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GENDER DISPARITIES IN ACCESS TO HEALTH INSURANCE: IMPLICATIONS FOR ECONOMIC DEVELOPMENT IN RWANDA

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ABSTRACT.

This study investigates gender-based disparities in health insurance access, focusing primarily on Rwanda's Community-Based Health Insurance (CBHI) scheme and its implications for economic development. Leveraging nationally representative data from the Rwanda Demographic and Health Survey (RDHS 2019/2020) and the Seventh Integrated Household Living Conditions Survey (EICV7 2023/2024), The study employs descriptive statistics, cross-tabulations, and survey-weighted logistic regressions. These methodologies isolate the variations in insurance participation, the determinants of female enrolment , intra-household disparities, and the downstream associations linking insurance access to welfare and economic participation.

The empirical results confirm that while Rwanda has secured high aggregate coverage through the dominant CBHI framework, statistically significant gender disparities in participation endure despite slightly higher baseline enrolment rates among women. Female enrolment in the CBHI scheme is significantly associated with age, geographic residency, poverty status, welfare quintiles, educational attainment, and marital status. Specifically, older cohorts, rural residents, and socioeconomically advantaged women display a higher likelihood of enrolment . Furthermore, distinct variations persist between male- and female-headed households, indicating that household structure and structural vulnerability continue to dictate insurance coverage.

Consequently, gendered asymmetries in healthcare access within Rwanda transcend nominal enrolment metrics. Participation remains tightly bound to household configurations, economic shocks, and structural socioeconomic positioning. These dynamics emphasize the critical necessity of expanding equitable, gender-responsive health financing frameworks to safeguard inclusive growth, poverty alleviation, human capital accumulation, and the realization of Rwanda’s Vision 2050 objectives.

Table of Contents

CHAPTER ONE. INTRODUCTION. 6

1.1. BACKGROUND OF THE STUDY. 6
1.2. PROBLEM STATEMENT. 9
1.3. OBJECTIVES AND AIMS. 11
1.4. RESEARCH QUESTIONS. 11
1.5. SCOPE OF THE STUDY. 12
1.6. LIMITATIONS OF THE STUDY. 13

CHAPTER TWO : LITERATURE REVIEW 13

2.1. THEORETICAL FRAMEWORK. 13
2.2. GENDER AND HEALTH INSURANCE. 15
2.3. SYNTHESIS AND CONCLUSION OF THE LITERATURE REVIEW. 16
2.5. RESEARCH GAP AND CONTRIBUTION. 18

CHAPTER THREE: METHODOLOGY. 18

3.0. INTRODUCTION. 18
3.1. RESEARCH ANALYSIS. 19
3.2. DATA SOURCE AND COLLECTION METHODS. 20
3.3. SAMPLE SELECTION. 21
3.4. DATA ANALYSIS TECHNIQUES. 21

CHAPTER FOUR: RESULTS AND DISCUSSION. 27

4.1. GENDER DIFFERENCES IN ACCESS TO COMMUNITY-BASED HEALTH INSURANCE (CBHI) IN RWANDA. 27
4.2 . SOCIO-ECONOMIC AND DEMOGRAPHIC FACTORS ASSOCIATED WITH WOMEN'S ENROLMENT IN CBHI. 34
4.2.1. DESCRIPTIVE PRESENTATION OF CBHI ENROLMENT ACROSS SOCIO-ECONOMIC CHARACTERISTICS. 34
4.2.2. LOGISTIC REGRESSION ANALYSIS RESULTS. 37
4.3.DIFFERENCES IN HEALTH INSURANCE ACCESS BETWEEN FEMALE AND MALE HEADED HOUSEHOLDS. 39
4.4. ASSOCIATIONS BETWEEN GENDER DIFFERENCES, WELFARE AND ECONOMIC PARTICIPATION. 42
4.5. GENDER DISPARITIES IN HEALTH INSURANCE IN RWANDA AND RWANDA'S 2050 DEVELOPMENT FRAMEWORK. 47

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS. 48

5.1. CONCLUSION. 48
5.2. POLICY RECOMMENDATION AND FUTURE RESEARCH. 51
5.3. FUTURE RESEARCH. 52

REFERENCES. 53

CHAPTER ONE: INTRODUCTION.

1.1. Background of the study.

A. Overview of Gender Disparities in Healthcare Access.

Gender inequality continues to pose a significant challenge worldwide, shaping patterns of social, political, and economic development. Despite improved efforts by governments, non-governmental organisations and women's advocacy groups, disparities persist across sectors healthcare access is notable.

Access to healthcare highlights how gender inequality plays out in the world. The World Health Organisation (WHO) describes health inequities as systematic differences in health outcomes or access to vital health resources among different population groups.

These disparities are structurally embedded in the larger social and economic conditions experienced by different people throughout their lives. In many developing countries, women often face barriers to accessing healthcare services and the financial protections needed to maintain health and well-being.

Health inequalities are connected to socio-economic status. Those who have fewer resources tend to face the biggest hurdles when seeking care. For women, these barriers may be caused by factors such as limited education, economic dependency, lack of decision-making autonomy, and prevailing cultural or religious norms. All these constraints can delay or prevent timely healthcare utilisation, ultimately resulting in adverse health outcomes (Nadakuditi, 2024).

Even in nations where healthcare systems and policies have undergone substantial improvements, marked gender disparities in both access and outcomes persist. Empirical evidence indicates that women are less likely than men to report favourable health status across various regions. For instance, in OECD-37 countries, only 66% of women report good or very good health, compared to 71% of men (Davaki, 2025; OECD, 2025).

In regions such as Sub-Saharan Africa and parts of Asia and Latin America, entrenched social norms and economic inequalities may further restrict women's access to essential healthcare services, including preventive care, reproductive health services, medications, and financial protection schemes (Nadakuditi, 2024). Additionally, studies demonstrates that cultural Norms

and persistent gender power disparities still influence healthcare usage patterns thus perpetuating lasting health inequalities (Novignon et al., 2019).

While gender disparities in healthcare access have been extensively recorded worldwide and throughout Sub-Saharan Africa, there has been less focus on how these inequalities function in countries that have attained comparatively high levels of health insurance coverage. This raises a crucial inquiry into whether merely increasing insurance coverage is enough to ensure fair healthcare access and financial security among different gender groups.

B. Importance of Healthcare Insurance in Economic Development.

Health is widely recognized as a fundamental element of economic development, since healthier populations are generally more productive and more capable to engage in economic activities. Thus, access to healthcare and financial protection mechanisms including health insurance plays a vital role in building human capital and fostering sustainable economic growth and development.

During the World Economic Forum Annual Meeting in January 2024, attendees emphasized that insurers play a critical role in promoting preventive healthcare which is essential for strengthening health systems and enhancing well-being of the population. Preventive healthcare, supported by effective health insurance, can decrease long-term medical expenses, boost workforce productivity, and foster a healthier more resilient society.

Health insurance is also acknowledged as a vital component of Universal Health Coverage (UHC), which strives to guarantee that every person can access quality healthcare services without incurring financial hardship. Consequently, health insurance has been prominently advocated as a crucial financing mechanism for both improving healthcare access and providing financial protection (Wang et al., 2012).

Health insurance contributes not only to enhanced healthcare access but also overall social and economic welfare. By reducing the financial burdens linked with illness, health insurance can shield households from poverty and economic vulnerability. Strong health insurance systems also enhance economic performance by promoting healthier, more productive populations (Raghupathi & Raghupathi, 2020).

Although economists discuss the precise dynamics of the link between health insurance and economic growth, most of the research suggests a positive relationship among healthcare accessibility, financial security, and favourable economic results. Health insurance can alleviate poverty by shielding families from overwhelming medical costs while promoting productivity, economic engagement, and overall household welfare.

In conclusion, health insurance is not simply a mechanism for accessing medical care; it is also an important component of social protection, human capital formation, and economic development.

Although there is considerable literature emphasizing the developmental significance of health insurance, there is less understanding of whether these benefits are fairly allocated among gender groups within national insurance frameworks. Comprehending gendered trends in insurance participation is thus crucial for assessing the inclusivity of healthcare systems and their wider developmental consequences.

C. Relevance to Rwanda's Socio-Economic Context.

Rwanda, a landlocked nation situated in Sub-Saharan Africa, is home to approximately 14.5 million people. Its demographic profile is notably youthful, with nearly half of the population under 20 (NISR, 2022). Recent census data from 2022 indicate that women constitute 51.5% of the population, while men make up 48.5% (NISR, 2022).

Over the past several decades, Rwanda's economy has undergone substantial growth and transformation. The sector now accounts for roughly 57% of the nation's GDP, with industry and agriculture contributing 15% each (Ministry of Finance and Economic Planning, 2025).

Despite progress in healthcare financing policies, access to healthcare and financial protection remain a challenge in many developing countries. Health insurance is widely considered an essential component of achieving Universal Health Coverage (UHC). In Rwanda, as in many other countries, there has been a strong policy commitment to expanding healthcare access and strengthening financial protection mechanisms (Urban et al., 2016; WHO, 2001).

Rwanda's health sector highlights the government's broader vision for progress, especially with the health policies that have been put in place since 2005. One of the key initiatives that really stands out is the Community-Based Health Insurance (CBHI) scheme, which is designed to

make healthcare services accessible and affordable for everyone regardless of geographical location or financial status (Ministry of Health, Health Sector Policy, 2015).

By expanding access to healthcare and providing financial safety nets, CBHI has become a key player in supporting Rwanda's effort toward Economic Development and Poverty Reduction Strategy (Urban, S., De, L., & Yamabana, H., 2016).

Rwanda offers a significant example for analysing gender inequalities in health insurance access, as it is often acknowledged as one of Sub-Saharan Africa's leading countries in promoting Universal Health Coverage via Community-Based Health Insurance (CBHI).

Broad insurance coverage does not automatically ensure equitable access, consistent financial protection, or equal decision-making authority among genders. Consequently, Rwanda serves as an instructive case study to analyze whether gender disparities persist despite an otherwise effective health insurance system.

Despite widespread health insurance expansion in Rwanda, the equity of healthcare delivery and financial risk protection across different genders remains contested. Investigating these disparities offers critical insights into the equity of the domestic health system and its integration into wider national development frameworks.

1.2. PROBLEM STATEMENT.

Rwanda's pursuit of Universal Health Coverage (UHC) hinges on its Community-Based Health Insurance (CBHI) scheme, which helps secure one of Sub-Saharan Africa's highest coverage rates at over 80% of the population (Nyandekwe et al., 2020; RSSB, 2024).

