“THE EFFECT OF COVID-19 ON HOUSEHOLD SUSTAINABILITY: A COMPARISON STUDY OF PLANNED AND UNPLANNED AREAS OF ISLAMABAD”

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Declaration

I certify that this research work titled "*THE EFFECT OF COVID-19 ON HOUSEHOLD SUSTAINABILITY: A COMPARISON STUDY OF PLANNED AND UNPLANNED AREAS OF ISLAMABAD"* is my own work. The work has not been presented elsewhere for assessment. The material that has been used from other sources it has been properly acknowledged / referred.

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Abstract

The frequency of infectious diseases was very low before 1900s. With the advancement of technology and increasing population, the evolution of diseases has also increased the pace and the frequency has also increased. Covid-19 is one of these viral diseases. It is stated in a lot of researches that the indirect impact of a highly transmissible disease is multiple times of their direct impact (Smith, Machalaba et al. 2019). As an evolved viral disease, Covid-19 is highly transmissible and contains high socio-economic effects which are difficult to understand without quantification. The effects of Covid-19 are known to us on the basis of simulation but not on factual data (Correia, Luck et al. 2020). The effect of Covid-19 on food security and economy is the highest with respect to previous pandemics (Stoop, Desbureaux et al. 2021). This type of pandemic can result in down trend of overall economy as with time, the household sustainability and living standard drops. Health is a major part of sustainability. Islamabad is the capital of Pakistan and is highly affected by Covid-19. Quantification and identification of the factors of socio-economic impact is necessary so that trends and strategies to control the indirect impacts of Covid-19 can be obtained. It will also include living pattern before and after Covid-19 of people who live in planned areas in comparison to people who live in unplanned areas. A detailed demographic trend analysis of effects of Covid-19 is also needed to understand the situation better.

Key Words: *Covid-19, household sustainability, socio-economic impact, planned and unplanned neighborhood, response plan.*

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CHAPTER 1: INTRODUCTION

1.1. BACKGROUND OF THE STUDY

The frequency of infectious diseases was very low before the 1900s. With the advancement of technology and increasing population, the evolution of diseases has also increased the pace and the frequency has also increased. Covid-19 is one of these viral diseases. It is stated in a lot of researches that the indirect impact of a highly transmissible disease is multiple times their direct impact (Smith, Machalaba et al. 2019). As an evolved viral disease, Covid-19 is highly transmissible and contains high socio-economic effects which are difficult to understand without quantification. The effects of Covid-19 are known to us based on simulation but not on factual data (Correia, Luck et al. 2020). The effect of Covid-19 on food security and the economy is the highest concerning previous pandemics (Stoop, Desbureaux et al. 2021). This type of pandemic can result in a downward trend of the overall economy as with time, household sustainability and living standards drop. Health is a major part of sustainability. Islamabad is the capital of Pakistan and is highly affected by Covid-19. Quantification and identification of the factors of socio-economic impact are necessary so that trends and strategies to control the indirect impacts of Covid-19 can be obtained. It will also include living patterns before and after Covid-19 of people who live in planned areas in comparison to people who live in unplanned areas. A detailed demographic trend analysis of effects of Covid-19 is also needed to understand the situation better.

Household sustainability is always a hot topic of research in times of catastrophes, pandemics, and economic crises. Similar research is carried out in every country when a major disaster hits according to correspondence because the first question of any layman about a disaster would be that how it has affected local households and on what scale. As, covid-19 is a newly born pandemic nature disaster, a lot of research is carried out regarding the effect and impact of Covid-19 on different aspects but the effect of Covid-19 on household sustainability is not discussed in any research especially in Pakistan.

This research will unfold a lot of new research questions and show us a true picture of the effects of Covid-19 on a very local scale according to the urban planning practices. Detailed research articles are published in 2020 and 2021 which discuss the household energy, overall economic changes, and health issues due to Covid-19 but this research would be holistic in

nature of sustainability and it will result in useful trends of the effect of Covid-19 concerning social, economic, urban planned and unplanned areas and demographics which would be useful to develop strategies and techniques for minimizing the effect of Covid-19.

Covid-19 is a pandemic that is changing form in every aspect. With every research, new dimensions of the disease are coming forward. Researchers are continuously working towards the effects of Covid-19 on a national and regional scale but the local level is not considered as it is the most important. The limitation of local evaluation is that data is not available and is difficult to collect. So, we take Islamabad, as it is the capital city and most drastically affected by Covid-19. Moreover, Islamabad is the only planned city of Pakistan and it also contains unplanned areas. The difference in demographics and the household pattern is the greatest in planned and unplanned areas of the same city i.e. Islamabad. The variance in a household will inform us about the effect of Covid-19 due to different living patterns. This way, the gap can be fulfilled by knowing that if Covid-19 has affected different communities differently or not. Planned areas of Islamabad are mostly home to high-income business-oriented households and unplanned areas have lower living standards with middle-income households who are job holders mostly. Lockdowns have affected household energy usage patterns, transportation, and health needs (Ravindra, Kaur-Sidhu et al. 2021). Covid-19 has even affected the pattern of garbage production and wastewater amount of households (Ikiz, Maclaren et al. 2021). So, considering all of this, techniques and strategies should be devised which can help people fight Covid-19 on a local scale in their households and maintain sustainability.

1.2. PROBLEM STATEMENT

The national and regional level of information is analyzed throughout the world and given more importance. This interest includes economic factors like GDP, interest rates, inflation, etc., and social factors i.e. population habits, overall perception, population density, etc. In this reign, the local effect of disasters and pandemics are lost and are not indulged in the analyses. Lack of data is the main reason for this discrimination. As the scope of this research, the national and regional effects of Covid-19 are well-known but the local impact is not quantified or calculated anywhere in the world successfully. A true need of local effect of Covid-19 determination is required for the successful implementation of policies against Covid-19, making a response plan and optimal results of restoration from Covid-19.

1.3. SCOPE OF RESEARCH

In Pakistan, a lot of characteristics of economics and social interaction of people have changed due to Covid-19. The inflation rate in Pakistan for 2020 was 10.74%. As an overall picture, people are forced to reduce their social capital and unemployment has arisen multiple natural economic problems. Due to this, psychological issues and frustration among the people have increased on a local scale. These problems need to be identified so that, through proper recommendations, the quality of life and the mental health of people can be restored i.e. direct and indirect effects of Covid-19 on household sustainability can be minimized. Pakistan may not be among the most Covid-19 cases countries but the indirect effects of Covid-19 are more in Pakistan than any other country. As my study area in Islamabad, Islamabad has had the most number of Covid-19 cases concerning population and the strict lockdowns of all were planned for Islamabad. So, the indirect effects of Covid-19 can be assumed maximum in Islamabad.

There exists numerous general advantages of this research but the most specific ones would be discussed. Covid-19 has affected us more in indirect ways than indirect ways, so a true picture of it would be unfolded through which the household sustainability would be insured and increased. Also, it would result in a better social life for individuals on a local scale. The results of this research would help in coping with Covid-19 by not compromising the quality of life and sustainability of the household. Government officials can use this research to make amendments to their strategies for better influence and control. A lot of new research questions would arise

through this research and the data of it can be used for various findings. As people are dependent on the government in these tough times of Covid-19, following the recommendations of this research would give them overall confidence against Covid-19.

We know that sustainability has three major pillars: social, economic, and environmental. In this research, the social and economic aspects of a household would be discussed, quantified, and calculated. The applicability of this research is mainly focused on disasters that are pandemic in nature. There exist no major limitations for the research and is very practical. The topic is very modern and results would have a major impact on the households. The sample area of this study is Islamabad but this research would apply to cities with the same characteristics and variables. Although, there are medical aspects related to the nature of this research which will be taken care of very critically to avoid any variance in the results. If the variables are changed then accordingly, the methodology of this research can be applied in a similar way to obtain results accordingly. For example, the effect of any disaster on household sustainability in comparison to planned and unplanned areas can be found.

1.4. OBJECTIVES

The research is solely dependent on the data collection from households. So, this research may work on some objectives as a side result but the major objectives of this research are as follows:

1. To identify the economic impact of Covid-19 in planned and unplanned areas of Islamabad.
2. To identify the social impact of Covid-19 in planned and unplanned areas of Islamabad.
3. To determine the coping strategies adopted by households during Covid-19.
4. To know the role of government in mitigating the effects of Covid-19 on household sustainability.
5. To recommend strategies for minimizing the effect of Covid-19 on household sustainability.

CHAPTER 2: STUDY AREA

2.1. HISTORY OF ISLAMABAD

Right now the capital of Pakistan is Islamabad. The work of building a planned city of Islamabad started in 1960 and it became the capital of Pakistan in 1963. Before 1963, Karachi was the capital of Pakistan. the proximity of Islamabad and Rawalpindi is strong so they are often referred to as sister cities or twin cities. The general observation of the city of Islamabad is clean, green, spacious, and quiet concerning other cities as it is the only planned city of Pakistan. The geographic positioning of the city was determined by taking a lot of factors into account. After the independence of Pakistan, it was known that a separate Capital for Pakistan is needed as Karachi is a port city and can be a threat by international forces easily. So the activities of the capital city were to be shifted to some other city. It was obvious that the city would be away from the business and basic sector activities of the country but the first rule was to achieve security and compromise on accessibility. A commission was developed in 1958 which was assigned the work to choose the location, climate, defense requirements, and education opportunities for the city.

After plenty of years of research and argument, several positions for the city were advised but the North East area of Rawalpindi, adjoining Margallah Hills was chosen and the work the development started. The national cabinet put the process of development into operation. The planning of the city was outsourced to a Greek firm named Doxiadis Associates. They suggested a grid network system for the city with the north side of the city facing Margallah Hills for beauty and defense purposes. The initial plans included that Islamabad would enclose the city of Rawalpindi along the GT road with extensions of Islamabad in the West direction. The weather of Islamabad is free from pollution, healthy and luxurious green because of the Pothohar Plateau. The city is planned with great perfection as it has efficient and accurate roads and avenues, highly organized market places, beautiful landscape and parks, and accessible public buildings. Karachi being the south city of Pakistan and also being a port city was subject to get attacked from the Arabian Sea. Islamabad was designed in such a place that it would be accessible to all parts of the country. Karachi is the greatest city in terms of GDP construct if Pakistan. which means that the majority of business activities of the country are dependent on Karachi. Making Islamabad a capital was derived from the idea that business groups should not be in control of

the administrative operations and policy-making of the country. The influence of business activities on the country's operations is very low now. Moreover, an added advantage of Islamabad being a capital city was that Rawalpindi military headquarters were near and so the dispute of Kashmir. So these disputes can be managed well.

The city is planned on eight distributed zones concerning the activities of the city. These zones are: administrative, residential, industrial, diplomatic enclave, commercial, educational, green area, and rural area. This zoning was necessary so that the activities can be managed and changed without any involvement of other zones. In this way, the zones were well manageable. For example, the industrial zone is situated away from residential so that residentials are not affected negatively by industrial activities.

The city of Islamabad today is the pulsatory beat of the country, rolling with the power and toughness of a rising, ever-changing nation. It’s a city that represents the desires and aspirations of a young nation and encourages the values and codes of the generation that has driven it so far.

2.2. DEMOGRAPHICS AND URBAN CHARACTERISTICS

Islamabad is a metropolis now. The population is rising with the highest population growth rate ever recorded for any city of Pakistan. It is the center for most international activities and it is also home to foreigners all around the world. The rationales of the city are simple and contribute towards sustainability. The temperature of the climate is fairly moderate, the scenery is lavish green, the skyline is beautiful, and extraordinary road and building infrastructure. Margallah is in the foothills of the Karakoram mountain range which extends towards the north of Pakistan. In this way, Islamabad is a passage or temporary stay place for tourists from the south of the country as well as foreign tourists. Some attractions include mountaineering, trekking, climbing, and adventure sports. The town is growing in the service business and educational aspects with the presence of the best universities in the country. It is an attraction towards the labor and students from all around Pakistan. The demographics of Islamabad are mixed as it consists of residents from every part of the country who carry different cultures, languages, and habits. Apart from labor and students, diplomats and high-income families of Pakistan also live in Islamabad. Embassies, consulates, and ministries are working from the

diplomatic enclave of the city. This presence of highly unequal families affects land prices and other dimensions of social issues.

Islamabad could be competitive with most of the cities in the world because of its fast development and beautiful sceneries. It was ranked as Gamma World City in 2008. Some historic buildings include Faisal Mosque which is the sixth largest mosque in the world. After 2003, Islamabad picked a fast pace towards business and industrialization. The city did not develop fast enough from the 1960s to 2003 than it developed from 2003 to the present stage. The population growth of Islamabad is steady, revolving around 5% per year growth for many decades now. New development arrises new opportunities for the younger generation. These opportunities were cashed by the graduates in the form of employment and became a resident in the city. Again, the main attractions for employment in Islamabad are the living quality in the city. These employees not only settled in Islamabad but also grew in the atmosphere. Population forecast tells that Islamabad is a place for 1.7 million people as of 2020. The last census was done in 2017. The estimations are according to the growth rate of the city. The city is expected to surpass 2.2 million people in 2030. The city covers an area of 906.5 sq km. according to the current estimation of the population, 2089 people are residing for every sq km of the city.

A detailed census was operationalized in 1998 which carries a lot of information about the residents of Islamabad. the maternal language of 68% of residents of Islamabad is Punjabi. Due to the location of the city, the dialect of Punjabi practiced in Islamabad is Pothohari. Formally and officially, Urdu is the first language of the city in which small local activities are carried out. English is the second language in which activities like macro-economical and policymaking are carried out. Due to ethnic differences, everyone tends to speak Urdu normally. 15% of residents of Islamabad are Pashto speakers and belongs to KPK and Quetta. But as per the census of 2017, the demographics of the city changed drastically. According to the 2017 census, 65% population of the city is Sindhi speakers, 11% are Punjabi speakers, 14% are Balochi, and the remaining speak else languages. Now, according to the 2017 census, the population of the city is 1,014,825. The migrations in the city are 397,731 and the majority of them are from Punjab. Around 116,614 migrants are from KPK and Azad Kashmir. Now, a lot of people from Baluchistan and GB have turned their face towards Islamabad to seek opportunities in business and employment. 59% population is between 15-64 years of age. Only 2.73% population is above 65 years of age and the rest are below 15. The literacy rate of Islamabad is 88% which is very high for other

cities of Islamabad. 11% carry a graduation degree and 5.2% people carry a master's degree in the city. 15.7% of people in Islamabad is labor which resides in the city. There exist a low concentration of Christians in the city with the majority being Muslims (95.43%). Hinduism is followed by 0.04% of the total population in step with the 2017 Census.

CHAPTER 3: LITERATURE REVIEW

3.1. TIMELINE OF COVID-19 IN PAKISTAN

Covid-19 had a major effect on south Asian countries. Pakistan is one of them. In early January 2020, Pakistan got some of its first cases of Covid-19. These infected individuals were travelers who returned to Pakistan from Iran and were residents of Baluchistan. Baluchistan is the largest and least populated province of Pakistan faced the first cases and started working on recovery and control of the spread on 27th January 2020. Pakistani students in China were also tested positive for Covid-19. On 23rd Feb, Pakistan closed its border for travelers from Iran to minimize the addition of cases. On March 4th, as a result of increasing cases in China, Pakistan Civil Aviation Authority introduced Covid-19 screening tests at four major airports. After closing the borders, a lot of Pakistanis were still in Iran who desired to return to the origin country because of the fear of this virus. So, Pakistan reopened the border of Iran after 14 days of closure. Increasing cases in Sindh resulted in a ban on marriage halls, parks, and hotels. On 21st March, Civil Aviation Authority suspended any domestic or private flights for some days to control the spread and the Sindh government announced a lockdown of 14 days in the province. Local police launched FIR against 472 individuals for not following SOPs in the lockdown. Punjab also went on lockdown but it was only for a week. Multiple violations across the country were recorded which included public gatherings. Pakistan increased the amount of the Benazir Income Support Program from 2000rs to 3000rs. Moreover, the government closed all the departments of hospitals other than the emergency ward to use them as Covid-19 relief centers. During all this, the Sindh government launched a mobile service to distribute rations to the daily wagers. On 31sy march, ECC gave an Rs100-billion grant as a relief fund to fight successfully against Covid-19. A special package for 12 million poor families was prepared under the Ehsas program. PDMA also helped and dispatched 50,000 N95 masks to the government departments

of Pakistan that were involved in fighting Covid-19. In April, the Ministry of Health strategized to increase the daily tests from 6,000 per day to 20,000 per day. After the effective results of the response plan and lockdowns, the Government started thinking to ease down the lockdown so that normal economic operations could be carried out to avoid economic losses. By the end of April, it was known that social distancing is the best response to fight Covid-19. Lockdown was ended on 5th May in Pakistan. The number of cases kept dropping after the ease of lockdowns and normal operations were carried out with preventive measures taken into account (Farooq, Khan et al. 2020).

With the better condition of the Covid-19 situation, the government decided to reopen offices and educational institutes from September 2020. Everything was normal until the second wave of Covid-19. The cases in Pakistan started increasing and broke the previous record of daily affected and total cases in the country. Due to this, the Government had to get back to lockdowns and close every gathering situation of people. By this time, people were frustrated enough by staying at home so many suffered from economic and social crises. Pakistan was in the top 12 pandemic-affected countries in the world. The government was forced to revise its approach towards the Covid-19 virus because middle and low-income families were not able to sustain it. Some religious leaders' messages to their followers resulted in people not following SOPs and an anti-government attitude was spread across the country. Which included refraining from visiting a hospital in case of testing positive of Covid-19 and not following SOPs? They even started spreading conspiracies regarding Covid-19. Citizens in populated cities of Pakistan also celebrated both Eids without taking care of the SOPs. In response to this reaction by the public government had to take steps to control everything. The perceived risk of the virus was decreasing while the actual risk and the total number of cases were increasing. The government announced ‘smart’ lockdowns and focused on a strategy called ‘track, trace and quarantine’. For this, the government took the help of the army and the local police to locate the affected individuals and quarantine them. Smart lockdown consisted of lockdown of specific smaller areas of cities which were most affected or had the maximum number of cases. By this time, the virus was spread in the rural areas where health infrastructure was not available and daily deaths started increasing. The government failed to gain social support (Akhtar, Akhtar et al. 2021).

