ADDIS ABABA UNIVERSITY

COLLEGE OF DEVELOPMENT STUDIES

CENTER FOR FOOD SECURITY STUDIES

CONTRIBUTIONS OF URBAN PRODUCTIVE SAFETY NET PROGRAM PUBLIC WORK TO HOUSEHOLD FOOD SECURITY: A CASE OF WOREDA 1 JEMO, NEFAS SILK LAFTO ADDIS ABABA.

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HABTAMU AYELE

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A THESIS SUBMITTED TO CENTER FOR FOOD SECURITY STUDIES

COLLEGE OF DEVELOPMENT STUDIES

ADDISABABA UNIVERSITY

IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF

MASTER OF SCIENCE IN FOOD SECURITY AND DEVELOPMENT

June 2023

ADDIS ABABA

DECLARATION

I **Habtamu Ayele Adera,** do hereby declare to Addis Ababa University School of Graduate Studies that this thesis is a product of my original research work, and it has not been submitted to any other university for any academic degree. Materials and information other than my own are dully acknowledged.

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As supervisor of the thesis, I certify that I have read and evaluated the thesis document prepared by **Habtamu Ayele** Entitled '**Contributions of Urban Productive Safety Net Program Public Work to Household Food Security: A Case of Woreda 1 Jemo, Nefas Silk Lafto Addis Ababa**' and recommend for Open Defense as fulfilling the requirement for the degree of Master of Science in Food Security and Development Studies.

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As members of the Examining Board of the Thesis Open Defense, we certify that we have read and evaluated the thesis prepared by **Habtamu Ayele** Entitled '**Contributions of Urban Productive Safety Net Program Public Work to Household Food Security: A Case of Woreda 1 Jemo, Nefas Silk Lafto Addis Ababa**' and recommend that it is acceptable thesis required for the degree of Master of Science in Food Security and Development Studies.

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ACRONYMS

CSA	Central Statistical Agency
FAO	Food and Agriculture Organizations
FCS	Food Consumption Score
HDDS	Household Dietary Diversity Score
HFIAS	Household Food Insecurity Access Score
ISPA	Inter Agency Social Protection Assessments
KII	Key Informant Interview
MoUDH	Ministry of Urban Development and Housing
PDS	Permanent Direct Support
PSM	Propensity Score Matching
PSNP	Productive Safety Net Program
PW	Public work
SA	Social Assistance
SDG	Sustainable Development Goal
SSN	Social Safety Nets
TDS	Temporary Direct Support
UPSNP	Urban Productive Safety Net Program
WFP	World Food Program

ACKNOWLEDGMENTS

My first and greatest thanks go to the almighty God who helped me in all my ways to complete this thesis research and writeup. Next, I am grateful to my research advisor, Amare Bantider (PhD), for his valuable advice, comments and unreserved guidance during conducting my research and writing the thesis. I would also like to thank Lidya and Dagmawi who supported me in many aspects related to this thesis work. Finally, I would also like to thank all my instructors who delivered different courses in the department for they shared me their knowledges and skills and all my classmates for their supports and information sharing.

ABSTRACT

Contributions Of Urban Productive Safety Net Program Public Work to Household Food Security: A Case of Woreda 1 Jemo, Nefas Silk Lafto Addis Ababa.

Urban productive safety net program (UPSNP) presents the first major opportunity to address food gaps of the vulnerable while at the same time employing the poor and vulnerable. On the other hand, the public work wage directly addresses the issue of access to food security. The study examined the contribution of UPSNP to household-level food security in woreda 1 Jemo Nefas Silk Lafto Sub-city. The study mainly adopted quantitative methods. The data was collected through a well-developed structured survey questionnaire from 79 UPSNP clients and 79 non-users as the control group selected from six sub-units of the Woreda using a systematic random sampling technique. The average effect of UPSNP on household food security status was estimated by the Propensity Score Matching Method (PSM). According to the food security indicator, UPSNP-users have lower HFIAS than non-users which implies that the ongoing implementation of a productive safety net program has a progressive, positive contribution to lowering food insecurity of households and the HFIAS difference among beneficiaries and non-beneficiaries is significant (t = 3.8957). The propensity sore matching result indicated that the urban productive safety net program has a significant positive contribution to enhancing food access at the household level. The negative impact of the program on household food insecurity access scores revealed that program beneficiaries have lower food insecurity scores which is the ultimate objective of the program to reduce food insecurity and poverty among destitute urban dwellers. The response from the survey participant and the key informant interviewee also revealed that public work activities are improving urban agriculture and beatification and changing the local environment through proper waste disposal and management. Despite the contributions of the UPSNP to food security, the demand for support is high compared to the actual households addressed. Therefore, the government and other stakeholders have to work to address more households and improve the public work wage rate against the existing market.

Keywords: Urban Productive Safety Net Program, Household Food Insecurity Access Scale, Propensity Score matching, Public Work.

CHAPTER ONE: INTRODUCTION

1.1 Background

Social protection is defined as a broad range of public and sometimes private instruments to tackle the challenges of poverty, vulnerability food insecurity and social exclusion (European Commission 2015b). An internationally agreed upon working definition focuses on 'the set of policies and programmes aimed at preventing or protecting all people against poverty, vulnerability and social exclusion throughout their lifecycles, with specific stress towards vulnerable groups (Herman, 2017). Social protection programmes and systems exhibit a wide range of objectives from directly reducing income poverty and other deprivations such as lack of access to health, education, hygiene, nutrition, protection, shelter, etc. to promoting human development, access to jobs and basic social services, addressing economic and social vulnerabilities and contributing to pro-poor economic growth (European Commission 2019).

Social protection is defined as interventions that help to reduce social and economic risks, vulnerabilities and deprivations for people and promotes equitable growth (MoLSA 2012). It encompasses safety nets, social insurance, health insurance, livelihood and employment schemes, and improving basic services.

The need for social protection strategy is a critical concern for states across the globe. The global focus on social protection and job creation, especially the role of social safety net has increased. For the first time, social protection is part of a comprehensive agenda of the Sustainable Development Goals (SDGs) which calls to end (extreme) poverty in all its manifestations by 2030. This ensures social protection for the poor and vulnerable, increases access to essential services, and supports people harmed by climate-related extreme events and other economic, social, and environmental shocks and disasters (World Bank, 2018).

Everyone has a right to social security and a decent standard of living (Articles 22 and 25 of the Universal Declaration of Human Rights). This understanding has been consistently reinforced through the International Labour Organization (ILO) Social Security (Minimum Standards) Convention, 1952 (No. 102). According to this minimum standard, it covers the nine principal branches of social security, namely medical care, sickness, unemployment, old

age, employment injury, family, maternity, invalidity and survivors' benefits. According to the ILO report, 2021 on world's social protection, only 46.9% of the global populations were effectively covered by at least one social protection benefit as of 2020. The remaining 53.1% or as many as 4.1 billion people were left wholly unprotected. On the top of this, there are significant inequalities across and within regions. In Europe and Central Asia (83.9%) and the Americas (64.3%) above the global average, while Asia and the Pacific (44.1%), the Arab States (40.0%) and Africa (17.4%) have far more marked coverage gaps.

Social protection as an approach to reducing poverty and vulnerability has emerged as a critical area for increased policy attention in Africa over the last decade. During this time social protection programmes have proliferated, both in terms of types of programmes and coverage, in the majority of countries across the continent. Many national governments, donors, civil society and NGOs are now playing an increasingly important role in designing, delivering and advocating for social protection.

The expansion of social protection has not been similar across continent of Africa. According to ILO (2021), the extent to which social protection has been taken up in countries, the focus on specific objectives of social protection as well as the types of social protection tools which are prioritized (e.g. cash transfers, inputs transfers, food aid, public works programmes) are strongly influenced by the different country-specific social, political and economic contexts across the continent.

Ethiopia has been implementing various formal social protection programmes since the 1960s. Berhane (2020) stated that Ethiopia made social protection an essential instrument in its poverty reduction agenda in recent decades and especially following the endorsement of a comprehensive social protection policy in 2014. The policy envisaged the implementation of social protection with four broad areas of intervention that involve safety nets (targeted social assistance programmes that transfer resources to poor households), social security and health insurance, livelihood and employment schemes, and equality of access to basic services (Ministry of Labor and Social Affairs, 2012).

Many countries' safety nets (a core part of social protection) have evolved from fragmented, separate interventions into integrated programmes. It is becoming coordinated mechanism for

providing regular and predictable transfers to targeted populations over the long term. Many countries are also making progress toward articulating national social protection strategies or have well-developed social protection systems. Social protection is increasingly seen as an essential part of many countries' poverty reduction and economic growth strategies (Unicef, 2009).

A public works program known as the Productive Safety Net Program (PSNP) was introduced in Ethiopia in 2004 to improve the country's resilience to drought-induced shocks. The program has two innovative, essential objectives: temporary employment creation and infrastructural development. Within five years, the program had addressed approximately 7.6 million households to cope with chronic droughts and withstand the impacts of the food crisis. PSNP has also created an impressive range of promoting community assets like soil and water conservation and natural resource management. The programs' impressive and ongoing accomplishments have increased interest in African public works programs. Besides, it has contributed to a significant shift in the portfolio of development assistance projects across the continent (Kalanidhi Subbarao et al. 2013).

Based on the experiences from the rural PSNP, urban productive safety net and livelihood support intervention which is implemented through a 10-year program framework has been designed by MoUDH to address 4.7 million poor in 972 cities and towns by implementing productive and predictable urban safety nets and complimentary livelihood interventions. The program's first phase was implemented from 2016/17 to 2020/21 in 11 cities, including Addis Ababa, Adama, Dessie, Mekele, Hawassa, Dire Dawa, Harari, Gambella, Asosa, Jigjiga and Asayita. The program intends to put in place basic safety net building blocks, which are productive and predictable transfers through public work (PW), livelihood interventions, and capacity building (MoUDH 2016). However, this has to be evaluated through studies in the program implementation districts. This study has also been aimed at evaluating the effect of the program on the beneficiaries.

1.2 Statement of the Problem

Urbanization brings several positive and negative impacts to the community. Infrastructure development like roads, railways, housing, health and education by private and public

providers are among the positive impacts. On the other hand, the population pressure resulting more from internal migration led to congestion and slum living conditions and waste disposal management problems. Access to food in urban areas is largely related to household income and market price which together determines largely the purchasing power (Unicef, 2009).

On the basis of these negative impacts of urbanization, Addis Ababa city administration planned to addresses food gaps of the vulnerable while at the same time providing employment opportunities for the poor and vulnerable through UPSNP. Urban productive safety net (UPSNP) presents the first major opportunity to address these problems while simultaneously employing the poor and vulnerable (MoUDH 2016). The public work wage directly addresses the issue of access to food security. The wage is paid in the form of food or cash, where food is given as a payment; the ration typically helps to meet household calorific requirements. Whereas in the case of cash payments like the UPSNP public works in Ethiopia, the wage is set according to a range of possible criteria, which are usually not linked to consumption needs. However, some studies (Amosha et 2020; Dessalgn 2021; Gebresilassie 2019; Melaku 2020; Tadesse 2021) indicated that UPSNP enables recipient households to purchase food, relieve liquidity constraints, improve household income earnings, and change consumption expenditure.

The public work (PW) component focuses on labour-intensive work activities such as urban solid waste management and environmental cleaning, urban beautification and greenery, urban integrated watershed management for the development of community assets and upgrading of social infrastructure (MoUDH 2016).

Though some studies are conducted on the food security status of urban households in different districts of Addis Ababa, research on the UPSNP's contributions to household food security has not yet been conducted at Woreda 1 Jemo. Therefore, this study focused on evaluating the contributions of the UPSNP public work program to household food security and the effects on the local environment in one of the densely populated areas of Addis Ababa Nifas Silk Lafto woreda 1 Jemo.

1.3 Objective of the Study

1.3.1 General objective

The study's overall objective is to analyze the contributions of the urban productive safety net public work program to household food security in Woreda 1 Jemo.

1.3.2 Specific objectives

- Investigate the food security status of urban productive safety net public work program beneficiary households
- Examine the contribution of urban productive safety net program public wage to household food security
- Explore the beneficiaries' perceptions towards the program in the light of the program goals.

1.3.3 Research questions

This study will answer the following questions

- What is the food security status of urban productive safety net program participants and the none participant households?
- Is the urban productive safety net program contributing to household food security?
- What are the perceptions of UPSNP beneficiaries about the objectives of the program?

1.4 Significance of the Study

This study informs the program implementing Parties about the food security status of the targeted households besides using it as a reference. It indicates the contributions of the program to the targeted households whether the program has to address more needy households both within and outside the district. In addition, it will identify the gaps during implementations of the program and inform practitioners and policy makers to improve future implementation procedures and performance of the program.

1.5. Scope and limitations of the Study

The study is concerned whether the newly implementing UPSNP is responding to the urban household food insecurity problem and waste management. The program has been commenced during 2016 and it has been five years of implementations age at the country level. Beside its first time to be implemented in the urban, there is limited previous research conducted on the contributions of the program to urban household food security. Even with in Addis Ababa, the implementation of the program has not been started at the same time and Woreda1Jemo is among the woredas where the program started lately in 2018.

The study only considered one Wereda due to a lack of resources. There was also a limitation in finding long-term data on UPSNP as the program was implemented starting in 2016 in urban areas. The absence of a baseline for evaluating the program's contributions forced the researcher to compare program participant households with more or less similar households at the beginning of the program, which were deprioritized due to the resource limit.

1.6 Ethical Consideration

During data collection, ethical considerations have been seriously taken into account to ensure the protection, integrity, anonymity, consents and other human elements of the informants. As argued by Kitchin and Tate (2000) research ethics are considered with the extent to which the researcher is ethically and morally responsible to his/her participants, the research sponsors and other concerned bodies who have a contribution in his/her research. Considering this idea, before starting to conduct the study, ethical consideration was seriously taken into account by the researcher. The district higher officials were communicated before information gathering was taken place from respondents of the district UPSNP beneficiaries. Similarly, willingness of the sampled clients for the research to respond to any survey questioner was requested and was carried out with their consents.

