer-provided benefits are less inclined to pay for additional insurance. Institutional trust positively affects participation, underscoring the importance of perceived program reliability. Financial shocks and the presence of young children are linked to a higher Willingness To Pay, reflecting a greater need for financial protection. Conversely, households with elderly members show lower Willingness To Pay, which may be due to different financial priorities or perceptions of insurance value.

The analysis concludes that participation in the Sehat Sahulat Program (SSP) is associated with a significant increase in saving behavior compared to non-participants, indicating that the program helps alleviate the financial burden of healthcare costs and supports improved savings capacity.

The SSP effectively reduces out-of-pocket health expenditures and provides significant financial relief for low-income households. Higher education levels are linked to greater healthcare service usage, while rural residence and marital status are associated with lower healthcare costs. Age positively influences SSP enrollment, as older individuals perceive higher health risks, while gender and marital status negatively impact participation, particularly among married women due to socio-cultural factors. Larger households and those with higher incomes, as well as individuals with better financial understanding, are more likely to enroll in the program. While the Seemingly Unrelated Regression (SUR) model suggests that the SSP's direct impact on savings behavior is moderated by other factors. Although the program reduces immediate financial pressures, its effect on savings is not isolated but intertwined with additional influences.

POLICY IMPLICATIONS

The study's findings support the creation of several key policy recommendations to enhance the effectiveness of the Sehat Sahulat Program (SSP). These recommendations focus on addressing regional disparities, improving financial literacy, and tailoring the program to better serve low-income families.

A. Policymakers should focus on addressing regional disparities in the SSP's effectiveness. This includes recognizing differences in economic conditions and healthcare access across regions and tailoring the program to meet these specific needs. Enhancing financial literacy is critical to maximize the SSP's impact. Thus, by implementing programs that educate low-income families about savings and health insurance benefits, the participation rates in the SSP can be improved significantly.
B. The SSP's effectiveness can be increased by tailoring policies to specific demographic needs, ensuring that vulnerable populations are better served by the program. Therefore, policymakers should consider creating a flexible, region-specific insurance policy. A tiered contribution structure that builds on regional economic conditions and access to healthcare facilities could improve participation in underserved areas.
C. In regions exhibiting lower willingness to pay, offering lower contribution rates or additional incentives could increase the participation in the SSP, thereby improving health insurance accessibility among underdeserved population. Policymakers should target initiatives aimed at raising awareness about the advantages of health insurance that could significantly boost participation rates in the SSP. The government should consider sustaining and possibly expanding the SSP; continuous efforts to refine the SSP based on a nuanced understanding of regional and demographic needs will be crucial for maximizing its impact and ensuring effective coverage. Sustained efforts to optimize the SSP will contribute to long-term financial stability and better financial outcomes for low-income households, ensuring broader and more effective coverage across diverse regions.

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APPENDIX I

TABLE A1: TREATMENT-EFFECTS ESTIMATION							
I19	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
r1vs0	.416	.075	5.58	0	.27	.563	***
Mean dependent var	2.145		SD dependent var		0.866		
*** p<.01, ** p<.05, * p<.1							

Table presents the fit statistics for a statistical model. In this case, the model has a relatively low pseudo R-squared and a moderate likelihood ratio chi-square statistic. The mean and median bias values are relatively low, suggesting that the model's predictions are reasonably accurate on average.