The third wave of the virus was more inclined towards to economic and social losses of the country. The economic and social indicators of middle and low-income families were drastically

affected. The virus had increased the inequality as a whole. It was now understood that the low working class or low paid class will have years of the period of recovery which will have an impact on the future generation. Health crises merged with economic crises result in the devastation of a sustainable household. That means a household affected in these terms will face the after-effects years long. For example, a lot of children had to leave school because of financial shortcomings. Distant learning resulted in poor education for every student. Pakistan was not even able to conduct proper face-to-face exams. This will lead to children not having adequate learning and they will not be inducted into high-paid jobs. An effect like this is lifelong. Contrary to this, students not deserving can have a better chance at securing jobs but it will still impact the industry. During this, children also lost their way to socialize and started obesogenic activities like playing video games and consuming junk food. The virus has taken over every aspect of life which includes our economy, social behaviors, minds, and hearts (Ilyas, Azuine et al. 2020).

The current situation of Covid-19 is still very critical as the delta wave of Covid-19 is considered to start soon. The current situation of Covid-19 would be discussed in the following passage as respective of the date 21st August 2021. The confirmed recorded cases, active cases, deaths, and recoveries of Pakistan are 1119970, 89044, 24848, and 1006078. The death ratio is 2.2%. The following table shows this data respective to provinces of Pakistan.

Table 1. Province-wise distribution of Covid-19 cases, deaths, and recoveries in Pakistan

	Confirmed Cases	**Active Cases**	**Deaths**	**Recoveries**
AJK	30423	4556	675	25192
Baluchistan	31781	573	335	30873
GB	9579	745	169	8665
Islamabad	95709	5386	848	89475
KPK	155712	7389	4750	143573
Punjab	378288	22938	11505	343845
Sindh	418478	47457	6566	364455

Running some simple divisions on this data provides us with death ratios of different provinces. It is found that the death ratio of AJK, Baluchistan, GB, Islamabad, and Sindh are below 2.2% i.e. the average of all provinces. Only Punjab and KPK have a death ratio of 3% which could be because of the limited capacity of hospitals or the low immunity of people against the virus. KPK is more concerned about culture and religion so the vulnerable group of women and old people was more at risk. Moreover, people in KPK are assumed to have less awareness of the virus because they are less educated. The high death rate in Punjab could be due to the high population of infected people in small geographic areas so the low class could not seek quality medical services.

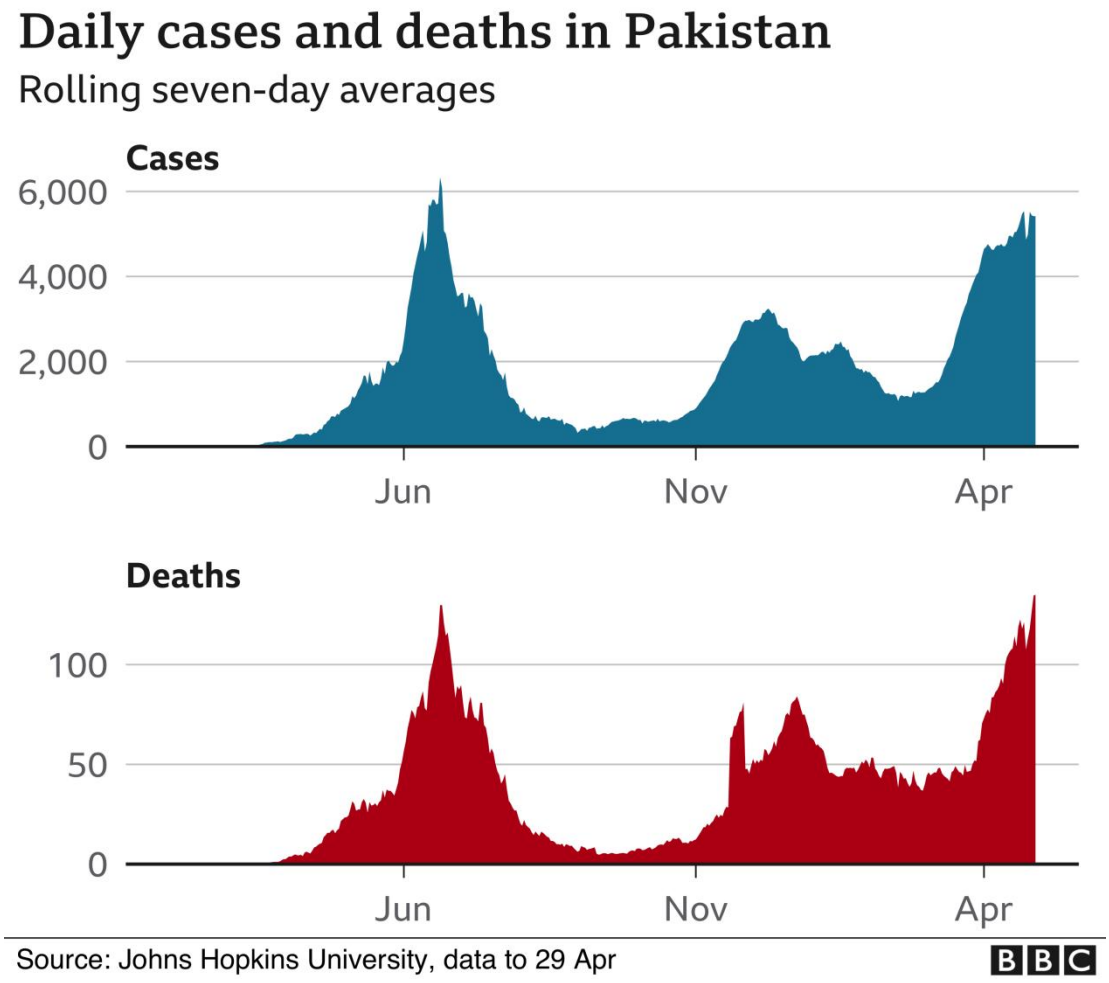

Figure 1. Daily cases and deaths from Covid-19 in Pakistan

These graphs above showcase and deaths from the start of the virus till now and it is obvious that we are highly affected by the virus and the economic and social effects are also exponentially increased because of the first and second wave of Covid-19.

3.2. HOUSEHOLD SUSTAINABILITY

Sustainability is a well-known concept and the world is moving towards sustainability at a much higher pace now due to climate change and other related problems. Sustainability has three major pillars namely environmental, economic and social. The importance of sustainability exists in the cascading effects of events that impact the quality of life and operations carried out. It has 17 major goals which address different aspects of life. Covid-19 as a pandemic has affected almost all of the sustainable goals in direct and indirect ways. For example, the rise in inequality, poverty, hunger, dirty water, and unemployment are all cascading effects of Covid-19. Health is a direct cause. These cascading effects reach the most local level of households and affect every individual differently according to their financial and social status. So, it is necessary to study the concept of sustainability in light of Covid-19 for better restoration of direct and indirect losses from Covid-19.

In this research, the scope is limited to social and environmental aspects of sustainability because environmental quantification of the impact of Covid-19 is nearly impossible and no accurate method exists. There is a need to study sustainability on a very local scale to dive into the real issues of people who are affected. This is where household sustainability comes into play. The sustainability of a household is generally expressed by the accessibility of basic needs and the capacity of attaining them. Every household is different from another household depending upon the level of vulnerability, capacity, geographic placement, and the magnitude of risk (Evans 2018). So, a holistic theory cannot be stated before understanding what household sustainability is and how Covid-19 has affected different households qualitatively.

A household is defined as the house and the occupant taken as a single unit. These occupants may be members of the same or different families. A household expresses the activities of every single occupant collectively (Gorman-Murray and Lane 2012). For example, if an occupant is traveling more than any other occupant then the traveling of the household would be the average of both occupants. A household can express similar activities like any individual or occupant. As the effect of any disaster is difficult to quantify if individuals are taken into account, we take households and their sustainability. Now, we can define household sustainability for the scope of this research. Household sustainability is addressed as the collective activities of the occupants of a single house. These activities may include transport, food consumption, energy consumption, and the financial status of a household. These activities are further broken down and classified as the social, economic, and environmental aspects of sustainability. It can be said that household sustainability is all dependent on the right tradeoff of the activities so that the quality of life of occupants is not compromised over the period and remains sustainable for the long term under circumstances of disasters like Covid-19 (Davies, Doyle et al. 2012).

3.3. SOCIO-ECONOMIC FACTORS

All of the terminologies and knowledge required for the scope of this research are conceptualized. We move forward to know the methods to quantify the impact of Covid-19 on household sustainability. As discussed before only social and economic impacts are part of this research. The key point here is to identify the factors which are associated with social and economic aspects of household and how they can correspond to the impacts of Covid-19.

A lot of ways exist when it comes to measuring the potential impact of pandemics. There are different ways for social impact and different for economic impacts of pandemics (Bhargava, Jamison et al. 2001). Literature expresses that the growth in the economy is directly proportional to life expectancy and it is inversely proportional to the mortality rate of the vulnerable groups i.e. children, old age, and women (IMF 2020). At the initial stages of Covid-19 spread in the world, it was calculated that it would affect the world economy by 4.9% declination (Gourinchas 2020). We know that the world economy is a larger set of the household economy so it plays an important part in this change in the economy (Coibion, Gorodnichenko et al. 2020). This economic recession is greater than the previous 2008 economic crisis. A breakdown of supply chains has also been observed which has affected the household accessibility to food and other

necessities (Ludvigson, Ma et al. 2020). The breakdown in systems results in cascading impacts down the chain at the bottom where the household exists. A survey in the United States of America says states that lockdown restrictions are the main cause of inflation, drop in consumption, and low employment rates. A 12.75% and 17% of decrease is noted in the industrial production and services sector in the US (Aruga, Islam et al. 2020). A lot of studies have been done in India to quantify the demand and supply of energy during the Covid-19 period because of the shortage of energy in different regions. Social distancing and partial restrictions on travel resulted in the reduced workforce and daily wage labor (Maria, Zaid et al. 2020). A simulation study using forecasting models stated that the funding for the health sector in the upcoming years would decrease which would result in avoiding health issues other than Covid-19 (McKibbin and Fernando 2021). Another study in the similar context says that countries with high density population and poor economy will have a major effect on the health services but the international funding for health sector may rise for them (Lee and McKibbin 2004).

As Covid-19 has cascading effects, it develops a cause and effect relationship. In this type of relationship, one event controls the occurrence and severity of the other event (Hovland 2005). A huge number of different dimensional events relate to each other to make a complex structure of effects which is a lot more confusing and difficult to interpret and quantify. This framework is addressed when we talk about the economic crises in South Asian countries (Thakur, Singh et al. 2020). The rate of Covid-19 hitting the world is higher than any other pandemic. The high spread rate is affiliated with the transfer of disease through droplet formation and utilizing air (Nayyar 2020). The symptoms resembled that of common seasonal flu so people were less concerned about it. Its existence came into knowledge when it initiated heart diseases in older people. So, during the early periods, there were no guidelines and households didn't know how to respond to the situation. The first response of the world was to contain the virus. In this containment try, people related to international operations were greatly affected resulting in an employment rate decrease (Gopinath 2020). This directly decreased the GDP of major countries. This created a ripple effect in the regional and local markets. This was the first time after the great depression that every country's GDP was declining at this rate. This includes developed and developing countries. Regional and national economies are projected to recover partially in 2021 but the local household economy and social effects will be cascading until a decade (Islam, Jannat et al. 2020).

3.3.1. INCOME AND EXPENDITURE

The first indicator of the economic impact of Covid-19 on households is the change in income and expenditure. It is observed that Covid-19 has affected the price of basic needs across the country due to the increased demand for certain food and non-food items. Initial strict lockdowns induced restrictions on the distribution of heavy vehicles which forced a shortage of products in markets. A decrease in supply and increased consumption and stockpiling resulted in local inflation in the market. Moreover, as discussed before, lockdowns and restrictions were the main reason for the loss of income of the daily wagers. Outdoor restaurants and other businesses were shut down as they promoted public gatherings. So, Covid-19 did not only negatively affect low-income households but also had a huge impact on middle-income households. A low income and increased expenditure are needed to be quantified so that the direct losses can be measured.

According to a study in which 493 volunteers took part in responding to the questionnaire about the income and expenditure of the households in Turkey and Nigeria (Celik, Ozden et al. 2020). 43.6% of participants reported a decrease in their family income and only 12% of participants said to have increased income during Covid-19. The rest of the sample's income did not change. Moreover, the family expenditure of 59.6% of volunteers increased and only 20.3% reported a decrease in family expenditure. 69.7% said that the nutrition expenses increased in Covid-19. Keeping these figures in mind, the big question is how to co-exist with the pandemic situation and also live a normal life with the same income and expenditures (Jung, Park et al. 2016). Another study states that the youngest (under 25) and the old age (above 65) were the most to be affected by the market disruption and to have low incomes in the UK (Piyapromdee and Spittal 2020). A remarkable work was done by researchers who estimated the long-term career impacts of students and early graduates (Joyce and Xu 2020).

3.3.2. EMPLOYMENT

Employment is the cascading effect of the decrease in income and increase in expenditures. As the businesses and economic activities were closed during the lockdown period, employment opportunities dropped drastically in Pakistan as well in our area of study. This included all sectors of basic and non-basic nature. Some people lost current jobs and others were not able to find a new job for them. These factors result in decreased employment rate and created a situation of panic in the country. The majority of the affected population found new ways to earn money which may include freelancing or small home-based business. In this way, Covid-19 also resulted in a lot of new micro-business startups which was beneficial for some but even more devastating for others. Home-based and online businesses were more encouraged by the population.

Major disruptions in the employment sector were for the young people in Pakistan. This includes online classes, very low social opportunities, and psychological health concerns. In a study, the high school completion rate in the United States was calculated (Ahn, Lee et al. 2020). The rates of high school completion in the US increased by a major percentage. The main reason for it was the reduced employment opportunities in the market so when there was nothing to do for young people, they completed their high school in an online and distant learning system. The driving force was no other than the worst employment condition. The schooling rates also decreased in the US during the Covid-19 period. Although, higher education faced a lot of multi-dimensional problems the stats for high schooling were better. The US broke the record of unemployment in April 2020 (Statistics 2020). Vulnerable groups suffered economically, socially, and educationally due to Covid-19 (Cho and Winters 2020).

The US always had immigrant employment rates higher than the native employment rate for 2 decades (Borjas 2017). The US is known to be a developed country with better employment rates for every race. Even in the great recession, employment was not decreased by this percentage. In only 2 months, the unemployment rate rose from 3.5% to 14.7% by April 2020. During Covid-19, the general trend of 2 decades was reversed and native employment was better than immigrant employment because of the panic situation and financial insecurities (Borjas and Cassidy 2020). Another study tells that Covid-19 affected remote and non-remote workers. Only 9% of remote workers were affected. Covid-19 has affected low-income non-remote workers the hardest. The respiratory health of non-remote workers was also calculated and it was in the worst

condition in the Covid-19 period. Also, reopening business seems inefficient in increasing employment again (Angelucci, Angrisani et al. 2020).

3.3.3. FOOD INSECURITY

In the initial stages of Covid-19, people did not have awareness about the pandemic. So, the first lockdown was a bit of a surprise for every individual which created a situation of panic in households. Cascading events increased the perceived risk of households and they were forced to think more objectively. In reaction to this, high-income households started stockpiling food and other non-food items being scare of the shortage. It was perceived at first that shortage in the market was due to low supply but it was due to high consumption and buying. On the contrary, low-income households were affected greatly. A lot of low-income households did not have food in lockdowns and faced malnutrition. An indicator like food insecurity corresponds towards the trust in the government. If the trust is lost, individuals and households start violating the SOPs directed by the government. Therefore, it is necessary to quantify this indicator to implement it according to strategies if there is more need for lockdowns.

Mandatory lockdowns have created significant concerns about the insecurity, availability, and accessibility of food in Iran. Little information exists in this domain of the pandemic. Data of this kind is never available in developing countries. A study in Iran reported that 20,502 people were affected by food insecurity and a lot have died due to unhygienic food. So, it has to be understood and basic actions must be taken efficiently (Wang, Horby et al. 2020). In a study in Iran, questionnaire data were collected on the factor of food insecurity which included different questions (Pakravan-Charvadeh, Mohammadi-Nasrabadi et al. 2021). Results showed that 35% of households showed food insecurity before Cvoid-19 while 43% of households were insecure about food during Covid-19. Moreover, the dietary diversity was also calculated, it showed that the white roots and vegetable consumption was much more in the Covid-19 period than before it. It is quite explainable because these food items are cheaper than meat and other items. Also, the consumption of wild fruits was also increased during lockdowns.

Bangladesh is a country with a huge fish production magnitude. The food security of Bangladesh depends on the fishery. This accounts for more than 60% of protein intake for households (Sunny, Sazzad et al. 2021). A study in Bangladesh reveals that 72% of people responded to the increase in prices of fish in the Covid-19 period. 80% of households replaced

eggs with fish because of these high prices. Households having high fish consumption (+10 times per week) decreased from 29% to 9% and these households majorly consisted of low-income families (Mandal, Boidya et al. 2021).

3.3.4. EDUCATION

Covid-19 has affected education systems all around the world. As the initial strategy for every country was to avoid public gatherings so educational institutes were the first ones to be closed because it was a point for the vulnerable group (students) to meet up. A forced movement was caused by which every educational institute had to be shifted to remote learning with the help of online classes. The major impact of this happening was on international students studying out of the country. Pakistani students in China and other countries had to come back home and a huge percentage also lost admissions and are still not allowed to continue face to face. Similarly, the education system became a complete disaster locally in Pakistan because online systems for examinations did not work and face-to-face exams could not be taken because of Covid-19. Students faced multidimensional consequences of this situation in terms of learning and transparent examination which can cause industrial and employment problems in the recovery stage of the pandemic.

Researchers in Ghana studied the impact of Covid-19 on the educational system. It says that the spread of Covid-19 created a situation of panic more in students than any other age group. The question raised was that how to carry out equally efficient educational learning with keeping in mind the psychological wellbeing and career counseling of students (Reynolds 2020). The study proved the hypothesis that there exists a strong relationship between Covid-19 and education and the impact of Covid-19 on education is negative based on questionnaire responses received (Upoalkpajor and Upoalkpajor 2020).