1.7 organization of the thesis

This thesis report organized in five chapters. The first chapter presents the general introduction of the thesis and includes; background of the study, statement of the problem, objectives and research questions, significance of the study, scope and limitation of the study

and the ethical consideration. Whereas, the second chapter covers review of related literature through which various concepts relevant to the study are discussed. The third chapter deals with methodological issues, under which the general descriptions of the study area, the data sources and acquisition techniques as well as method of data analysis are discussed. The forth chapter consists of results and discussion which is analysis based on the processed primary and secondary data of the study. At the end, the fifth chapter is dedicated to conclusion and recommendation based on the findings/results of the study.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1 Theories of food security

The emergence of the concept of food security very much relates to the political (policy) concerns towards combating an increasing malnutrition and famine at global level (Bezu, 2018). It was during early years of the 1970s when the proportion of the malnourished world population was higher than ever before. As a result UN/FAO took the initiative to call upon the world nations to take part in the First World Food Conference in 1974, which adopted the Universal Declaration on the Eradication of Hunger and Malnutrition. The declaration proclaims in its article number one that: 'Every man, women and child has the inalienable right to be free from hunger and malnutrition in order to develop fully and maintain their physical and mental faculties' (UN, 1974).

Hence, the main emphasis was placed on how to enable the world suitable to feed every existent, at global position, and what should every nation do to become food self-sufficient. In other words, the main issue was how enough food can be made available to conquer hunger. These questions have indeed attracted academic sweats, particularly a concern to identify and understand predicaments that hamper nations to produce sufficient food and how to enable each person to pierce acceptable food. Therefore, the issue of food security has thus come central to academic exploration (Bezu, 2018).

Food security exists when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO 2000). On the other hand, the inexistence of the above condition within the household, district or broader geographical coverage could be considered as food insecurity.

Food is both a need and a human right. Enough food in terms of quantity and quality for all people is an important factor for a healthy and productive life as well as for a nation to sustain its development. According to FAO (2006), the situation in terms of food security is determined by indicators of food security, the possibility of obtaining stability of supply and health. They are defined in detail below;

Food availability: The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid).

Food access: Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet. Entitlements are defined as the set of all commodity bundles over which a person can establish command given the legal, political, economic and social arrangements of the community in which they live (including traditional rights such as access to common resources).

Utilization: Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met. This brings out the importance of non-food inputs in food security.

Stability: To be food secure, a population, household or individual must have access to adequate food at all times. They should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity). The concept of stability can therefore refer to both the availability and access dimensions of food security.

2.2 Concepts of Productive Safety Net Program

Social safety nets gained great attention in development discourse following the 1990 world development report on poverty (World Bank, 1990). According to this report, social safety net is explained as some form of income insurance to help people through short-term stress and calamities. World Bank also gives a wider definition for safety net as "safety nets are programs which protect the person or households against the adverse outcomes in welfare; chronic incapability to work and earn (chronic poverty) and decline in this capacity from a marginal situation that reserves (transient poverty) (Subbarao, 1996 in Devereux, 2001).

The PSNP was launched in 2005 and has been running by the Ethiopian Government in collaboration with twelve development partners. The partners are Austria, the European Commission, Canada, Denmark, Ireland, Netherlands, Sweden, UK, USA, the World Food Programme, UNICEF, and the World Bank. The Programme is one of the largest national social safety net programmes in Africa, with a budget availability of approximately 650 million dollars per year, operating in seven regions, with most drought prone woredas, and

benefiting at least eight million people during Phase IV (mid-2015–2020) (Knippenberg et al., 2017).

The programme delivers cash, food or a mix of both in exchange for public works. Chronically food-insecure households/beneficiaries who cannot contribute labour to public works are given an unconditional cash or food transfer of equivalent value to that received by labour contributing households and increasing the period from 6 months to 12 months. The program also delivers skills upgrading and training across different technical agencies and levels through its capacity-building component.

The Programme covers two components:

i. The labor-intensive Public Works (PW) component, including Temporary Direct Support (TDS) beneficiaries, and

ii. The Permanent Direct Support (PDS) component.

The first group of beneficiaries are chronically food-insecure households with able-bodied adults and may include pregnant or lactating women who will be temporarily moved to direct support without having to do public works. The second group consists of chronically food-insecure households without able-bodied adults or who are labour-constrained (elderly, people with disabilities, chronically ill and orphans), who are entitled to receive support without participating in public works. The first group receive regular cash or food transfers conditioned on the provision of labour for public work activities, with exception of the Temporary Direct Support, who temporarily receive unconditional transfers. The second group receive financial or in-kind support on an unconditional basis. In the ongoing PSNP Phase IV, the first category receives 6 months of support, while the second is entitled with 12 months of support (PSNP IV, Programme Implementation Manual, 2016).

Public works beneficiaries accounted for 86 % of the 8 million of beneficiaries in 2016/17. The public work component includes a great share of community-level projects, and about 60 per cent of these are related to restoring natural resources, such as soil and water conservation, and designed to improve climate resilience (Haverkort et al., 2015). Additional community projects concern the development of community assets like roads, water infrastructure,

schools, and health care centres. This component thus contributes simultaneously to social protection and building climate resilience, benefiting also those who are not entitled to receive the support.

The Ethiopian PSNP was developed as an alternative to the repeated, *ad hoc* emergency public works interventions which characterized the humanitarian response to cyclical food insecurity in Ethiopia over several decades. The programme aims to provide a planned multi-year response to cyclical vulnerability, providing predictable social protection for food insecure households through PWP employment, while also promoting the 'graduation' of households from poverty. It does this by providing PWP employment to create productive assets, together with a range of complementary interventions, such as micro-finance and agricultural extension, while also providing cash transfers for households that do not have available labour (McCord, 2013).

2.2 Urban Productive Safety Net Program (UPSNP)

2.2.1 Development of UPSNP in Ethiopia

The Government of Ethiopia has developed Urban Productive Safety Net Project (UPSNP), as an element of the Urban Food Security and Job Creation Strategy approved on 2015, to support over 4.7 million urban poor living in 972 cities and towns. It had envisaged that this would be achieved over a long-term period through a gradual rollout plan of different phases. The first phase is set to include big cities that have a population of more than 100,000 people, and the World Bank is assisting the government in its implementation over the period 2016-2021 (World Bank, 2015).

In the first phase, the UPNSP will target 11 major cities: Addis Ababa and one city from each region (Adama, Assayita, Asosa, Dessie, Dire Dawa, Gambella, Hawassa, Harari, Jijiga, and Mekele). It is expected that 500,000 clients (the poorest 12% and about 55% of people living below the poverty line in these 11 cities) will be targeted through a gradual rollout plan during a five-year period. Given the large size of Addis Ababa and the relatively high poverty rates it exhibits, large numbers of the beneficiaries will be from this city. Thus, to facilitate

coordination and lower administrative costs, the proposed impact evaluation will be restricted to Addis Ababa (World Bank, 2015).

2.2.3 Components of UPSNP

The UPSNP has interventions that meet the varied needs of the urban poor and vulnerable. It provides continuous income support to the elderly and disabled living in households with no working-age members, street children, the homeless, and beggars. Additional services to meet the specific needs of street children, the homeless, and beggars (access to shelter, healthcare, counseling, and where possible reunification with their families) are also integral provisions. A combination of income support and services to increase employability of those with too little work or in low-quality employment are planned (MoUDH, 2016).

The UPSNP has l adopted a three-phase integrated model or pathway designed to provide income support and increase employability. In the first phase, clients will receive transfers (conditional on meeting their co-responsibilities) followed by life skills training and guidance on the employment pathways, namely self-employment and wage employment. In the second phase, clients will continue to receive conditional transfers, training and job-matching services to increase employability. In the third phase, clients will have the option to continue to receive a small amount of conditional transfers to supplement income derived from employment secured as a result of program support or through other means (MoUDH, 2016).

Based on the integrated model, the project has three major components: (a) Safety Net Support; (b) Livelihood Services; and (c) Institutional Strengthening and Project Management.

a) Safety Net Support

This component provides conditional and unconditional safety net transfers. The unconditional (direct) transfers are two types named as permanent and temporary unconditional transfers. Permanent unconditional transfer is for those who are unable to take part in work because of different reasons. Those eligible for permanent unconditional transfers who would like to receive these transfers register and provide verification of age (above 65 years only) or of their disability or chronic illness that prevents them from being

able to perform a co-responsibility for the transfer (MoUDH, 2016). It targets the chronically ill, the elderly and people with disabilities, and urban destitute.

Temporary unconditional transfer is for those who are unable to work due to pregnancy, lactation (having a child less than one-year-old) and injury or illness. As per the PIM (2016), the households will provide verification of pregnancy or other temporary factors that prevent them from participation in public work.

Conditional transfer is given to those who are able bodied to perform work. These clients get cash transfer by participating in public works.

b) Livelihood Support

As per MoUDH (2016), those beneficiaries, who have interest to enhance their work, will get livelihood support that enables them to graduate from the program and promote moving out of poverty. The target groups for these interventions are individuals in households receiving conditional transfers who desire more and higher-paid work and a few numbers of beneficiaries who have a business skill directly involve in livelihood activities.

c) Institutional Strengthening and Program Management

This component will support the development and strengthening of program systems for targeting, monitoring and evaluation and MIS, payments, and citizens' engagement (CE). It will also finance capacity building (human resource, training, administrative, and physical capacity) and strengthening program management (coordination, Financial Management (FM), procurement, and safeguards) (MoUDH 2016).

2.3 Food Security situations in Urban Context

Strong consumption growth in urban Ethiopia led to poverty reduction by 11 percent points between the year 2011 and 2016. Poverty reductions happened across towns and cities of all sizes, though was mainly driven by small and medium sized towns which contributes to the total urban population. Overall, poverty rates decrease with increased city size, with the exception of Addis Ababa which has a relatively high poverty rate. Households with little educated heads working in trade, services or agriculture contributed most to urban poverty

reduction. In addition, the rising education levels of the urban labor force contributed substantially to the reduction in urban poverty. The trade and service sector Tis the he main contributor to urban poverty reduction, while agriculture plays an important role in small towns, where the labor force is less educated and keeps close links with the rural vicinity (World Bank 2020).

Despite being one of the least urbanized Sub-Saharan countries, Ethiopia's urban population has been growing fast. According to the latest rounds of Household Income and Consumption Expenditure Survey (HICES), Ethiopia's urbanization rate the share of the country's population in urban areas rose from 16.6 percent in 2011 to 19.1 percent in 2016 (CSA). While its urbanization level is still among the lowest in Sub-Saharan Africa (World Bank, 2020) urban population growth is rapid. The urban population increased by 6.2 percent annually since 2011, which is much faster than rural population growth of 2.7 percent. This means that nearly 1 million people are added to the urban population every year. It is estimated that there are 45 cities of at least 50,000 population as of 2015 (Schmidt et al. 2018). Ethiopia's urban population is projected to reach 42 million by 2032 and its population share to hit 30 percent by 2028 (World Bank, 2015).

Urban population growth will take place mainly in small towns and secondary cities. Natural population increase accounted for the largest part of urban population growth in Ethiopia until recently (World Bank 2015). However, rural to urban migration is expected to outpace natural increase as of 2018, contributing to more than 40 percent of urban population growth. Between 2015 and 2025, around 5 million people are projected to be added in small towns with a population of less than 50,000 (Schmidt et al. 2018). Secondary cities with a population of greater than 100,000 (such as the regional capitals) will also grow at the similar scale, adding 5.7 million people between 2015 and 2025. In the meantime, the contribution of Addis Ababa to the overall urban population will decline (though it will remain by far the biggest city) (World Bank, 2020).

Urbanization is an inevitable consequence of socio-economic development, but in many countries it is proceeding at such a fast rate that it is outpacing the growth of services and employment. The result is mushrooming slums in city centers and slum towns on their

peripheries. Under such conditions the supply of potable water for cooking and washing is limited, and facilities for sewage and waste disposal are inadequate or often lacking altogether. Housing is no longer provided through communal and self-help construction, but is another matter for commerce, as rents must be paid even for a space on the floor in a single room. Such housing often lacks facilities for meal preparation. Wage employment and monetary income are the objectives for all physically active members of the family (FAO, 1997).

FAO (1997) stats that when jobs in the formal sector are insecure or hard to come by, work might be found in the informal-sector activities of petty trading, repair and maintenance services and food vending. However, the majority of urban dwellers in developing countries remain highly disadvantaged, with very limited purchasing power. For these people, guaranteeing the efficient distribution of low-cost but nutritious food is becoming an ever more pressing concern.

Urban food security is different from rural food security. In rural food security, household food productions take leads in determining the levels of food availability. While in urban food security, it is a combination of factors such as a competitive retail network, existence of safety net like public distribution system coupled with the supply position of the state. In normal circumstances, the wide network of retail trades takes care of availability in an urban area. The major issues in general is that of affordability. However, in the recent context of food price increase and the impact of global warming and consequent climate change on production, even urban food availability is bound to get affected by food availability in the country. Food price increase has been cited as the most important problem plaguing the food security situations in urban Ethiopia (WFP, 2009).

Food access is largely a function of purchasing power. Access to food bears most significance than more availability of food. It depends up on access to livelihoods and income earned, which in turn are determined by a set of factors ranging from occupation and income levels to literacy level and gender parity (WFP, 2009).

Utilization or absorption, is an important, though relatively ignored, facet of food security. The goal of food security is to keep a person healthy through nutritious food. Eating well does

not keep a person healthy, food has to be absorbed and assimilated in to the body. The ability of the body to translate food intake into nutritional status mediated by a number of factors, some generic and others related to hygiene and morbidity. It has been estimated that in developing countries, one out of five people do not use safe water, and roughly, half are without adequate sanitation (WHO, 2007). Thus, access to safe drinking water, sanitation and adequate health facilities are crucial for food security.

2.4 Food security measurements

Rapid, accurate, cross-contextual indicators of food security have been developed over the past decade or so. Among this are:

2.4.1 Household Food Insecurity Access Scale (HFIAS)

Although some of the food security measurement tools described thus far assess more than just available national food supplies, they also do not emphasize household-level behaviors and determinants of food access because of their focus on national- or regional-level estimates and trends. Household-level measures of food security are concerned with food security dynamics between and within households. Because these measures rely on data from household surveys, they are able to more accurately capture the "access" component of food security than measures that rely on nationally aggregated data (Jones et al. 2014).

Food access refers to physical and economic access to food; however, many of the tools used to measure food access actually measure food acquisition or food consumption. These concepts are commonly used interchangeably to refer to food access, yet they are important to distinguish for measurement purposes (Jones et al. 2014). Household Food Insecurity Access Scale (HFIAS) is a brief survey instrument developed by Food and Nutritional Technical Assistant (FANTA) to assess whether or not households have experienced problem with assessing food during the past 30 days (Noble, 2016). The HFIAS measures the prevalence and degree of food insecurity from a nutritional perspective, focusing on a household's food related experienced.