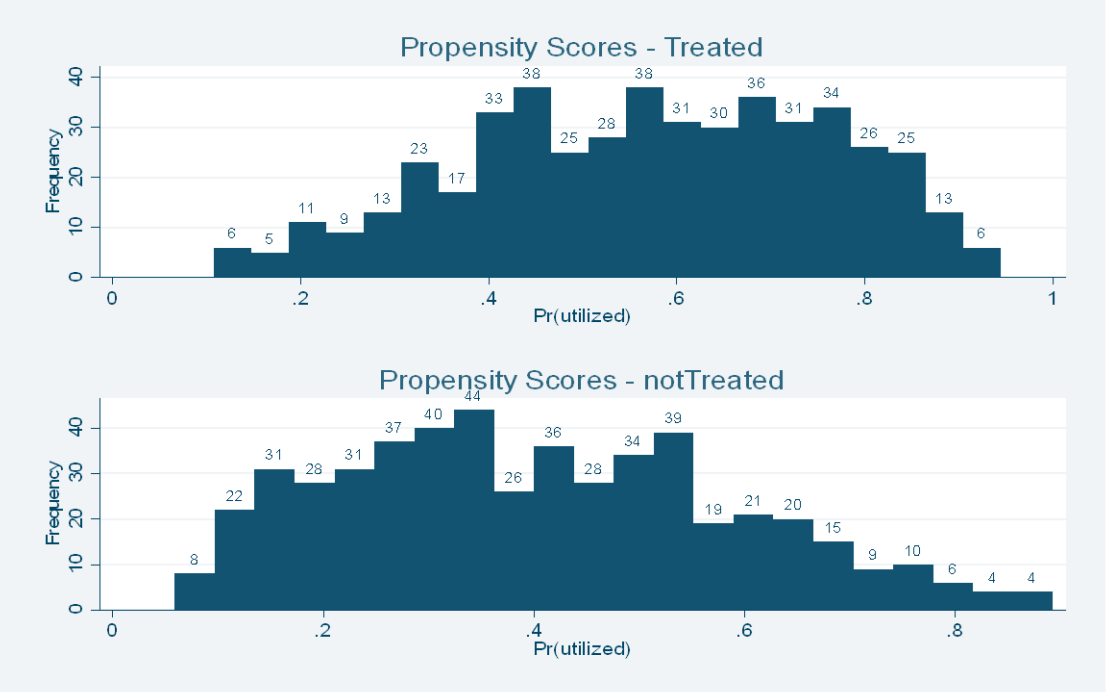
TABLE A2: FIT STATISTICS OF COVARIATE BALANCE								
Statistic	Ps R2	LR chi2	p>chi2	Mean-Bias	Med-Bias	B	R	%Var
Value	0.01	12.77	0.545	4.3	3.5	23.1	1.06	10
note: Refitting the model using the generate () option								

TABLE A3: COVARIATE BALANCE SUMMARY				
	Raw	Matched		
Number of obs	990	956		
Treated obs	478	478		
Control obs	512	478		
	Standardized	differences	Variance	ratio
	Raw	Matched	Raw	Matched
Age	0.587	-0.071	1.208	1.201
Gender	-0.521	-0.034	1.436	1.006
Years of Education	-0.21	-0.036	0.868	1.063
Union Council Type	-0.021	0.059	0.997	1.012

Marital Status	-0.035	0.083	1.477	1.594
household size	0.265	0.157	0.948	0.952
child_under5	-0.301	0.105	0.947	1.066
Income	0.158	0.04	1.013	0.905
employment status	0.17	0.013	0.952	0.994
Financial literacy	0.151	-0.009	0.888	1.093
Saving with goals	0.002	-0.088	0.996	1.193
Saving purpose	0.076	0.002	1.11	1.067
Financial access	-0.099	0.004	1.145	1.107
Assets	0.223	0.009	0.957	1.067

Table , presents the same summary statistics as presented in Table a3, but after applying propensity score matching. The goal is to assess the effectiveness of the matching process in balancing the covariates. The standardized differences in covariates were substantially reduced after matching, indicating improved balance between the treated and control groups. Most standardized differences fell below the threshold of 0.1, suggesting adequate balance. Variance ratios became closer to 1, indicating more comparable variability in the matched sample

Figure a1: Density Plot



SOCIAL HEALTH INSURANCE JOURNEY IN PUNJAB

PUNJAB HEALTH INITIATIVE MANAGEMENT COMPANY (PHIMC)

PHIMC is established by Punjab Government to register, empanel and monitoring of facilities and coordination among different stake holders for smooth running of program. The innovations and program reforms are being suggested by PHIMC. .