Another study in Zambia studied the effect of the STEM model on students due to Covid-19. (Sintema 2020) also discussed that the negative impacts of Covid-19 on education are due to the loss of contact hours of students of 12 grade and teachers and also, due to the issues that arise by switching to online learning because of the familiarity of the system. Other reasons include that the examinations sometimes cannot be postponed so the student of 12^{th} grade has less time to prepare. The performance of students in Zambia decreased but the grades were better than before because of the leniency of teachers. (Marinoni, Van't Land et al. 2020) suggests in the IAU

Global Survey Report that government should take responsibility for the students who are facing difficulties in education due to financial shortage in Covid-19. Moreover, governments should give preference to psychological and social aspects of students in the recovery from the Covid-19 because it has been neglected till now.

3.3.5. SOCIAL TRIPS

The effect of Covid-19 on transport systems cannot be ignored because, in the modern world, the majority of the economic activities are directly associated with the daily commute, and psychological health is affiliated with social trips. So a change in transport systems and trip-making behaviors can have a social and economic impact. In Pakistan, low and middle-income households usually travel through public transport to and from work, and upper-middle-income and high-income households travel with means of personal vehicles for leisure and work. These include business activities and travel in between cities. Initial lockdown in Pakistan restricted any personal transport and public transport so economic activity was completely stopped. In the later lockdowns, personal transports were allowed but public transport was still closed which affected low-income households because they could not go to work or for making a living. The education level of low-income households is also low so they cannot even work remotely for any company as they are daily wagers majorly.

In Australia, people have lost trust in public transport even the government is doing its best to keep the public vehicles sanitized and hygienic (Beck and Hensher 2020). The households prefer vehicles even if it's more costly. As the pubic vehicles will get more crowded again, the health would be compromised again. Moreover, the data tells that people in Sydney are returning with more force towards trips of social and leisure nature (Beck and Hensher 2020). A study declares that effects on transport may result in twice the impact (Cheshmehzangi 2020). First, people are using private vehicles more than public because the general understanding and trust factor has changed. The capacity of road networks may not be enough for where amusement and recreational buildings exist. Secondly, economic pressure would exist on the public transport system to fulfill its demand of operations because of less clientage.

3.3.6. PSYCHOLOGICAL IMPACTS

Psychological impacts of Covid-19 exist in hidden aspects of the cascading events ignited by the pandemic. The measure is usually qualitative because it is very hard to measure and quantify. This domain only refers to the social impact of the virus but the economic condition can be a reason for such type of critical indicator. Economists and governments usually ignore the psychological impact of any disaster because the awareness of the subject is low and data doesn't exist. Recent high tourist traffic in the north of Pakistan is proof of psychological impacts existence and that it had a significant magnitude. Data in some form is necessary to gain the trust of the households so they follow policies induced by the government. According to a study, maladaptive behaviors, defensive responses, and emotional distress are the psychological reactions to any kind of pandemic (Taylor 2019). People usually show lower life expectancy and quality of life due to mental illness (Rodgers, Dalton et al. 2018). A strategy is needed in which group of specialized people are indirect counseling sessions with the most affected people so that they can return to normal life with the same energy as before. Or, the psychological damages would be lifelong and affect the physical aspects eternally (Cullen, Gulati et al. 2020).

A researcher in Egypt quantified psychological impacts on the households in different cities of Egypt (Arafa, Mohamed et al. 2021). The total sample of the research was 1629 respondents. The results were as follows:

Table 2. Psychological impact on households in different cities of Egypt

	Impact Scale	**Respondents**
Depression	Mild to Moderate	67.1%
	Severe to Very Severe	44.6%
Anxiety	Mild to Moderate	53.5%
	Severe to Very Severe	30.6%
Stress	Mild to Moderate	48.8%
	Severe to Very Severe	33.8%
Inadequate Sleeping	--	23.1%

It is clear from the data that almost half the population is affected psychologically by Covid-19. This may also include households that are not affected economically but are affected

mentally. The main reason for these results came out to be an absence of emotional support from family and friends. Health emergencies in the household also have psychological impacts on students which are expressed as frustration, loss of interest, boredom, and fear (Mei, Yu et al. 2011). According to another study, females and males are equally vulnerable to psychological issues from Covid-19, and 24.9% of students experienced fear and anxiety in China (Cao, Fang et al. 2020). Governments should include strategies in a policy of recovery from Covid-19 to deal with the psychological impact to reduce fear and anxiety among the households so that productivity can be increased (Shahyad and Mohammadi 2020).

3.3.7. MEDICAL SERVICES

The very first impact of Covid-19 was the effect on the medical condition of individuals and the load on medical services. The spread of Covid-19 was understood so the initial purpose of lockdowns was to slow the spread so that medical facilities are not crowded with patients. if facilities reach the maximum of their capacity then new cases of Covid-19 could not be entertained which would result in more deaths. The condition in Pakistan was controllable during the initial stages. New Covid-19 relief centers were developed in government buildings but as soon as the government decided to lift the lockdown restrictions (Hashim 2020), new cases of Covid-19 were reported at record-breaking numbers and there was fewer medical service capacity for it. The advice from public health officials was also disregarded (Kermani 2020). The medical staff was full of fear and many decided not to serve in the Covid-19 period. The basic equipment got dysfunctional and no primary training was given to people willing to work against Covid-19 (Jaffery 2020). There exists a need to cope with the medical capacity and medical situation. If fear is not controlled among the medical staff and affected people then it could lead to human catastrophe (Yi, Lagniton et al. 2020). The load on medical facilities is directly proportional to the curve of daily cases of Covid-19 in Pakistan (Khalid and Ali 2020).

A study in the US observed the use of EMS (emergency medical service) by individuals. It was seen that people attending EMS were very much greater in the initial stages of Covid-19 than previously (Lerner, Newgard et al. 2020). This was because of the panic situation and lack of awareness. Even if the individuals were not infected by Covid-19 and had just a minor cold needed EMS because of the fear of getting infected. With time and successive lockdowns, this amount was reduced to almost nil, and the EMS was only used for people who were infected.

People with other illnesses who needed EMS started avoiding medical services. This was because of two reasons. One is that those individuals were not given standard EMS and proper attention because the priority was already given to Covid-19 patients. Secondly, the EMS attendees dropped because of no traffic or other casualties because people were at home and safe.

3.4. COPING STRATEGIES ADOPTED BY HOUSEHOLDS

All the factors discussed above directly or indirectly affects household sustainability in social or/and economic aspects. Although the government did formulize the SOPs for the right response of households still households reacted in different ways. These ways may be related to the directions provided by the government or their adaptability. Some social reactions of households are derived from the emotional and psychological state of households. Overall, there is a much need to understand the reaction of households to Covid-19 that how did they cope with the condition. As it is known till now that Covid-19 has affected every household in a different because of the multi-dimensional cascading effects of Covid-19. So, every household responded differently. For example, for hypothesis construction, high-income households coped up with Covid-19 situations in a social manner. High-income households are more prone to give more importance to social than economic aspects. On the other hand, low-income households may have given more importance to economics and reacted to improve their financial status in the Covid-19 period. Still, it is impossible to know the certainty without relevant data because in the real field things can be a lot more different.

Data collection is needed to know the coping behavior of households. As the variation of the nature of data, open-ended questions and interviews of households would be better. After the collection of interviews, they can be compiled in the form of qualitative data and similar responses can be fetched. More valuable and meaningful conclusions can be made by this kind of data. It can be used in the policy-making of relief from Covid-19. This data would act as feedback for households. A problem exists that there is no direct communication of the households to the government and the government doesn't involve the public in policymaking. This would be a good step for this kind of research in that households would be asked about the reactions they had to adapt to cope with Covid-19. The government would be more confident in making policies and SOPs of Covid-19 with the help of this data. Ultimately trust would be developed among the households and the government which would lead to positive social

engineering of people and less fear and psychological issues among the households because the main reason for Covid-19, as stated before, is when individuals don't follow the SOPs.

CHAPTER 4: METHODOLOGY

4.1. SAMPLE POPULATION

The case study is Islamabad as stated before. Various formulas for calculating sample population for the data collection are available which have different natures. The main difference between these formulas is the availability of the variables e.g. if the population of the area under study is known or not. In the case of this research, we know the total population and other variables. So, we use the following formula as it is the most commonly used formula to determine the sample population size if the total population under consideration is known.

$$\text{Sample size} = \frac{\frac{z^2 \times p\,(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p\,(1-p)}{e^2 N}\right)}$$

The variables N, p, e, and z refer to the total population, confidence level, margin of error, and z-score respectively. The population of Islamabad is 1,014,825 according to the census of 2017 and the growth rate was 4.91%. It is the highest recorded growth rate in the history of Pakistan. The projected population of 2021 concerning this growth rate comes out to be 1,229,302. We will use this value in the formula. Moreover, we will take a 95% confidence level and 5% of margin of error as it is used and suggested by many researchers. The z-score is a constant number of deviations a proportion is away from the mean. So, there exists a unique value of z-score for any level of confidence. Corresponding to a 95% level of confidence, the z-score comes out to be 1.96. Putting these values in the formula we get the sample size of our study area.

Sample Size = 385

4.2. QUESTIONNAIRE DESIGN

The design of the questionnaire was simple. Around 20 sources of articles related to the topic of research were consulted. All of them formulated questionnaires for the socio-economic impact of Covid-19 in some dimensions within the above-discussed indicators. So, useful questionnaires were fetched from those sources and also referred by the supervisor of this research. After compilation, the questions were assigned to the respective indicator to quantify and measure key indicators and sorted into the questionnaire to make sense and easy for the respondent. It includes 3 major portions namely; demographics, socioeconomic impact, and coping strategies.

The demographic portion consists of general questions about the households. These portions give an idea of the socio-economic status of the respondent and validate if the questionnaire is filled by the target audience or not. Some examples of questions are asking them their age, income, education, address, and details about the household. The main portion is of socio-economic impact in the questionnaire. It has questions about the expenditures before and during Covid-19, the complete information of household members with conditional sentences, point five Likert scale, and some simple yes/no questions. Some indicators are easy to quantify so the input data by the respondents is kept discrete quantitative. For example, for indicators like employment and expenditure, discrete values are needed by the questionnaire. Other indicators which are difficult to quantify like social indicators are assigned questions that are ordinal or nominal. So, these types of indicators would be measured qualitatively. The last portion of the questionnaire is knowing about the coping strategies of households. In this section, a checklist was proposed by one of the panel members of this research. This checklist includes the SOPs to be followed by the respondents. Respondents are asked to check the SOP which they have followed in the Covid-19 period. These include checklist questions like wearing a mask, practicing social distancing, etc. Finally, an open-ended question was included in the questionnaire under the same section which asks the respondents that how they tried to cope with the Covid-19 situations. Methodology for concluding the answers for this question would be different but manual.

These questions correspond to every indicator and will give a clear insight into these indicators. After collection of data and analyzing it, the socio-economic effect of Covid-19 will be interpreted in the light of these indicators. Some important references used in the compilation

of questions are (Kalanidhi, Ranjan et al. 2021), (Gansey, Mendiratta et al. 2020), and (UNDP 2020). The questionnaire used for data collection is attached as **Appendix A**.

4.3. DATA COLLECTION

Efficient data collection is the major part of the concern for this type of research. There exist different types of data collection techniques. These may include personal contact, internet-based, interviews, and telephonic. The questionnaire of this research is lengthy and has vast dimensions so telephonic responses cannot be obtained. On the other hand, interviews of 385 people are not possible as it would consume a lot of time and delay the conclusion process of this questionnaire. So we are left with internet and personal contact types. A google form was developed according to the questionnaire and floated into the target groups of social media in Islamabad. The response for the questionnaire was not good as respondents were not sharing information over an online questionnaire and also, most of them quit in the middle because of the length. One other issue faced in online form was that the target audience was difficult to approach. All of these issues leave us with only one option for data collection which is through personal contact.

The questionnaire was printed in hard form and distributed to the households of Islamabad. It was preferred that the household heads fill the questionnaire as they would provide accurate information about the household. Half of them were received from the planned area of Islamabad and others were received from the unplanned area of Islamabad. The households were confident and easy filling the form in hard form and also gave sensitive information about their households with anonymity. The questionnaires collected were then manually recorded in the form of excel so that they can be transferred into the analysis of the data.

4.4. DATA ANALYSIS

Data analysis is a part that brings meaning into the data and finally, the corresponding questions into the key indicators with quantitative values. A statistical software, SPSS, was used for the data analyzing part. The data from the excel sheet was copied into the SPSS and then variables were added into the software for each question. Suitable categories were developed for each variable so that the trend can be analyzed afterwards. For example: the data entered in excel sheet for age was a whole number for each entry so the suitable categories for the variable of age were It included factorization and assigned weights to each question. Lowest through 17, 17-18, 19-20, 21-22 and 23 through highest. These categories were made to keep the data in some form of trend and to distribute the percentages evenly into the categories so that they can be crosstabed with other variables afterwards. The values in the SPSS were then entered according to the categories of each variable so that analysis can be run on them. Majority of the variables were crosstabed with the variable of household type which included two categories: planned and unplanned. Which is evidently the scope of this research but more croostabulation can be run with other demographic variables to find more trends and conclusions. The variables under the key indicator of expenditure were run on a different analysis which is paired sample t-test. Suitable tables and graphs were developed to visualize the results which helped in drawing conclusions and recommending startegies for households as a response to Covid-19. Then these weighted and factorized questions were added into the variable of each key indicator.

Apart form this objective data collection and analysis, a subjective questionnaire was prepared for the government institutes responsible for the action against Covid-19. These institutes were identified by the experts and focal persons were contacted through personal and over the call meetings and interviews. No objective analysis was run on this part of the data collection but it was kept subjective, just to make a comparison of the actions taken by the government with the strategies recommended from the results of objective analysis. It would draw a clean line between what was the response by the government and what should have been the response for better restoration and control during and after Covid-19. The data obtained from the government insititutes was explained collectively in a subjective wat which is discussed in analysis part of the research.

CHAPTER 5: RESULTS

5.1. DEMOGRAPHIC PROFILING

The indicator of household area type is the most important demographic indicator because the main objective of this research is to find out disparities between planned and unplanned areas of Islamabad. So, it was critically necessary to get equal amount of questionnaires from planned and unplanned. As the sample size is 385, the 1:1 was not exactly achievable. 50.9% of the questionnaires were received from the people who live in planned areas of Islamabad and 49.1% from the unplanned areas of Islamabad. Responses from unplanned areas were difficult to collect because of the lack of interest in the thesis topic and explaining the questionnaire to them because they were mostly uneducated so the questionnaire was filled by the representative of the household who is educated.

The data received by the respondents was highly male dominated. 72.7% of the respondents were male. One reason for this dominancy is because women are unlikely to involve in family matters as most of them are dependent and cannot answer sensitive household information because of lack of knowledge. Most of the household heads are male and the family is dependent upon them so a huge difference in gender exists in this demographic indicator. However, it was tried to maximum effort to increase the number of female respondents but only 27.3% data could be obtained by females. Still, it is a good percentage to know the perception and trend between male and female across different critical indicators.

Table 3. Demographic profiling of respondents

Variables	Frequency	Percent (%)
Household Area Type		
Planned	196	50.9
Unplanned	189	49.1
Gender		
Male	280	72.7
Female	105	27.3
Age		
Lowest through 17	14	3.6
17-18	156	40.5
19-20	121	31.4
21-22	37	9.6
23 through highest	57	14.8
Education Level		
Matric/O-Levels	3	0.8
Intermediate/A-Levels	269	69.9
Graduate	94	24.4
Post-Graduate	19	4.9
Educational Institute Type		
Government	118	31.6
Private	267	69.4

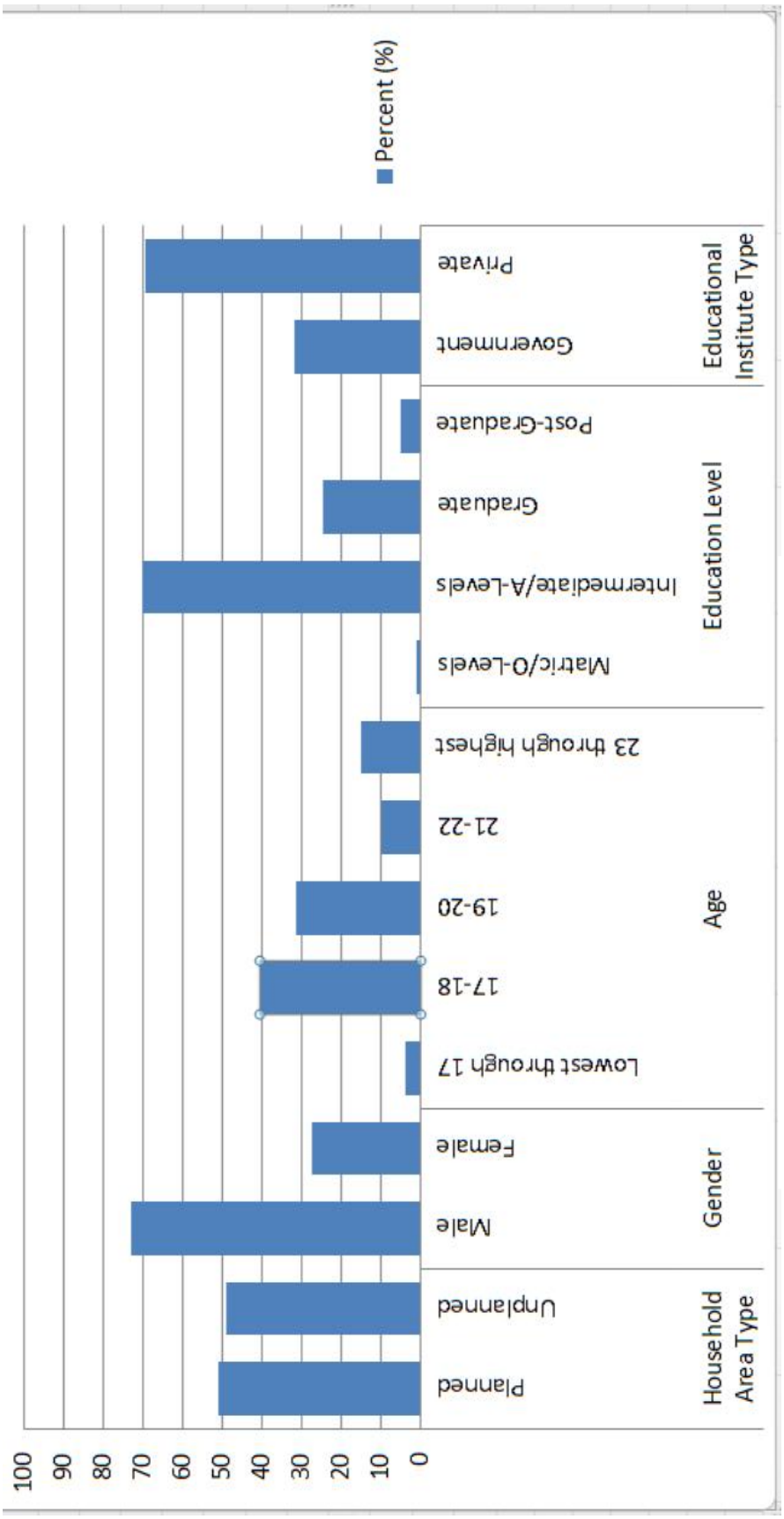

Figure 2. Demographic profiling of respondents.