According to Noble (2011), HFIAS poses questions of increasing severity on food security domains, such as anxiety over food, insufficient dietary quality, and the quantity of food. It

has been developed on the premise that households across different cultural or social contexts respond to food insecurity in universal ways. The HFIAS is a household-level survey; that allows researchers to understand the experience of household, not individual, food insecurity. Though it is a household survey, data from the HFIAS should be used collectively to examine community, district or even national food insecurity status. It cannot be used to determine if one household needs more help than another (Noble, 2016). The survey has two key purposes:

- Comparing change over time in one group (useful for monitoring food security interventions or observing the impact of events on food security)
- Comparing food access across populations (useful for determining which areas are most in need of food assistance)

2.4.2 Food consumption score

Food Consumption Score (FCS) is an index that was developed by the world food programme (WFP) in 1996. The food consumption score aggregate household level on the diversity and food groups consumed over the previous seven days, which is then, weighted according the relative nutritional value of the consumed food groups.

Food groups containing nutritionally-dense foods, such as animal products, are given greater weight than those containing less nutritionally dense foods, such as tubers. Based on this score, a household's food consumption can be further classified into one of three categories: poor, borderline, or acceptable. The food consumption score is a proxy indicator of household caloric availability.

2.4.3 The Household Dietary Diversity Score (HDDS)

The Household Dietary Diversity Score (HDDS) was released in 2006 as part of the FANTA II Project as a population-level indicator of household food access. Household dietary diversity can be described as the number of food groups consumed by a household over a given reference period, and is an important indicator of food security for many reasons. A more diversified household diet is correlated with caloric and protein adequacy, percentage of protein from animal sources, and household income (Swindale et al., 2006). The HDDS

indicator provides a glimpse of a household's ability to access food as well as its socioeconomic status based on the previous 24-hours (Kennedy et al., 2011).

2.5 Empirical Review

There are a number of researches conducted in Ethiopia related to rural Productive Safety Net Program (PSNP) in relation to poverty, food security, asset building, practice and resilience of households. However, there are limited literatures on the contributions of urban productive safety net program on food security and intended environmental protections.

2.5.1 UPSNP Performance

There are a number of researches conducted in Ethiopia related to rural Productive Safety Net Program (PSNP) in relation to poverty, food security, asset holding and resilience of households. Teklay (2009) had tried to analyze and link poverty, the impact of the PSNP on poverty and creating capability. When concluding, the study assured the contribution of the PSNP in increasing income and consumptions of poor Ethiopians. However, the programs impact on developing the capability of the poor seemed unlikely. A study by Bahru et al. (2020) indicated that PSSNP does not improved household food security, child dietary diversity and child anthropometry, despite its improvement in child meal frequency.

Misgana (2018) studied the contribution of urban productive safety net program to households' livelihood improvement and environmental protection in Addis Ababa. The study result show that urban productive safety net program cash transfer has positive and statistically significant relationship with food security. The cash allows the beneficiaries to purchase food which has improved their food access status. UPSNP has brought positive effect on the livelihood of beneficiaries. It has contributed to improve beneficiaries' assets, livelihood strategies and livelihood outcomes. For the majority, it has enhanced their livelihood strategies by being additional and stable means of livelihood.

Another study by Mume et al (2022), which were analyzed using Propensity Score Matching (PSM) method revealed that PSNP has increased total annual income and calorie intake of participant households compared to non-participant households. Similarly, according to Hailu and Amare and Tasew and Tariku (2022) PSNP enhances the consumption expenditure, daily

calorie intake, and annual income of participating households relative to a similar group of non-participating poor households in rural areas.

Using panel data from household surveys in 2002, 2005 and 2007 in the Amhara region, Andersson, et al. (2009) had studied PSNP‘s impact on livestock and tree holdings of rural households. They found that households that participated in the program increased the number of trees planted, but there was no increase in their livestock holdings. We found no evidence that the PSNP protects livestock in times of shock. Shocks appear to lead households to disinvest in livestock, but not in trees.

2.6 Conceptual Framework

The presented review draws on a conceptual framework was to analyze contributions of urban productive safety net public work on food security of the beneficiary households. This framework (Figure 1) puts the household food security status as a dependent variable and the rest; demographic characteristics, economic characteristics, UPSNP public work and institutional factors as an independent factors that affects the household food security. However, for this specific study the institutional factors will not be included.

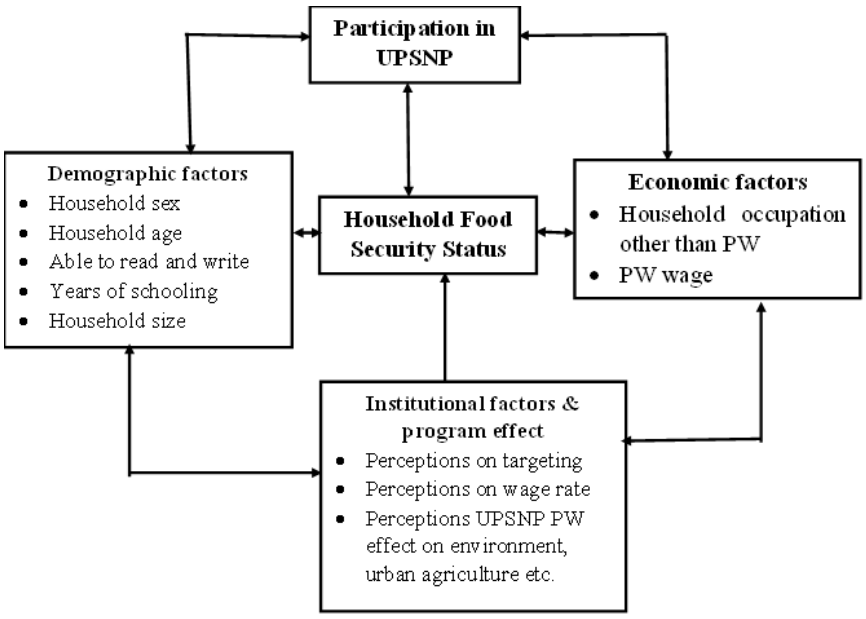

Figure 1 Conceptual framework. (Source: Own construction)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Descriptions of the Study Area

Nefas Silk Lafto is one of the eleven sub-cities of Addis Ababa located in the southwest suburb of Addis Ababa and has twelve woreda administrative structures. It borders Kolfe Keraniyo, Ledeta, Kirkos, Bole and Akaki Kality sub-city. According to the central statistical agency population projection, Nefas silk sub city's population is estimated to be about 368,883 (172,907 males and 195,976 females) (CSA, 2014). The major socio-economic activities of the people in the sub-city are non-agricultural activities such as trade, manufacturing and services.

Concerning land use, it consists of residential, open spaces, roads (Asphalt, cobblestone, gravel, and unpaved roads), urban agriculture and green space. The residential settlements include informal housing, formal and planned settlements and condominium public housing. There is a lack of open communal areas in informal settlements, whereas condominiums and planned private settlements possess open spaces.

Formal settlements get water supply from individual municipal pipelines. In informal settlements, water is collected from communal water tanks supplied by Addis Ababa Water and Sewerage Authority. Generally, water scarcity is common in all parts of the Wereda, and in most cases, water is only available for a few days a week. Residents sometimes have to fetch water from distant areas using Carts and cars.

The research was explicitly conducted at Woreda 1 Jomo on the contributions of urban productive safety net program public work activities to food security and the environment. The total population of this Woreda is 40,886 and of these, 20,852 are Female. Public work beneficiaries in the district are 515 (87 male-headed and 428 female-headed) households. The direct support clients are 270 (203 female-headed and 67 male-headed) households and individuals clients are 560 (339 female and 221 male).

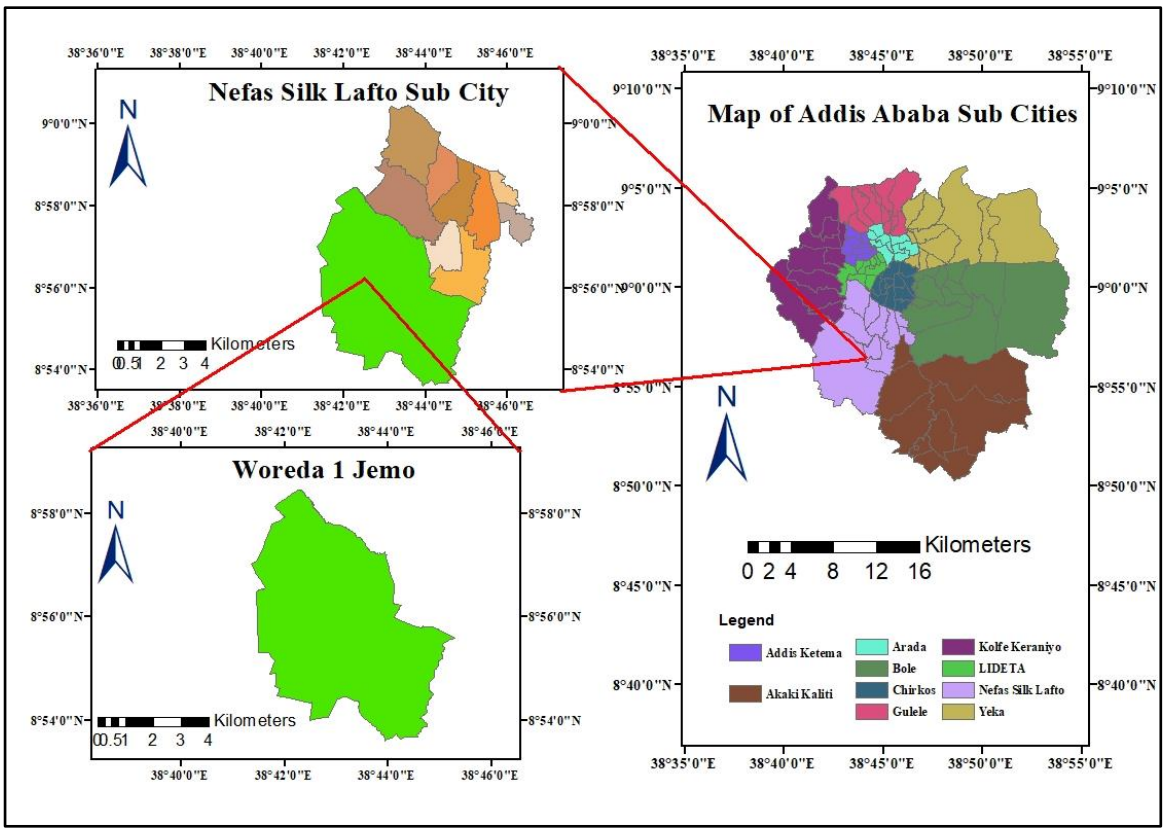

Figure 2 Location Map of the study area (Source: Own construction from Ethio-boundary database)

3.2 Research design and approach

This study adopted a mixed method research design to analyse both qualitative and quantitative data, which helps to triangulate the study from both data sources (Cohen et al., 2007). It is envisaged that a combination of qualitative and quantitative research designs helps fully explain the richness and complexity of understanding the impact of urban productive safety net programs on households through various viewpoints. The mixed method also employs open and closed-ended questions, emerging and predetermined approaches, and qualitative and quantitative data analysis (Caruth, 2013).

The study mainly depends on quantitative methods where the data was collected through a well-developed structured household survey questionnaire from program participant and non-participant households and subject to analysis using statistical software. The quantitative methods help generate numerical data, which are also statistically analyzed to meet required objectives through descriptive statistics (frequencies and percentages) and inferential statistics

and impact analysis techniques to estimate the contribution of the public work project to enhance food access.

An explanatory (casual) research method has been used to examine the contribution of UPSNP public work wage on household food security. Explanatory studies focus on an analysing a situation or a specific problem to explain the patterns of relationships between variables. Explanatory studies focus on analysing a situation or a particular problem to explain the patterns of relationships between variables and assess the impacts of changes on existing situations and processes.

The exploratory research design was used through an interview with a subject matter expert at Woreda and ketena levels to have meaningful insights about the program's impact against the intended purpose. Key Informant Interviews (KII) were conducted in person, with open-ended questions to get meaningful information about the urban productive safety net program.

3.3 Type and Sources of data

The foundation of good research mainly depends on the quality and the type of data used in the research study. There are two sources of information broadly classified as primary and secondary sources.

3.3.1 Primary Source of Data

A primary source provides direct or firsthand evidence about the research under consideration. The researcher will use primary data sources collected through survey questionnaires, key informant interviews and focus group discussions and collected with great care for validity, accuracy and reliability. The main means of generating primary data for the study was a household survey using structured questionnaires and key informant interviews (KII) using checklists.

3.3.2 Secondary Source of Data

Secondary sources can be thought of as second-hand information. The study utilized a wide range of secondary sources, including; reference books, published research papers related to the research topic, textbooks, senior essays, online sources and also the annual report of the

Addis Ababa City Administration and Wereda reports and other previously collected data related to the study.

3.4 Sampling Technique and Sample Size Determination

The sub-city and district were selected purposefully based on the researcher's prior knowledge of the area. Finally, the sampling household for both groups (UPSNP users and none users) was chosen using a systematic random sampling technique from the existing six subunits of the district in proportion to the size of UPSNP PW participants (Table 3.1). A systematic random sampling technique has been used to identify the respondent household from the total program beneficiary households.

The study mainly depend on total number of project beneficiary households, which is the sample frame of the study. In order to determine the sample size of the study Yamane's (1967) sample size determination formula is used. The formula is as follows:

$$n = \frac{N}{1+N(e)^2} \quad \text{eq. 1}$$

Where n represents the sample size; N denotes the study population and e represents the level of precision. The formula utilizes a 95% confidence interval, P=0.05. For this study, ±5% is taken as the level of precision, which considers the cost and availability of time to have a reasonable sample representing the population under investigation. The total number of project PW beneficiary households in Woreda 1 is 515 (428 female-headed).

Accordingly, the sample can be calculated using the first equation as:

$$n = \frac{515}{1+2198(0.05)^2} = 79.2 = \underline{\underline{\mathbf{79}}}$$

Based on the calculation, **79**-project beneficiary households were selected from six sub-units of the Woreda using a systematic random sampling technique.

The district food security office registered households for their food security status or poverty level to classify and address with the food security program. They categorized households into poorest of the poor (Level 1), poor (level 2), medium (level 3) and rich (level 4) based on their income, house ownership and type, family size, the health status of the household head, disability level and other household assets (TV, refrigerator, etc.).