SOCIO DEMOGRAPHIC & HEALTH INDICATORS OF PUNJAB

Punjab largest province holding 53% of Pakistan population (127million 2023) with average house hold size of 6.43and growth rate of 2.53 and higher in urban Punjab 4.46. It consists of 36 districts and 9 divisions with 65% of rural population. Punjab contributes 60% of GDP of Pakistan mainly from agriculture and industry. As 37% of Pakistan population is living in multidimensional poverty and 31.6% in Punjab , lowest among all provinces. OOP health expenditure is 53% highest among provinces.

HEALTH INDICATORS OF PUNJAB

Punjab Life expectancy is 65.05 years, less than national level 67.3 years. Maternal mortality Ratio (MMR) is 157/100,000 live births and Infant Mortality Ratio (IMR) is 73/1000 live births with under 5 mortality is 64/1000live births. There are 4960/ public health institutions from primary to tertiary level. 399 public sector hospitals and there is large private health sector from PHC to large tertiary care specialized hospitals in Punjab. Full Immunization coverage 80% and 27% modern contraceptive use.

As OOP expenditure is SDG 3.8.2 and indicators for 3.8.1 UHC are directly linked and has large impact on socio economic status of low income families.

Service Coverage Index is UHC Monitoring tool , derived from 14 to 16 health indicators in four domains of Maternal and Child Health ,Communicable disease , Non Communicable diseases and Service Capacity and Access. UHC index is used for SDG monitoring and for district ranking. Punjab UHC Index is highest 53.2.

TABLE A4: SERVICE COVERAGE INDEX FOR UNIVERSAL HEALTH COVERAGE ; 2023

Indicators	Punjab	National
Family Planning demand satisfied with modern methods (%)	50.3	48.6
Antenatal care -4+ visits %	56.2	51.4
Child Immunization Penta3%	95.2	83.5
Health seeking behaviour for child pneumonia %	86.1	84.2
RMNCH Aggregate score	69.3	64.7
Communicable Disease Aggregate score	42.8	41.7
Aggregate Non Communicable Disease aggregate Score	55.2	55.2
Hospital Beds density 10,000 population against threshold(%)	59.3	59.3
Health worker density (Physician, Psychiatrist ,surgeon against threshold (%)	51.2	54.6

International Health Regulations core capacities	43.2	42.7
Service Capacity & Access Aggregate	50.8	51.7
Universal Health Coverage Index	53.8	52.7

Ranking of study Districts based on Universal Health Coverage Index

District Lahore is overall no1 in Punjab and DG khan at the lowest level ranked 41 and Bahawal nagar is 30th in Punjab.

Notes:

2 Models of willingness to pay → two types of insurance plans → first, at the time of treatment insurance (% contribution), secondly, monthly premium insurance plan.

TABLE A5: COVARIATE BALANCE BEFORE MATCHING

	Mean		t-test		V(T)/	
Variable	Treated	Control	%bias	t	p>t	V(C)
Age	47.611	47.425	1.4	0.220	0.827	1.090
Gender	1.538	1.554	-3.600	-0.520	0.604	1.010
Years of Education	4.130	4.435	-6.400	-1.020	0.309	1.000
Union Council Type	1.462	1.431	6.3	0.980	0.330	1.010
Marital Status	2.092	2.025	10.000	1.640	0.100	2.05*
household size	0.615	0.615	0	0.000	1.000	.
child_under5	0.381	0.389	-1.700	-0.270	0.791	.
Income	10.592	10.655	-12.000	-1.790	0.074	0.890
employment status	0.613	0.619	-1.300	-0.200	0.842	.
Financial literacy	6.090	6.019	2.9	0.450	0.650	0.950
Saving with goals	0.837	0.849	-3.400	-0.530	0.594	.
Saving purpose	1.299	1.343	-4.500	-0.670	0.502	0.990
Financial access	1.409	1.424	-4.000	-0.620	0.533	1.150
Assets	1.797	1.826	-3.100	-0.480	0.632	0.920

Assets: Represents the individual's or household's asset ownership.

Child_Under5: Indicates whether the household has children under the age of 5.

Elderly: Indicates the presence of elderly individuals in the household.

Employment Status: Employment status of the individual.

Financial Access: Access to financial services or institutions.