Age of the respondents was recorded as discrete values and it was distributed into 5 age ranges. Majority of the respondents were between the age of 18 and 25 so this range was divided into 5 categories so that age groups could be analyzed and understood accordingly. The respondents were not household heads but their children filled the questionnaire on behalf of the household head which explains the concentration of age of respondents into this range because they didn't entered the age of household head instead entered their own age. But still it can be used to know the perception of different age groups.

Age range 17-18 and 19-20 has the most percentage as 40.5% and 31.4% respectively. It means 71.9% data falls equal to and between the ages of 18 and 21. These were mostly undergraduate students studying in different universities belonging to different backgrounds.

The demographic indicator of education level showed that 69.9% of respondents were intermediate degree holders and most of them were enrolled in graduation programs in different universities in Islamabad. Some of this percentage discontinued study because of financial limitations according to subjective reaction of respondents. 24.4% of respondents had graduation degrees and were job holders at the time of filling the questionnaire.

Out of 385 responses, 267 (69.4%) completed their education or were currently studying in private institution and only 31.6% in government educational institution. This also includes respondents studying in semi-government institutions. This percentages show that families want their studying household members to get educated from private institutions because of the difference of level of quality between private and government institution.

Table 4. Demographic profiling of respondents

Variables	Frequency	Percent (%)
Household Income		
Lowest through 50,000	68	17.7
50,001-100,000	111	28.8
100,001-150,000	67	17.4
150,001-200,000	45	11.7
200,001 through highest	94	24.4
Income Source		
Job	227	59.0
Business	100	26.0
Investments	23	6.0
Support from friends/family	35	9.1
Occupation		
Government Employee	52	13.4
Professional	109	28.2
Skill Worker	39	10.1
Self-Employed	51	13.4
Student	134	34.9
Family Type		
Nucleus	232	60.3
Extended	55	14.3
Joint	98	25.5
House Ownership		
Owned	241	62.6
Rented	144	37.4
Type of House		
Apartment	68	17.7
Semi-Detached	86	22.3
Detached	231	60.0

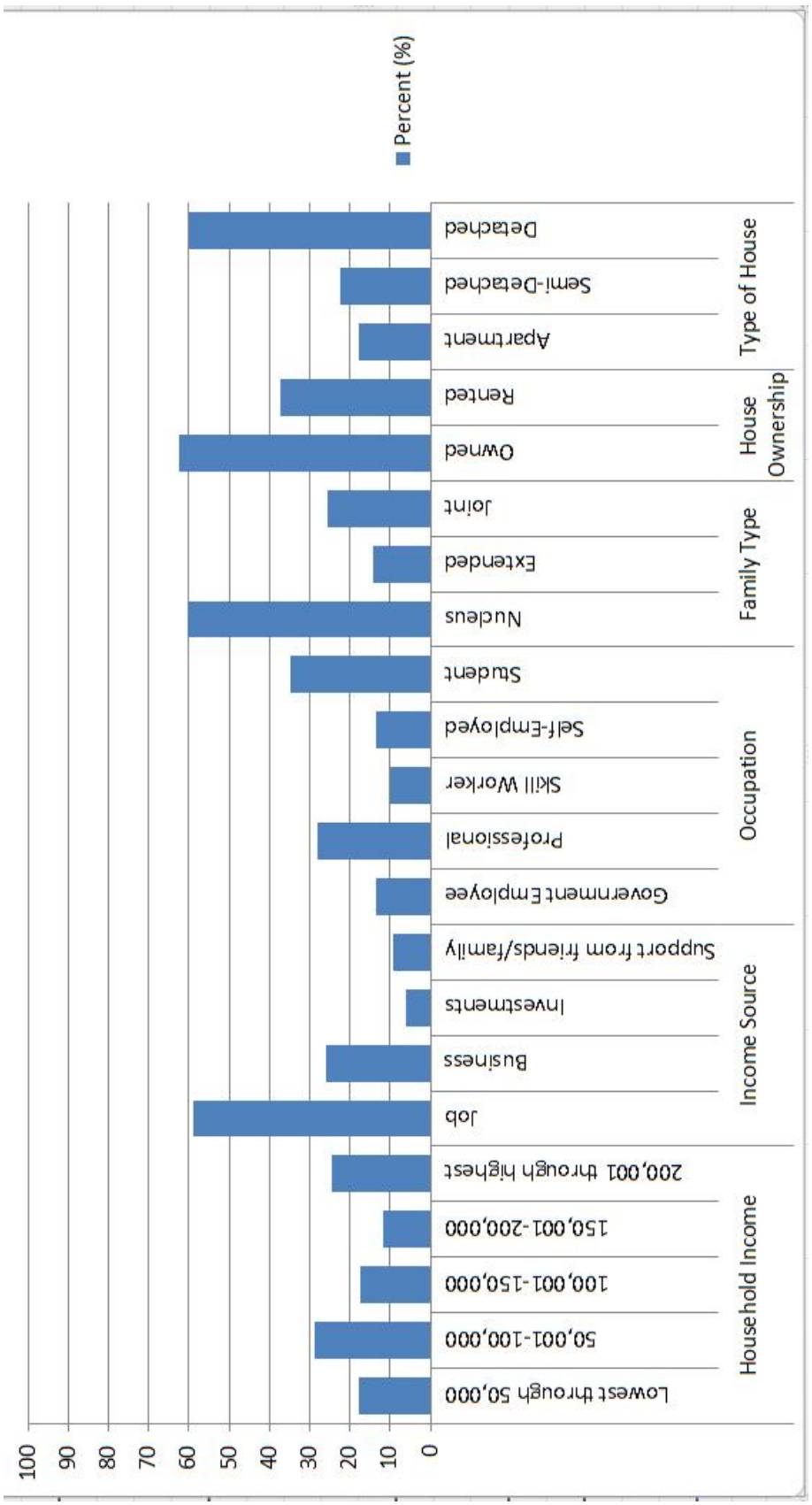

Figure 3. Demographic profiling of respondents

Income of household was also recorded in discrete values and encoded into 5 ranges so that they could be studied with ease. This data was evenly distributed and diverse ranges were needed to develop. The highest percentage is range 50,001-100,000 which is 28.8% followed by range 200,001 through highest i.e. 24.4%. This represents that half data has household income between 50,001 to 100,000 and 200,001 to the highest value. A better analysis can be done on this trend of household income because the data is kind of evenly distributed into the ranges.

59% of the respondents were job holders and had the only source of money inflow which is quite a huge percentage. Islamabad is mainly focused on the job holders i.e. a huge amount of government officers, ambassadors, job holders in head offices of big companies, which explains the high percentage of respondents being job holders. Whereas, 26% have business and 6% have invested money as the major source of income. Another important fact from the data is that 9.1% respondents didn't earn money but buy their bread from the support of friends/family which is quite explainable because of the increasing employment in the focal study area.

One demographic question was to identify the family type of respondents. It was found that 60.3% of families were living as a nuclear family type in Islamabad. Only 14.3% and 25.5% families of respondents live as extended and joint family types respectively. Most of the family migrations happened recently in Islamabad. As the cost of living is high, families tend to shift with children and spouse only which explains this high percentage of nuclear families in Islamabad. Old age members of the family prefer living in the native house rather than living on rent in Islamabad, provided that major percentage of families live in rented accommodation in the area of Islamabad.

Occupation is an important demographic indicator which unveils the curtain from a lot of questions. Occupation was divided into major categories for better responses i.e. government officer, professional, skilled worker, students and self-employed. The responses showed that huge percentage (34.9) of respondents were still students. Actually it was told to fill the questionnaire on behalf of the household head but the question of occupation was a little bit misunderstood and respondents gave their own information due to which the percentage of students is very high. Other than students, 28.2% of the sample's occupation is professionals followed by 13.4% of both government employs and self-employed people.

House ownership indicator showed that 62.6% of the respondents owned their own house in the premises of Islamabad and the remaining 37.4% lived in rented space. Households which

live on rented house have more chances that they migrated to Islamabad recently and household who own their living space spent a lot more years in the city.

Type of house was divided into 3 categories i.e. apartment, detached and semi-detached. 60% respondents lived in detached houses. It is quite explainable because the development policies and bylaws of Islamabad are well regulated and the master planning also motivates detached houses. Whereas, all the semi-detached houses are in unplanned areas of Islamabad and the percentage of respondents who live in semi-detached house is 22.3%. The lowest percentage is of the respondents who live in apartments which is 17.7%.

Table 5. Demographic profiling of respondents

Variables	Frequency	Percent (%)
Household Members		
Lowest through 3	25	6.5
4-5	182	47.3
6-7	124	32.2
8 through highest	54	14.0
Household Members (Students)		
0	16	4.2
1	68	17.7
2	107	27.8
3	94	24.4
4 or more	100	25.9
Household Members (Under 18)		
0	162	42.1
1	94	24.4
2	58	15.1
3 or more	71	18.4
Household Members (60+)		
0	257	66.8
1	84	21.8
2 or more	44	11.4
Household Members (Under 6)		
0	349	90.6
1 or more	36	9.4

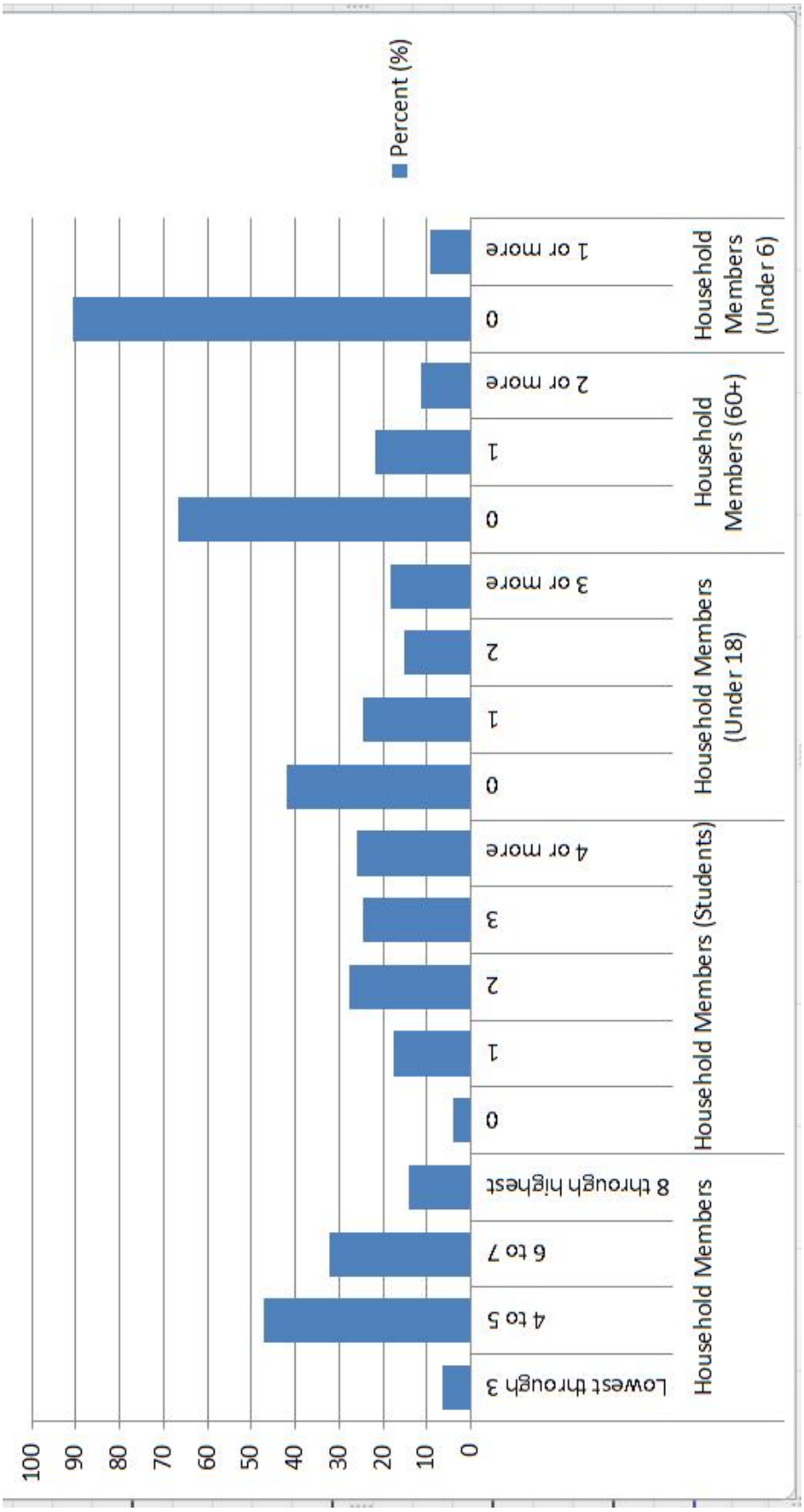

Figure 4. Demographic profiling of respondents.

Some indicators of vulnerability of a household were mandatory to be determined. Covid-19 affected more on households who had more household members, toddlers, old age, young and household members who were students. The impact of Covid-19 was more on the households who had more number of vulnerable groups. These vulnerable groups were determined for the social and economic impact of Covid-19. Then these vulnerable groups were converted into indicators as questions which were asked from the respondents. The question inquired number of household members, under-6, under-18, 60+ and studying household members. Respondents were needed to input discrete values into these questions. Higher the number of any of these indicator, higher the vulnerability against Covid-19 would be. For example, as we know, the impact of Covid-19 is more dependent towards the unique and fast spread of the pandemic, higher number of household members would result in more Covid-19 patients as it would ultimately spread into every household member and hence increases the socio-economic impact. Moreover, if the number of old age household members are higher than they are more vulnerable to get expired and need more medical attention which needs more social and economic resources.

The responses were collected and categories were formed accordingly to the data collected so that the data could be understood and be considered into the quantitative analysis. The categories developed are listed in the table above. As we talk about the household members in the data set, 47.3% of the respondents had 4 – 5 household members which are the maximum percentage in the data. Followed by 32.3% households had 6 – 7 members in the household. These two categories represent the data as huge percentages are involved in them. The mode of this indicator is 5 i.e. majority of the households had 5 number of members as compared to other numeric values. Moreover, respondents were asked about the number of students in the household so that vulnerability of the household can be determined. It is unveiled that households who have more number of students are affected socially on the basis of every parameter and also economically because they had to shift to the online mode for attending classes for which they might have bought electronic devices and education fee also increased due to inflation in Covid-19. The quality of education dropped drastically during Covid-19 because distant education was new to the Pakistani education system. About the number of students in the household, only 4.2% of the household didn't have any member who was not studying. The rest of the respondent data says that there were students in the households. As mentioned previously,

most of the families shift to Islamabad for better education of their children. Other key values in this variable includes: 27.8%, 24.4% and 25.9% respondents had 2, 3 and 4 students living in the household respectively. It is a surprise to see that almost half of the households have 3 or 4 students in the household which means that these students are a massive burden on the household head economically. It is nearly impossible for a household head to fulfill educational needs of 3 or 4 students under the condition of a pandemic and social distancing.

Other vulnerable groups are considered as households which have some number of old age and toddlers as a family member. Individuals were considered old age if they are older than 60 years and toddlers if they were younger than 6 years. Another aspect was considered in this section for the individuals who are less than 18 years of age. Conventionally, individuals less than 18 years are not considered vulnerable groups but in this case, they were to be accounted because working under 18 years of age is considered child labor and it is not allowed. So, these type of individuals are mostly studying and cannot help in the financial upcoming of the household through working, this makes them a vulnerable individual. So, the discrete values were recording through the questionnaire of how much old age, toddlers and under-18 are living in the household.

42% of the households didn't have any under 18 individual. 24.4% had 1, 15.1% had 2 and 18.4% had 3 or more under-18 individuals. Again, more than half households have individuals in the households who cannot earn and be a part of family income. on the other hand they have other expenditures of social kind. 67% households have 0 old age individuals in the household. 22% have 1 and 11% have 2 old age members in the household. Old age members are vulnerable because they have medical demands and require more care. This aspect is the most important when we talk about Covid-19 because it has taken more lives when old people get infected. On the other hand, even if old age individuals are not affected, they required regular checkups to the hospitals because mostly they have regular medical condition and the hospital beds are full due to Covid-19 patients. When we talk about the toddlers, they are the least effected by the Covid-19 but they are considered because they are directly dependent on mothers and if a mother get ill with Covid-19 then it would directly impact her offspring more than her. That loss would be expressed lifelong on the health of the toddler. Moreover, toddlers are more exposed to any kind of virus and bacteria because they touch and lick everything when they are

playing. 91% of the households didn't have toddlers in the house and 9% have 1 or more toddlers in the household.

5.2. ECONOMIC EFFECT

Among the total of three categories i.e. economic, social and coping strategies, of the impact of Covid-19, economic impact was the first one to be addressed. Economic impact is difficult to calculate and quantify when it comes to the local community. Some households refrain from sharing economic situation as they consider it to be sensitive information. Specially, household heads feel hesitated when it comes to delivering information about the expenditure and income of the household. Sometimes, they try to fake the information but the confidence of privacy to their information provided was given by self-speech and as, it was related to Covid-19 so they understood that this information would be utilized in the best way possible to devise policies against covid-19. Moreover, they were made clear about the type of analysis to be run on the information provided by them.