Households of the control group were selected considering the status of their food security levels, which are more or less similar to the targeted household at the commencement of the program based on the information from the district food security office. The district food security office has the list of households with their food security levels. The proportional numbers of control households from the district's six sub-units were randomly selected based on the list from the district food security office.

Table 3 1 Sampled households by the two groups

Sampled household		Ketena 1		Ketena 2		Ketena 3		Ketena 4		Ketena 5		Ketena 6		Total		
		M	F	M	F	M	F	M	F	M	F	M	F	Male	Female	Total
UPSNP users	Freq.	9	7	1	1	0	2	1	1	2	3	14	38	27	52	79
	%	11.4	8.9	1.3	1.3	0.0	2.5	1.3	1.3	2.5	3.8	17.7	48.1	34.2	65.8	100
None users	Freq.	8	6	2	3	1	3	1	2	1	2	16	34	29	50	79
	%	10.1	7.6	2.5	3.8	1.3	3.8	1.3	2.5	1.3	2.5	20.3	43.0	36.7	63.3	100
Total		17.0	13.0	3.0	4.0	1.0	5.0	2.0	3.0	3.0	5.0	30.0	72.0	56	102	158
		10.8	8.2	1.9	2.5	0.6	3.2	1.3	1.9	1.9	3.2	19.0	45.6	35.4	64.6	100

Source: Computed from secondary data

3.5 Data collection techniques

The study used quantitative and qualitative data collection methods. The study utilized primary quantitative data collected using a household survey questionnaire tool developed for the purpose. Quantitative data on the households' socio-demography, economic information, perceptions towards the UPSNP and the nine household food insecurity accesses scale. Two enumerators with experience in quantitative data collection were selected, oriented and deployed to administer the survey. Besides supervising the data collection process, the researcher also participated in the data collection process. Additionally, the key informant interviews with key informants were conducted to triangulate the survey findings. In order to triangulate the findings from the quantitative data key informant interview were conducted

with selected staffs from the wereda UPSNP facilitators, ketene task force members and beneficiaries.

To support the study, secondary data from various Government institutions, including Wereda food security office, the Central Statistics Agency (CSA), UPSNP implementation manual and other reliable institutions were utilized. Moreover, findings of previous empirical studies and journals were used as a reference to make a comparative analysis among theoretical and empirical bases and findings of the study.

3.6 Data analysis and Interpretation

The study utilized both quantitative and qualitative techniques of data analysis to analyze both data sources gathered from primary and secondary data. The qualitative data collected through key informant interviews were analyzed concurrently and thematically with quantitative data analysis techniques such as narration and explanation. A computation of data gathered from qualitative sources was also used as an analysis technique. It was used to compare the findings collected from households through the questionnaire with the finding that was obtained from key informants, interviewee of Woreda and Ketena level administrators and other development experts through interviews and focus group discussions.

Collected primary quantitative data were filled and analyzed using STATA software to generate descriptive statistics and econometric regression results. Descriptive statistics include mean, mean comparison test standard deviation (SD), frequency, percentage, and tabular and graphical representation. Household Food Insecurity Access Scale (HFIAS) has been used to analyse the household's food security status in the study area. Finally, the contribution of the UPSNP is analyzed using an econometric regression model. Perceptions of the study participants were also analyzed using frequency and percentages.

3.6.1 Household Food Insecurity Access Scale (HFIAS)

Household food insecurity (access) that can be used to guide, monitor and evaluate program interventions was developed by the USAID's Food and Nutrition Technical Assistance (FANTA) project and has supported a series of research initiatives to explore and test different options for meeting this need.

The FANTA project identified a set of 18 questions that distinguish the food secure from the insecure households across different cultural contexts. These questions represent three universal domains of household food insecurity and can be used to assign households along a continuum from food secure to severely food insecure (Coates et al., 2007).

A food secure household experiences none of the food insecurity (access) conditions, or just experiences worry, but rarely. A mildly food insecure (access) household worries about not having enough food sometimes or often, and/or is unable to eat preferred foods, and/or eats a more monotonous diet than desired and/or some foods considered undesirable, but only rarely. But it does not cut back on quantity nor experience any of three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating). A moderately food insecure household sacrifices quality more frequently, by eating a monotonous diet or undesirable foods sometimes or often, and/or has started to cut back on quantity by reducing the size of meals or number of meals, rarely or sometimes. But it does not experience any of the three most severe conditions.

A severely food insecure household has graduated to cutting back on meal size or number of meals often, and/or experiences any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating), even as infrequently as rarely. In other words, any household that experiences one of these three conditions even once in the last four weeks (30 days) is considered severely food insecure.

3.6.2 Regression model specification

The study utilized Propensity Score Matching Method (PSM) in order to estimate the average effect of UPSNP on household food security status. This method of analysis is used when there is no baseline data to look at the impact of a program on the participants. In this case the UPSNP users and none users of similar status at the start of the program but deprioritized due to resource limit. Treatments are heterogeneous in the population and developed a framework that each household has two potential outcomes; an outcome when participating in the UPSNP public work project (y_1) and not participating (y_0). If we let the participation status d, d=1 for project users and d=0 for non-users, then it is possible to write the observed outcome y of the household food security performance as a function of the two potential outcomes as:

$$Y = dy1 + (1-d)\, y_0 \quad \text{..... Eq. 2}$$

The causal effect of UPSNP participation on its observed outcome y is the difference between the two outcomes (y_1-y_0). However, because of the realization, the potential outcomes are mutually exclusive that is only one of the two outcomes will be observed at a time (Nguezet et.al, 2011). It is also impossible to measure the individual effects of project participation in any household. However, it can be possible to estimate the mean effect of UPSNP participation on a population household. Such mean parameter is called average treatment effect (ATE) (Imben and wooldridge, 2009).

$$\text{ATE} = \frac{1}{n}\sum_{i=1}^{n} \frac{\text{di}-(\text{p(xi)yi}}{(\text{p(xi)}(1-\text{p(xi)})} \quad \text{..... Eq. 3}$$

Where n is the sample size, $n_1=\Sigma di$, is the number of treated variables which is the number of UPSNP public work participant households and p (xi) is a constant estimate of propensity score evaluated at x.

It is possible to use logistic regression to estimate the propensity score. Propensity score matching pursues a targeted evaluation of whether participating in the program cause households to improve household's food security status.

There will be a problem of avert and hidden biases and deal with the problem of non-compliance or indigenous treatment variable. In order to remove such biases Robin (1974) introduces ignobility (conditional) assumption which postulates, the existence of a set of covariate x, which controlled for renders the treatment outcomes (y_1 and y_0). The estimation using the conditional independent assumption or they are based on a two-stage estimation procedure, conditional probability of treatment called propensity score. Using the above thought it is possible to develop two interrelated stages:

3.6.2.1 Estimating the Propensity Scores

The first step in PSM method is estimate the propensity scores using logit regression model. Caliendo and Kopeinig (2008) noted that the logit model which has more density mass in the bounds could be used to estimate propensity scores, P(x) using a composite characteristic of the sample households and matching will then be performed using propensity scores, p-score,

of each observation. Matching algorism has been selected based on the data to be collected after undertaking matching quality test. Overlapping condition or common support condition was identified, to estimate the average treatment effects of both outcomes (ATE1 and ATE0) after estimation of the propensity scores, seeking an appropriate matching estimator is the major task.

There are various matching estimators, which include the nearest neighbor matching, caliper and radius matching, stratification and interval matching, kernel and local linear matching (Caliendo and Kopeinig, 2008). However, this study mainly utilized four types of matching techniques Kernel Matching (KM), Nearest Neighbor Matching (NNM) and Radius Caliper Matching (RCM) and Stratification Matching (SM).

3.7 Description and measurement of variables

The study used participation in the program as a treatment and none participants as non-treated, that classified sample households as a control and treatment group. Socio-demographic factors Marital status, sex of household head, years of schooling and family size are matching variables to develop common support among treated and control groups. The food security indicator variable Household Food Insecurity Access Scale is taken as the outcome variable. The perceptions of the study participants were also summarized in descriptive statistics.

3.7.1 Matching variables

Among the given variables household head sex, marital status, years of schooling, family size, occupation and types of housing were enable the study to develop common support among the program users and control groups. This is to mean according to the analysis of common support identification, more similarities between the program participant and the non-program participant was observed with these variables. The dependent variable is Household Food Insecurity Access Scale (HFIAS) status of the households, which was categorized as food secure (No), mildly food insecure (Rarely), moderately food insecure (Sometimes), and severely food insecure (Often).

- **Household head Sex:** as demographic variables, age is important to observe the gender based segregation of project participation and measured using dummy variable (0=female and 1=male) that enable the study to develop common support among treated and control groups. It is assumed that as age increase the productive capacity of people decreases.

- **Marital status:** as one of the demographic variable disaggregation of the household's marital status against other variables and food insecurity level was found very important. It has categorized as Married=1 divorce/separated =2 widowed= 3 Single=4.

- **Years of schooling:** education level of a household is another determinant to easily understand and participate in project activities as per the expectation level. The education level of households is measured in a continuous form where each number indicates the highest completed grades. Finally, it has been categorized under no education, elementary level and secondary education level.

- **Household occupation:** Means of livelihood for urban households could significantly affect the project's degree of participation. Hence, the study measured the major occupation of households other than public work. For the program users, public work is an additional occupation through which they earn monthly income.

- **Family Size:** the size of family members is an important variable in determining food security at the household level. It is measured as continuous, where the numbers indicate the number of family members residing in the household. Besides this, children under 18 years who attended school were also considered to see the household capacity to send their child to school.

3.7.2 Outcome variable

Household Food Insecurity Access Scale (HFIAS): is a brief survey instrument developed by Food and Nutritional Technical Assistant (FANTA) to assess whether or not households have experienced a problem with accessing food during the past 30 days (Noble, 2011). HFIAS score is calculated for each household by summing the codes for each of the nine

frequency-of-occurrence questions. The maximum HFIA score for a household is 27, where the household responded “often” for all nine frequency-of-occurrence questions and the minimum score is 0 if a household responded “no” to all occurrence questions. The higher the score, the more food insecurity the household experienced. The lower the score, the less a household experience food insecurity.

CHAPTER FOUR: RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter provides detailed information about the study's findings using various analysis techniques. It presents the data analysis and discussion of the research findings obtained from data collected from the survey questionnaire. Responses for the measures on the questionnaire are summarized and shown using tables, histograms and pi-charts to facilitate easy understanding.

Sociodemographic and economic profiles of sample respondent households and data obtained from the survey have been described using descriptive statistics. Simple frequency and percentage analysis have been used for the perceptions of people on the program. Propensity score matching was used to measure the impact of urban productive safety net on household food security (access) status.

4.2 **Socio Demographic Characteristics of Respondents**

Descriptive and impact analysis was conducted using questionnaires from 158 surveyed households. Socio-economic and demographic information (gender, age, education level, family size, income and expenditures, house ownership and type and number of school-age children) of the respondents are described to provide clear insight and background about respondents who engaged in the study.

The study involved 158 randomly selected households of Woreda 1 Jemo Nifas Selk Lafto Sub-city, where 102 (64.6%) are female-headed and 56 (35.4%) are male-headed households. The gender composition of female-headed is greater than male-headed sample households in both urban productive safety net users and non-users. Of the total UPSNP user respondents, 65.8% are female-headed and 34.2% are male-headed households, 63.3% of non-users are female-headed, and the remaining 36.7 % are male-headed households. The higher number of female-headed households can be attributed to the program's focus, where destitute and poorest of the poor communities are the main targets of UPSNP.

4.2.1 Urban productive safety net coverage in the wereda

According to the list of households with their economic status, which was obtained from the Wereda food security office (table 4.1), the total number of households are 14630 (3307 are female-headed). Among these, level one (poorest of the poor) and level two (the poor) are 437 and 3374, respectively, which need social support or an urban productive safety net. Households in need of the program support are 26.05% of the total households in the wereda. Of these total needy households (3811 HH), only 494 (12.96%) are addressed with the first-round program (table 4.1) in the wereda. More than 77% of households are deprioritized while they need support.

Table 4. 1 Total number of households, needy households and number of households addressed by UPSNP.

Ketena	Male headed HH	Female headed HH	Total	Level 1			Level 2			Total (L1+L2)	% Needy	No of HH addressed			% addressed
				MHHH	FHHH	Total	MHHH	FHHH	Total			MHHH	FHHH	Total	
1	681	207	888	38	26	64	170	67	237	301	33.90	28	16	44	14.62
2	2099	760	2859	13	30	43	136	141	277	320	11.19	9	11	20	6.25
3	1542	393	1935	20	51	71	210	83	293	364	18.81	0	36	36	9.89
4	1319	677	1996	9	30	39	93	131	224	263	13.18	3	19	22	8.37
5	1827	453	2280	16	22	38	582	236	818	856	37.54	7	26	33	3.86
6	3855	817	4672	67	115	182	1230	295	1525	1707	36.54	43	296	339	19.86
Grand Total	**11323**	**3307**	**14630**	**163**	**274**	**437**	**2421**	**953**	**3374**	**3811**	**26.05**	**90**	**404**	**494**	**12.96**

Source: Computed from secondary data obtained from the Wereda food security office

The very low coverage of the program in addressing vulnerable households, increases the compliance related to targeting. There must be strong compliance management mechanisms to reduce compliant from the community though . this, resource mobilization .

4.2.2 *Age of respondent*

The mean age of UPSNP PARTICIPANT household is 38.87 years with a standard deviation of 9.074 and 40.03 years with a standard deviation of 9.9884 for non-user households. The result indicates that the age difference between the non-user and program user is statistically not significant, with a t-value of 0.7630. The minimum and maximum age of respondent households range from 21- to - 58 years for project users and from 24- to - 62 for non-project users (Table 4.2).

Table 4. 2 Mean age of UPSNP-users and None-users (Two-sample t test)

Group	Obs	Mean	Std. Err.	Std. Dev.	Min	Max
None-Users	79	40.02532	1.112027	9.883909	24	62
UPSNP Users	79	38.87342	1.020937	9.07429	21	58
Combined	158	39.44937	.7537991	9.475108	21	62
diff		1.151899	1.509608			
Diff =		Mean (None-Users) - mean (UPSNP Users)			t =	0.7630

Source: Own survey result, 2021

The mean age of both treated and control groups indicate that the project has covered a public work eligible age of the community groups who are most vulnerable. The program has targeted people who can participate in the development activities with their labour.