Even with all the progress , studies throughout across Sub-Saharan Africa indicates that women still encounter substantial inequalities in healthcare access, financial security, and decision-making power. even within contexts of expanding health insurance coverage (Seidu, 2020; Zegeye et al., 2023; Karamagi et al., 2024). For instance , studies from Rwanda highlight that women continue to face barriers especially concerning financial issues and autonomy when seeking healthcare, despite the presence of (Community based-health Insurance) CBHI schemes (Koch et al., 2022; BMC Women's Health, 2022).

Despite constituting a demographic majority in Rwanda (NISR, 2022) with high enrolment rates, women still face disparities in healthcare affordability, financial security, and household decision-making. Viewed through the lens of gender-based household economics (Folbre, 1994), these inequities stem not only from income differentials but also from pervasive gender norms and intra-household power dynamics.

In a similar vein, Sen's Capability Approach argues that development should be evaluated based on individuals' substantive freedoms and capabilities, rather than income alone. Within this theoretical framework, limited access to health insurance has the potential to restrict women's abilities to maintain their health, sustain productivity, and participate in economic activities.

Although prior studies have explored the expansion of CBHI, healthcare utilization, and general healthcare access in Rwanda (Saksena et al., 2011; Chemouni, 2018; Koch et al., 2022), comparatively limited attention has been given to gendered patterns of insurance participation, differences across household structures, and their links to broader socio-economic outcomes.

Existing research has largely focused on overall insurance coverage, healthcare financing performance, or healthcare utilisation within Rwanda's CBHI system. Consequently, there remains limited empirical understanding of whether gender differences persist within a context of relatively high insurance coverage, how these disparities may vary between female-headed and male-headed households, and how they relate to welfare conditions and economic participation.

This research aims to address this gap by systematically examining gender differences in Community-Based Health Insurance (CBHI) access in Rwanda, including determinants of women's enrolment, differences between female-headed and male-headed households, and the associations between insurance participation, household welfare, and economic participation. This gap is particularly important within the Rwandan context, where high overall insurance coverage may obscure underlying gendered inequalities in access, financial protection, and socio-economic outcomes.

Persistent gender disparities in health insurance access threaten to undermine human capital development, constrain women's economic participation, and exacerbate household vulnerability to health-related shocks, ultimately stalling Rwanda's Vision 2050 objectives.

Examining the nature of these disparities and their correlation with household welfare is therefore critical to advancing Rwanda's mandate for inclusive and equitable development.

1.3. OBJECTIVES AND AIMS.

This research investigates gender differences in access to healthcare insurance specifically Community-Based Health Insurance (CBHI) in Rwanda and analyzes how these differences are connected to household welfare, economic participation, and wider development outcomes.

Although previous studies have documented the expansion of CBHI and overall trends in healthcare access, comparatively limited attention has been given to gendered patterns of insurance participation, household differences, and their broader socio-economic implications.

To address this gap, the research dives into the extent of gender differences in CBHI access. It looks at various socio-economic and demographic factors associated with women's enrolment, and contrasts insurance coverage between female and male headed households.

Additionally, it examines how these gender-based differences in health insurance access relate to different indicators of household well-being and economic activity. ultimately, the research considers the broader implications of gender inequalities in health insurance access for Rwanda's long-term development objectives under the Vision 2050 framework.

In doing so, the study contributes to existing literature by moving beyond overall insurance coverage trends to explicitly examine gender disparities within Rwanda's CBHI system and their associations with welfare, economic participation, and Inclusive development outcomes.

1.4. RESEARCH QUESTIONS.

Guided by the study objectives to address the identified research gap, this study investigates the following core questions:

1. To what extent do gender differences exist in access to community-based health insurance (CBHI) in Rwanda?

2. Which socio-economic and demographic factors are associated with women's enrolment in

CBHI?

3. How does access to health insurance vary between female-headed and male-headed households in Rwanda?

4. What associations exist between gender differences in health insurance access and indicators of household welfare and economic participation?

5. What policy and development implications do observe gender disparities in health insurance access have for Rwanda's vision 2050 Framework?

1.5. SCOPE OF THE STUDY.

This study centers on Rwanda, a nation in Sub-Saharan Africa that has achieved notable advances toward universal health coverage through the implementation of the Community-Based Health Insurance (CBHI) system.

The research primarily relies on secondary data derived from sources such as the Rwanda Demographic Health Surveys (DHS), the Integrated Household Living Conditions Survey (EICV7), and reports produced by the National Institute of Statistics of Rwanda (NISR), the Ministry of Health, and various international organizations.

By leveraging these nationally representative datasets, the present study is positioned to systematically examine gender disparities in health insurance access, the socio-economic determinants influencing women CBHI enrolment, and the complex associations among health insurance access, household welfare, and economic participation.

The analytical framework for this study is grounded in gender and development perspectives together with Sen's Capability Approach which underscore the significance of gender relations, resource accessibility, and individual capabilities in shaping welfare outcomes.

From an empirical standpoint, the analysis integrates descriptive statistics with logistic survey-weighted regression methods to investigate patterns of insurance access and to elucidate their broader socio-economic implications within the Rwandan context.

1.6. LIMITATIONS OF THE STUDY.

This research relies on secondary data sources, which may limit the depth of analysis of nuanced gendered experiences and intra-household decision-making processes. Limited availability of detailed household-level data may also constrain the capacity to fully explore individual differences in health insurance access and utilisation.

Additionally, the study relies on complementary datasets collected during different survey periods (RDHS 2019/2020 and EICV7 2023/2024). While this approach allows the study to leverage the strengths of both datasets, differences in survey timing may limit direct temporal comparability across some dimensions of the analysis.

Furthermore, as the study is situated specifically within the Rwandan context, its findings may not be wholly generalizable to other Sub-Saharan African nations with differing healthcare systems, institutional structures, and socio-economic environments.

At the end, this study focuses primarily on associations between gender disparities and development related outcomes and therefore does not seek to establish direct causal relationships.

CHAPTER TWO: LITERATURE REVIEW .

2.1. THEORETICAL FRAMEWORK.

As discussed in the previous chapter, this study investigates gender disparities in access to health insurance within Rwanda's Community-Based Health Insurance (CBHI) system, with a focus on their broader implications for development.

The analysis is informed primarily by Gender and development perspectives together with Sen's Capability Approach, which provide the principal analytical lenses for understanding gender disparities in health insurance access and their broader development implications.

gender and development economics perspective offer a valuable lens for understanding how economic outcomes are shaped by social norms, bargaining dynamics, and the unequal allocation of unpaid care responsibilities (Folbre, 1994).

This framework is particularly pertinent to the current study, as disparities in health insurance access may stem not only from economic barriers but also from gendered dynamics within households and communities.

Broader economic literature on household decision-making and intra-household bargaining has similarly explored how family dynamics, labour allocation, and resource control influence economic and social outcomes.

A gender-aware economic perspective further enriches this discussion by highlighting the importance of power relations, social norms, and unpaid work both within and beyond the household. These theoretical perspectives enhance our comprehension of gender differences in accessing health insurance in Rwanda.

Sen's Capability Approach further strengthens this analysis by arguing that development should be evaluated according to individuals' actual freedoms and capabilities rather than income alone. In this context, women's access to medical care and insurance is crucial not only for its effects on health results but also for its contribution to increasing women's chances for social and economic involvement.

The literature on development economics also highlights the significance of healthcare accessibility and financial security boosting productivity, reducing poverty, and promoting enduring human capital growth (World Health Organization, 2001; Moene, 2002).

In this study, these perspectives are used not as separate competing frameworks but as complementary approaches for understanding how gender, health insurance access, household circumstances, and development results interrelate in the Rwandan context.

The theoretical framework therefore guides both the selection of variables and the interpretations of relationships between insurance participation, welfare indicators, household characteristics, and economic participation within the empirical analysis.

Collectively, these theoretical perspectives provide a robust analytical foundation for examining how gender disparities in health insurance access intersect with broader development outcomes in Rwanda.

2.2. GENDER AND HEALTH INSURANCE.

Global efforts to secure Universal Health Coverage (UHC) by 2030 have prompted widespread health insurance expansion across Sub-Saharan Africa. Nevertheless, empirical evidence indicates that coverage growth continues to fracture along entrenched socioeconomic and gender lines.

While existing scholarship establishes that gender, wealth, education, employment, and domestic dynamics dictate insurance enrolment across the region, the persistence of these structural barriers within high-coverage paradigms remains under-researched. Consequently, Rwanda's highly successful Community-Based Health Insurance (CBHI) scheme offers a critical empirical boundary case to evaluate whether aggregate enrolment gains successfully mitigate systemic inequities.

A multi-country study by (Amu et al., 2022), relying on data from 23 SSA countries, found that health insurance coverage remains relatively low overall, with women less likely to be insured than men. The analysis also reveals that elevated levels of education, increased wealth, employment, and media exposure are all linked to higher probability of having insurance.

similarly, (Karamagi et al. ,2024) and (Barasa et al. ,2021) emphasize that, even with efforts to enhance universal health coverage, inequalities in health insurance coverage and healthcare access persist across Africa. Women particularly, those with low income, less education, and living rural residence, remain among the most underinsured groups.

Large-scale analyses utilizing Demographic and Health Survey (DHS) data corroborate these systemic disparities. Specifically, Seidu (2020) demonstrates that health insurance enrolment among women aged 15–49 across Sub-Saharan Africa remains both critically low and deeply fractured, identifying household wealth, educational attainment, formal employment status, and urban residency as the primary determinants of coverage.

Research further underscores the importance of women's decision-making autonomy in facilitating access to health insurance. (Zegeye et al., 2023); for example, find that married women with greater decision-making power within the household are substantially more likely to be insured, even after accounting for socio-economic variables.

Collectively, these findings demonstrate that women's restricted insurance coverage is inextricably linked to structural inequities in education, labor market participation, income distribution, and domestic agency. These disparities simultaneously constrain formal healthcare utilization and undermine women's broader economic security and productivity.

While this regional scholarship provides vital context, Rwanda represents a unique analytical setting due to its near-universal coverage and institutionalized commitment to the Community-Based Health Insurance (CBHI) framework. Extant Rwanda-focused literature has extensively documented CBHI expansion, aggregate healthcare utilization, and macro-level financial risk protection; however, critical empirical gaps persist regarding gender-differentiated enrolment patterns, intra-household variations, and their downstream socioeconomic implications.