The key indicators of economic impact came out from the literature review. These three indicators were income, expenditure and employment. A lot of minor indicators were identified but they were not as significant when Covid-19 (a pandemic situation) was in consideration. When we talk about the economic situation of a household, we need to know that what is a household earning and what type of expenditures do they have. Some households may have more than 1 earning household member, some may be earning through business and others from jobs and it may be a hybrid model of earning. Similarly, when it comes to the expenditure of a household, some may spend more money on education and some may spend more on transport or utilities. To cover this all up, a variety of questions were developed. Some of these variable questions were fetched from other researches and others were made from the expert opinion. After listing of these variables, pilot test added a lot more detail to the variables under the key indicator of economic impact. So after repetitive modifications of the variables, a section of the questionnaire was made which addressed the economic condition of the households in a much better and accurate way because the more accurate the variables were, the more legit quantitative measure was to be obtained.

The key indicator of employment was added to the economic impact as it can be considered as a minor indicator in other researches but in the context of Covid-19, it holds a lot

more importance. The effects of Covid-19 mainly effected the employment due to the lockdowns and social distancing so it makes it significant. Due to this, apart from knowing what households are earning and expending, it was necessary to know if they got unemployed or if they changed the source of income to meet the expenditures. Although, households were asked about the comparison of expenditures before and during Covid-19 but employment details during Covid-19 really simplifies the understanding the quantifying the economic impact.

5.2.1. INCOME

The variables were sorted into suitable categorize so that they could be understood with ease. The table shows distribution of the total data in categories and then the same for planned and unplanned areas. Different desired categories were made through SPSS, the data was encoded into different variable and then the frequency test was run. After that, crosstabs were made with respect to planned and unplanned areas of Islamabad and the results were put into the table above. A chi square test was then run on the crosstab and only the p-value was entered into the table. P-value less than 0.05 means that under the consideration of a specific variable, there exist a strong relationship between planned and unplanned areas and if the value is greater than 0.05, then the relationship is not strong so we say that no relationship exists. Let's start the stating of data collected and results from income and others would be discussed later by turn. Five questions (variables) were asked from the households which indicated all about the quantity and quality of their income.

A chi square test of independence was performed to analyze the relation of household area type with earning members of household ($p = .000$), money borrowed during Covid-19 ($p = .000$), and financial savings used during Covid-19 ($p = 0.008$). The relation between these variables was significant.

A chi square test of independence was performed to analyze the relation of household area type with reduced salaries during Covid-19 ($p = .168$), and households receiving financial aid ($p = .075$), . The relation between these variables was not significant.

54%, 28% and 18% of the total sample said that there are 1, 2 and 3 or more earning members in the household respectively. 40%, 34% and 26% of the planned area sample said that there are 1, 2 and 3 or more earning members in the household respectively. 68%, 22% and 10%

of the unplanned area sample said that there are 1, 2 and 3 or more earning members in the household.

81% of total sample, 78% of planned area sample and 84% of unplanned area sample said that they didn't receive reduced salaries during Covid-19. Whereas 19% of total sample, 23% of planned area sample and 16% of unplanned area sample said that they received reduced salaries during Covid-19.

96% of total sample did not received financial relief from the government and only 4% received financial aid from the government. 2% of the planned area sample and 5% of the unplanned area sample received financial relief from the government.

41% of the total sample did not use financial savings during Covid-19 and 23% of the total sample did not have any savings when entering into Covid-19. 46% of the planned area sample did not feel the need to spent savings during Covid-19 and 25% did not have any savings. 36% of the unplanned area sample did not spent savings during Covid-19 and 21% did not have savings. Moreover, 29% and 15% of unplanned area sample used less than 50% and more than 50% savings during Covid-19 respectively. In planned area sample, 22% and only 6% used less than 50% and more than 50% financial household savings during Covid-19.

87% of total sample did not borrowed money from friends or family during Covid-19 and 13% borrowed money from their friends/family. 94% of planned area sample did not borrowed money from friends/family and 6% borrowed money during Covid-19. 81% of unplanned area sample did not borrowed money from friends/family and 19% borrowed money during Covid-19.

Table 6. Economic Effect of Covid-19 – Effect on Income

Variables	Total (%)	Planned (%)	Unplanned (%)	p-value
How many household members are earning?				
1	54	40	68	.000
2	28	34	22	
3 or more	18	26	10	
Did your household members receive reduced salaries during Covid-19?				.168
Yes	19	22	16	
No	81	88	84	
Did your household receive any financial relief from government?				.075
Yes	4	2	5	
No	96	98	95	
What percentage of financial savings of household was used in Covid-19?				
0	41	47	36	.008
Less than 50%	26	22	29	
More than 50%	10	6	15	
Didn't have any savings.	23	25	20	
Did your household borrowed money from relatives/friends during Covid-19?				.000
Yes	13	6	19	
No	87	94	81	

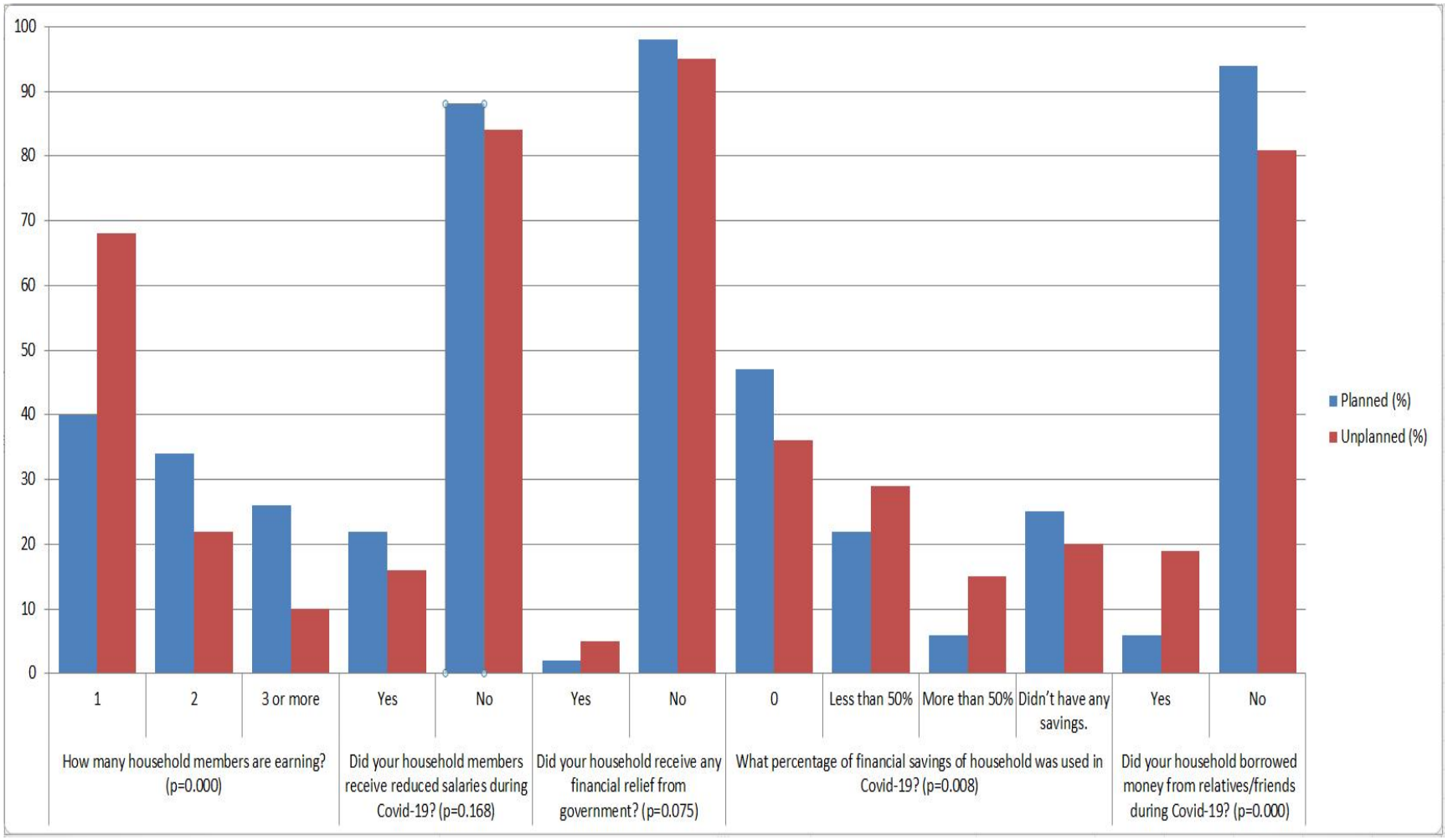

Figure 5. Economic Effect of Covid-19 – Effect on Income

5.2.2. AVERAGE MONTHLY EXPENDITURE

After analyzing income of the total sample through a number of variables, key indicator of expenditure was also needed to be calculated so that the impact can be included into the economic effect of Covid-19. In this section of questionnaire, the households were asks about the magnitude of expenditure before and during Covid-19. The major parameters of expenditure were identified which were expected to have a huge difference between the two magnitudes asked. These parameters had literature support are listed as: Utilities, Education, Health Services, Food, Tourism or Entertainment and Transport. At the start of the section, the total expenditure before and during Covid-19 was also asked to get a whole picture of the key indicator.

Households felt insecure sharing this sensitive information so some households didn't put any value in this section and left it blank. Even after asking them and taking them into confidence about the privacy policy of research, they didn't want to tell about the expenditure of their household. As total sample was 385, only 237 household answered this section so only these entries were considered. Among these 237, 109 were the responses which were from planned sample and 128 were from the unplanned sample. After getting the data from the households, it was separated from the rest of the data because it was to be analyzed differently. A comparison of before and during Covid-19 was needed in total, planned and unplanned areas. So a normal chi test was not performed on this data as it is done on the rest of the data. Paired sample t-test was performed on the data. The two variables compared were before Covid-19 and during Covid-19 values.

Mean, t-value and p-value were stated in the table for planned, unplanned and total sample so that these values can be compared and it can be found out if the relationship is because of the planned or unplanned sample (if relation exists in the total sample). A negative mean value and t-value means that the expenditure under respective parameter increased during Covid-19 with respect to before Covid-19 time. For example: by referring the table, the expenditure on utilities, education, health services and food increased during Covid-19 and expenditure on tourism, entertainment and transport decreased during Covid-19.

A Paired Sample t-test was performed to analyze the relationship between the total expenditure ($p = .013$), expenditure on utilities ($p = .000$), health services ($p = .000$), food ($p = .000$), tourism and entertainment ($p = .000$), and transport ($p = .000$) before and during Covid-19 in planned and unplanned area sample. There was a significant relationship between these variables in total sample.

A Paired Sample t-test was performed to analyze the relationship between expenditure on education ($p = .823$) before and during Covid-19 in planned and unplanned area sample. There was not a significant relationship between the two variables in total sample.

Table 7. Effect of Covid-19 on the average monthly expenditure of households.

Variables (Before and During Covid-19)		Mean	t-value	p-value
Total Expenditure	Total (N=237)	-3843	-2.50	0.013
	Planned (n=109)	-3962	-1.45	0.150
	Unplanned (n=128)	-3742	-2.25	0.026
Utilities	Total	-1553	-3.95	0.000
	Planned	-1997	-2.85	0.005
	Unplanned	-1191	-2.81	0.006
Education	Total	-220	-0.22	0.823
	Planned	-969	-0.47	0.637
	Unplanned	418	0.81	0.419
Health Services	Total	-2646	-6.67	0.000
	Planned	-2147	-3.135	0.002
	Unplanned	-3070	-6.88	0.000
Food	Total	-3886	-4.43	0.000
	Planned	-4816	-2.65	0.009
	Unplanned	-3093	-6.32	0.000
Tourism and Entertainment	Total	4734	6.81	0.000
	Planned	7183	5.54	0.000
	Unplanned	2648	4.35	0.000
Transport	Total	3179	10.15	0.000
	Planned	3552	6.15	0.000
	Unplanned	2862	9.30	0.000

5.2.3. EMPLOYMENT

69% of total households didn't have any household members looking for a job during Covid-19. Planned area sample had 66% and unplanned area sample had 73% of households who had none unemployed household members. Whereas, 23%, 24% and 21% of the households in total, planned and unplanned area sample respectively, had 1 member unemployed and looking for a job during Covid-19. The rest of the sample in all sample categories had 2 or more household members looking for job during Covid-19.

Some of the households needed to change the occupation during Covid-19 because their own occupation was not well paying during Covid-19. So when the respondents were asked, it came out that 17% of the total sample changed occupation during Covid-19 and 83% stayed with the same occupation and survived the pandemic. When we talk about the planned area sample, 22% changed the occupation and 78% didn't change the occupation. Whereas, 12% households changed occupation and 88% didn't change occupation in unplanned area sample during Covid-19.

Due to financial shortcomings in households during Covid-19, some households made their non-earning household members to earn which were not earning in normal days. In total sample, 19% of the households made their non-earning household members to earn and in 81% of households the number of earning members remained the same. As in planned area sample, 22% increased the number of earning members and 78% didn't need to increase the number of earning members. These values for unplanned area sample were only 10% and 90% respectively.

The households were asked that if their household head works on a daily wage or not. It was quite important because the daily wagers were the most to get effected by Covid-19 as a single day without work would mean a day without meal. In the total sample, 18% households had household heads who worked on daily wages and the rest didn't work on daily wages. For planned area sample, the same value was 11% and for unplanned area sample the same value was 25%. That means, household heads in 25% of unplanned area of Islamabad work on daily wage that is a very significant finding.

Some households who were not in a good financial position before Covid-19 were even worst during Covid-19. As education is very expensive in Islamabad, a lot of households had to discontinue education of the studying household members. A total of 4% sample discontinued

study of household members due to financial shortcomings during Covid-19. It was 3% for planned area sample and 4% for unplanned area sample.

Households were asked if they delayed utilities bill payments during Covid-19 due to financial problems. Utilities are a basic necessity and everyone should be able to pay them even in the worst financial status. 62% in the total sample said 'not at all' for delaying utility bills. 72% of planned area sample did not delay utility bill even once and 51% in unplanned area sample did not delay bills. The rest of the percentage delayed utility bill payments during Covid-19 in four degrees which are 'a little', 'somewhat', 'considerably' and 'extremely'. The total percentage of these four degrees was 28% for planned area sample and 49% for unplanned area sample who delayed payment of utilities bill during Covid-19.

During lockdowns, online classes and work from home forced household members to buy more devices like laptops to attend classes or to work. Half of the total sample spent extra money during lockdowns for online work. It was 47% for planned area sample and 56% for unplanned area sample.

A chi square test of independence was performed to analyze the relation of household area type with job hunting ($p = .187$), discontinuation of education ($p = .539$), and additional expenditure to attend online classes or work from home ($p = .073$). The relation between these variables was not significant.

A chi square test of independence was performed to analyze the relation of household area type with change of occupation ($p = .005$), increase in earning members ($p = .000$), household head working on daily wages ($p = .000$), and monthly payments during Covid-19 ($p = 0.000$). The relation between these variables was significant.

Table 8. Effect of Covid-19 on the employment of households.

Variables	Total (%)	Planned (%)	Unplanned (%)	p-value
How many household members are looking for a job?				
0	69	66	73	.187
1	23	24	21	
2 or more	8	10	6	
Did your earning household members changed occupation during Covid-19?				.005
Yes	17	22	12	
No	83	78	88	
Did non-earning members of household started earning during Covid-19?				.000
Yes	19	28	10	
No	81	72	90	
Does your house head work on daily wage?				
Yes	18	11	25	.000
No	82	89	75	
Did any household member discontinued education due to financial shortcomings?				.539
Yes	4	3	4	
No	96	97	96	
Did your household delay utility bill or loan payments in Covid-19 due to financial issues?				
Not at all	62	72	51	
A little	12	12	12	.000
Somewhat	12	8	16	
Considerably	8	4	12	
Extremely	6	4	8	

Did your household members spent extra money for work-from-home or online classes?				.073
Yes	51	47	56	
No	49	53	44	

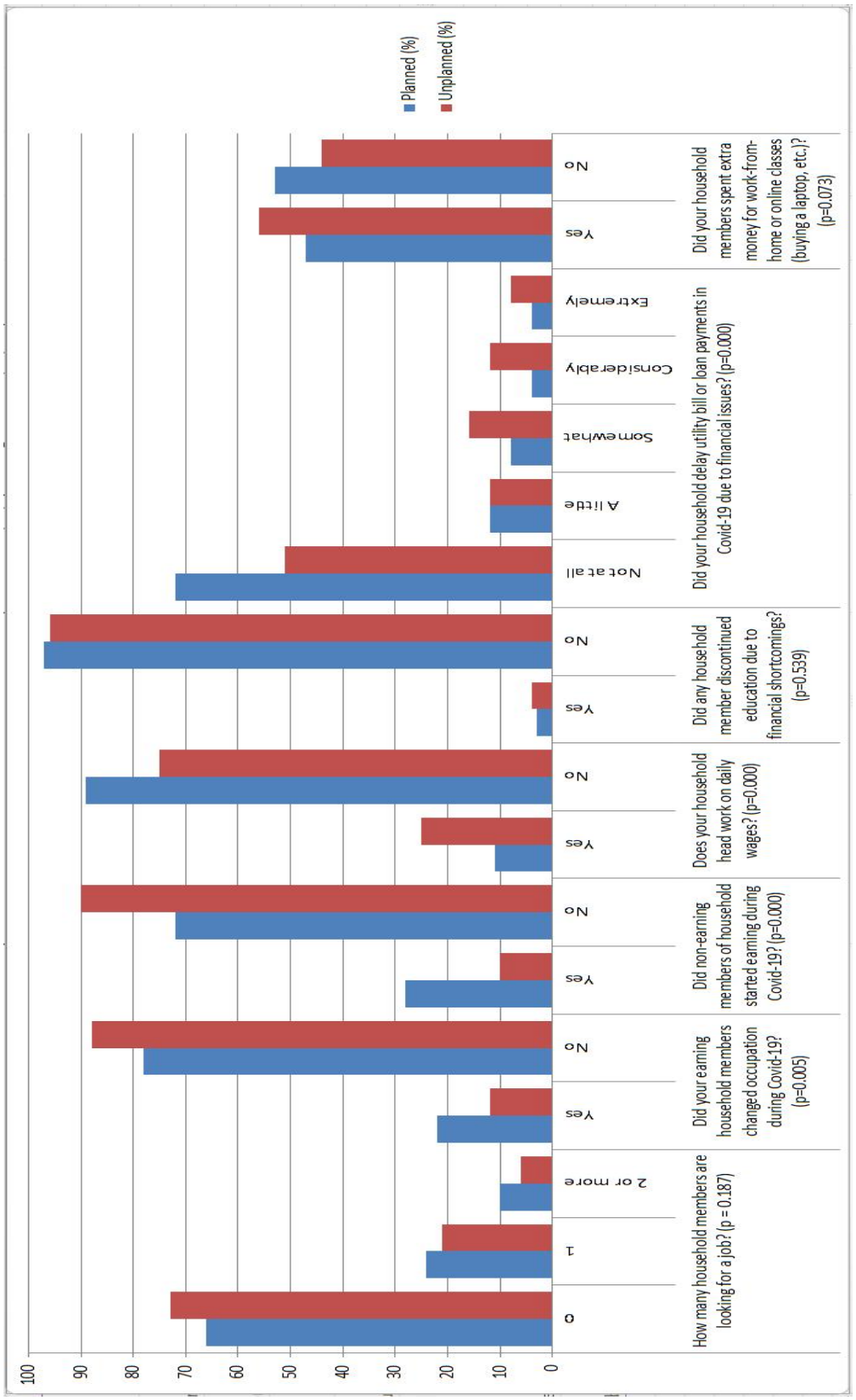

Figure 6. Effect of Covid-19 on the employment of households.