4.2.3 ***Marital status of the households***

The study result indicates a total of 97 (61.39%) of the sample households are married, 32 (21.52%) divorced, 20 (12.66) widowed and 7 (4.43) are single. Among these, 54 (68.35%), 16 (20.25%), 7 (8.86%) and 2 (2.53%) are married, divorced, widowed and single households of the UPSNP users respectively (See figure 3). Similarly, 54.43% are married, 22.78% divorced/separated, 16.46% are widowed and the remaining 6.33% are single household for the non-program participants (Figure 3).

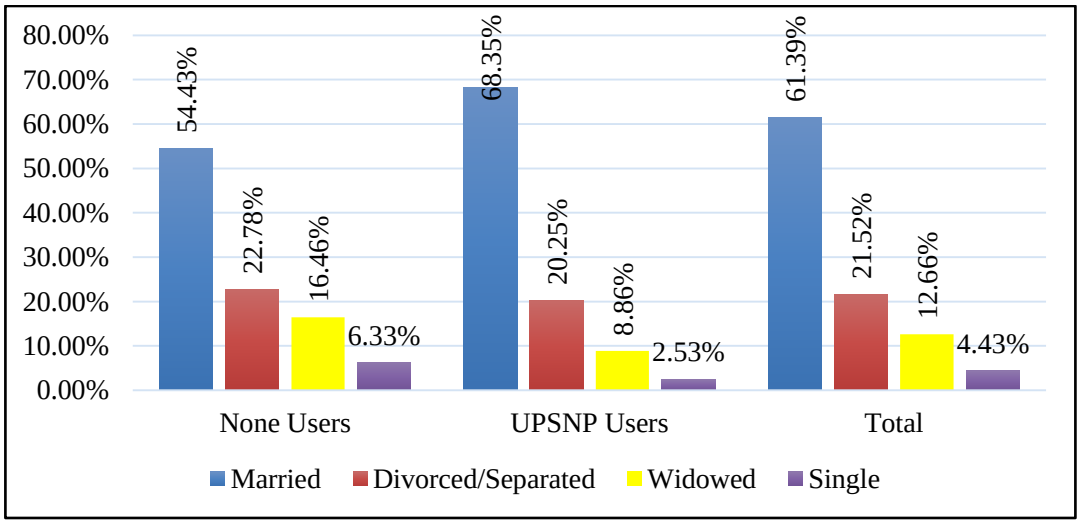

Figure 3 Marital status of surveyed household

Source own survey data 2021

4.2.2 Education status of sample households

The education level of the household head is a crucial variable that can support the effort of a project to improve food security status by classifying project beneficiaries through their education level, capacity and skills they possess. Accordingly, of the total 158 surveyed households 73 (40.20%) have a primary education level, 46 (29.11%) have secondary level education and the remaining 39 (24.68%) can't read and write. Furthermore, female-headed household accounts for 45.10% of primary, 26.47% of secondary education and the remaining 17.86% have no education (Figure 4). Like the nationwide scenario, women account for a large proportion of the uneducated population because women in developing countries face a wide range of socio-economic challenges that hinder them from participating equally and accessing services fairly.

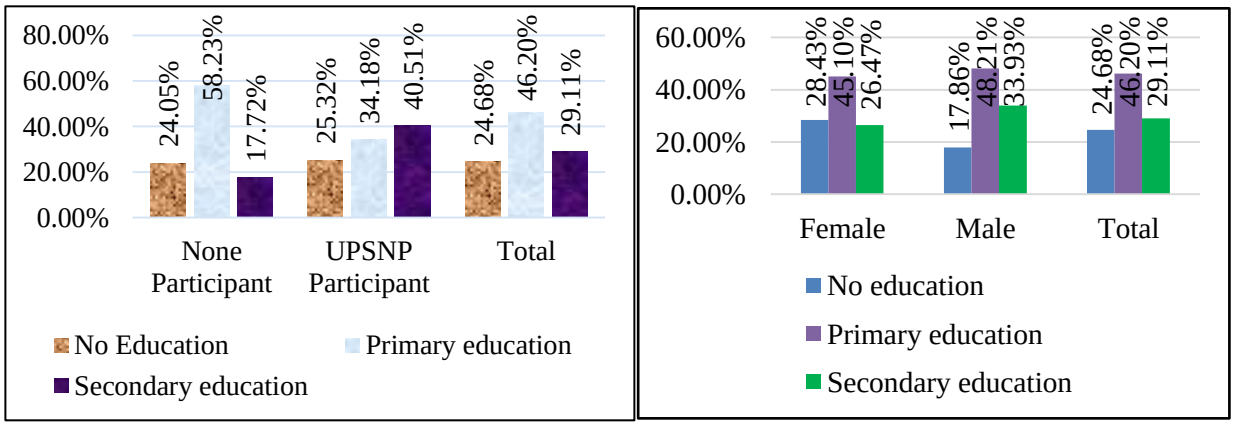

Figure 4 Percentage households that can read and write and level education by sex

Source: own survey, 2021 [The level of education was generated from the years of schooling data by categorizing 0 as "can't read and write" 1 to 6 (Primary education" and 7 to 12 as "secondary education".]

On the other hand, 40.51% and 17.72% of UPSNP users and non-project users have attained their secondary education, respectively. In comparison, only 34.18% of UPSNP users and 58.23% of non-project users have an academic background of primary school status. Among the survey participants, 25.32 % of the program users and 24.05% of the none participant households were unable to read and write (Figure 4).

The mean education grade of the program participant is 1.152 with standard deviations of 0.8021 and 0.937 with standard deviations of 0.0728 for the none participant households. Table 4.3 indicates mean educational level difference between the program users and none users is not significant, with a t value of -1.8557 (Table 4.3). Most of the household heads, 46.2 %, who took part in the survey, fall under the primary education level.

Table 4. 3 Mean education level of project participant and non- participants (Two-sample t test)

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
None Users	79	.9367089	.0728289	.6473174	.7917177	1.0817
UPSNP users	79	1.151899	.0902386	.8020584	.9722474	1.33155
Combined	158	1.044304	.0584302	.7344562	.9288931	1.159714
diff		-.2151899	.1159614	-.4442471	.0138673	-.2151899
diff =	Mean (none users) - mean (UPSNP users)				t = -1.8557	

Source: own computations from survey data, 2021

4.2.3 Household occupations other than the UPSNP public work

Most households are engaged in different informal activities to support their income and daily labour is the primary occupation of the households, with coverage of 77% of the total. The other one is private works like small businesses, which covers only 29.11% for the none users and 16.46% of the program users and 23% of the total surveyed household (Figure 5). These two groups of income-generating activities highly depend on their availability all the time. Since most households are at the primary education level, they do not have diverse job options.

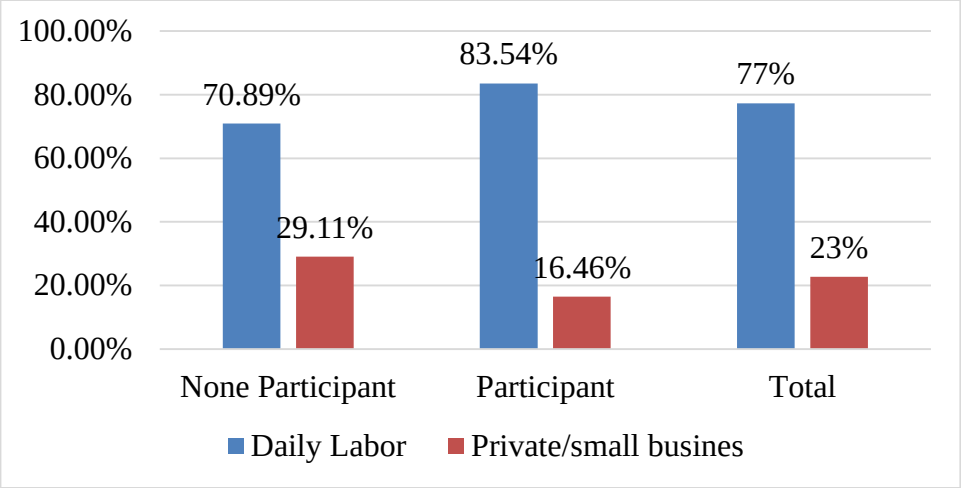

Figure 5 Household occupations other than PW activity

Source own survey 2021

4.2.4 Average family size of households

The average family size in the study area is 4.069, with a standard deviation of 1.423. The mean family size of project participants is 4.114 per head and 4.261 members per household for non-participants. The finding indicates that the mean family size for the two groups of survey participants is statistically not different (table 4.4).

Table 4. 4 Mean family size of project participant and non- participants (Two-sample t test)

Group	Obs	Mean	Std. Err.	Std. Dev.	min	max
None Users	79	4.025316	0.1774121	1.576874	1	8
PSNP Users	79	4.113924	0.1418423	1.260722	2	8
Combined	158	4.06962	0.1132648	1.423717	1	8
diff		- 0.0886076	0.2271438			
diff =	Mean (None Users) – mean (UPSNP Users)			t = -0.3901		

Source: own survey, 2021

On the other hand, the average family member in female-headed households is 4.078 and 4.054 in male-headed households, with a standard deviation of 1.412 and 1.458, respectively.

The mean family size difference among UPSNP users and none users and male and female-headed households are not significant (Table 4.5).

Table 4. 5 Mean family size of respondent households disaggregated by sex (Two-sample t test)

Group	Obs	Mean	Std. Err.	Std. Dev.
Male	56	4.053571	.1947687	1.457515
Female	102	4.078431	.1398104	1.412015
Combined	158	4.06962	.1132648	1.423717
diff		.0248599	.2375365	
diff =	Mean (Male) - mean (Female)			t = 0.1047

Source: own survey, 2021

4.2.5 Average number of Children under Eighteen years old

The average number of children under 18 years for program participants and non-participants is 2.316 and 2.291, respectively. Statistically, there is no significant difference in the mean number of children of none users and UPSNP user households (Table 4.6).

Table 4. 6 Mean number of children under 18 years of project participant and non-participants (Two-sample t test)

Group	Obs	Mean	Std. Err.	Std. Dev.	Min	Max
None Users	79	2.291139	.1519663	1.350706	0	6
UPSNP Users	79	2.316456	.11751	1.044452	0	6
Combined	158	2.303797	.0957489	1.203545	0	6
diff		-.0253165	.1920999			
diff =	Mean (None users) – mean (UPSNP Users)			t = -0.1318		

Source: own survey, 2021

4.2.6 Children under 18 years attending school

Children's schooling could be used as an important indicator of the well-being status of a given community where school dropout and out-of-school children are expected to be high in poor households. The average size of children under 18 who attend school is 1.8987, with a standard deviation of 0.932. The mean children under 18 years of age who attend school for program user households and none user households are 2.051 and 1.7447, respectively. The

result indicates that the mean size of school-age children of UPSNP users is higher than that of the none user with a t-value of -2.5310 (table 4.7).

Table 4. 7 Mean number of children under 18 years who attend school for project participant and non- participants (Two-sample t test)

Group	Obs	Mean	Std. Err.	Std. Dev.	Min	Max
None Users	79	1.746835	.102656	.9124264	0	3
UPSNP Users	79	2.050633	.1048929	.9323081	0	5
Combined	158	1.898734	.0741475	.9320197	0	5
diff		-.3037975	.1467677			
diff =	Mean (None users) – mean (UPSNP Users)			t = -2.0699		

Source: own survey, 2021

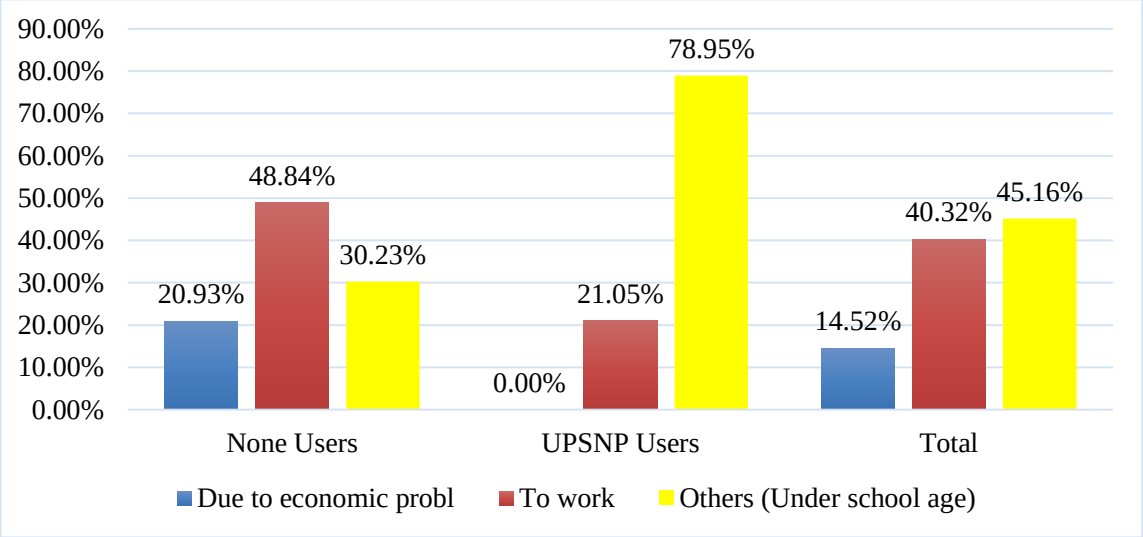

Figure Source: own survey, 2021

6 Reasons for children under 18 not attending school

Among the reasons for not attending school are children are engaged with daily work to support their family and economic problems of their family are the major reasons to remain out of school while their ages allow them. Figure 6 shows 48.84% of the none users and 21.05% of the program users' children under 18 years old do not attend school to work and support their families. In addition, 20.93% of the none user's household children are out of school due to their family's economic problems.

4.3 Household Income and Expenditures

4.3.1 Household monthly income

One of the significant factors related to household food access is income. The average monthly household income (ETB) has increased for the program users, which has been at least regular every month since it is a monthly wage (table 4.8). The minimum and maximum monthly income for the none user is 1000 ETB and 3500 ETB, while it is 2750 ETB and 4525 ETB for the program users, with standard deviations of 548.3281 and 448.6017, respectively. The survey result indicates the mean monthly income of the program user is 3677.532 and that of the none users is 2734.8. The difference between the two means is statistically significant, with a t-value of -11.8273. This suggests that participation in PSNP helps improve the income and livelihoods of poor urban households. In line with these findings, Mume et al. and Tasew and Tariku (2022), in their study regarding the impact of a productive safety net, found that PSNP increased the income of participant households.