In Rwanda, this regional evidence provides an important lens for assessing whether gender disparities persist within a high coverage insurance system and how such disparities may intersect with household welfare, economic participation and broader development outcomes.

2.3. SYNTHESIS AND CONCLUSION OF THE LITERATURE REVIEW.

Existing literature establishes that gender inequalities in health insurance coverage remain pervasive across Sub-Saharan Africa, with rural, less-educated, and lower-income women experiencing the lowest enrolment rates (Seidu, 2020; Amu et al., 2022). Beyond macro-level socioeconomic barriers, socio-cultural and domestic dynamics dictate women's healthcare access. Specifically, limited household bargaining power, restricted autonomy, and disproportionate unpaid caregiving burdens heavily constrain insurance acquisition (Agarwal, 1997; Zegeye et al., 2023). This alignment with gender economics theory confirms that intra-household power asymmetries and the unequal distribution of resources directly restrict women's formal healthcare choices (Folbre, 1994).

Furthermore, these access disparities interact with women's distinct macroeconomic positioning to compound financial instability. Because women are concentrated in informal employment and saddled with unpaid domestic labor, lacking insurance leaves them structurally exposed. When health shocks occur, the resulting high out-of-pocket costs and increased caregiving time demands inevitably drain household income and erode systemic welfare.

Research further indicates that investment in women's health, especially maternal healthcare, is linked to enhanced human capital and improved well-being for future generations.

At the same time, the literature on development economics indicates that health insurance is vital in alleviating poverty, offering financial security, enhancing productivity, and fostering human capital development, mainly by lowering catastrophic health costs and boosting access to healthcare (Fan et al., 2024; Raghupathi & Raghupathi, 2020; World Health Organization, 2001). Unequally distributed health insurance access heavily compromises household welfare and undermines avenues for inclusive economic growth. Globally, expansion strategies targeting Universal Health Coverage (UHC) have routinely failed to eradicate deep-seated disparities in healthcare accessibility and financial risk protection (Karamagi et al., 2024; Barasa et al., 2021). This tension is particularly instructive in Rwanda one of the few Sub-Saharan nations to achieve near-universal coverage primarily through its Community-Based Health Insurance (CBHI) scheme. Consequently, Rwanda serves as a critical empirical setting to evaluate how gender differentiated healthcare access intersects with broader development trajectories.

Empirical evidence confirms that CBHI has mitigated catastrophic out-of-pocket health expenditures and insulated vulnerable populations from health-induced poverty, thereby stabilizing household economies and driving healthcare utilization.

Comparative data further indicates that Rwanda's dual structure of community-oriented and formal insurance frameworks correlates with enhanced socioeconomic well-being across genders. Nevertheless, structural barriers endure; low-income cohorts remain disproportionately burdened by indirect costs, including transportation expenses, frequent pharmaceutical stockouts, and supplementary service fees. These persistent challenges demonstrate that high enrolment metrics alone do not guarantee equitable financial insulation or healthcare parity.

Within this framework, even marginal gender asymmetries in insurance access and financial safeguarding generate compounding developmental friction. These disparities restrict women's economic participation, heighten domestic vulnerability to idiosyncratic health shocks, and stall long-term human capital accumulation. Furthermore, the literature emphasizes that income metrics alone cannot capture the realities of women's healthcare access. Rather, structural inequalities in formal employment, educational attainment, unpaid labor allocation, and domestic agency heavily dictate healthcare navigation and financial vulnerability. Examining

gendered insurance dynamics therefore requires synthesizing gender economics with broader health equity and development frameworks.

Despite an expanding body of research on the Rwandan healthcare landscape, critical empirical gaps persist. Extant literature largely prioritizes macro-level enrolment trends, aggregate utilization rates, and general CBHI performance metrics. Comparatively little analytical focus has been directed toward the gendered configurations of insurance participation, intra-household variations, and their downstream correlations with welfare and economic output within the CBHI system.

This study addresses these deficiencies by merging nationally representative Demographic and Health Survey (DHS) and Integrated Household Living Conditions Survey (EICV) datasets. By isolating the determinants of women's enrolment , assessing the variations between male- and female-headed households, and mapping the linkages between insurance participation, welfare, and economic engagement, this research offers a distinct contribution to contemporary debates on gender equity, health policy, and inclusive development in Rwanda.

2.4. Research Gap and Contribution.

While existing literature thoroughly documents gender-based healthcare disparities across Sub-Saharan Africa and aggregate performance metrics of Rwanda's CBHI expansion.
a critical analytical omission remains. Specifically limited research that explicitly examines gendered insurance participation patterns, household differences, and their broader socio-economic implications within Rwanda's CBHI system.

This study addresses these gaps by investigating gender disparities in CBHI access and their associations with welfare, economic participation, and development outcomes using nationally representative survey data.

CHAPTER THREE: METHODOLOGY.

3.0. introduction.

This chapter outlines the methodological approach used to investigate gender disparities in access to health insurance coverage in Rwanda, specifically Community-Based Health Insurance (CBHI) in Rwanda and their implications for household welfare, economic

participation , and broader development outcomes. The chapter describes the research design , data source , sample collection procedures, analytical techniques and the specific strategies used to respond each research question outlined above.

The methodology combines descriptive and econometric analysis using nationally representative household survey data. Consistent with previous studies examining inequalities in health insurance access in sub-saharan Africa (Seidu, 2020; Amu et al., 2022; Zegeye et al., 2023), the study adopts a quantitative approach to analyse patterns of health insurance coverage and socio-economic factors shaping access to health insurance , particularly among women. The methodology was therefore designed to maximise the analytical value of available national datasets while acknowledging the limitations associated with secondary cross-sectional data.

3.1. RESEARCH ANALYSIS.

This study adopts a quantitative approach, cross-sectional research design using nationally representative secondary datasets. A cross-sectional design was considered appropriate because the study seeks to examine patterns, disparities , and statistical associations rather than establish causal relationships.

The cross-sectional approach was selected because it allows the study to analyse existing patterns of community-based Health Insurance (CBHI) enrolment at a specific point in time using nationally representative survey data. In addition , the design supports the application of descriptive statistics and econometric models to examine the determinants of CBHI access and the relationship between insurance coverage and welfare related indicators.

This methodological approach is consistent with previous studies conducted in Sub-Saharan Africa that relied on Demographic Health Survey (CBHI) and the national household surveys to analyse health insurance inequalities and gendered healthcare access patterns (Seidu, 2020; Amu et al., 2022; Zegeye et al., 2023; Barasa et al., 2021). The quantitative design was therefore considered suitable for addressing the objectives of this study and generating nationally representative findings.

3.2. DATA SOURCE AND COLLECTION METHODS.

This research is based mainly on secondary data collected from the Rwanda Demographic Health Survey (RDHS) 2019/2020 and the Seventh Integrated Household Living Conditions Survey (EICV7) carried out in 2023/2024.

These datasets were chosen because they offer nationally representative data on demographic traits, socioeconomic factors, household well-being, employment status, and health insurance coverage pertinent to the study's goals.

The Rwanda DHS dataset was mainly utilized to examine gender inequalities in access to health insurance and the variations in insurance coverage between households led by females and males.

The 2019/2020 DHS of Rwanda was chosen due to its detailed data on individual health insurance coverage and types, aspects that were either lacking or less thorough in previous survey rounds. The dataset comprises respondents of both genders and includes household-level information, rendering it appropriate for examining gender disparities in Community Based Health Insurance (CBHI) enrolment.

This study also employed the Seventh Integrated Household Living Conditions Survey (EICV7), which offers up-to-date nationally representative data on poverty, household well-being, workforce involvement, and living circumstances in Rwanda. Despite EICV6 spanning a timeframe nearer to the 2019/2020 DHS, interruptions due to the COVID-19 pandemic impacted data gathering and its thoroughness. As a result, EICV7 was deemed more appropriate for examining welfare and economic participation metrics.

To anchor the interpretation and discussion of empirical findings, this research integrates grey literature and official publications from institutional bodies, including the Rwanda Social Security Board (RSSB), the Ministry of Finance and Economic Planning (MINECOFIN), the National Institute of Statistics of Rwanda (NISR), and the World Health Organization (WHO).

These institutional resources contextualize the empirical results within Rwanda's macro-level development trajectory and Vision 2050 objectives. Because the methodology synthesizes the DHS 2019/2020 and EICV7 2023/2024 datasets, the findings must be interpreted as relying on complementary, non-contemporaneous data sources. While this approach capitalizes on the

discrete analytical strengths of both datasets, it explicitly acknowledges the constraints regarding direct temporal comparability across certain analytical dimensions.

3.3. SAMPLE SELECTION.

The analytical sample derived from the EICV dataset comprises individuals aged 15 years and older. This age threshold isolates a demographic cohort directly relevant to evaluating labor force participation, socioeconomic conditions, and health insurance access. To isolate the specific determinants of women's enrolment in the CBHI framework, a subset of the analytical sample is restricted exclusively to female respondents. Within this mixed-data methodology, the DHS dataset captures broader gender asymmetries in healthcare access and variations across male- and female-headed households, while the EICV7 dataset isolates the socioeconomic predictors of CBHI enrolment alongside downstream interactions between insurance coverage, household welfare, and economic output.

To construct the final analytical dataset the EICV person-level dataset was merged with the household and poverty datasets through the household identification variable (hhid). This integration process allowed for the combination of personal demographic traits with household-level welfare metrics like poverty status, welfare quintiles, access to electricity, access to the internet, sanitation conditions, household size, and consumption per adult equivalent.

After data cleaning, recoding variables, and merging, cases with missing data on variables used in the regression models were removed from the final estimation samples as needed. Missing observation were handled through listwise deletion for variable included in specific regression models where necessary.

Nevertheless, the resulting analytical samples remained nationally representative through the application of survey weights provided within the datasets.

3.4. DATA ANALYSIS TECHNIQUES.

Empirical analyses were executed using Stata 19 software, deploying a combination of descriptive and inferential statistical methods to address the primary research objectives.

To account for the complex, multistage sampling designs inherent in both the DHS and EICV datasets, all estimations were adjusted for survey weights, clustering, and stratification using Stata's specialized survey (svy) execution commands.

This guaranteed estimates that were nationally representative and robust standard errors during the analysis. This adjustment was necessary to ensure valid population level estimates and correct variance estimation.