Financial Literacy: The individual's level of financial literacy.

Gender: The gender of the individual (binary variable).

Household Size: The total number of members in the household.

Income: The individual's income level.

Marital Status: The marital status of the individual.

Rural Urban: Indicates whether the individual resides in a rural or urban area.

Savings Purpose: The primary purpose of the individual's savings.

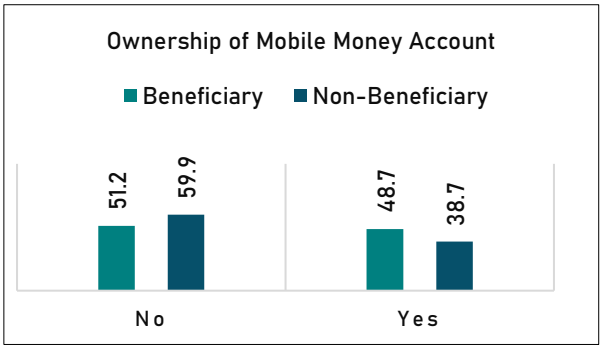
Years of Education: The number of years of formal education completed by the individual.

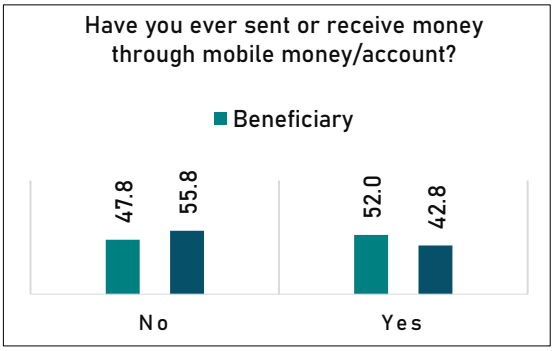
APPENDIX II

Cell phone ownership is a crucial factor for improving financial inclusion. The survey reveals that 81.8% of beneficiaries own a cell phone, and an additional 15.9% have access to one. Among non-beneficiaries, 74% own cell phones, and an additional 22% reported having access to a mobile phone (see Figure 1). This widespread mobile phone accessibility offers significant potential for enhancing financial inclusion through mobile-based solutions.

However, 51.3% of beneficiaries and 60% of non-beneficiaries do not own a mobile money account. Similar statistics are observed when respondents were asked about transferring money through mobile money medium. Nearly half of the respondents (48% of beneficiaries and 56% of non-beneficiaries) reported never using mobile money. This highlights a critical need for financial education to improve understanding and utilization of mobile financial services.

Figure a2: Mobile Money Account Ownership and Usage





Bank account ownership presents a more severe concern. A notable 69.4% of beneficiaries and 74.8% of non-beneficiaries reported not having a formal bank account, reflecting a deep-seated distrust in the formal financial sector (Figure 3).

The survey also examined the ease of access to various amenities. Point of Sales (POS) was the most accessible, with 78.3% of beneficiaries and 81.2% of non-beneficiaries reporting ease of access. In contrast, banks, ATMs, and post offices were rated as less accessible, with nearly half of the respondents struggling to access these services (Figure 4)

Figure a3: Do you own/have any bank account?

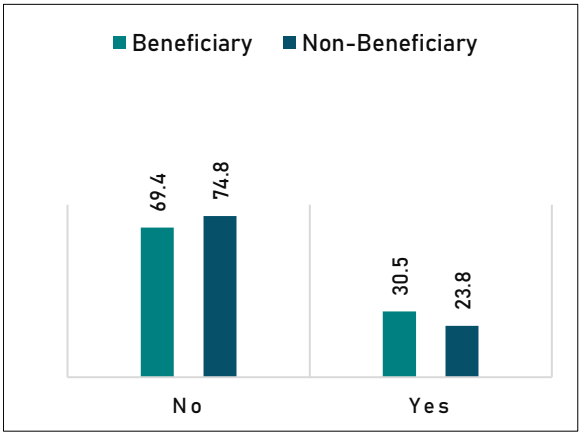
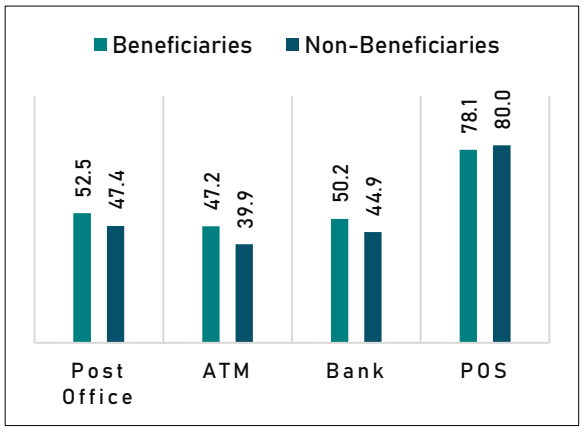