Table 4. 8 Mean household monthly income (ETB) for project participant and non-participants (Two-sample t test)

Group	Obs	Mean	Std. Err.	Std. Dev.	Min	Max
None Users	79	2734.81	61.69174	548.3281	1000	3500
UPSNP Users	79	3677.532	50.47164	448.6017	2750	4525
Combined	158	3206.171	54.71163	687.7146	1000	4525
diff		-942.7215	79.70732			
diff =	Mean (None users) – mean (UPSNP Users)				t = -11.8273	

Urban households have several challenges compared to rural households. Urban households must purchase all their foods and other goods and services, including housing, transportation, health care and education. Therefore, food security depends mainly on the income of the households.

4.3.2 Household monthly expenditure

The average monthly expenditure of the two groups is 3212.5 ETB, with a standard deviation of 676.4213. The mean monthly expenditure of the UPSNP user is 3677.532 with a standard deviation of 448.6107 and that of the none user is 2747.468 with a standard deviation of

530.7167 (table 4.9). The difference between the two means is statistically significant, with a t-value of -11.8959.

Table 4. 9 Mean household monthly expenditure (ETB) for project participant and non-participants (Two-sample t test)

Group	Obs	Mean	Std. Err.	Std. Dev.	Min	Max
None Users	79	2734.81	59.71029	530.7167	1000	3500
UPSNP users	79	3677.532	50.47164	448.6017	2750	4525
Combined	158	3212.5	53.81319	676.4213	1000	4525
diff		-930.0633	78.18379			
diff =	Mean (none users) - mean (UPSNP users)				t =	-11.8959

Source own survey 2021

With the increased monthly income of the UPSNP users due to the wage from the public work activities, their expenditure is also significantly increased. However, this does not mean the households of the UPSNP user are food secured. In both case their monthly income and expenditure is equal that is they do not have savings.

4.3.3 External support

One of the socioeconomic ways by which households fill their gaps in access to food is support/ assistance from their relatives, neighbors and remittance from abroad. Among households receiving assistance, 45.57% are non-program participants and 24.05% are program participants (Table 4.10). As the result indicates, more numbers of none user households got assistance. Support from relatives and neighbors are the main source of assistance in the study.

Table 4. 10 Percentage of households receiving external financial assistance

Receive Financial assistance	Participation in UPSNP		
	None participant	Participant	Total
Yes	36	19	55
	45.57%	24.05%	34.81%
No	43	60	103
	54.43%	75.95%	65.19%
Total	79	79	158
	100%	100%	100%

4.3.4 House ownership

In metropolitan cities like Addis Ababa, owning a house is a lifelong challenge for most middle- and low-income citizens, even to the extent that many families remain unsuccessful in acquiring a house in their life. Recently, the high demand of citizens to own a house has become a prominent public agenda that governments confront throughout the day-to-day implementation of urban development activities.

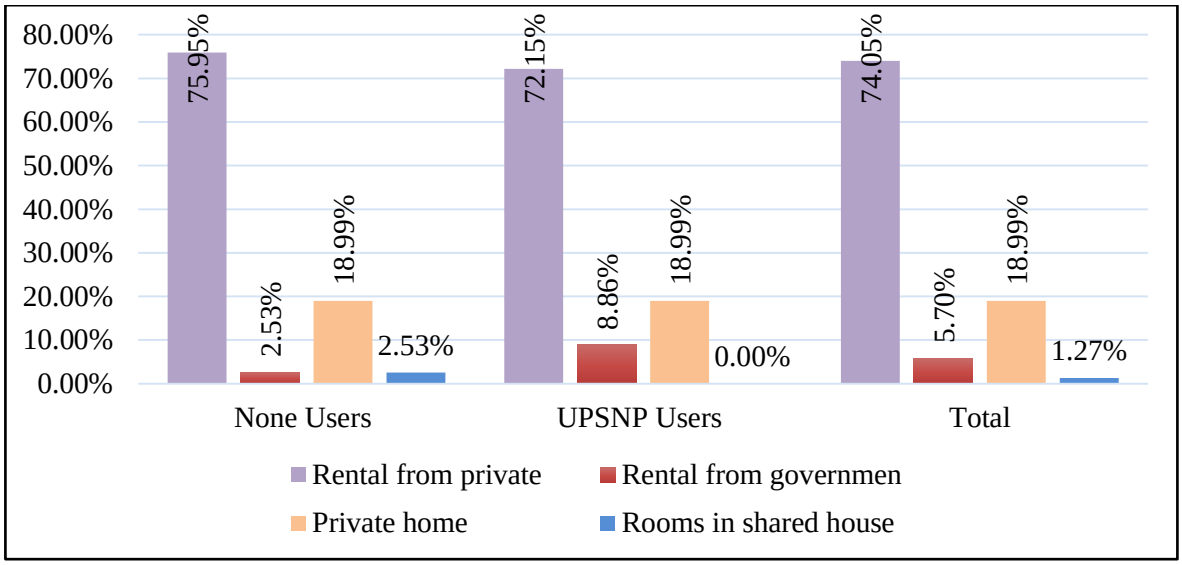

Figure 7 House ownership of sample households

Source: own survey, 2021

Of the sample households, only 18.99% have owned their house, while the others, 74.05%, live in a rental house from a private house owner, 5.70% live in government rental houses and the remaining 1.27% of the sample households live in shared rooms. This indicates that most households didn't own a house which needs further effort and commitment from the Administration to open up opportunities through different housing modalities (Figure 7). Similarly, only 18.99% of both the UPSNP users and non-user households own a house, which is far less than the city administration figure, indicating that 75.2% of the total households own a house in Addis Ababa City Administration. In 1994 the number of housing units (374,742) was 9.5% less than the number of households (414,262) which needed an equal number of dwellings. (CSA1999:218). Based on the data of the planning and policy commission, the difference has increased to 24.8% within ten years, even if the total housing

stock has raised to 471,429 with a 2.5% average annual increment. The unfulfilled demand for residential housing in 2004 was 116,806.

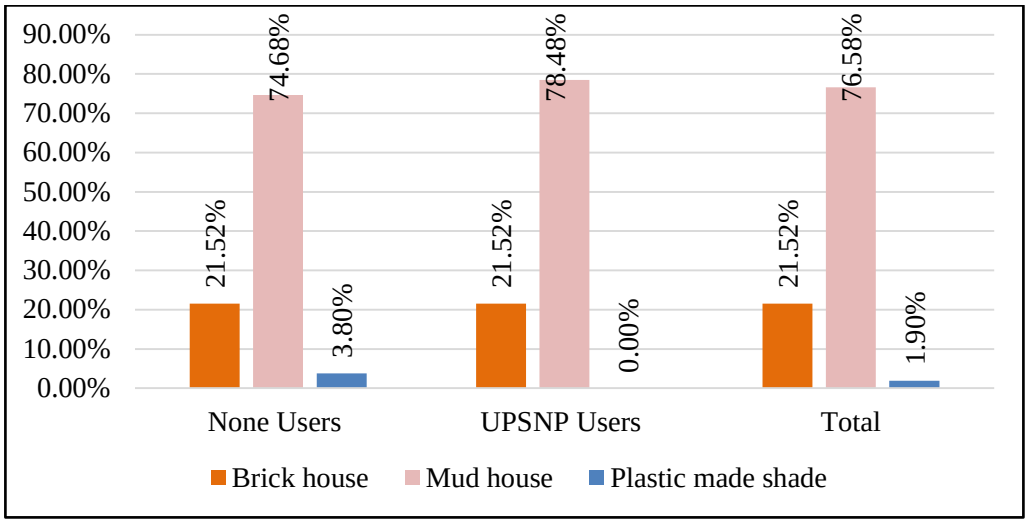

Figure 8 Type of house owned by households

Source: own survey, 2021

Figure 8 revealed that of the total households involved in the survey, 76.58% live in a house constructed using non-durable materials, wood plastered with mud. Only 21.52% of the households live in houses constructed with durable materials, including bricks and cement. The remaining 1.9% lives in plastic shade.

4.4 Household Food Insecurity

The study engaged household food insecurity access survey questions with three major distinctive parts. The first question mainly addresses households' concerns and uncertainty about food supply. The second group of questions is related to the insufficiency of quality food, which includes variety and preferences of the type of food. The third group mainly focused on insufficient food intake and its physical consequences.

Accordingly, 88.61% of none program participants and 91.14% of UPSNP participants surveyed households replied that they worried about the existence of enough food for their household. Of which, 7.59% of non-participants and 8.86% of the participant households often, 40.51% of none participants and 24.05% of the participants sometimes and 40.51% of the non-participant and 58.23% of the participants rarely worried about their household would

not have enough food. Within the second category, more than 78% of the non-participant households could not eat the foods they preferred, while less than 76% of the program participant households could not eat the food they chose. Similarly, more non-participant households explained that their family members had eaten reduced meal size and number and stay without food than the program participants (tables 4.11 and 4.12). They did not eat because they lacked the resources to obtain other types of food.

Table 4. 11 Household Food Insecurity (None participants)

S/N	Household Food Insecurity Access Scale questions		Yes	Rarely	Sometimes	Often
			%	%	%	%
Q1	Worry about not have enough food	1st Category	88.61	40.51	40.51	7.59
Q2	Unable to eat kinds of preferred foods	2nd Category	84.81	15.19	40.51	29.11
Q3	Eat a limited variety of foods	2nd Category	84.81	20.25	44.30	20.25
Q4	Eat foods they did not want to eat	2nd Category	78.48	31.65	35.44	11.39
Q5	Reduce amount of meal	3rd Category	65.82	24.05	27.85	13.92
Q6	Reduce number of meal	3rd Category	60.76	16.46	27.85	16.46
Q7	No food to eat of any kind	3rd Category	41.77	3.80	24.05	13.92
Q8	Go to sleep hungry	3rd Category	37.97	5.06	18.99	13.92
Q9	Go a whole day and night without eating	3rd Category	30.38	5.06	21.52	3.80

Table 4. 12 Household Food Insecurity (UPSNP participants)

	Household Food Insecurity Access Scale questions		Yes	Rarely	Sometimes	Often
			%	%	%	%
Q1	Worry about not have enough food	1st Category	91.14	58.23	24.05	8.86
Q2	Unable to eat kinds of preferred foods	2nd Category	72.15	16.46	40.51	15.49
Q3	Eat a limited variety of foods	2nd Category	72.15	20.25	35.44	16.46
Q4	Eat foods they did not want to eat	2nd Category	75.95	13.92	35.44	26.58
Q5	Reduce amount of meal	3rd Category	39.24	5.06	27.78	11.39
Q6	Reduce number of meal	3rd Category	34.18	5.06	16.46	12.66
Q7	No food to eat of any kind	3rd Category	11.39	0.00	6.33	5.06
Q8	Go to sleep hungry	3rd Category	11.39	0.00	3.80	7.59
Q9	Go a whole day and night without eating	3rd Category	7.59	1.27	5.06	1.27

Food secured Moderately food insecure

Mild food insecure Severely food insecure

Source: Own survey, 2021 and the food security prevalence category is adapted from USAID, 2007

Tables 4.11 and 4.12 disclosed Household Food Insecurity Access Prevalence (HFIAP) beyond the mere frequencies and percentage composition. Percentage compositions shaded using different colours represent four categories of households regarding food insecurity (access): food secures, mild, moderately and severely food insecure. Households are categorized as increasingly food insecure as they respond affirmatively to more severe conditions and/or experience those conditions more frequently.

4.5 Household Food Insecurity Access Scale

Household Food Insecurity Score (HFIAS) is a continuous measure of the degree of food insecurity (access) in the household in the past four weeks (30 days). First, the HFIAS score variable is calculated for each household by summing the codes for each frequency-of-occurrence question. The maximum score for a household is 27, where the household responded "often" for all nine frequency-of-occurrence questions and the minimum score is 0 (the household responded "no" to all occurrence questions). The higher the score, the more food insecurity (access) the household experienced. The lower the score, the less food insecurity (access) a household experiences. Then it has coded to the four access categories (1: Food secured (0 and 1), 2: mild (2 to 8), 3: moderate (9 to 16) and 4: severely (17 to 27) food insecure) from 1 to 4, respectively.

Table 4. 13 Mean HFIAS comparison test among UPSNP users and non-users (two group mean t-test)

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
None Users	79	2.835443	.1159614	1.030688	2.604582	3.066305
UPSNP Users	79	2.21519	.1090975	.9696799	1.997993	2.432386
Combined	158	2.525316	.0831238	1.04485	2.361131	2.689502
diff		0.6202532	0.1592147	.3057583	0.934748	0.6202532
diff =	mean (project non-users) – mean (project users)				t = 3.8957	

Source: Own survey, 2021

Accordingly, the mean HFIAS of the total surveyed households is 2.53, with a standard deviation of 1.045 that is UPSNP participant household is on average mildly food insecure and the non-participant households are moderately food insecure. The mean HFIAS of UPSNP users and non-users is 2.22 and 2.84, respectively (table 4.13). UPSNP users have a

lower HFIAS category mean than non-users, implying that the ongoing implementation of a productive safety-net program has a progressive, positive contribution in lowering households' food insecurity. The HFIAS category mean difference between beneficiaries and non-beneficiaries is strongly significant at (t = 3.8957). Since this study was conducted on the UPSNP project, which is ongoing or on implementation, the gradual declining progress of the project beneficiary's food insecurity access score could be continued. Taking the decline in the food access category as a major indicator the project is on the right track to achieve its intended objective concerning the improvements of the household food access.

4.6 UPSNP Impact on Household Food Security

The study engaged Propensity Score Matching (PSM) method to estimate the contribution of an ongoing urban productive safety-net program to enhance food security at the household level in Woreda 1 Jemo, Nifasilk Sub-city under the Addis Ababa City Administration.

To proceed and measure the effect, balancing property must be satisfied before matching the treated with control groups/households. This results in the generation of propensity scores to be used for the matching procedure. Hence, balancing property satisfaction was investigated and propensity score graphs for project participants and non-participants were generated. After all, the average treatment effect on the population (ATE) and average treatment effect on the treated (ATT) are measured using nearest neighbour, radius matching, stratified matching and kernel matching techniques.

4.6.1 Propensity score matching analysis

The first stage of the algorithm to estimate the propensity score is constructing the propensity score for each variable and matching starts from each treated case's propensity score and tries to find a control case with a similar propensity score to use as a match. Logistic regression comes first, followed by propensity score estimation and identification of the block, which can satisfy the balancing property.