3.4.1. Gender Disparities in Access to CBHI.

The first research objective evaluates the extent of gender-based disparities in health insurance access, focusing specifically on Rwanda's CBHI framework. This initial analytical phase relies primarily on the Rwanda Demographic and Health Survey (DHS), which provides nationally representative data on health insurance coverage and demographic characteristics. Descriptive statistical methods including frequency distributions, percentages, and cross-tabulations were deployed to map enrolment trends, cross-referencing insurance status against sex, geographic location, educational attainment, and socioeconomic tiers.

Descriptive statistical methods were employed to examine trends in health insurance coverage for both men and women.Frequencies, percentages, and cross-tabulations were created to analyze insurance enrolment based on sex, location, education level, and socio-economic factors.

Cross-tabulation analysis was chosen as it enables comparison of categorical variables and offers a clear perspective on differences among population groups. Design modifications for the chi-square tests were also utilized to assess if the noted disparities in insurance coverage were statistically significant.This stage aimed to determine the existence and magnitude of gender gaps in access to health insurance prior to conducting multivariate analysis.

3.4.2. Socio-Economic and Demographic Factors Associated with Women's Enrolment in CBHI.

To address the second research question , the analysis examined the socio-economic and demographic factors associated with women's participation in Community-based Health Insurance (CBHI) in Rwanda. The analysis used the EICV7 dataset and focused exclusively on women aged 15 years and above.

Explanatory variables were selected based on previous literature on healthcare access and health insurance participation in Sub-Saharan Africa (Seidu, 2020; Zegeye et al., 2023). The analysis included age, level of education, marital status, place of residence, poverty classification, and welfare categories as key explanatory factors.

To improve analytical clarity and reduce model complexity, selected variables such as education, and marital status were recoded into broader analytical categories.

The dependent variable, CBHI enrolment was binary and coded as 1 for women enrolled in Community-Based Health Insurance and 0 otherwise. Given the binary nature of outcome variable, survey-weighted logistic regression analysis was employed to estimate the socio-economic and demographic and demographic factors associated with women's participation in CBHI.

Logistic regression was selected because it is appropriate for estimating the probability of occurrence of a binary outcome variable and enables interpretation through odds ratios (Hosmer, Lemeshow, & Sturdivant, 2013).

Model specification and variable selection were informed by previous literature together with the study's theoretical framework. Care was taken to minimise potential overlap among explanatory variables during model development.

The analysis was conducted progressively. Initial descriptive statistics and cross-tabulations were generated to examine the distribution of CBHI enrolment across socio-economic categories before estimating the regression model.

The general logistic regression model was expressed as:

$$\ln (P_i / (1 - P_i)) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_k X_k + \varepsilon_i.$$

Where for the variables we have it is represented as such :

$$\text{Ln}\,(P(CBHIi=1)/1-P(CBHIi=1)) = \beta_0 + \beta_1 Agei + \beta_2 Residence_i + \beta_3 Quintilei + \beta_4 Educationi + \beta_5 MaritalStatusi + \varepsilon i.$$

The final model included age, poverty status, residence , welfare quintile, education level, and marital status as explanatory variables. Survey procedures incorporating sampling weights , clustering, and stratification were applied to account for the complex survey design.

3.4.3. Differences in Insurance Access Between Female and Male Headed Households.

To address the third research question, the analysis examined differences in health insurance access between female-headed and male-headed households using the DHS household dataset. The assessment focused on whether household headship was associated with participation in Community-Based Health Insurance (CBHI).

The analysis proceeded in two stages. First, descriptive statistics were used to present the distribution of households according to the sex of the household head. Second, CBHI enrolment patterns were compared between female-headed and male-headed households to assess differences in health insurance access by household headship category.

Because the study aimed to examine household-level differences in insurance participation, the analysis relied on household survey data and incorporated the DHS complex survey design, including sampling weights, clustering, and stratification, to produce nationally representative estimates.

3.4.4. Gender Disparities, Household Welfare, and Economic Participation.

To explore the fourth research question, this study employed survey-weighted logistic regression models using the EICV7 dataset to examine the associations between gender differences, welfare conditions, economic participation, and Community-Based Health Insurance (CBHI) participation in Rwanda. Unlike the previous analysis, which focused exclusively on women, this stage included both male and female respondents aged 15 years and above.

The analysis proceeded in two complementary stages. First, a main logistic regression model was estimated to assess whether gender differences in CBHI participation remain significant after controlling for demographic, socio-economic, welfare, and household living condition characteristics. This model aimed to identify the overall determinants of CBHI enrolment and evaluate the independent association between gender and insurance participation.

Second, because the study is concerned not only with whether men and women differ in CBHI enrolment but also whether key determinants operate differently across gender groups, a set of interaction models was estimated. These models examined whether the effects of employment status (economic participation), welfare status (poverty level), and place of residence on CBHI participation vary between men and women. Interaction terms between gender and each explanatory factor were introduced to test potential gender-specific differences in enrolment patterns.

The first step examines the associations between gender, welfare indicators, economic participation, and CBHI enrolment using the Baseline model:

A. The baseline model

The baseline model will estimate the association between gender and CBHI participation after controlling for demographic characteristics, economic participation, welfare conditions, and household living conditions. The model included age, employment status, poverty status, education, marital status, residence, electricity access, internet access, sanitation facilities, and cooking fuel.

$$\text{Logit}\,(P(CBHIi=1)) = \beta 0+\beta 1 Genderi+\beta 2 Employmenti+\beta 3 Welfarei+\beta 4 Xi+\varepsilon i$$

where:

CBHIi = participation in Community-Based Health Insurance for individual *i*.
Genderi = sex of respondent (0 = male, 1 = female).
Employmenti = employment status (0 = not employed, 1 = employed).
Welfarei = household welfare indicators including poverty status.
Xi = vector of control variables including age, education, marital status, residence, electricity access, internet access, sanitation, and cooking fuel.
εi= error term.

The model estimates the associations between gender, economic participation, welfare conditions, and CBHI enrolment while accounting for complex survey design through sampling weights, clustering, and stratification.

B. Gender Interaction Models (Three Separate Models).

To assess whether key determinants of CBHI participation operate differently across gender groups, three separate interaction models were estimated. These models examined whether the effects of employment status, welfare status (poverty level), and residence on CBHI participation varied between men and women.

Three interaction models were estimated:

Gender × Employment Model

Gender × Welfare (Poverty Status) Model

Gender × Residence Model

These models tested whether employment, welfare conditions, and place of residence affected CBHI participation differently across gender groups.

(a) Gender × Employment Interaction Model

The first interaction model examined whether the association between economic participation and CBHI enrolment differed between men and women.

$$\textbf{Logit } (P(CBHIi=1))= \beta 0 + \beta 1 \text{ Genderi} + \beta 2 \text{Employmenti} + \beta 3(\text{Genderi} \times \text{Employmenti}) + \beta 4 Xi + \varepsilon i$$

(b) Gender × Welfare Status Interaction Model

The second interaction model examined whether household welfare conditions influence CBHI participation differently between Men and Women.

$$\text{logit}(P(CBHIi=1))= \beta 0 + \beta 1 \text{Genderi} + \beta 2 \text{Welfarei} + \beta 3(\text{Genderi} \times \text{Welfarei}) + \beta 4 Xi + \varepsilon i$$

(c) Gender × Residence Interaction Model.

The third interaction model evaluated whether residential location shapes gender differences in CBHI participation.

$$\text{logit}(P(CBHIi=1)) = \beta 0 + \beta 1 \text{Genderi} + \beta 2 \text{Residencei} + \beta 3(\text{Genderi} \times \text{Residencei}) + \beta 4 Xi + \varepsilon i.$$

Regression coefficients were interpreted using **log-odds coefficients (b)**, statistical significance levels, and standard errors. Positive coefficients indicate a higher likelihood of CBHI participation, whereas negative coefficients indicate a lower likelihood of enrolment relative to the reference category

CHAPTER FOUR: RESULTS AND DISCUSSION.

4.0. Introduction

This chapter presents the empirical findings of the study based on analyses conducted using the DHS and EICV7 datasets. The results are organised according to the study's research questions. The chapter examines gender differences in CBHI participation, determinants of women's enrolment, differences between female-headed and male-headed households, and the associations between gender, welfare conditions, and economic participation in health insurance participation.

4.1. GENDER DIFFERENCES IN ACCESS TO COMMUNITY-BASED HEALTH INSURANCE (CBHI) IN RWANDA.

This section presents the findings related to the first research question concerning gender differences in access to Community-Based Health Insurance (CBHI) in Rwanda using data from the 2019/2020 Rwanda Demographic and Health Survey (RDHS). The analysis first examines overall health insurance coverage and the main types of insurance coverage in Rwanda before focusing on gender differences in CBHI enrolment and variations across selected socio-economic characteristics, including residence, province, and wealth status.

4.1.1. Distribution of Health Insurance Coverage

Figure 4.1: Overall, Health Insurance Coverage in Rwanda

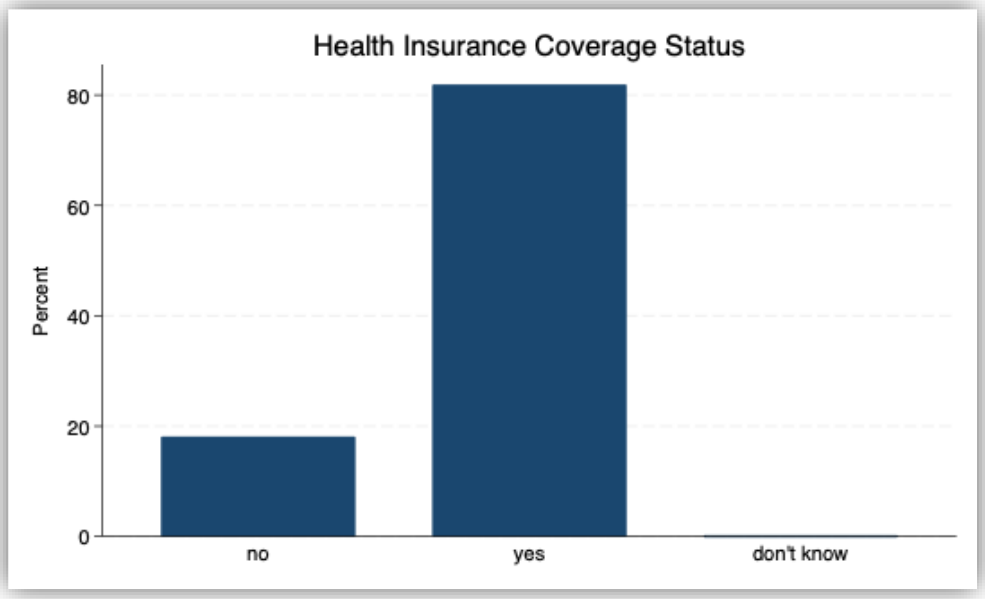


Table 4.1: Distribution of Health Insurance Coverage

covered by insurance	Freq.	Percent	Cum.
no	10,109	18.08	18.08
yes	45,785	81.88	99.95
don't know	26	0.05	100.00
Total	55,920	100.00	

Source: RDHS 2019/2020 data.