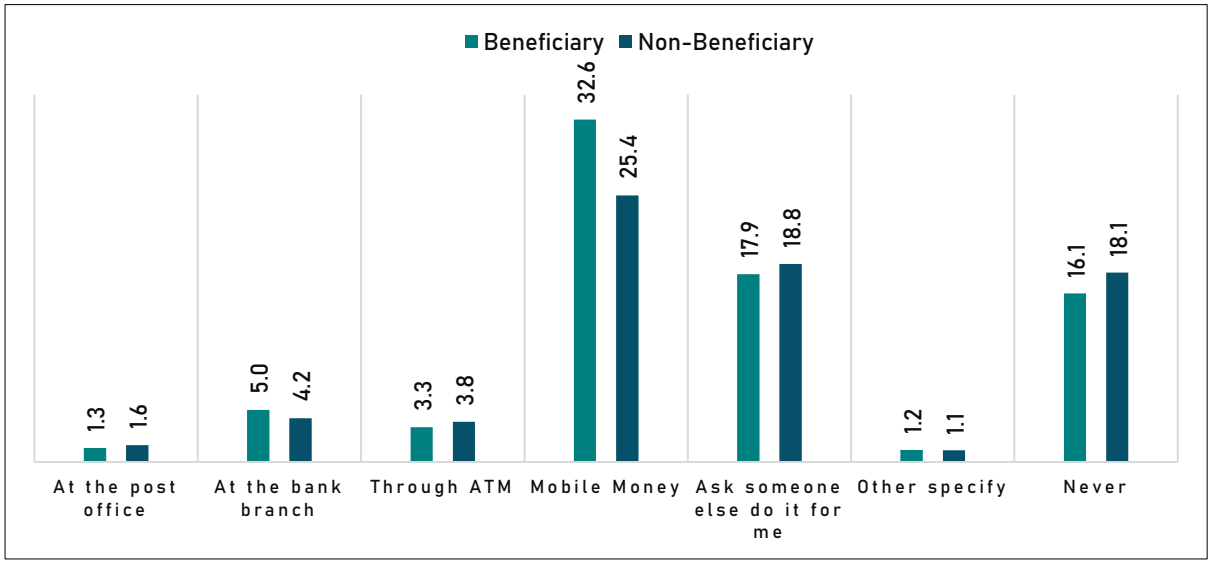
Figure a4: Easy Access to Amenities



Preferences for money transfer are closely linked to these accessibility issues. When asked about their preferred mode of money transfer, mobile money emerged as the most preferred method, followed by POS. Specifically, 32.6% of beneficiaries and 25.4% of non-beneficiaries reported using

mobile money for transfers. Additionally, a significant number of respondents sought assistance from others for money transfers (Figure 5).