The logistic regression result indicates that the estimated model performs well for the intended matching exercise since Pseudo $R^2 = 0.0532$ and is significant at <5% (Table 4.14). A propensity score for each household of both treated and control groups was developed and

the optimal number of blocks was identified as block 5, where this block ensures the mean propensity scores are not different for treated and control groups. Hence, the balancing property is satisfied at block 5.

Table 4. 14 Logistic regressions to estimate propensity scores

Participation in UPSNP	Coef.	Std. Err.	z	P>z
Household sex	-.305858	.227925	-1.34	0.180
Marital status	-.3101172	.128307	-2.42	0.016
Years of schooling	0272125	.0312114	0.87	0.383
Family size	-.0184189	.0818805	-0.22	0.822
Occupation	-.4826482	.2516089	-1.92	0.055
Types of housing	-.1928681	.2580547	-0.75	0.455
_cons	1.5016	.8437295	1.78	0.075
Log likelihood = -103.68854		Number of obs = 158		
Pseudo R2 = 0.0532		LR Chi^2 (6) = 11.66		
Prob > Chi^2 = 0.0701				

Source: computed from own survey, 2021

4.6.2 Common support chacking among treated and control groups

After estimating the propensity score values for program participants and non-participants, the next step in the propensity score matching technique is checking common support conditions. Only observations in the common support region matched with the other group considered and others should be out of further consideration. Once the region of common support is identified, sample households that fall outside this region have to be dropped and the treatment effect cannot be estimated for these sample households.

The estimated propensity score of non-participant households (control) ranges from 0.16186748 to 0.68322925, with a mean score of 0.4658913. The estimated propensity score of participant households (treated), ranges between 0.20707228 and 0.75704498, with a mean score value of 0.5372423.

Table 4. 15 Distribution of propensity score estimate for treated and control groups

Group	Mean Pscore	Std.	Min.	Max.
None Users	0.4658913	0.1238526	0.16186748	0.68322925
UPSNP Users	0.5372423	0.1352006	0.20707228	0.75704498
Total	0.5015668	0.1341011	0.16186748	0.75704498

Source: own survey, 2021

The common support region table (4.15) would lie between 0.20707228 and 0.68322925. It excludes treated units whose propensity score is higher than 0.68322925 and control groups whose propensity score is less than 0.20707228. Therefore, households whose estimated propensity scores are less than 0.20707228 and larger than 0.68322925 are not considered for the matching exercise.

The graphical presentation is also another way of checking common support where the common support is indicated before and after matching. Propensity scores of the treatment group and the control group show the presence of enough overlaps among project participant and non-participants (Figure 9).

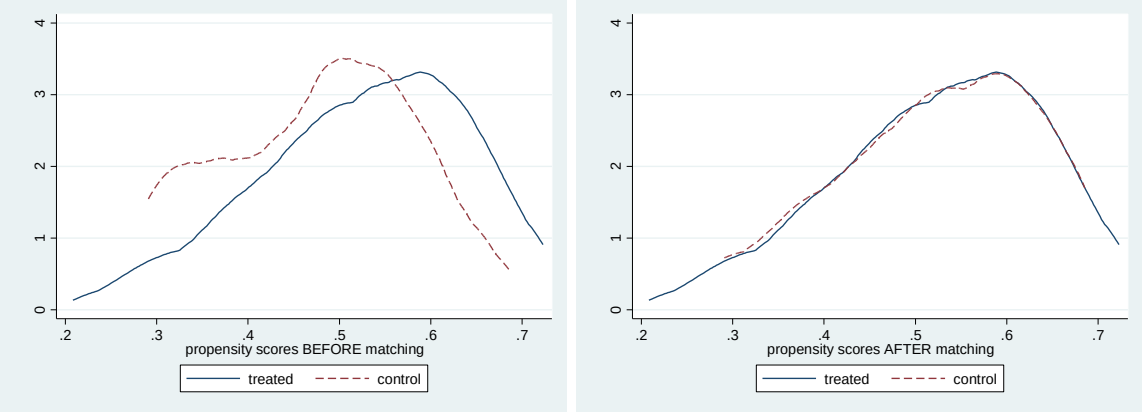

Figure 9 Propensity scores common support area graph

Source: computed from own survey, 2021

After matching, the graph revealed that most of the treated groups' propensity scores concentrated from 0.2-to-0.7. This case is the same for control groups, indicating the presence of enough common support to conduct matching algorithms.

4.6.3 Mean unmatched value of outcome variables and Average Treatment on the Treated

The next step focused on comparing the average value of outcome variables before matching and average treatment on the treated, where the difference indicates a positive or negative contribution of the treatment on the treated. The unmatched values in table (4.16) tell us the average result of each outcome variable for treated and control groups, before matching. The ATT indicates the average value of each outcome variable for treated and control groups after matching.

Table 4. 16 Average value of outcome variables before and after matching

Variable	Sample	Treated	Controls	Difference	S.E.	T stat
Household Food Insecurity Access Score (HFIAS)	Unmatched	2.21518987	2.83544304	-.620253165	.159214709	-3.90
	ATT	2.21518987	3.15189873	-.936708861	.198337618	-4.72

Source: Own survey result , 2021

Table (4.16) reveals that the program negatively contributes to household food insecurity. The average treatment on the treated (ATT) effect of UPSNP on household food insecurity access score is negative. The Household Food Security Access Score of treated households declined by 0.9367, reflecting that the program has contributed to lowering the household food insecurity scale score to be classified under mildly food insecure categories. Because, the higher HFIAS, the higher the food insecurity status of the household will be and vice-versa.

4.6.4 Testing the balance of propensity score

Before trusting ATT estimation, checking whether the balancing matching is effective in creating good control groups is mandatory. The balancing result yield percent of bias using average treatment on the treated value of each matching variable followed by a summary of mean bias. The standardized mean difference compares the difference in means in units of the pooled standard deviation. A concern with the standardized bias approach is that there is not a defined level of success of the matching procedure in the literature. In most empirical studies, a bias reduction below ten percent is considered sufficient (Austin et al., 2007; Austin & Mamdani, 2006), while others state the need for five percent or less (Caliendo & Kopeinig, 2005).

Table 4. 17 Mean bias of each variable before and after matching

Variable	Unmatched	Mean		%Bias	%Reduction (bias)	t-test	
	Matched	Treated	Control			t	p>t
Household head Sex	U	.34177	.36709	-5.3		-0.33	0.741
	M	.34177	.35443	-2.6	50.0	-0.17	0.868
Marital status	U	1.4557	1.7722	-36.5		-2.29	0.023
	M	1.4557	1.5063	-5.8	84.0	-0.41	0.685
Years of schooling	U	4.8481	4.2532	17.6		1.10	0.271
	M	4.8481	4.3671	14.2	19.1	0.92	0.360
Family Size	U	4.1139	4.0253	6.2		0.39	0.697
	M	4.1139	4.1392	-1.8	71.4	-0.12	0.906
Occupation	U	1.1646	1.2911	-30.3		-1.91	0.058
	M	1.1646	1.1519	3.0	90.0	0.22	0.829
Types of houses	U	1.7848	1.8228	-8.5		-0.54	0.592
	M	1.7848	1.8354	-11.4	-33.3	-0.70	0.485

* if variance ratio outside [0.64; 1.56] for U and [0.64; 1.56] for M. *Source: Own survey result, 2021*

Table 4. 18 Mean Bias after matching for all variables

Sample	Ps R^2	LR chi^2	P > chi^2	Mean Bias	Med Bias	B	R	%Var
Unmatched	0.053	11.66	0.070	17.4	13.1	55.1*	1.17	40
Matched	0.010	2.14	0.906	6.5	4.4	23.2	2.25*	0

- If B>25%, R outside [0.5; 2]. *Source, Computed from own survey, 2021*

Table (4.17) shows the reduction of bias comparing before and after matching scenarios for each variable. Table (4.18) indicates that the mean bias of all matching variables was reduced to the standard and acceptable level of 6.5%. Howarter (2015) stated that the absence of significant differences between the treated and control groups after the match proves that balance has been achieved.

4.6.5 Impact of the UPSNP on Household Food Insecurity

Household Food Insecurity Access Score directly addresses the food insecurity status of the household through score-based analysis. It is a continuous measure of the degree of food insecurity in the household in the past four weeks or 30 days before the interview date. HFIAS score is calculated for each household by summing the codes for each frequency-of-occurrence question. The maximum HFIA score for a household is 27, where the household responded "often" for all nine frequency-of-occurrence questions and the minimum score is 0 if a household responded "no" to all occurrence questions. The higher the score, the more food insecurity the household experienced. The lower the score, the less food insecurity the household experiences.

The urban productive safety net program has a significant negative impact on household food insecurity access score, where UPSNP user households have on average -3.307 (Nearest Neighbor Matching), -3.610 (Stratified Matching), -3.821 (Kernel Matching) and -5.840 (Radius Matching). The lower HFIAS than non-user households and the score difference is significant for all matching techniques except for radius matching (Table 4.19).

Table 4. 19 Different matching analysis to estimate the impact of UPSNP on HFIAS

Type of matching	n. treat.	n. contr.	ATT	Std. Err.	t
Nearest Neighbor Matching	79	48	-0.802	0.242	-3.307
Stratified Matching	72	83	-0.694	0.192	-3.610
Kernel Matching	79	76	-0.673	0.176	-3.821
Radius Matching	79	76	-0.663	0.113	-5.840

Source: Own survey, 2021

The negative values on HIFAS score of beneficiary households assert that the ongoing urban productive safety net program has a significant contribution and has potential to reduce the food insecurity level of targeted households. At the same time, dedicated efforts are deemed to strengthen and diversify the program's impact. Thus, the result tells us that urban

productive safety net program beneficiary households have lower food insecurity levels, which could be a milestone of the project's progress toward achieving its objective.

In line with the findings of this study, many studies revealed that the PSNP in Ethiopia has a positive impact on the availability of food, particularly during the lean season, increased household calorie intakes, improved food consumption, increased annual income and improved livelihoods of the beneficiary households (Hailu, 2022; Mume et al., 2022; Tasew and Tariku, 2022; Gebressilassie, 2020; Muluken, 2019; Waltaji, 2017; Philipp Maier, 2014).

On the contrary to this, the finding of the study by Bahru et al. (2020) and Abiye et al. (2019) on the impacts of productive safety net states that it did not improve household food insecurity, livelihoods and food consumption.

4.7 Perceptions of the peoples about the program

Likert items have been used to measure respondents' attitudes towards the UPSNP program using questions related to the program operation, wage rate, and contribution to the physical environment. The number 1 to 5 are coded as strongly agree, agree, neutral disagree and strongly disagree, respectively, for analysing the data. Since it is difficult to use the Likert scale data mean as a measure of central tendency as it has no meaning. Therefore, the percentages and frequencies are the best way to display the response distribution (table 20).

Table 4. 20 Frequency of the responses on the perceptions of people to the program

Questions	Participation in UPSNP	Frequency of the response				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Do you agree that beneficiary selection process was fair?	None users	0	5(6.33%)	21 (26.58%)	47 (59.49%)	6(7.59%)
	UPSNP usrers	4(5.06%)	65(82.28%)	7 (8.86%)	3(3.80%)	0
	Total	4 (2.53%)	40 (44.30%)	28 (17.72%)	50(31.65%)	6(3.80%)
The compliance management system of the program implementing institute is well	None users	0	0	47(59.49%)	27(34.18%)	5(6.33%)
	UPSNP usrers	0	34(43.04%)	22(27.85%)	13(16.46%)	10(12.66%)
	Total	0	34(21.52%)	69 (43.67%)	40(25.32%)	15(9.49%)

established

The wage rate is sufficient to cover food need of the HH	None users	NA	NA	NA	NA	NA
	UPSNP usrers	0	8(10.13%)	1(1.27%)	57(72.15%)	13(16.46%)
	Total	0	8(10.13%)	1(1.27%)	57(72.15%)	13(16.46%)
Do you agree with the timeliness of transfer?	None users	NA	NA	NA	NA	NA
	UPSNP usrers	2 (2.53%)	41(51.90%)	3(3.80%)	25(31.65%)	8(10.13%)
	Total	2 (2.53%)	41(51.90%)	3(3.80%)	25(31.65%)	8(10.13%)
The program is contributing to urban agriculture	None users	45(56.96%)	31(39.24%)	3(3.80%)	0	0
	UPSNP usrers	48(60.76%)	29(36.71%)	2 (2.53%)	0	0
	Total	93(58.86%)	60(37.97%)	5(3.16%)	0	0
You agree that the PW is contributing to the urban beautification?	None users	14(17.72%)	61(77.22%)	4(5.06%)	0	0
	UPSNP usrers	17(21.52%)	60(75.95)	2(2.53%)	0	0
	Total	31(19.62%)	121(76.58%)	6(3.80%)	0	0
Do you agree that waste disposal and management activity is changing your physical environment?	None users	14(17.72%)	61(77.22%)	4(5.06%)	0	0
	UPSNP usrers	17(21.52%)	60(75.95%)	2(2.53%)	0	0
	Total	31(19.62%)	121(76.58%)	6(3.80%)	0	0
There is sufficient and appropriate safety material supply for during PW activities	None users	NA	NA	NA	NA	NA
	UPSNP usrers	0	52(65.82)	0	27(34.18%)	0
	Total	0	52(65.82)	0	27(34.18%)	0

Source own survey 2021

Survey respondents were asked about the fairness of the targeting process and more than 44% agreed that the process was fair. However, more than 31% disagreed with the fairness of the targeting processes. Similarly, concerning the targeting process, they were asked about the compliance handling system by the district UPSNP public work program coordination office and 21.52% agreed that there are compliance mechanisms established. In comparison, 25.32% and above disagreed with the existence of an established compliance management system. Large portions of the respondent, 43.67%, do not know whether there is a compliance system. On top of this, the findings from KIIs revealed all interviewed households underlined the

importance and benefits of UPSNP to the individual households in supporting and improving their food insecurity.

The other point was about the size of the wage paid for public work. This question was only applicable to the program participants and their response was 72.15% disagreed and 16.46% strongly disagreed that the wage amount is not proportional to the monthly expenditures of the household. Smaller portions of the respondents, 10.13%, agreed with the sufficiency of the wage rates for household expenditures. On the other hand, 51.90% and 2.53% of the respondents agreed and strongly agreed that there is a timely transfer of the monthly wage, respectively. On the other hand, 31.65% and 10.13% of the respondent disagreed and strongly disagreed with the timeliness of the transfer, respectively. The KII result has also revealed that the wage rate is too low to cover basic household needs with the current market inflation.