The survey-weighted estimates show that approximately 81.9% of individuals were covered by some form of health insurance, while about 18.1% remained uninsured and around 0.05% have no insurance at all.

These findings indicate that Rwanda has achieved a relatively high level of health insurance coverage, largely driven by the expansion of Community-Based Health Insurance (CBHI). These findings reflect Rwanda's substantial progress towards Universal Health Coverage (UHC), particularly through the implementation and expansion of CBHI schemes.

The high level of insurance coverage observed in this study is consistent with previous studies identifying Rwanda as one of the leading countries in Sub-Saharan Africa in terms of health insurance coverage and social health protection (Urban et al., 2016).

Nevertheless, the persistence of uninsured individuals suggests that barriers to healthcare coverage continue to exist among certain population groups. Highlighting the importance of examining disparities beyond national coverage.

4.1.2. Distribution of Health Insurance Types

Table 4.2: Main Types of Health Insurance Coverage

name of main type of health insurance	Freq.	Percent	Cum.
mutelle/community health insurance	42,624	93.10	93.10
rama/rssb	2,153	4.70	97.80
mmi	588	1.28	99.08
private insurance company	220	0.48	99.56
employer	18	0.04	99.60
other	181	0.40	100.00
don't know	1	0.00	100.00
Total	45,785	100.00	

Source: RDHS 2019/2020 data.

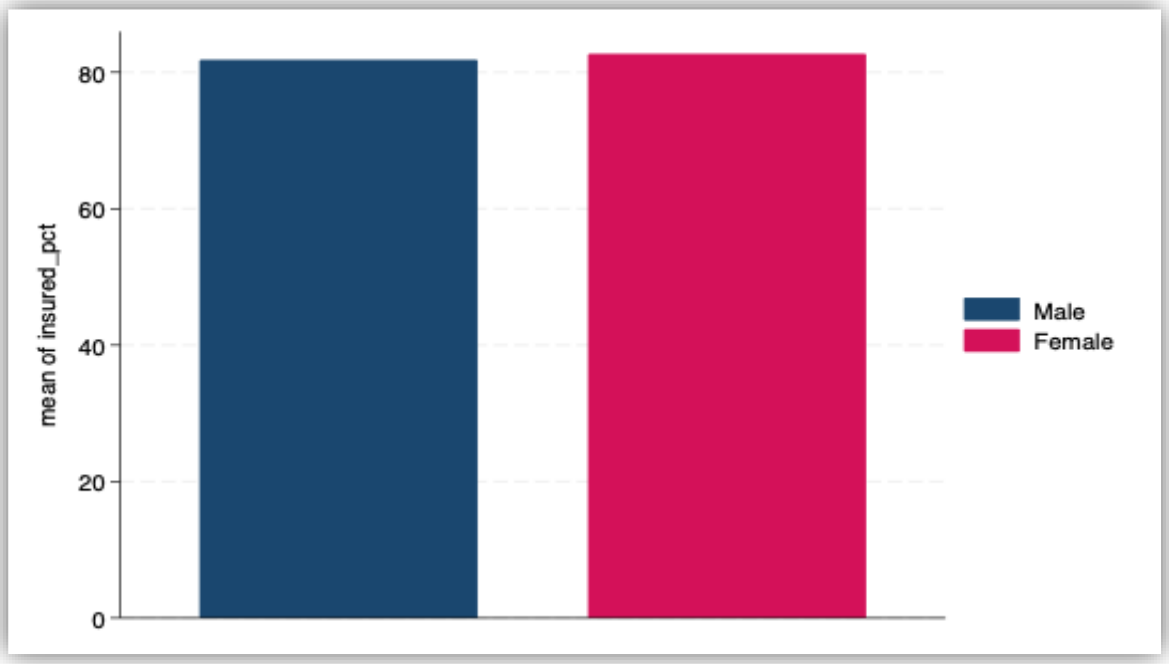
The result in the table above indicates that Community-Based Health Insurance (CBHI), commonly known as *Mutuelle de Santé*, was by far the dominant form of health insurance coverage in Rwanda. Among insured respondents, approximately **93.1%** were enrolled in CBHI. Other insurance schemes such as RSSB/RAMA, MMI, and private insurance collectively represented only a small proportion of total coverage.

These findings demonstrate the central role of CBHI within Rwanda's healthcare financing system and further confirm the scheme's importance in expanding access to healthcare services among the population. The dominance of CBHI is consistent with Rwanda's long-standing policy emphasis on community-based health financing mechanisms aimed at improving healthcare accessibility and reducing financial vulnerability **(Urban et al., 2016)**.

The strong concentration of insured individuals within CBHI further justifies the study's focus on Community-Based Health Insurance as the principal mechanism through which healthcare access is experienced by most Rwandans.

4.1.4. CBHI Coverage by Gender

Figure 4.2: Overall, Gender Distribution of Health Insurance



Source: RDHS 2019/2020 data.

Table 4.3: overall gender distribution of health insurance.

female	Covered by health insurance 0	1	8	Total
Male	.1922	.8072	6.7e-04	1
Female	.1827	.817	3.3e-04	1
Total	.1871	.8124	4.9e-04	1

Key: Row proportion

Pearson:
Uncorrected chi2(2) = 11.5728
Design-based F(1.84, 809.66) = 4.7499 P = 0.0108

Source: RDHS 2019/2020 data

These findings indicate a slight difference in health insurance coverage between men and women. The estimates show that approximately **81%** of women were insured compared to

about **80%** of men. Conversely, men recorded slightly higher uninsured proportions than women.

The design-based chi-square test further revealed that the observed difference was statistically significant at the 5% level ($p < 0.05$), suggesting that gender remains associated with variations in health insurance access in Rwanda.

The slightly higher insurance coverage observed among women may be consistent with Rwanda's emphasis on maternal, reproductive, and community health programmes., community health efforts, and strategies aimed at vulnerable population groups.

However, higher enrolment among women does not necessarily imply equal access to healthcare resources, financial protection, or decision- making power within households. Coverage levels alone may therefore be insufficient indicators of gender equity in healthcare access.

Given the dominance of CBHI within Rwanda's health insurance system, the analysis next examines whether participation in CBHI differs between men and women

Table 4.4: CBHI Coverage by Gender.

female	insurance type: Other/No	CBHI	Total
Male	.2506	.7494	1
Female	.2348	.7652	1
Total	.2422	.7578	1

Key: Row proportion

Pearson:
Uncorrected chi2(1) = 18.7563
Design-based F(1, 440) = 23.5660 P = 0.0000

Source: RDHS 2019/2020 data.

The results presented in Table 4.4 further illustrate differences in CBHI enrolment between male and female respondents. Approximately 76.5% of female respondents were enrolled in CBHI compared to 74.9% of male respondents.

The chi-square test based on design revealed a statistically significant relationship between gender and CBHI enrolment ($p<0.05$), affirming that gender disparities in accessing CBHI persist in Rwanda.

These results indicate that while Rwanda has attained extensive insurance coverage, gender-related disparities still persist. The results may also reflect the broader influence of social protection policies and healthcare programmes that prioritise maternal and community healthcare services.

4.1.5. CBHI Distribution Across Socio-Economic Characteristics.

The analysis further examined variations in CBHI enrolment across selected socio-economic characteristics including residence, province, and household wealth status.

Table 4.5: CBHI Coverage by Residence

type of place of residence	insurance type		
	Other/No	CBHI	Total
urban	.3178	.6822	1
rural	.2266	.7734	1
Total	.2422	.7578	1

Table 4.6: CBHI Coverage by Province

region	insurance type		
	Other/No	CBHI	Total
kigali	.322	.678	1
south	.2152	.7848	1
west	.245	.755	1
north	.1595	.8405	1
east	.2704	.7296	1
Total	.2422	.7578	1

Table 4.7: CBHI Coverage by Wealth Quintile

wealth index combined	insurance type		
	Other/No	CBHI	Total
poorest	.3382	.6618	1
poorer	.2239	.7761	1
middle	.1686	.8314	1
richer	.1833	.8167	1
richest	.2969	.7031	1
Total	.2422	.7578	1

The findings in above tables revealed notable variations in CBHI enrolment across socio-economic groups. Rural residents generally exhibited higher levels of CBHI coverage compared to urban residents, at the same time, higher rural participation may also reflect more limited access to alternative insurance arrangements compared with urban populations, where formal and private insurance schemes are common.

In Rwanda, the Community-Based Health Insurance (CBHI) policies have historically aimed to improve access to healthcare and provide financial security for those living in rural areas and facing economic hardships. This may partly explain the higher enrolment rates in these regions. (Urban et al., 2016).

Interestingly, there are also noticeable differences among wealth groups. Households with lower and middle incomes tend to engage more with CBHI compared to wealthier families. This phenomenon can be interpreted through the notion that people with higher incomes often opt for other insurance options like RSSB/RAMA, MMI, or private health insurance. These findings reinforce the role of CBHI as an important insurance mechanism for lower-income and potentially vulnerable populations. (Urban et al., 2016; Barasa et al., 2021).

Variations in CBHI enrolment among provinces were also apparent, indicating that geographical disparities and socio-economic factors still affect health insurance access patterns throughout Rwanda.

Overall, the findings suggest that although Rwanda has made substantial progress in expanding health insurance coverage, disparities linked to gender, residence, and socio-economic conditions remain relevant in understanding access to Community-Based Health Insurance.

4.2 . SOCIO-ECONOMIC AND DEMOGRAPHIC FACTORS ASSOCIATED WITH WOMEN'S ENROLMENT IN CBHI.

This section presents the findings related to the second research question concerning the socio-economic and demographic factors associated with women's enrolment in Community-Based Health Insurance (CBHI) in Rwanda.