A chi square test of independence was performed to analyze the relation of household area type with unemployment in Covid-19 ($p = 0.823$), number of days unemployed ($p = .857$), starting business in Covid-19 ($p = .339$), kind of business started ($p = .167$), drop in clientage ($p = .319$), and percentage drop in clientage ($p = 0.316$). The relation between these variables was not significant.

Household members were asked if their household members face any unemployment during Covid-19. A total of 10% households faced unemployment of household head during Covid-19. The values were same for planned area sample and almost same for unplanned area sample with is 9%. Moreover, it was also asked that how many days they stayed unemployed. So as a part of 10% of total sample, 9% said that they stayed unemployed more than a month and only 1% stayed unemployed for less than a month. The condition was similar to the planned area sample but a slight difference was observed in unplanned area sample in which 7% stayed unemployed for more than a month and 2% for less than a month from a total of 9%.

Some households expressed that they found Covid-19 as an opportunity for business which was online or home based. Two major factors for this opportunity were increasing financial demand and excessive online shopping. A lot of households started business in food, clothes and services while staying at home to fulfill the demand of finances in Covid-19. A total of 12% households started business in Covid-19. In planned area sample, 14% households started business and the value for unplanned area sample was only 11%. Moreover they were asked about the type of business they started. From a 12% of total sample who stared some business comprised of 5% households who did home based business and 7% that did online business. In 14% of planned area sample, exactly half were those who did some home based business and other half 7% did online business. This online business may include freelancing or providing services. In 11% of unplanned sample, 8% did online business and 3% did online business.

Until these questions, the households with the family income source of business were not dealt with or considered to the most so separate questions for these kind of households were developed so that complete situation can be analyzed. These households were asked that if their clientage drop during Covid-19 or not. 66% household didn't answer the question because their source of income was not business before Covid-19. A total of 18% households said that the clientage or sales of business dropped. For planned and unplanned area sample 19% and 16%

households said that the clientage or sales dropped. The rest of the sample space had business as source of income but the sales or profit of the business didn't drop. Then as a second part of this question, the households were asked if the dropped sales were more than 50% or less than 50%. For the total sample, 14% said that the sales dropped by less than 50% and only 5% said that it dropped more than 50%. The distribution in planned and unplanned area sample was almost the same that's why it's not discussed here.

Table 9. Effect of Covid-19 on the employment of households.

Variables	Total (%)	Planned (%)	Unplanned (%)	p-value
Did your earning household members face unemployment during Covid-19?				.823
Yes	10	10	9	
No	90	90	91	
How many days did they stay unemployed?				.857
1 month or less	1	1	2	
More than a month	9	9	7	
Not Applicable	90	90	91	
Did your household start any business in Covid-19?				.339
Yes	12	14	11	
No	88	86	89	
What kind of business was it?				.167
Home Based	5	7	3	
Online	7	7	8	
Not Applicable	88	86	89	
If your income source was business before Covid-19, did sales or clientage drop during Covid-19?				.319
Yes	18	19	16	
No	17	19	14	
Not Applicable	66	62	70	
By what percentage did sales or clientage drop?				.316
50% and less	14	16	12	
More than 50%	5	4	6	
Not Applicable	81	80	82	

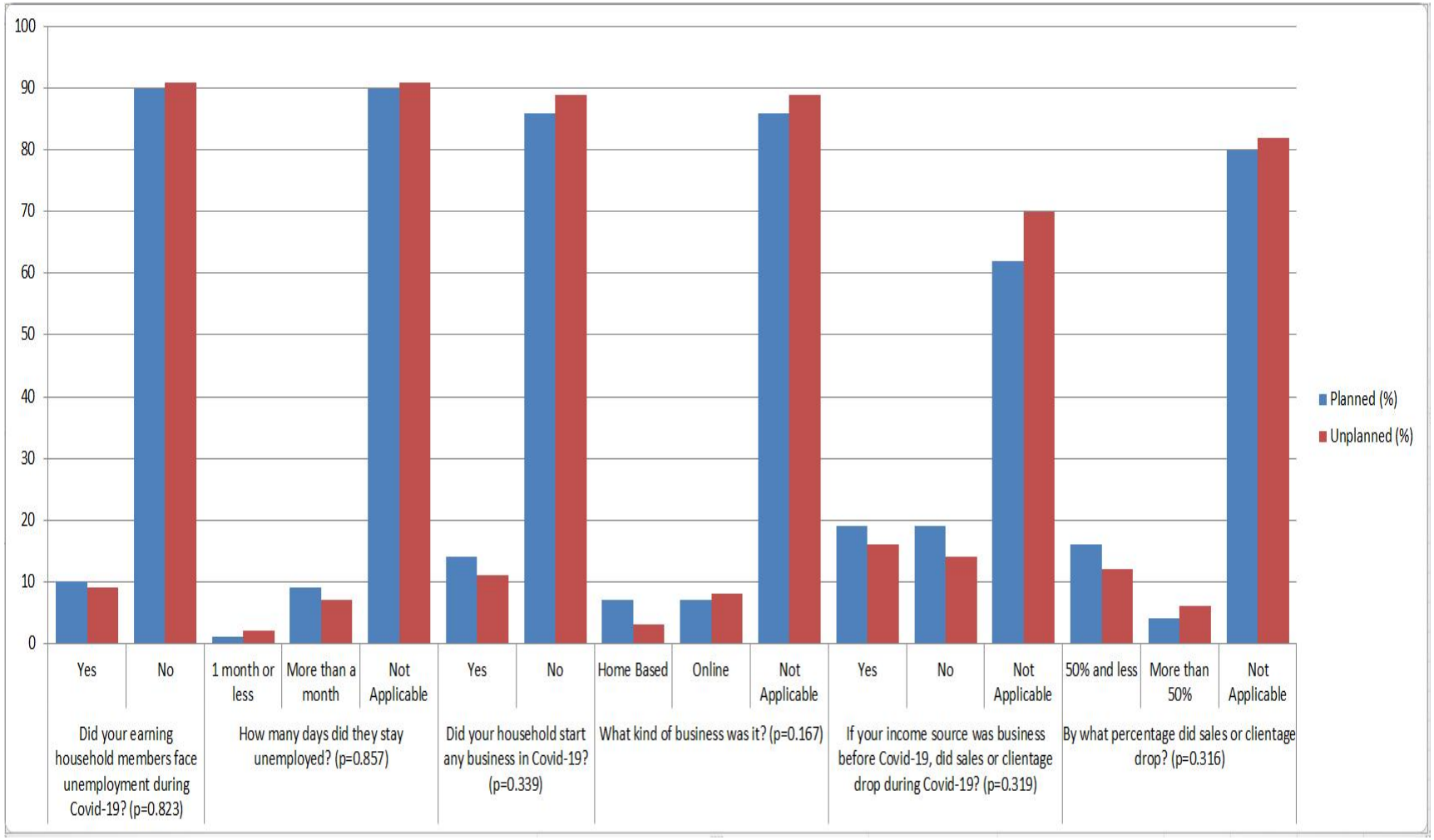

Figure 7. Effect of Covid-19 on the employment of households.

5.3. SOCIAL EFFECT

5.3.1. MEDICAL

A portion of medical situation of households was included in the questionnaire as a key indicator to determine the social impact of Covid-19 on planned and unplanned area samples. This portion had 6 questions which were fetched from the literature. This portion is more inclined towards the vulnerability of the households. It will let us know that if households were able to get standard medical services during Covid-19 or not. Also, if planned area had more infected people or households in unplanned area.

A chi square test of independence was performed to analyze the relation of household area type with member tested Covid-19 positive ($p = 0.000$), safe recovery from Covid-19 ($p = .000$), facility used for Covid-19 ($p = 0.009$), and standard medical conditions in lockdown ($p = 0.001$). The relation between these variables was significant.

A chi square test of independence was performed to analyze the relation of household area type with regular medical condition ($p = 0.485$), and hospitalized Covid-19 patients ($p = .431$). The relation between these variables was not significant.

First question asked was about how many people have regular medical condition. This regular medical condition includes people who have sugar, blood pressure, etc. Or, people who are on lifelong medication due to any kind of illness. The information is important to know because people with these characteristics are affected in two ways i.e. they are double the vulnerable from any old age household member. Firstly, they need regular check up from a hospital which was not possible in times of Covid-19 and if the condition of this kind of household member is gets critical due to the illness (not due to Covid-19) then the priority will not be given. Secondly, this type of household member requires more attention in the household and there must always be a caretaker for the member. If everyone in the household gets infected even if the person who is on regular medical condition is not then still that person will get highly affected. The results showed that almost half of the households had none household member with regular medical condition in all three samples: total sample, planned area sample and unplanned area sample. Around 23% households had 1 household member with regular medical condition in all three sample categories and the rest 27% sample had 2 or more household member with regular medical condition.

Second question in medical section was that how many household member tested positive of Covid-19. In simple terms, this variable was to identify the amount of people infected in planned and unplanned area samples. Notable terms are that 36% households in total area sample had 1 or more household members who got infected with Covid-19. Whereas, 40% in planned area sample and only 21% in unplanned area sample were tested positive of Covid-19.

They were also asked if the household members were hospitalized or not. The results came out that 13% households had 1 or more household member hospitalized in total sample. The same percentages for planned area sample and unplanned area sample were 11% and 15%.

It was then needed to know that how many household member lost life due to Covid-19 and households could not be directly asked about that. So a variable was added which asked them to enter the amount of household members who recovered safely from Covid-19. Later these numbers were converted into suitable categories and percentages so that they can be compared with the previous variable which was about the percentage of household members tested positive of Covid-19. The results showed that 34% households had 1 or more household members who recovered safely from Covid-19. Same percentage for planned area sample was 39% and it was 18% for unplanned area sample.

After the basic information, the respondents were asked about the type of medical facility preferred. They were given three options: government, private and none. The option ‘none’ was available because a lot of people during Covid-19 lost trust into the medical facilities and did not go for tests and vaccinations even in case of symptoms. A notable difference in percentages of private facility was seen. 41% of total households said that they preferred private facility whereas 38% of planned area sample and 53% of unplanned area sample said that they preferred private medical facility for tests, vaccination and treatment. Also, 16% in planned area sample and only 6% in unplanned area sample didn’t use any medical facility either public or private.

Last question was kind of satisfactory based in which households were asked if they were able to get standard medical services during Covid-19. These medical services could be related to Covid-19 or generally any other. 70% in total sample, 78% in planned area sample and only 62% in unplanned area sample answered ‘Yes’ to this question. The rest of the sample in three categories answered ‘No’. The deduction is simple that unplanned area sample didn’t get standard medical services on average to planned area sample.

Table 10. Social effect of Covid-19 on the medical facilities available to households

Variables	Total (%)	Planned (%)	Unplanned (%)	p-value
Household members having regular medical condition.				
0	51	49	54	.485
1	23	24	23	
2 or more	26	28	23	
Household members tested positive of Covid.				
0	64	50	78	.000
1	14	18	9	
2 or more	22	32	13	
How many household members were hospitalized as COVID patients?				
0	87	89	86	.431
1	11	10	12	
2 or more	2	1	3	
How many household members recovered safely from Covid-19?				
0	66	51	82	.000
1	14	17	10	
2 or more	20	32	8	
What kind of facility was preferred for Covid-19 tests, vaccination and treatment?				
Government	48	46	50	.009
Private	41	38	53	
None	11	16	6	

Were your household members able to get standard medical services during lockdowns?				.001
Yes	70	78	62	
No	30	22	38	

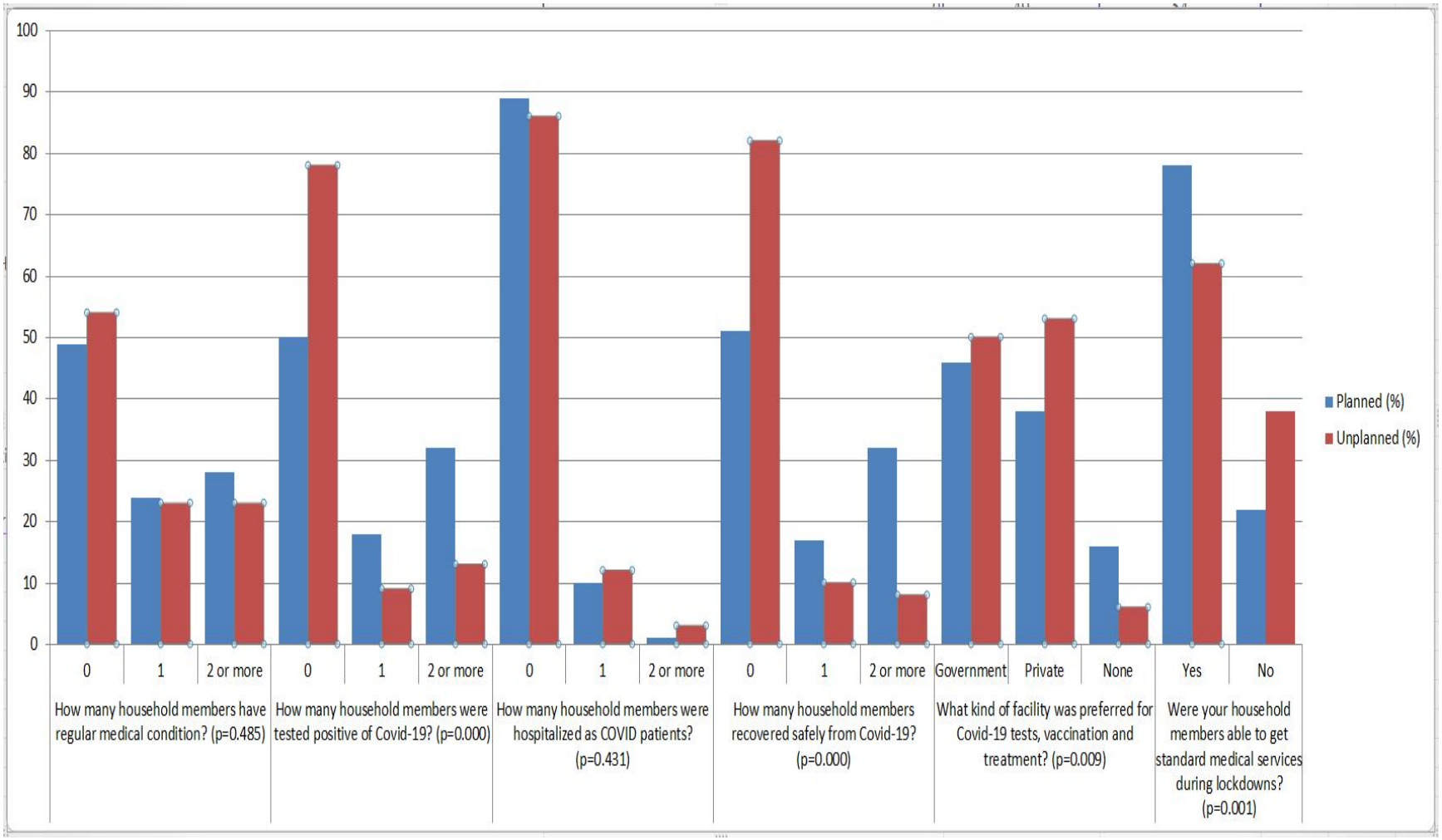

Figure 8. Social effect of Covid-19 on the medical facilities available to households

5.3.2. PSYCHOLOGICAL

The section of psychological impact consisted of 8 questions. These variables were designed to translate the psychological impact of planned and unplanned area samples from qualitative to quantitative. A chi square test of independence was performed to analyze the relation of household area type with change in quality of sleep ($p = .000$), and fear of Covid-19 infection ($p = .015$). The relation between these variables was significant. A chi square test of independence was performed to analyze the relation of household area type with drop in grades ($p = 0.154$), exercising during Covid-19 ($p = .156$), level of family conflicts ($p = .0.70$), psychiatrist consultation ($p = .084$), avoiding Covid-19 news ($p = .297$), and symptoms of anxiety ($p = .104$). The relation between these variables was not significant.

Households were asked if the grades of household members dropped who were students. 59% of the total sample said that the grades of studying household members dropped and the remaining 41% of total households said that the grades didn't drop. It is a very high percentage if more than half of the students in the total sample space are getting affected in studies during Covid-19. The percentages for planned and unplanned area were not highly differentiated. 62% of planned area households said that the grades of students dropped and 57% of the unplanned area household said that the grades dropped with respect to the grades before Covid-19.

The exercising routine of 33% of the total sample remained the same. Whereas, 52% said that the amount of exercise decreased and only 15% said that their daily exercise routine increased in Covid-19. There was not much difference in planned and unplanned area samples. The percentages of exercising routine increased, decreased and remained similar were the same but 33% of planned area households said that the probability of exercising regularly has significantly decreased and this percentage for unplanned area sample was 24% so we get a difference of 9% here.