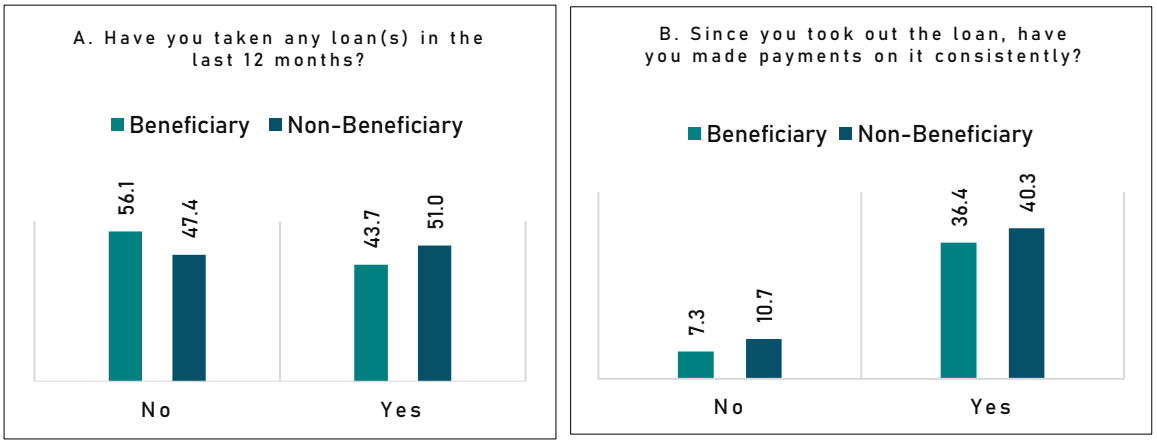
Figure a5: If need to, how do you transfer money?

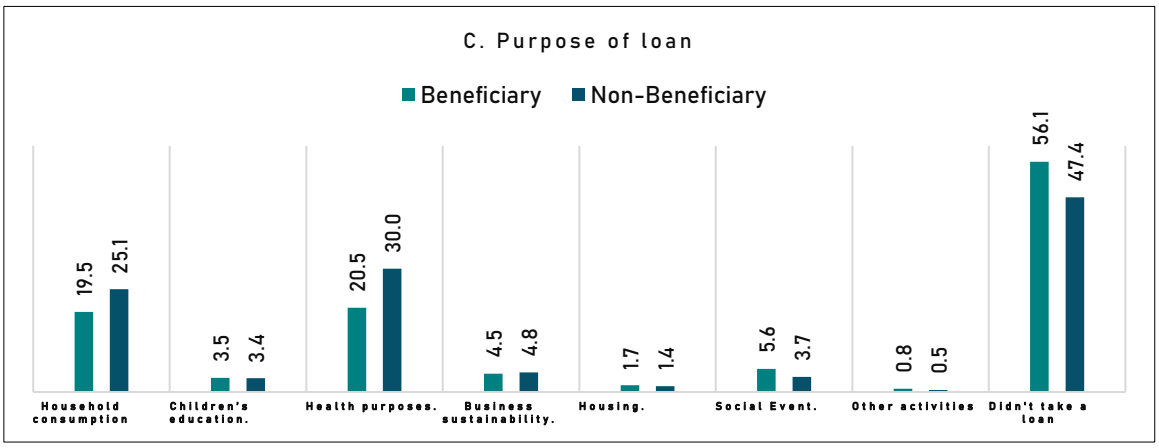


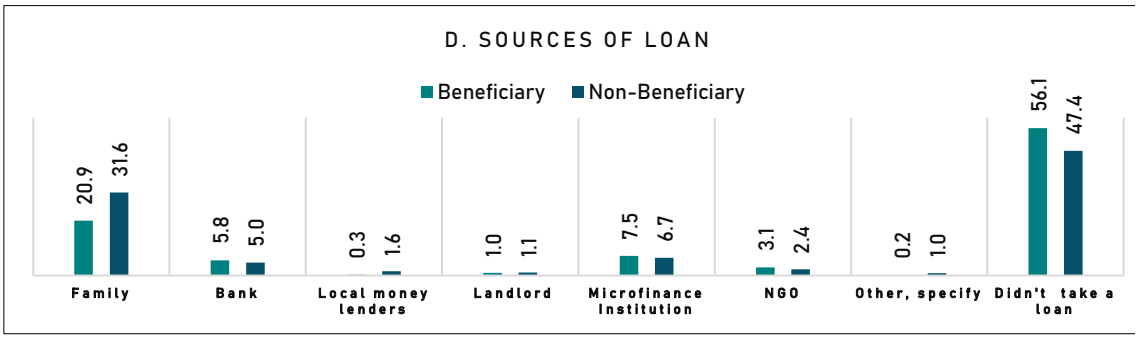
This preference for mobile money and POS services is understandable given the limited accessibility of banks and the low levels of financial education among beneficiaries. This underscores the need to improve financial literacy and access to formal financial services to promote more efficient and independent money transfer methods.