Using the EICV 7 national household survey (2023/2024), the analysis focused on women aged 15 years and above . this section first presents descriptive patterns of CBHI participation across selected socio-economic characteristtics before presenting survey-weighted logistic regression results examing the factors associated with women's enrolment in CBHI.

4.2.1. descriptive presentation of CBHI Enrolment Across Socio-Economic Characteristics.

Table 4.12: CBHI Enrolment by Education Level.

Education level	cbhi 0	1	Total
No/Pre-p	0	1	1
Primary	.1568	.8432	1
Secondar	.1776	.8224	1
Tertiary	.4577	.5423	1
Total	.1822	.8178	1

Key: Row proportion

Pearson:
Uncorrected chi2(3) = 634.6753
Design-based F(2.91, 4701.17)= 172.7610 P = 0.0000

Source: EICV 2023/2024 data.

The results presented above show variations in CBHI enrolment according to women's educational attainment. Women with **primary and secondary education** demonstrated relatively higher participation in CBHI compared to women with tertiary or advanced education.

The comparatively lower enrolment among women with tertiary education may be explained by a greater reliance on alternative insurance schemes such as RSSB/RAMA or private health insurance.

These findings suggest an association between educational attainment and women's participation in CBHI. Higher educational attainment may be linked to greater awareness of

healthcare services , better understanding of insurance benefits , and improved ability to navigate healthcare systems.

The observed pattern is broadly consistent with studies in Sub-Saharan Africa showing positive relationship between education , healthcare utilisation and insurance participation among women (Seidu, 2020; Zegeye et al., 2023).

Welfare Quintiles / Poverty Status

Table 4.13: CBHI Enrolment by Welfare (poverty).

Welfare Categories	cbhi 0	cbhi 1	Total
Severaly	.2544	.7456	1
Moderate	.1989	.8011	1
Non Poor	.1698	.8302	1
Total	.18	.82	1

Key: **Row proportion**

Pearson:
Uncorrected chi2(2) = **60.4735**
Design-based F(**1.99, 3213.40**)= **14.5522** P = **0.0000**

The results further reveal differences in CBHI participation according to women's welfare and poverty status. Women classified as **moderately poor and non-poor** demonstrated relatively higher participation in CBHI enrolment compared to severely poor women. The findings also show that poorer women constitute a relatively higher proportion of individuals without CBHI coverage. This finding suggests that financial barriers may continue to influence insurance participation despite Rwanda's strong commitment to universal Health Coverage.

In contrast to the trend seen in education, the reduced involvement of poorer women might indicate that certain at-risk groups are completely uninsured, even with the aim of increasing universal health coverage.

Conversely, reduced involvement among non-poor women might partially indicate the utilization of different health insurance programs apart from CBHI. The link between poverty status and CBHI involvement was statistically significant, suggesting a robust connection between women's socio-economic circumstances and health insurance enrolment.

Table 4.14: CBHI Enrolment by Residence.

Residence area	cbhi 0	1	Total
Urban	.2511	.7489	1
Rural	.1507	.8493	1
Total	.18	.82	1

Key: **Row proportion**

Pearson:
Uncorrected chi2(1) = **295.6330**
Design-based F(1, 1614) = **140.3705** P = **0.0000**

Source: EICV7 2023/2024 data.

The findings further reveal differences in women's CBHI enrolment according to place of residence. Similar to the patterns observed in the previous section, rural women demonstrated relatively higher CBHI participation compared to urban women.

This pattern is consistent with the historically rural orientation of Rwanda's CBHI programme, which has traditionally focused on expanding healthcare access among rural and lower-income populations.

Table 4.15: CBHI Enrolment by Marital Status.

Marital status	cbhi 0	1	Total
Never ma	.1732	.8268	1
Married/	.186	.814	1
Formerly	.1771	.8229	1
Total	.18	.82	1

Key: **Row proportion**

Pearson:
Uncorrected chi2(2) = **4.9879**
Design-based F(1.98, 3198.31)= **2.3224** P = **0.0987**

Source: EICV7 2023/2024 data.

The findings also indicate variations in CBHI enrolment across marital status categories. Although the association was not statistically significant (p = 0.09), observable differences in participation patterns were present. Never married and formerly married women displayed relatively higher CBHI participation compared with married women. However, these groups

also accounted for relatively larger proportions of uninsured women. These patterns may reflect differences in household arrangements, financial circumstances, or decision-making dynamics related to health insurance participation.

4.2.2. Logistic Regression analysis Results.

Table 4.16: Survey-Weighted Logistic Regression Results for the socio-economic and demographic Factors Associated with Women's Enrolment in CBHI.

Factors Associated with Women's Enrolment in CBHI

	(1)	
	Model 1	
	b	**se**
cbhi		
Age (Years)	1.005***	(0.002)
Severely Poor	1.000	(.)
Moderately poor	1.292*	(0.172)
Non-Poor	1.689***	(0.308)
Urban	1.000	(.)
Rural	1.536***	(0.109)
Q1	1.000	(.)
Q2	1.131	(0.135)
Q3	1.363**	(0.210)
Q4	1.516***	(0.234)
Q5	1.160	(0.184)
Primary or less	1.000	(.)
Secondary level	1.744***	(0.111)
Tertiary	1.000	(.)
Never married	1.000	(.)
Married/Cohabiting	0.825***	(0.049)
Formerly married	0.647***	(0.057)
Observations	17409	

Source: computation from EICV7 2023/2024 data.

Results for the Model Estimation.

The survey-weighted logistic regression results indicate that age, residence, poverty status, education, welfare category, and marital status are important factors associated with women's participation in CBHI in Rwanda.

Consistent with prior studies, the survey-weighted logistic regression results presented in the table above show that **age, residence, welfare status, education, and marital status** all play significant roles in determining whether women participate in CBHI. These patterns indicate the structural socio-economic disparities and the organizational framework of Rwanda's health financing system.

Age was shown to be positively associated with CBHI enrolment, indicating that older women are more likely to participate in CBHI. Each additional year of age increased the odds of enrolment by approximately **0.5%** (**OR = 1.005, p < 0.001**). This observation might indicate that older women have heightened healthcare requirements and thus have stronger motivations to retain health insurance.

Economic status to be a significant predictor of women's participation in CBHI, assessed through poverty status factor. Compared to severely poor women, moderately poor women (**OR = 1.292, p < 0.10**) and non-poor women (**OR = 1.689, p < 0.001**) exhibited notably greater odds of enrolment, by approximately **29%** and **69%** respectively.
They further suggest that financial capacity continues to facilitate access to and participation in CBHI.

Residence also played a significant role in the analysis. Rural women were significantly more likely to enrol in CBHI than their urban counterparts (**OR = 1.536, p < 0.001**). This finding reflects the historically rural orientation of Rwanda's Community-Based Health Insurance programme, which primarily targeted vulnerable and lower-income populations in rural communities, consistent with previous studies (Urban et al., 2016).

Additional analysis of welfare quintiles, indicating household welfare and consumption rates, indicated that women in the middle welfare categories had greater chances of CBHI enrolment. Women in **Q3 (OR = 1.363, p < 0.05)** and **Q4 (OR = 1.516, p < 0.001)** showed notably greater

odds of enrolment relative to those in the lowest consumption quintile. Nonetheless, Q2 and Q5 did not show statistical significance. The lack of a noteworthy link among women in the wealthiest quintile (Q5) could indicate that affluent households often depend on other insurance options like RSSB/RAMA or private health insurance plans.

Education played a significant role in influencing women's involvement in CBHI. The findings indicate that women with secondary education had significantly greater chances of enrolling **(OR = 1.744, p < 0.001)** when compared to those with primary education or lesser educational qualifications. This finding suggests that education might enhance enrolment by increasing health awareness, expanding access to information, and fostering better health-seeking behaviour.

The tertiary education category displayed limited independent explanatory power within the final specification after controlling for socio-economic variables.

Women's participation in CBHI was also statistically linked to marital status. Women who are married or cohabiting (**OR = 0.825, p < 0.001)** and those who were previously married **(OR = 0.647, p < 0.001)** exhibited lesser odds of enrolment compared to women who have never been married.

Overall, the findings indicate that women's participation in Community-Based Health Insurance in Rwanda is shaped by a combination of demographic and socio-economic factors, including age, residence, poverty status, educational attainment, welfare category and marital status.

4.3.DIFFERENCES IN HEALTH INSURANCE ACCESS BETWEEN FEMALE AND MALE HEADED HOUSEHOLDS.

This section presents the findings related to the third research question concerning differences in health insurance access between female-headed and male-headed households in Rwanda. Using the DHS household dataset, the analysis examines the distribution of households by sex of household head and compares patterns of Community-Based Health Insurance (CBHI) participation across household headship categories.

4.3.1. Distribution of Households by Sex of Household Head

Table 4.8: Distribution of Households by Sex of Household Head

female_head	Freq.	Percent	Cum.
Male-headed	40,956	73.24	73.24
Female-headed	14,964	26.76	100.00
Total	55,920	100.00	

Source: RDHS 2019/2020 data.

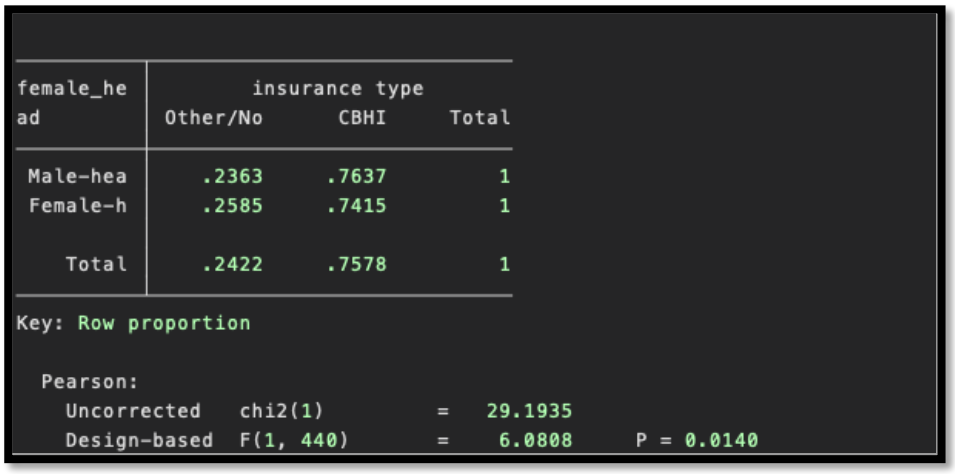
The distribution of households by sex of household head indicates the continued predominance of male-headed households in Rwanda, which accounted for approximately **73.2%** of all households in the sample, compared to **26.8%** female-headed households.