A distributed pattern of percentages were collected from the variable in which the households were asked about the quality of sleep during Covid-19. 29% of total households said that the quality of sleep decreased during Covid-19, 45% said that it increased and 26% said that it remained the same. A highly versatile pattern was seen in the planned and unplanned area samples. 40% of planned area sample and only 17% of unplanned area sample said that the quality of sleep decreased during Covid-19. 24% households in planned area sample and 28% households in unplanned area sample said that the quality of sleep remained the same as before

Covid-19. Whereas, 36% households in planned area sample and 55% households in unplanned area sample said that the quality of sleep increased in Covid-19.

According to some researches, the more siblings spent time with each other during Covid-19, the more they fought and got into conflicts. Also, due to the frustration of staying at home and fighting the pandemic, families got into internal conflicts. 50% of total households said that the level of family conflicts remained the same. This value was 47% for planned area sample and 53% for unplanned area sample. 19% total household said that the level of conflicts decreased and 31% said that the level of conflicts increased. In planned area sample, 20% said that it decreased and 32% said that it increased whereas in unplanned area sample, the level of conflict and fight in family decreased in 18% households and increased in 29% households.

Variables	Total (%)	Planned (%)	Unplanned (%)	p-value
Did the grades of studying household members drop during Covid-19?				.154
Yes	59	62	57	
No	41	38	43	
During COVID-19 pandemic, how has the probability of exercising regularly changed as compared to pre-COVID-19 period?				.156
Significantly Decreased	28	33	24	
Slightly Decreased	24	20	28	
Grossly Similar	33	31	34	
Slightly Increased	11	11	11	
Significantly Increased	4	6	3	
How has the quality of your sleep changed during Covid-19 as compared to before it?				.000
Significantly Decreased	15	21	9	
Slightly Decreased	14	19	8	
Grossly Similar	26	24	28	
Slightly Increased	25	17	33	
Significantly Increased	20	19	22	
What was the level of family conflicts and fights among siblings during Covid-19, in comparison to before it?				.070
Significantly Decreased	8	11	5	
Slightly Decreased	11	9	13	
Grossly Similar	50	47	53	
Slightly Increased	23	25	20	
Significantly Increased	8	7	9	

Table 11. Psychological effects on household sustainability due to Covid-19

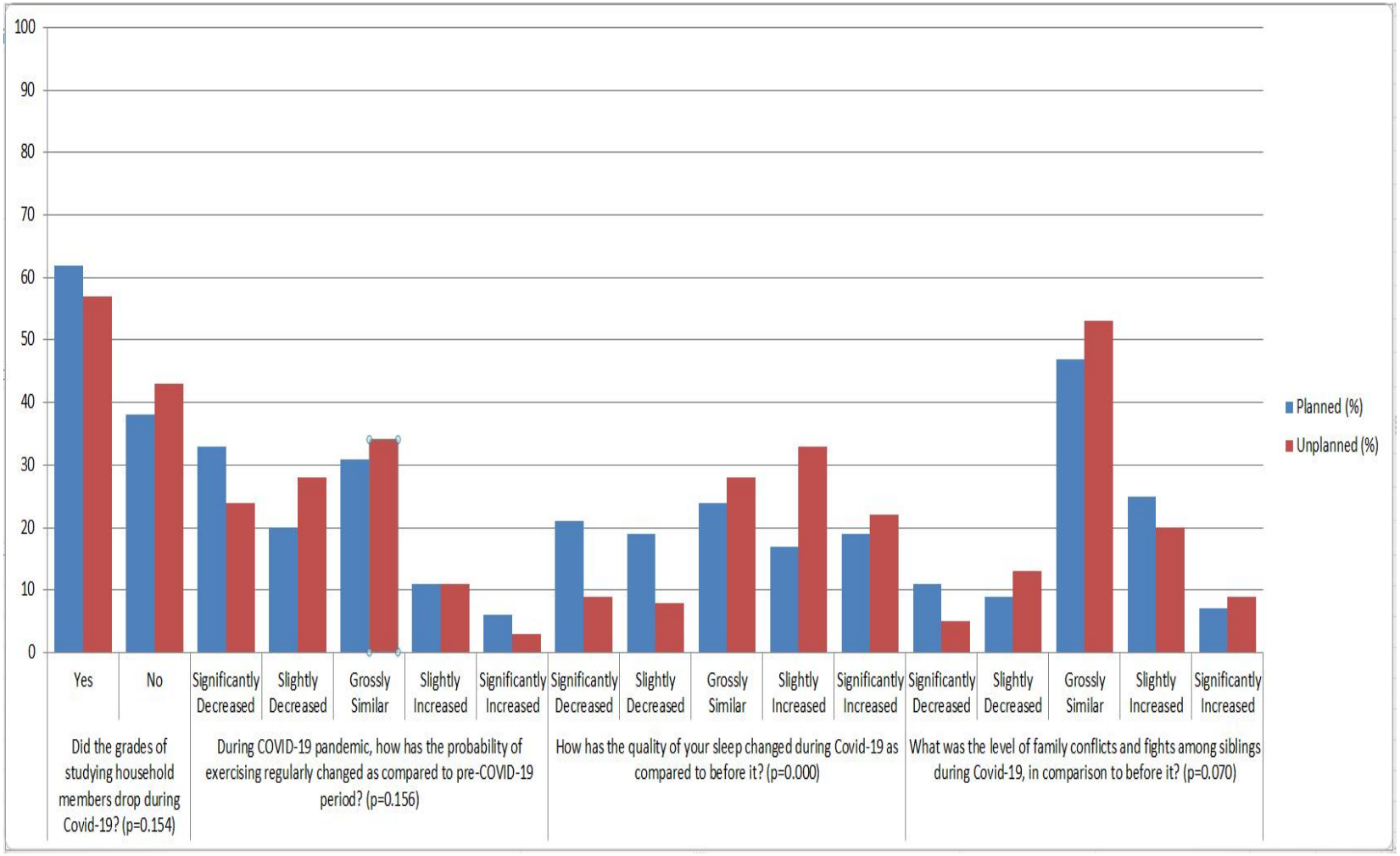

Figure 9. Psychological effects on household sustainability due to Covid-19

Households were asked if they visited any psychologist during Covid-19 due to the increasing mental pressure. 12% of total households said that they consulted a psychologist during Covid-19 due to mental fatigue and depression. On break down of the total data, it was found that household members consulted a psychologist during Covid-19 in 10% household of planned area sample whereas only the percentage for consulting a psychologist in unplanned area sample was 15%.

Perception of risk is all about how much households are fed with the news or information about Covid-19. A lot of people avoided listening to Covid-19 related news or updates because it made them afraid and more depressed about the situation. 26% of the households did not avoid listening to Covid-19 related news whereas the remaining avoided it to some extent. Households who extremely avoided the news and updates of Covid-19 were 14%. The percentages in planned and unplanned area sample were almost the same to the total sample which means the variable was not much dependent on if the household is situated in a planned area or an unplanned area.

When we talk about perception of risk, we also talk about the fear of people getting infected. The reaction of most people during pandemics is derived by the fear of getting infected. So if the fear is high then the reactions would be more illogical and it would disturb daily normal tasks. It was found out that the life of household members in 28% total households was not affected due to fear of Covid-19. It was affected in some ways in 48% of the total households and the remaining 24% households had household members which got affected to ‘considerable’ and ‘extreme’ extents.

Finally the households were asked that if the household members showed any sign of depression or anxiety. Anxiety and depression are sometimes not identified by the person on its own but sometimes changes in mood and interaction are noticed by others. Household members didn’t show any symptoms of anxiety or depression in 33% of households in planned as well as unplanned area sample. So the same percentage for total sample would also be 33%. Household members who showed high symptoms of anxiety and depression were 16%, 21% and 11% in total sample, planned area sample and unplanned area sample respectively.

Table 12. Psychological effects on household sustainability due to Covid-19.

Variables	Total (%)	Planned (%)	Unplanned (%)	p-value
Did any of your household members consult a psychologist during Covid-19?				.084
Yes	12	10	15	
No	88	90	85	
How much do you avoid reading or listening COVID-19 related news and messages?				.297
Not at All	26	26	25	
A Little	24	21	26	
Somewhat	20	24	17	
Considerably	16	16	15	
Extremely	14	13	16	
How much has the fear of getting infected with COVID-19 affected your life?				.015
Not at All	28	26	30	
A Little	28	23	33	
Somewhat	20	20	20	
Considerably	15	20	11	
Extremely	9	12	6	
Did household members show any symptoms of anxiety or depression during Covid-19?				.104
Not at All	33	33	33	
A Little	26	24	27	
Somewhat	25	21	28	
Considerably	10	13	7	
Extremely	6	9	4	

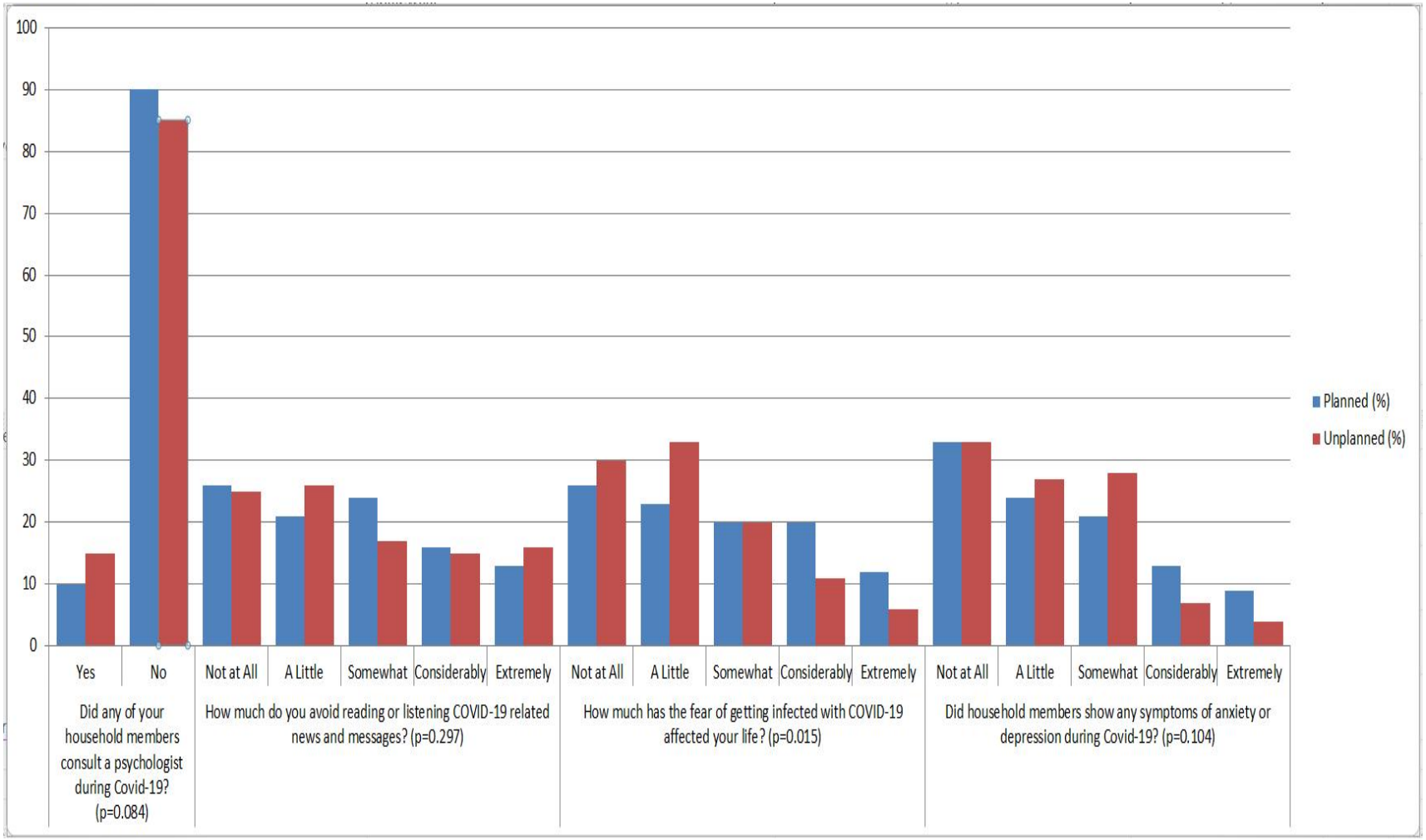

Figure 10. Psychological effects on household sustainability due to Covid-19

5.3.3. FOOD

Food was the basic and the most important concern during lockdown. During lockdowns in Covid-19 transportation was closed so delivery of food into distant places got disturbed due to which shortages of food were experienced. Moreover, people who worked on daily wages didn't have enough money to survive lockdowns. So they had to spend days without food or rely on the government. A chi square test of independence was performed to analyze the relation of household area type with food shortage ($p = .006$), reduction of meals ($p = .002$), market food item shortage ($p = .017$), stockpiling food ($p = .027$), accessibility of food quality ($p = .008$), and worrying about food ($p = .039$). The relation between these variables was significant. A chi square test of independence was performed to analyze the relation of household area type with food supply from government ($p = .296$), spending a day without meal ($p = .436$), which item was not available in market ($p = .118$), and consumption of junk food ($p = .424$). The relation between these variables was not significant.

Households who run out of food during lockdowns were 8% of the total sample. When we look into the planned area sample, the percentage was 5%. At the same time the percentage of running out of food in unplanned area sample was 12%. Some households who had some food reserves managed and divided the ration into days and reduced the amount of meal to survive lockdown. The percentage of reducing the amount of meal per day was 13% in total household sample. 8% and 18% households reduced the amount of food per day in planned and unplanned area sample respectively.

In the state of a global pandemic and lockdowns, it is the responsibility of the government to fulfill the food demand and arrange ration packages for people who deserve them. Federal government made policies for distributing free food among the needy households but it was not enough. Only 5% households received free food supply from the government during Covid-19. The values of planned and unplanned areas were almost the same however the percentage of unplanned area sample must have been higher because they were the ones who were really facing the problem of food scarcity.

Looking into the situation of scarcity of food during lockdowns, the households were asked if they spent a whole day without having a meal during Covid-19. Surprisingly 5% households said that they spent a whole day without having a single meal. This percentage means that either the food was not available in lockdowns or these households didn't have any reserve

food or money to buy food. The percentage was same for planned and unplanned area of Islamabad.

To eliminate the confusion about the reason of households spending the day without food, households were asked if there was shortage of food in the market and what kind of food was not available. These were two extra variables to cross verify that the households are facing food scarcity because of the unavailability of funds and the poor management and lack of efficient policy of the government. 19% of total households said that they faced food shortage of some kind of food item in the market. 15% in planned area sample and 24% in unplanned area sample said the same. These percentages show the discrimination of food distribution during lockdown. They were also asked about the type of food item which was not available or which food item was short from market. 42% said that sugar was not available in the market during lockdowns and Covid-19. 28% said that flour was not available. The difference of the opinion in planned and unplanned area sample didn't vary significantly in this regard.

Table 13. Effect of Covid-19 on food availability of households.

Variables	Total (%)	Planned (%)	Unplanned (%)	p-value
Did your household run out of food during lockdown?				.006
Yes	8	5	12	
No	92	95	88	
Did your household reduce the amount of food (times of meal) per day in Covid-19?				.002
Yes	13	8	18	
No	87	92	82	
Did your household receive free food supply from government during Covid-19?				.296
Yes	5	4	6	
No	95	96	94	
Did your household members spend a whole day without having a single meal during Covid-19?				.436
Yes	5	5	5	
No	95	95	95	
Did your household face shortage of food item in market during Covid-19?				.017
Yes	19	15	24	
No	81	85	76	
Which food item was not available?				.118
Sugar	42	47	39	
Meat	13	14	12	
Flour	28	25	29	
Fruits and Vegetables	17	14	20	

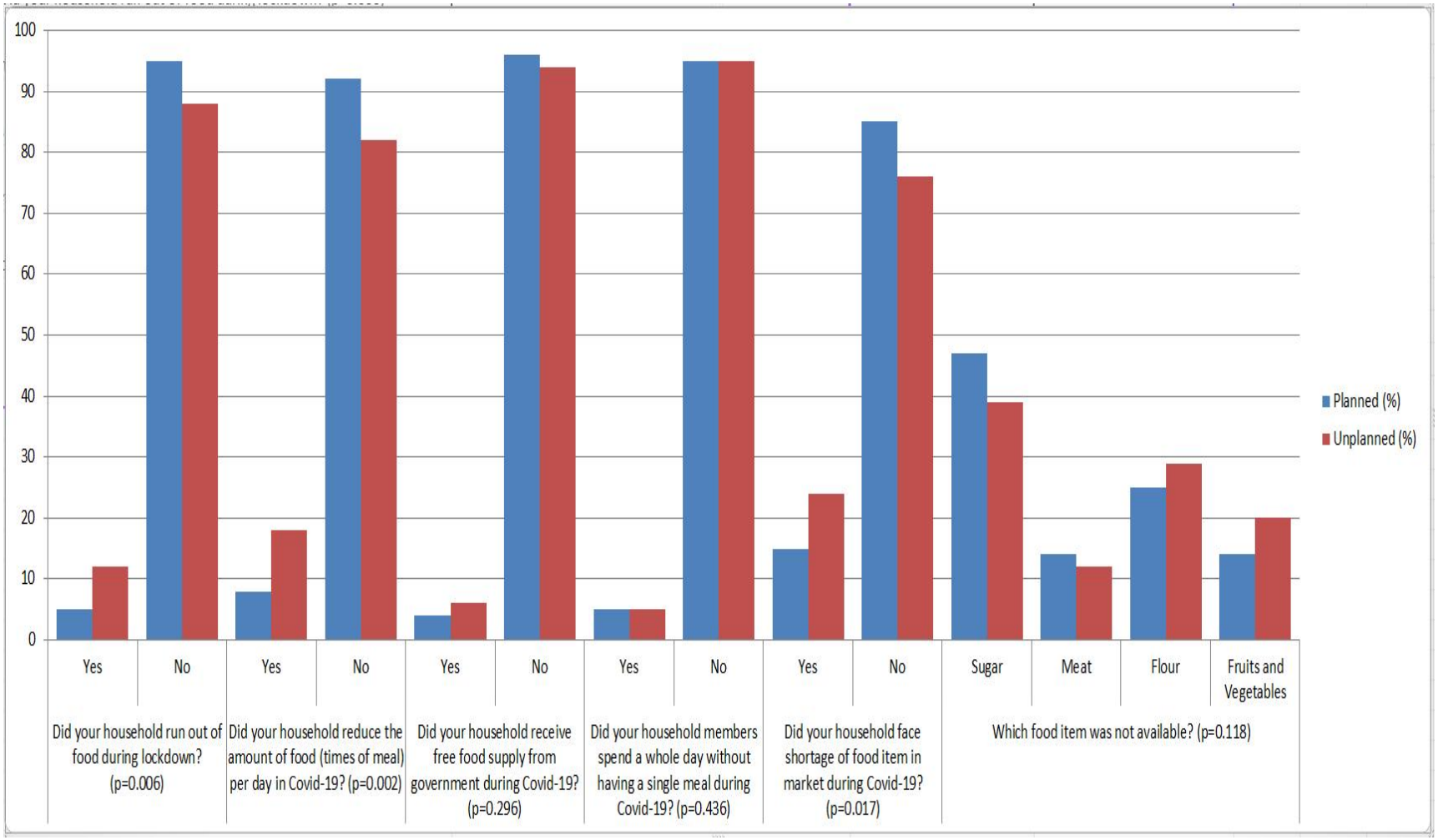

Figure 11. Effect of Covid-19 on food availability of households.