Borrowing behavior provides further insights into the financial practices of the surveyed population of interest. When questioned about loans taken in the past twelve months, 43.7% of beneficiaries and 51% of non-beneficiaries responded affirmatively (see Figure 6A). Among these respondents, nearly 80% reported making loan payments (see Figure 6B). The primary reasons for borrowing were health issues and household expenses, cited by both categories (see Figure 6C)

Figure a6: Borrowing Behavior

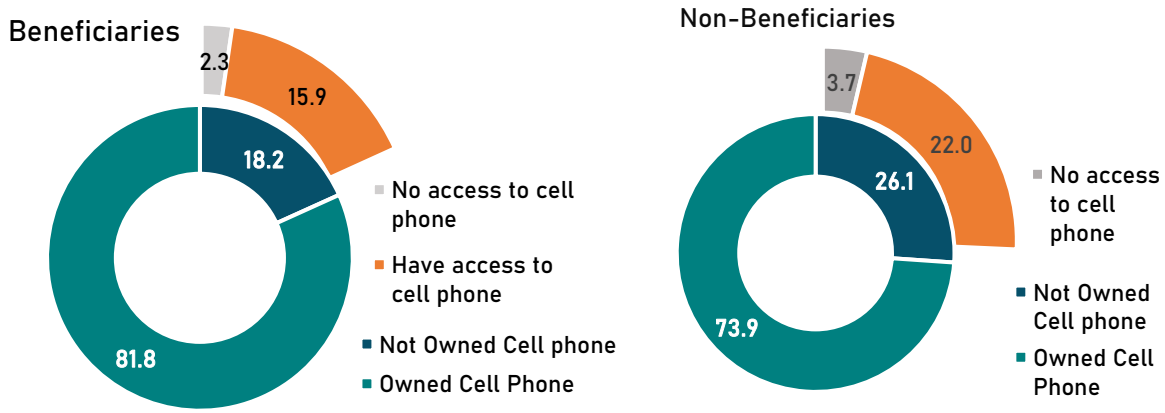






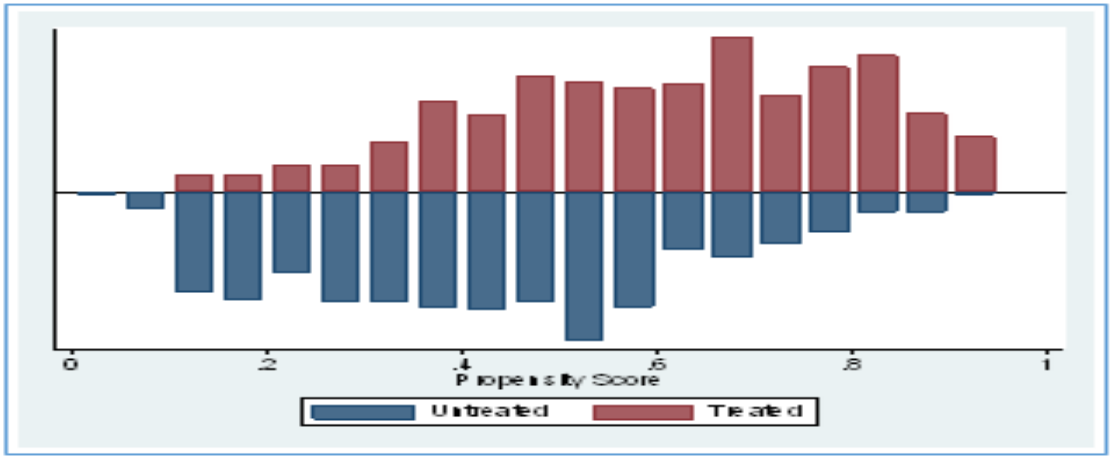
The predominant borrowing sources are friends and family, accounting for nearly 40% of loans for both groups. Less than 10% of respondents utilized microfinance institutions, and only 6% relied on banks (see figure 6d). This indicates a significant distrust in formal financial institutions, highlighting the need for improved financial education and better access to reliable financial services