Despite this imbalance, female-headed households still constitute a substantial proportion of households nationally, making their inclusion important in analyses of healthcare access and household welfare.

The relatively higher proportion of male-headed households reflects broader household and socio-economic structures commonly observed across many Sub-Saharan African countries, where men continue to dominate household leadership and economic decision-making roles (Agarwal, 1997). However, the significant presence of female-headed households also highlights the importance of examining whether household headship influences access to Community-Based Health Insurance (CBHI) and healthcare-related welfare outcomes.

4.3.2. CBHI Coverage by Household Headship.

Table 4.9: CBHI Coverage by Sex of Household Head.



female_head	insurance type		
	Other/No	CBHI	Total
Male-hea	.2363	.7637	1
Female-h	.2585	.7415	1
Total	.2422	.7578	1

Key: Row proportion

Pearson:
Uncorrected chi2(1) = 29.1935
Design-based F(1, 440) = 6.0808 P = 0.0140

Source: RDHS 2019/2020 data.

Male-headed households show slightly higher CBHI enrolment **(76.4%)** than female-headed households **(74.2%)**. Conversely, a larger share of female-headed households is not enrolled **(25.8%)** compared with male-headed households (**23.6%)**. These differences are **statistically significant**, indicating that household headship is associated with variation in CBHI coverage in Rwanda.

While households led by male constitutes a greater share of the sample, the reduced CBHI participation noted in female headed households may indicate wider socio-economic disparities associated with income stability, caregiving roles, and decision-making dynamics within households. These findings suggest that household structure remains relevant to understanding health insurance participation, even within a national system characterised by relatively overall coverage.

Previous research indicates that households led by women tend to be more economically at risk and may face increased financial difficulties when it comes to assessing healthcare and sustaining Insurance coverage (Agarwal, 1997; Beegle et al., 2001).

overall, the comparatively high participation CBHI observed across both household categories demonstrates the important role played by Rwanda's CBHI Programme in increasing healthcare access among vulnerable population groups. Rwanda's focus on universal health coverage and community-based insurance mechanisms has contributed significantly to reducing financial barriers to healthcare access, particularly among lower-income household (Urban et al., 2016).

Overall, the findings suggest that despite Rwanda's significant progress towards expanding health insurance coverage, household structure and socio-economic vulnerability continue to influence healthcare access and insurance participation.

The differences noted between households led by females and those led by males reinforce earlier studies indicating that gender dynamics, negotiating strength, and financial vulnerability are crucial factors influencing healthcare access in households (Agarwal, 1997; Beegle et al., 2001).

4.4. ASSOCIATIONS BETWEEN GENDER DIFFERENCES, WELFARE AND ECONOMIC PARTICIPATION.

To answer the fourth research question, this section examines the associations between gender differences in health insurance access and indicators of household welfare and economic participation using the EICV7 dataset. Unlike the previous research question, which focused exclusively on women, this stage of the analysis included both male and female respondents aged 15 years and above.

The analysis relied on survey-weighted logistic regression models to assess whether gender differences in Community-Based Health Insurance (CBHI) participation remained significant after controlling for demographic, socio-economic, welfare, and household living conditions. Additional interaction models were estimated to examine whether the relationships between economic participation, welfare status, and CBHI enrolment differed across gender groups.

Table 4.16. Main logistic regression Model Results of CBHI Enrolment .

Gender Differences in CBHI Participation		
	(1)	
	Model 1	
	b	se
cbhi		
Male	0.000	(.)
Female	0.101***	(0.026)
Age (Years)	0.004***	(0.002)
Not employed	0.000	(.)
Employed	-0.292***	(0.038)
Severaly Poor	0.000	(.)
Moderately poor	0.335***	(0.112)
Non-Poor	0.748***	(0.109)

No/Pre-primary	0.000	(.)
Primary	0.515	(1.173)
Secondary	0.314	(1.174)
Tertiary/TVET	-1.214	(1.168)
Never married	0.000	(.)
Married/Cohabiting	-0.214***	(0.052)
Formerly married	-0.410***	(0.080)
Urban	0.000	(.)
Rural	0.417***	(0.062)
No electricity	0.000	(.)
Has electricity	0.486***	(0.060)
No internet	0.000	(.)
Internet access	-0.255***	(0.059)
Unimproved toilet	0.000	(.)
Improved toilet	0.528***	(0.104)
Traditional cooking	0.000	(.)
Clean cooking	-0.135	(0.106)
Constant	-0.448	(1.181)
Observations	34935	

Source: computation from EICV7 2023/2024 data.

The above table presents the results of the survey logistic regression model examining the associations between gender differences, welfare conditions, economic participation, and participation in Community-Based Health Insurance (CBHI) in Rwanda.

The model accounts for the complex survey design using sampling weights, clustering, and stratification and is based on **34,935 observations**, representing an estimated population of **7,644,570 individuals**. The model is statistically significant ***(F (15,1614) = 77.84, p < 0.001)***, indicating that the explanatory variables jointly contribute to variations in CBHI participation.

The findings show that **gender is significantly associated with CBHI participation**. Women demonstrate a higher likelihood of participation compared with men ***(b = 0.101, p < 0.001)***.

Regarding **economic participation**, employment status is negatively associated with CBHI enrolment, with employed individuals being less likely to participate than those not employed ***(b = –0.292, p < 0.001).*** Age is positively associated with participation ***(b = 0.004, p < 0.05)***, suggesting slightly higher enrolment among older individuals.

Welfare conditions emerge as important determinants of CBHI participation. Compared with severely poor individuals, those from moderately poor ***(b = 0.335, p < 0.01)*** and non-poor households ***(b = 0.748, p < 0.001)*** exhibit significantly higher participation. Similarly, access to electricity ***(b = 0.486, p < 0.001)*** and improved sanitation facilities ***(b = 0.528, p < 0.001)*** are positively associated with CBHI enrolment, while internet access is negatively associated ***(b = –0.255, p < 0.001)***.

Additional demographic characteristics also show significant associations. Married/cohabiting ***(b = –0.214, p < 0.001)*** and formerly married individuals ***(b = –0.410, p < 0.001)*** are less likely to participate compared with never-married individuals. Rural residents display higher participation than urban residents ***(b = 0.417, p < 0.001)***. By contrast, educational attainment and clean cooking fuel are not significantly associated with CBHI participation.

Overall, the results indicate that gender differences, welfare conditions, and economic participation are significantly associated with CBHI participation in Rwanda. Women and individuals with stronger welfare characteristics demonstrate higher participation, whereas employment status shows a negative relationship with enrolment.

Table 4.17: Gender and Employment+Poverty+Residence Interaction Model Results.

Interaction Effects of Gender with Employment, Poverty and Residence on CBHI Participation.						
	(1)		**(2)**		**(3)**	
	Gender×Employment		**Gender×Poverty**		**Gender×Residence**	
	b	se	b	se	b	se
cbhi						
Male	0.000	(.)	0.000	(.)	0.000	(.)
Female	0.107***	(0.038)	0.104**	(0.043)	0.104**	(0.043)
Not employed	0.000	(.)	0.000	(.)	0.000	(.)
Employed	-0.291***	(0.048)	-0.295***	(0.037)	-0.295***	(0.037)
Male # Not employed	0.000	(.)				
Male # Employed	0.000	(.)				
Female # Not employed	0.000	(.)				

Female # Employed	-0.008	(0.057)				
Age (Years)	0.005***	(0.002)	0.005***	(0.002)	0.005***	(0.002)
Severaly Poor	0.000	(.)	0.000	(.)	0.000	(.)
Moderately poor	0.390***	(0.111)	0.390***	(0.111)	0.390***	(0.111)
Non-Poor	0.848***	(0.106)	0.849***	(0.106)	0.849***	(0.106)
No/Pre-primary	0.000	(.)	0.000	(.)	0.000	(.)
Primary	0.362	(1.123)	0.363	(1.122)	0.363	(1.122)
Secondary	0.186	(1.124)	0.187	(1.123)	0.187	(1.123)
Tertiary/TVET	-1.425	(1.120)	-1.424	(1.119)	-1.424	(1.119)
Never married	0.000	(.)	0.000	(.)	0.000	(.)
Married/Cohabiting	-0.217***	(0.051)	-0.217***	(0.051)	-0.217***	(0.051)
Formerly married	-0.463***	(0.078)	-0.462***	(0.078)	-0.462***	(0.078)
Urban	0.000	(.)	0.000	(.)	0.000	(.)
Rural	0.409***	(0.057)	0.410***	(0.063)	0.410***	(0.063)
Male # Urban			0.000	(.)	0.000	(.)
Male # Rural			0.000	(.)	0.000	(.)
Female # Urban			0.000	(.)	0.000	(.)
Female # Rural			-0.001	(0.051)	-0.001	(0.051)
Constant	0.354	(1.126)	0.354	(1.125)	0.354	(1.125)
Observations	34947.000		34947.000		34947.000	

Source: computation from EICV7 2023/2024 data.

the above table results represents the interaction models examining whether the associations between employment, poverty status and residence with CBHI participation differ between men and women.

The **Gender × Employment** model indicates that, compared with men, women are significantly more likely to participate in CBHI ***(b = 0.107, p < 0.01)***. Employment is negatively associated

with participation ***(b = −0.291, p < 0.001)***, indicating lower enrolment among employed individuals relative to those not employed. However, the interaction term between **gender and employment** is not statistically significant ***(b = −0.008, p > 0.05)***. This suggests that the effect of employment on CBHI participation does not differ significantly between men and women. In other words, although women show higher overall enrolment than men, employment affects both groups similarly.

The **Gender × Welfare Status** model reveals more nuanced gender differences in enrolment patterns. Relative to severely poor individuals, moderately poor ***(b = 0.390, p < 0.001)*** and non-poor individuals ***(b = 0.849, p < 0.001)*** exhibit higher CBHI participation. Compared with men, women also demonstrate higher enrolment ***(b = 0.104, p < 0.05)*.** However, the negative interaction coefficients for Women × Moderately Poor ***(b = −0.199, p < 0.10)*** and Women × non-Poor ***(b = −0.168, p < 0.10)*** indicate that improvements in welfare status are associated with slightly smaller increases in participation among women than among men. While better welfare conditions increase enrolment for both genders, the enrolment advantage associated with improved welfare appears stronger among men.