Regarding the program's public work contributions to urban agriculture, 58.86% of the respondents strongly agreed and 37.97% agreed that it is positively contributing to urban agriculture through cleaning the waste disposal areas and rehabilitating marginal lands. On the other hand, plantations and nursing of the planted seedlings and cleaning the roadsides and the public regions maintain the city's beauty. This has been confirmed by the survey participants through 76.58% agree and 19.62% strongly agree responses, indicating that the PW activities contribute to the city's beautification. Above all, the program's waste disposal and management activity are changing the livening areas' physical environments. Of the total respondents, 76.58% agreed and 19.62% strongly agreed with the contribution of public work activities to the improvements of the local physical environments. In this regard, the program benefits not only the targeted people but also all the communities living in the city.

In line with the study's findings, Misgana (2018) found that UPSNP public work activities involved environmental cleaning, urban greenery, watershed management and urban agriculture activities, enhancing the environment's quality, safety and esthetics. Similarly, a study conducted by Endalamaw (2019) at Diredawa city administration states that UPSNP is contributing to improving household food security status at the household level and liquid and

solid waste handling and disposal, besides growing awareness of environmental conservation in the community.

The other issue which was addressed in the study is the provisions of personal protective wear/equipment (PPE) for the public work participants. In this regard, 65.82% of the respondent agreed that there are provisions for personal protective equipment, while the remaining 34.18% disagreed.

Table 4. 21 Mean response on fairness of targeting by the UPSNP users and none user (Two-sample t test)

Group	Obs	Mean	Std. Err.	Std. Dev.
None users	79	3.684	0.080	0.708
UPSNP Users	79	2.114	0.060	0.531
Combined	158	2.899	0.080	1.004
diff		1.569	0.0995472	
diff	mean (None users) - mean (UPSNP users)		t = 15.7676	

Source: own survey, 2021

The mean response of the non-user is 3.684 with a standard deviation of 0.080 and that of the program user is 2.111 with a standard deviation of 0.060. The result is statistically significant, with a t-value of 15.7676. The result revealed that the non-users disagreed with the fairness of the targeting process (table 4.21). This could be because they are not selected for the program while needy, which is the problem related to the transparency of the targeting process.

In summary, labour-intensive public work projects support sustainable community assets and public service improvements. The public work activities appropriate for the urban areas and customized to the special environments are implemented well.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Urban productive safety net (UPSNP) presents the first significant opportunity to address food gaps of the vulnerable while at the same time employing the poor and vulnerable. On the other hand, the public work wage directly addresses the issue of access to food security. Where the wage is paid in food, the food ration is typically designed to meet household calorific requirements. The study aims to investigate the contribution of the urban productive safety net program on household food security in a specific case study area of Woreda 1 Jemo, Nifas-Silk Sub-City of Addis Ababa City Administration. A household survey was conducted using a well-developed semi-structured questionnaire. A total of 158 households with an equal proportion of UPSNP users and non-users (79 users and 79 non-users) were randomly selected from a sample frame containing a list of beneficiaries and non-beneficiaries households. The study utilized descriptive statistics to present results. Propensity Score Matching (PSM) analysis implemented to estimate the impact of the UPSNP on household food security. Nearest Neighbor, kernel and radius matching techniques were applied to estimate ATT of the program.

The study revealed that the mean HFIAS of the total surveyed households is 2.525, with a standard deviation of 0.083. The study disclosed that the mean HFIAS of UPSNP users and non-users is 2.22 and 2.835, respectively. UPSNP users have a lower HFIAS category mean than non-users, implying that the ongoing implementation of a productive safety-net program has a progressive and positive contribution to lower households' food insecurity. The HFIAS category means difference between beneficiaries and non-beneficiaries is strongly significant ($t = 3.8957$). Since this study was conducted on the UPSNP project, which is still ongoing, the gradual declining progress of the project beneficiary's food insecurity access score could continue. This could be taken as a significant indicator to ensure the project is on the right track to achieve its intended objective concerning improvements to household food access

The econometric model also strengthens the research finding that urban productive safety-net program has a significant negative impact on household food insecurity access score. UPSNP-user households have, on average, -3.307 (Nearest Neighbor Matching), -3.610 (Stratified Matching), -3.821 (Kernel Matching) and -5.840 (Radius Matching) lower HFIAS scores than

non-user households and the score difference is statistically significant for all matching techniques.

The program's negative impact on HFIAS of beneficiary households asserts that the ongoing urban productive safety-net program has a significant contribution potential to reduce the food insecurity level of targeted households. At the same time, dedicated efforts are deemed to strengthen and diversify the program's impact. Thus, the result tells us that urban productive safety net program beneficiary households have lower food insecurity levels, which could be a milestone of the project's progress toward achieving its objective.

Concerning the perceptions of the study participant on the program's different aspects, more than 46% of the respondents agree that the targeting process was not fair and more than 36% disagree that it was fair. The mean comparison between the program users and none users on the fairness of targeting is also strongly significant, with a t-value of 15.7676. More than 88% of the program user respondents disagree with the wage amount is sufficient. About 53% of the respondents agreed with the timely transfer of wages and more than 41% disagreed with the timeliness of the transfer. On the other hand, more than 95% of the respondents agree that public work activities contribute to urban agriculture improvement, urban beautification and local environmental improvements, respectively.

5.2 Recommendations

The findings of the study made it necessary for the following recommendations

- Compared to the total support requiring households in the Wereda, the program targeted few numbers of households and this has increased the compliance related to targeting. Therefore, the government must find other ways to address more households.
- Even though the program is positively contributing to the household food security, there has to be a continuous effort to maintain the program’s effect on beneficiary households.
- The program is positively impacting the local environment. However, the public work participants must be given more care not to be affected during cleaning and removing wastes.

- Large portions of the respondent households have no or limited awareness o the compliance system. Therefore, the Wereda food security office should provide mass awareness creations. Beside this, skill training for the program participant is necessary sustains their income.
- The study was limited to one wereda of the city due to lack of time and finance, if more than one wereda were used as the study area, the result may be different and further assessment need to be conducted.

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ANNEX 1 SURVEY QUESTIONNAIRES

HOUSEHOLD SURVEY QUESTIONNAIRE

General Introduction

Dear respondent, my name is Habtamu Ayele, I am a student from Addis Ababa University with a prospective graduates of Master's degree in the department of Food Security and Development. By now, I am making research for my thesis entitled "**CONTRIBUTIONS OF URBAN PRODUCTIVE SAFETY NET PROGRAM PUBLIC WORK TO HOUSEHOLD FOOD SECURITY: A CASE OF WOREDA 1 JEMO, NEFAS SILK LAFTO ADDIS ABABA**". The overall objective of the study is to analyze the contributions of urban productive safety net public work program to household food security in Woreda 1 Jemo.

Your answer will be kept privately and only used for the purpose of this research. The researcher also trusts that real answers from all the respondents have very high importance that might be used for policy makers, planners and NGO that work on UPSNP as poverty reduction program of the country. Hence, I ask you to be honest and real in your response. Furthermore, any information that you provide is very important to this Household survey. Finally, I would like to extend my appreciation and thanks for your cooperation and scarifying of your valuable time.

Are you willing to participate in the interview? If "Yes" __ continue the interview and if "No" ___ Thank and stop.

Woreda _____ Ketena _____ Interviewer name_____
Date of interview_____ Starting time _____Ending time_____

Please encircle the correct answer which to indicate number and write a correct number on the space provided.

Part I: Socio-demographic characteristics			
S/N	**Questions**	**Answer Option**	**Skip**
Q1.1	Sex of household head	1. Male 2. Female	
Q1.2	Age of household head in year	_____ Years.	
Q1.3	Marital status of the household head	1. Married 2. Divorced/ Separated 3. Widowed 4. Single	
Q1.4	Educational status of Household head (Can read and write	1. Yes 2. No →	Q1.6
Q1.5	If Yes, years of schooling	_____years	

Q1.6	Total number of family size	Male_____ Female _____ Total_____	
Q1.7	Number of individual under 18 years old	Male_____ Female _____ Total_____	
Q1.8	Number of children currently attending school	Male_____ Female _____ Total_____	
Q1.9	Number of children not attending school	Male_____ Female _____ Total_____	
Q 1.10	Reason for not attending school	1. Due to economic problems 2. Health problem 3. Taking care of others 4. Taking care of sick ones 5. To work 6. Others specify_____	
Q1.11	How many member of the HH are benefiting from the UPSNP	Specify the No _____	
Q 1.12	History of any chronic medical problem confirmed by the physician.	1. Yes 2. No	
Q1.13	Occupational status of Household head (more than 1 choice is possible)	1. Daily labor/informal activities 2. Private work/small business	
Q1.14	Ownership of the house	1. Rental from private 2. Rental from government 3. Private 4. Other specify (____)	
Q1.15	Types/quality of the house	1. Brick house 2. Mud house 3. Plastic made 4. Rooms in shared house	
Part II. Economic Characteristics			
Q2.1	What were the estimated monthly income of the household prior to join the UPSNP?	_____ ETB	
Q2.2	What were the estimated monthly expenditure of the household prior join the UPSNP?	_____ ETB	
Q2.3	What were your estimated monthly income after joining the UPSP?	_____ ETB	
Q2.4	What were your estimated monthly expenditure after joining the UPSP?	_____ ETB	
Q2.5	What portion of your monthly expenditure did the UPSNP wage cover?	1. It covers all 2. Half of the monthly expenditure 3. Small portion	
Q2.6	What amount of money expend for food/month?	_____ ETB	
Q2.7	What amount of money expend for noon food/month?	_____ ETB	

Q2.8	Do you receive financial assistance from any other sources?	1. Yes 2. NO →	Q2.10
Q2.9	If yes for Q 2.8 what was your source of finance?	1. Relatives 2. Remittance 3. Neighbors 4. Others specify_____	
Q 2.10	Source of household food	1. Prepared at home 2. Buying at restaurant 3. Other (specify)_____	
Q 1.15	Food purchasing responsible gender	1. Male 2. Female	
Q 1.16	Access to credit service	1. Yes 2. No	
Q 1.17	Access to free health service	1. Yes 2. No	
Part III Perceptions of Beneficiary HH towards the program			
Q 3.1	Do you agree that beneficiary selection process was fair?	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5 Strongly disagree	
Q 3.2	The compliance management system of the institute is well established	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5 Strongly disagree	
Q 3.3	The wage rate is sufficient to cover food need of the HH	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5 Strongly disagree	
Q3.4	Do you agree with the timeliness of transfer?	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5 Strongly disagree	
Q3.5	The program is contributing to urban agriculture	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5 Strongly disagree	
Q3.6	You agree that the PW is contributing to the urban beatification?	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5 Strongly disagree	
Q3.7	Do you agree that waste disposal and management activity is changing your physical environment?	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5 Strongly disagree	
Q3.8	There is sufficient and appropriate safety material supply for during PW activities	1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5 Strongly disagree	
Q3.9	Was there any illness/ injury happened to you /your team member due to lack of safety materials	1. Yes 2. No	
Part IV: Household Food Insecurity Access Scale (HFIAS) Questions			

S/N	Question	Option	Skip
Q4.1	In the past four weeks, did you worry that your household would not have enough food?	1. Yes 2. No ⟶	Q202
Q4.1a	How often did this happen?	1. Rarely (once or twice in the past 4 weeks) 2. Sometimes (3-10 times in the past 4 weeks) 3. Often (> 10 times in the past 4 weeks)	
Q4.2	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	1. Yes 2. No ⟶	Q203
Q4.2a	How often did this happen?	1. Rarely (once or twice in the past 4 weeks) 2. Sometimes (3-10 times in the past 4 weeks) 3. Often (> 10 times in the past 4 weeks)	
Q4.3	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	1. Yes 2. No ⟶	Q204
Q4.3a	How often did this happen?	1. Rarely (once or twice in the past 4 weeks) 2. Sometimes (3-10 times in the past 4 weeks) 3. Often (> 10 times in the past 4 weeks)	
Q4.4	In the past four weeks, did you or any household member have to eat some foods that you did not want to eat because of a lack of resources to obtain other types of food?	1. Yes 2. No ⟶	Q205
Q4.4a	How often did this happen?	1. Rarely (once or twice in the past 4 weeks) 2. Sometimes (3-10 times in the past 4 weeks) 3. Often (> 10 times in the past 4 weeks)	
Q4.5	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	1. Yes 2. No ⟶	Q206
Q4.5a	How often did this happen?	1. Rarely (once or twice in the past 4 weeks) 2. Sometimes (3-10 times in the past 4 weeks) 3. Often (> 10 times in the past 4 weeks)	
Q4.6	In the past four weeks, did you or any household member have to eat fewer meals in a day because there was not enough food?	1. Yes 2. No ⟶	Q207

Q4.6a	How often did this happen?	1. Rarely (once or twice in the past 4 weeks) 2. Sometimes (3-10 times in the past 4 weeks) 3. Often (> 10 times in the past 4 weeks)	
Q4.7	In the past four weeks, was there ever no food to eat of any kind in your household because of a lack of resources to get food?	1. Yes 2. No →	Q208
Q4.7a	How often did this happen?	1. Rarely (once or twice in the past 4 weeks) 2. Sometimes (3-10 times in the past 4 weeks) 3. Often (> 10 times in the past 4 weeks)	
Q4.8	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	1. Yes 2. No →	Q209
Q4.8a	How often did this happen?	1. Rarely (once or twice in the past 4 weeks) 2. Sometimes (3-10 times in the past 4 weeks) 3. Often (> 10 times in the past 4 weeks)	
Q4.9	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	1. Yes 2. No	Q209a
Q4.9a	How often did this happen?	1. Rarely (once or twice in the past 4 weeks) 2. Sometimes (3-10 times in the past 4 weeks) 3. Often (> 10 times in the past 4 weeks)	

Thank you for your participation and valuable information.

ANNEX 2 KII CHECKLISTS

GUIDING QUESTIONS FOR SEMI-STRUCTURED INTERVIEW (KII)

Date of interview: _____

Interview No: _____

Name of interviewee: _____

Description of the interviewee: _____

1. When did the program started implementing in the district? How was the targeting processed?
2. How did compliance is managed from beneficiaries?
3. Do you thing the program has brought the intended results? If yes how? If not Why?
4. How do you assess the impact of UPSNP on income/expenditure, food security, environment, health, educational status of beneficiary households in this woreda? (Short- and long-term impact)?
5. What are the weakness and strength of the UPSNP in your understanding and what solutions can you recommend?
6. What are the specific PW activities taking place by the PW participants? (Under the watershed management, waste management, urban agriculture, beautifications etc.).
7. Do you received any skill training that can help improve your employability?