Figure a7: Cell phone ownership



DISTRIBUTION OF PROPENSITY SCORES AFTER MATCHING

Figure a1: Frequency Distribution of PSM Treated &Untreated Groups



The histogram shows the distribution of propensity scores for the treated and untreated (control) groups after matching. The horizontal axis represents the propensity scores, which are the estimated probabilities of being in the treated group given the observed covariates. And the vertical axis represents the frequency of observations within each propensity score bin. Bars above the horizontal axis represent the treated group, while bars below represent the control group. The relatively balanced red (treated) and blue (control) bars indicate that the matching process has successfully aligned the distributions of propensity scores between the treated and control groups, ensuring comparability

TABLE A6 : BALANCE TEST- COMPARISON OF VARIANCE

	Before		After	
Variable	**Treat Variance**	**Control Variance**	**Treat Variance**	**Control Variance**
Age	183	152.6	183	156.10
Gender	0.250	0.169	0.250	0.250
Educational Background years/	1.107	1.470	1.107	1.117
Employment status	0.237	0.250	0.237	0.237
Union council	0.250	0.249	0.250	0.250
Marital Status	0.491	0.366	0.491	0.330
Household size	0.234	0.250	0.234	0.234
Elderly	0.200	0.198	0.20	0.20

Child_5	0.235	0.250	0.235	0.235
Disease binary	2.216	2.111	2.216	2.3
Disability	0.068	0.082	0.068	0.068

The Entropy balance test compares the means of various covariates between the treated (SSP utilizers) and control (non-utilizers) groups before and after matching. Before matching, the covariate means show notable differences across several variables, such as age, gender, educational background, and household size. After matching, the means for these variables become identical for both groups, indicating that the matching process has successfully balanced the covariates.

This adjustment ensures that the treated and control groups are comparable, enhancing the reliability of the impact evaluation of the Sehat Sahulat Program (SSP). The variance test assesses the dispersion of covariates between the treated (SSP utilizers) and control (non-utilizers) groups both before and after matching. Initially, variances for several covariates, including age and educational background, differ between the groups, indicating imbalance. For instance, the variance in age for the treated group is higher than for the control group. However, after matching, the variances for most covariates, such as gender and household size, become closely aligned between the two groups. This reduced variance disparity confirms that the matching process effectively balances the spread of covariates, further ensuring that any observed differences in outcomes can be attributed to the treatment rather than underlying variability between the groups.

The entropy balance test confirms that the covariate means are well-aligned post-matching, reinforcing the robustness of the results. Additionally, the variance test shows that the spread of covariates between the two groups has been effectively minimized.

TABLE A7: BALANCE TEST- COMPARISON OF MEAN

	Before		**After**	
Variable	**Treat Mean**	**Control Mean**	**Treat Mean**	**Control Mean**
Age	48.150	40.120	48.150	48.150
Gender	1.52	1.785	1.52	1.52
Educational years/ Background	0.842	1.086	0.842	0.842
Employment status	0.617	0.485	0.617	0.617
Union council	1.474	1.470	1.474	1.474
Marital Status	2.085	2.214	2.085	2.085
Household size	0.629	0.471	0.629	0.629
Elderly	0.275	0.272	0.275	0.275

Child_5	0.378	0.524	0.378	0.378
Disease binary	2.431	2.363	2.431	2.431
Disability	0.073	0.089	0.073	0.073

These findings affirm that the SSP significantly alleviates the financial burden of healthcare for low-income households. The reduction in OOP costs highlights the program's effectiveness in enhancing financial protection and access to essential healthcare services. This aligns with global research on social health insurance programs, demonstrating the SSP's role in improving healthcare equity and providing a model for similar interventions aimed at reducing financial barriers to healthcare.

SDPI

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