The **Gender × Residence** model further examines whether residence shapes enrolment differently for men and women. Compared with men, women maintain higher participation levels, while rural residence remains positively associated with CBHI enrolment. Nevertheless, the interaction between **gender and rural residence** is not statistically significant, indicating that residence influences CBHI participation in comparable ways across gender groups. Thus, although women generally display greater enrolment than men, rural residence does not significantly alter the gender gap in CBHI participation.

Overall, the interaction analyses suggest that women demonstrate higher CBHI participation than men across models. However, the influence of employment and residence on enrolment does not significantly vary by gender, whereas welfare status shows modest gender variation, with improvements in welfare appearing to strengthen participation somewhat more strongly among men than among women.

4.5. GENDER DISPARITIES IN HEALTH INSURANCE IN RWANDA AND RWANDA'S 2050 DEVELOPMENT FRAMEWORK.

This last research question considers the broader development implications of gender differences in health insurance access within the context of Rwanda's
Vision 2050 framework.

Rwanda's Vision 2050 provides a plan to transform the country into a high-income economy. A key objective is to ensure all citizens have universal access to quality healthcare services (MINECOFIN).

This research question seeks to place the observed patterns of gender, welfare, and economic participation within Rwanda's long-term development agenda. Findings from Research Question 1 indicate that Rwanda continues to maintain high levels of health insurance coverage, with the Community-Based Health Insurance (CBHI) being the main form of participation.

While these findings are consistent with previous studies showing that Rwanda is a leading country toward Universal health coverage across sub saharan Africa ((Urban et al., 2016). the analysis highlights ongoing gaps in enrolment across genders and socio-economic groups. At the same time , the findings suggest that high overall insurance coverage should not automatically be interpreted as evidence of complete equity, since variations across gender and socio-economic groups continue to emerge within patterns of participation.

The findings from research **Questions 2** and **4** , indicate meaningful associations between health insurance participation and demographic , socio-economic , and welfare factors including age, poverty status, residence , employment and education.

These findings suggest that participation in health insurance is closely associated with welfare conditions and socio-economic positioning rather than operating indepently from them. Similar studies done in Sub-Saharan Africa have pointed out that socio-economic inequalities, women's independence and household situation remain essesntial determinants of insurance participation and healthcare access. Seidu, 2020; Zegeye et al., 2023; Karamagi et al., 2024).

In Rwanda, the high rates of community based health insurance (CBHI) participation broadly align with national objectives related to human capital development, poverty reduction, and

inclusive economic development. However, the persistence of differences associated with gender, welfare conditions , employment status and household circumstances suggests that continued expansion of coverage alone may not fully guarantee equitable healthcare access and development outcomes.

If disparities associated with socio-economic position and gender persist, they may continue to influence women's economic participation, household resilience, and access to healthcare services, potentially affecting progress toward broader development objectives.

From the perspective of Vision 2050, the findings suggest that continued progress in equitable health insurance access may contribute to Rwanda's broader development goals, particularly those relating to strengthened human capital, improved welfare outcomes , social inclusion and reduced vulnerability. These findings therefore reinforce the importance of ensuring that health insurance systems are not evaluated solely through overall coverage levels but also through their inclusiveness, equity, and capacity to support broader development objectives.

In this regard , health insurance participation represents not only a healthcare outcome but also a component of Rwanda's wider socio-economic development path (WHO, 2001; Fan et al., 2024; Pal & Sharma, 2025).

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS.

5.1. Conclusion.

This study examined gender differences in access healthcare insurance specifically the Community-Based Health Insurance (CBHI) in Rwanda and analysed how participation patterns relate to household welfare conditions, economic participation, and broader development considerations within the context of Rwanda's Vision 2050 Framework.

One of the most important findings of this study is that women were not systematically less enrolled in CBHI than men. In some analyses, women showed slightly higher participation. At first glance, this appears to contradict both the initial expectations of the research and a large body of literature from Sub-Saharan Africa that frequently associates women with lower insurance participation and greater barriers to healthcare access (Seidu, 2020; Amu et al., 2022). However, Rwanda's context may help explain this outcome.

Rwanda's health system has historically placed strong emphasis on maternal and reproductive healthcare, Community-based Health interventions, and insurance expansion. In such a setting, higher female enrolment is not entirely unexpected. Previous studies on Rwanda's healthcare model similar highlight the important role of CBHI in expanding healthcare utilisation and financial protection, particularly among studies on vulnerable groups (Saksena et al., 2011; Chemouni, 2018).

Yet these findings should not be interpreted as evidence that gender inequality in healthcare access has disappeared. One of the broader lessons emerging from this study is that gender disparities cannot be assessed through enrolment figures alone. The analysis consistently showed that participation patterns remain strongly connected to welfare conditions, residence, household structure, and socio-economic positioning. In this sense, inequality may operate less through exclusion from enrolment and more through the structural conditions that shape access, affordability, and healthcare security.

At the same time, the findings suggest that women should not be viewed as a uniform category within the health insurance system. Although women overall demonstrated relatively strong participation in CBHI, important internal differences remained. Women facing poverty, lower educational attainment, and lower household consumption levels generally showed weaker participation patterns than more socio-economically advantaged women. These findings are broadly consistent with earlier literature suggesting that women with limited resources face greater healthcare barriers, including financial constraints and reduced access to healthcare security (Nakuduti, 2014). Such disparities may have broader implications for women's health, healthcare utilisation, and financial protection, while also affecting household welfare, human capital development, and inclusive development outcomes.

This became particularly visible in the household analysis where female headed households recorded lower CBHI participation than male headed households. While the difference was modest, it was statistically significant. This finding suggests that household structure and household circumstances remain relevant in shaping health insurance participation in ways that simple gender comparisons do not fully capture. These patterns are consistent with perspectives from gender and household economics literature, which emphasize intra-household resource allocation, bargaining relations, and unequal social responsibilities (Folbre, 1994; Agarwal, 1997).

The analysis of women's enrolment further reinforced the importance of socio-economic context. Age, poverty status, household consumption position, residence, education, and marital conditions all shaped participation outcomes. The persistence of lower participation among poorer and more disadvantaged groups suggests that financial barriers remain relevant even within a high-coverage system. Such patterns support earlier research showing that healthcare access and insurance participation are strongly influenced by broader social and economic conditions (Zegeye et al., 2023).

The relationship between insurance participation, welfare conditions, and economic participation was equally important. The findings showed that gender, welfare indicators, residence, employment status, and selected household living conditions were significantly associated with CBHI participation. Although women generally demonstrated slightly higher participation than men, participation patterns remained closely linked to socio-economic positioning and household conditions. The interaction analysis further suggested that the influence of employment and residence did not vary substantially across gender groups, while welfare status showed modest gender variation in participation patterns. These findings also highlight the close relationship between health insurance participation and women's broader economic realities. Unequal participation in health insurance may influence women's healthcare security, economic resilience, and ability to engage fully in productive and social life, with possible implications for household welfare and inclusive development.

Taken together, the findings support a more nuanced understanding of gender differences in health insurance access. Rwanda's experience demonstrates that high national coverage does not automatically translate into complete equity. Although gender gaps in enrolment appear relatively limited, inequalities remain associated with household vulnerability, welfare conditions, and unequal access to resources.

This study contributes to the literature by offering a more contextualized understanding of gender and health insurance participation within Rwanda's CBHI system. It highlights the importance of looking beyond aggregate coverage rates and examining the underlying conditions that shape participation. In the context of Rwanda's Vision 2050 agenda, this remains highly relevant. Expanding coverage is important but sustaining equitable participation and reducing structural inequalities are equally important for strengthening human capital, household welfare, and inclusive development.

5.2. Policy Recommendation and future research.

The findings of this study point toward several policy considerations for Rwanda's health system and wider development agenda. The results of the study showed that Rwanda has made strong progress in expanding CBHI, but equity gaps remain beneath the surface. The following recommendations reflect both the evidence from this research and the country's long-term ambitions under vision 2050.

Rwanda has achieved high enrolment level of insurance, but participation still varies by welfare status, household type, and living conditions. Policy attention should therefore focus not only on overall coverage levels but also on identifying which groups remain comparatively vulnerable within the system, particularly poorer women, disadvantaged households, and lower-consumption populations.

Strengthen support for vulnerable households. The lower participation observed among female headed households, lower welfare groups suggest that households' economic realities continue to matter so strengthening subsidies and reducing indirect healthcare costs may help reduce these gaps; this would support Rwanda's broader goals of social protection, poverty reduction and inclusive growth.

Maintain gender-responsive health strategies; the findings did not support a simple picture of women being universally less insured. Instead, gender still interacts with poverty, caregiving roles, and household responsibilities. Future policy efforts should therefore move beyond simple enrolment counts and pay greater attention to the wider conditions that shape healthcare security.

Stronger links between health insurance and development policy should be maintained; the study found important association between insurance participation, welfare conditions, and economic positioning, this suggests that health insurance is not only healthcare issue; it is also connected to household resilience, labour participation, and human capital development. Continued investment in equitable insurance systems can therefore contribute to Rwanda's vision 2050 ambitions of building a healthier, more productive and more inclusive society.

5.3. Future research.

This study relied on secondary cross-sectional datasets. These sources offer strong national coverage, but they cannot capture lived experiences, household dynamics, or how decisions are made over time. Future research should therefore use qualitative or mixed-methods approaches to explore how gender norms, decision-making power, and everyday household realities shape insurance participation in Rwanda.

Future work should also look beyond enrolment. Being insured does not guarantee equal use of services or equal protection from costs. Studies on healthcare utilisation, quality of care, and financial protection across gender and welfare groups would help determine whether CBHI participation leads to equal healthcare experiences and outcomes.

Another important area is the relationship between health insurance and employment. This study found lower CBHI participation among employed respondents, suggesting that insurance patterns differ across labour market groups. Research comparing CBHI with formal schemes such as RSSB/RAMA could clarify how employment status shapes access and whether inequalities emerge between informal and formal workers.

Another area deserving further investigation concerns the comparatively lower participation observed among some wealthier and higher-consumption groups. One possible explanation is movement toward alternative insurance arrangements such as RSSB/RAMA or private schemes. However, future research could examine whether this pattern reflects normal diversification of insurance choices or whether it signals differences in perceived service quality, benefit packages, healthcare preferences, or the relative attractiveness of CBHI across socio-economic groups. Such research would contribute to understanding the long-term inclusiveness and sustainability of Rwanda's evolving health financing system.

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