Some households had savings before Covid-19 which helped them to survive through the lockdowns and some didn't have any financial savings so they could not stockpile food items. Again, it was the perception of risk. Households with high risk perception stockpiled food and who didn't stockpile had low perception of risk or they didn't have enough financial resources. The variable about how much money did households spent was divided into three categories. 73% of the households didn't stockpile food in lockdowns during Covid-19. 13% spent less than 20,000 Pkr and 14% spent more than 20,000 Pkr in the total household sample. The data in comparison of planned and unplanned area sample only differed in the category of households who spent more than 20,000 pkr. The percentage in planned area sample was 19% whereas the percentage was only 9% in unplanned area sample.

With the increasing online businesses during Covid-19, the demand of junk and fried food also increased because most online businesses were related to fast food. The consumption of fried and junk food of 42% of the total household sample decreased during Covid-19 and this intake increased in 28% of the households. It remained the same in 30% total household sample. The distribution of increasing and decreasing usage of junk food was the same for planned and unplanned area samples.

Previously, questions were asked from the households which indirectly referred to the accessibility of food but a straight forward and direct question was also needed to know the quality of food available during Covid-19 because we already talked about the quantity of food in local households. Households were asked if the quality of food increased or decreased during Covid-19 with respect to the before Covid-19 period. On this point, the quality of food in 67% of total households didn't change and remained similar. However, 26% and only 7% said that the quality of food decreased and increased respectively. For planned and unplanned area sample, the percentage under grossly similar was the same but there was a trend noticed in percentage of households who said that the food quality decreased during Covid-19. In unplanned area sample, 32% said that the quality of food decreased and only 21% in planned area sample said that the quality decreased.

About the perception of the food accessibility, most households were worried if they would have enough to eat or not. Apart from the factual accessibility, it is necessary to know about the fear perception of the households. They were asked if they were worried that they would have enough to eat during Covid-19 or not. It came out that 70% of total households were

not worried or had no fear of eating sufficient food during Covid-19. Whereas, the rest of 30% total households have fear but majority on a lighter scale. The distribution of percentages in planned and unplanned area sample didn't vary much from the total household data.

Table 14. Effect of Covid-19 on food availability of households

Variables	Total (%)	Planned (%)	Unplanned (%)	p-value
How much did your household spent on stockpiling food for lockdowns in Covid-19?				
None	73	68	78	.027
Less than 20,000	13	13	13	
More than 20,000	14	19	9	
During Covid-19, how has your intake of fried and junk foods changed as compared to pre-Covid-19 period?				
Significantly Decreased	20	20	21	.424
Slightly Decreased	22	19	25	
Grossly Similar	30	33	25	
Slightly Increased	17	16	18	
Significantly Increased	11	12	11	
How was the quality of food accessible during Covid-19 in comparison to Pre-Covid-19 period?				
Significantly Decreased	9	9	10	.008
Slightly Decreased	17	13	22	
Grossly Similar	67	68	65	
Slightly Increased	4	5	3	
Significantly Increased	3	5	0	
Were your household members worried that they would not have enough to eat?				
Not At All	70	72	68	
A Little	16	11	21	.039
Somewhat	8	8	7	
Considerably	4	5	3	
Extremely	2	4	1	

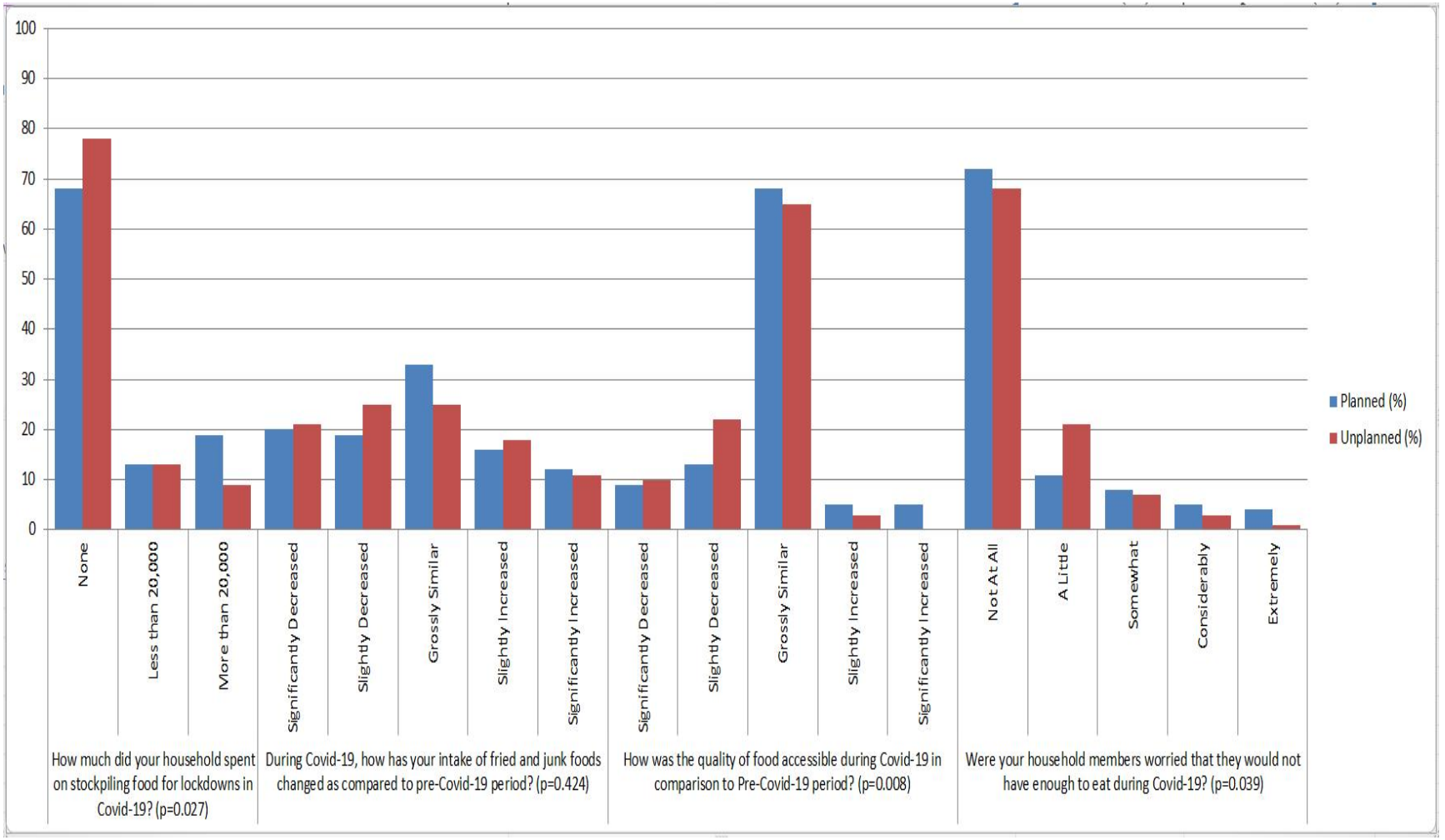

Figure 12. Effect of Covid-19 on food availability of households

5.3.4. SOCIAL TRIPS

One of the key indicators was social trips. Covid-19 has changed the habits of trips of households on a very big scale. Due to lockdowns, household members didn't go outside and stayed at home. Even when the lockdown was eased, household members did not come back to normal routine but were triggered with fear of getting infected. For the sake of hypothesis generation, we say that the households in planned area decreased social trips because they had more fear of getting infected and on the other hand, household members in unplanned area sample were also fearful but forced into going outside to carry out financial practices. But the true picture can only be portrayed by the help of data collected. A total of five questions were added into this key indicator. A chi square test of independence was performed to analyze the relation of household area type with change in total daily trips ($p = .018$), visitng family/friends ($p = .014$), and visiting mosque ($p = .001$). The relation between these variables was significant. A chi square test of independence was performed to analyze the relation of household area type with change in mode of transportation ($p = .482$), and visiting public spaces ($p = .296$). The relation between these variables was not significant.

First question was to identify if the household members changed the mode of transportation or not. This could be because of different reasons. For example, some may change mode of transportation to save money and switch from private to public transport and some may fear Covid-19 so much that they switched from public to private mode of transportation. There may be more reasons other than these two. 17% of the total households changed the mode of transportation. The percentages for planned and unplanned area were 16% and 18% so there did not existed any significant change in habits of the planned and unplanned area sample with respect to change of mode of transportation during Covid-19.

Households were asked about the total daily trips change. In the total household sample, 70% households said that the total daily trips decrease during the entire Covid-19 period. In planned sample, the decreased total daily trips percentage was 72% and it was 66% in unplanned area sample. The percentages of every sample were 21% in which the total social trips didn't change. The difference of planned and unplanned area sample reflected on the category where the daily social trips of unplanned area were more than the planned area sample.

When they were asked about the change in visiting friends or family during Covid-19, 49% said that it significantly decreased. Whereas, the decrease in visiting friends or family in

planned area was 55% and it was 42% in unplanned area sample. Again, the households in unplanned area which increased the amount of trips to relatives or friends were greater than the sample of planned area.

Visits to public spaces decreased to greater extents on a total scale but the distribution In planned and unplanned area sample was almost equal. It means the degree of which planned area sample decreased visits to public spaces was same as of unplanned area sample. 58% of the total households said that the visits to public spaces decreased significantly and 24% said that it decreased slightly.

Some people don't compromise on the religious values even in pandemic. As majority of the population in our country and Islamabad is Muslim who have to visit mosque for prayers, we asked households if they reduced the amount of visits to mosque or not. 63% of the total household sample said that the visits to mosque were decreased from significant to slight degrees. The same percentage for planned area was 68% and for unplanned area sample was 59%. A unique trend was found in this variable because the percentage of households in planned area which increased the visits to mosque were also greater than the unplanned area sample which means the percentage of grossly similar in perspective if visiting to mosque was very much greater in unplanned area sample than planned area sample.

Table 15. Effect of Covid-19 on social trips of the households

Variables	Total (%)	Planned (%)	Unplanned (%)	p-value
Change in mode of transportation?				
Yes	17	16	18	.482
No	83	84	82	
During Covid-19, how has the total daily trips of household members changed as compared to before Covid-19?				
Significantly Decreased	44	47	40	.018
Slightly Decreased	26	25	26	
Grossly Similar	21	21	21	
Slightly Increased	5	6	5	
Significantly Increased	4	1	8	
During Covid-19, how has the frequency of visiting friends/relatives per month changed as compared to before Covid-19?				
Significantly Decreased	49	55	42	.014
Slightly Decreased	31	31	30	
Grossly Similar	16	12	22	
Slightly Increased	2	1	3	
Significantly Increased	2	1	3	
During Covid-19, how has the frequency of visiting public spaces per month changed as compared to before Covid-19?				
Significantly Decreased	58	62	55	.296
Slightly Decreased	24	20	28	
Grossly Similar	14	14	13	
Slightly Increased	4	4	5	
Significantly Increased	0	0	0	
During Covid-19, how has the frequency of	33	39	28	.001

visiting mosque per week changed as	30	29	31	
compared to before Covid-19?	30	23	36	
Significantly Decreased	4	4	5	
Slightly Decreased	3	5	0	
Grossly Similar				
Slightly Increased				
Significantly Increased				

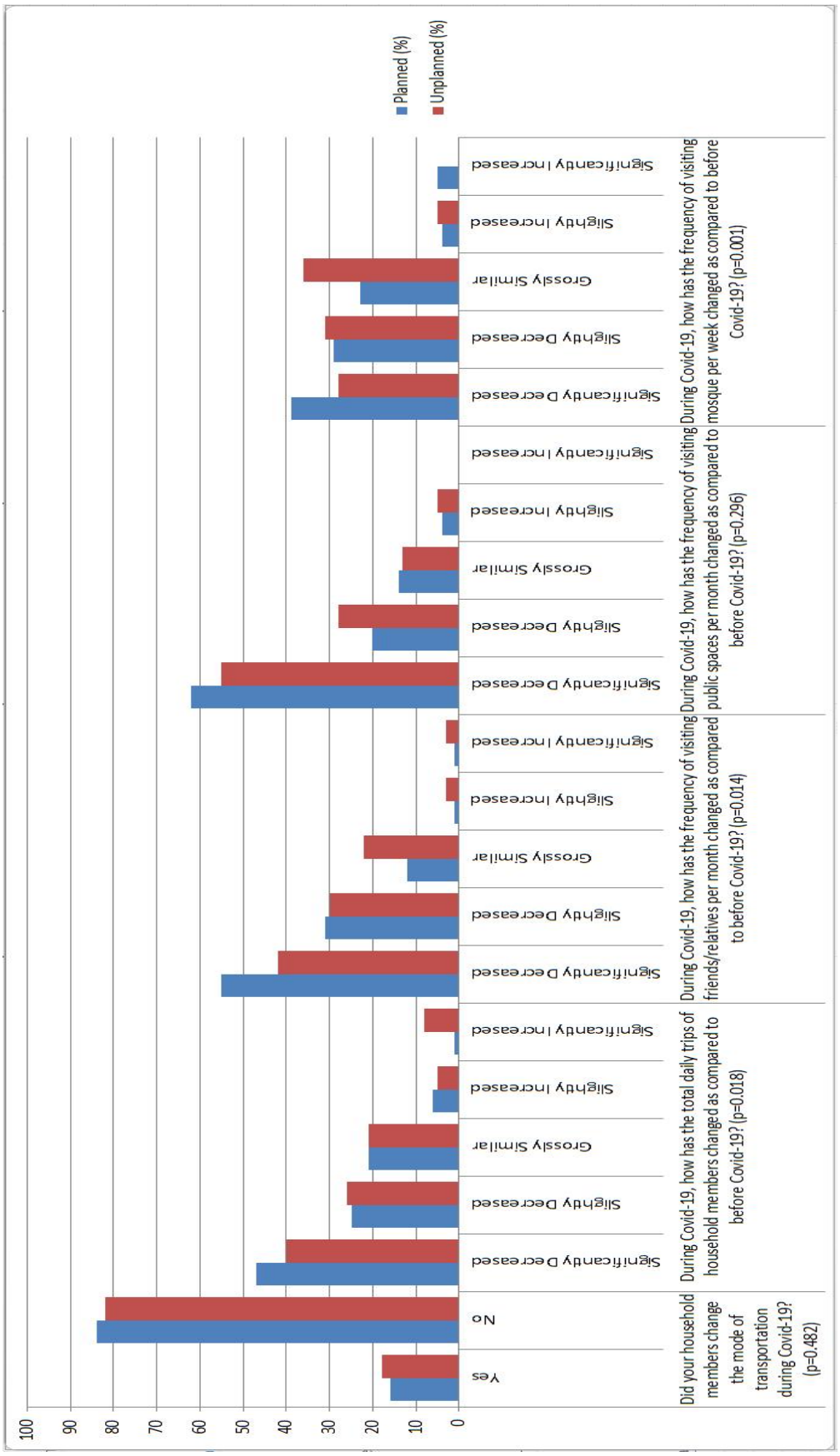

Figure 13. Effect of Covid-19 on social trips of the households

5.4. COPING STRATEGIES ADOPTED

One of the important objectives of this research was to identify the coping strategies and adaptive measures taken by the households. Government already spread the awareness among the households through social media and other techniques about the suggestions of adaptive measures. These are also called the SOPs of Covid-19. These SOPs were converted into variables and then in questions. Only those SOPs were taken into consideration which was related to households and household members directly. Through these questions we aimed to know the acceptability of the SOPs regularized by the government. The hypothesis can be generalized by the question that if planned area households followed the SOPs more than unplanned area households or not. Twelve questions were fetched from the SOPs which are listed below. These SOPs are in fact the true picture of coping strategies and adaptive measure taken by the households. One subjective question was added to the list of questions in this section. The questions asked if they practiced any other coping strategies on their own. This subjective question was analyzed on the personal judgment of the research supervisor and researcher and also qualitatively.

A chi square test of independence was performed to analyze the relation of household area type with using mask ($p = .044$), washing hands ($p = .005$), no handshakes ($p = .001$), face touch refraining ($p = .000$), and home quarantine practice ($p = .002$). The relation between these variables was significant. A chi square test of independence was performed to analyze the relation of household area type with keeping 6-ft distance ($p = .124$), avoiding public gathering ($p=.109$), stayed at home ($p = .069$), avoided public transport ($p = .125$), avoided unnecessary travel ($p = .763$), avoided going to school ($p = .415$), and use of sanitizers ($p = .126$). The relation between these variables was not significant.

Table 16. Coping strategies adopted by households to deal with Covid-19

Variables	Total (N=385)	Planned (n=196)	Unplanned (n=189)	p-value
Used a mask regularly.				
Yes	95	97	93	.044
No	5	3	7	
Kept a distance of 6 feet.				
Yes	61	65	57	.124
No	39	35	43	
Avoided public gathering.				
Yes	81	84	78	.109
No	19	16	22	
Washed hands frequently.				
Yes	88	93	84	.005
No	12	7	16	
No handshakes or greetings.				
Yes	64	72	56	.001
No	36	28	44	
Refrained from touching eyes, nose and mouth.				.000
Yes	54	64	44	
No	45	36	56	

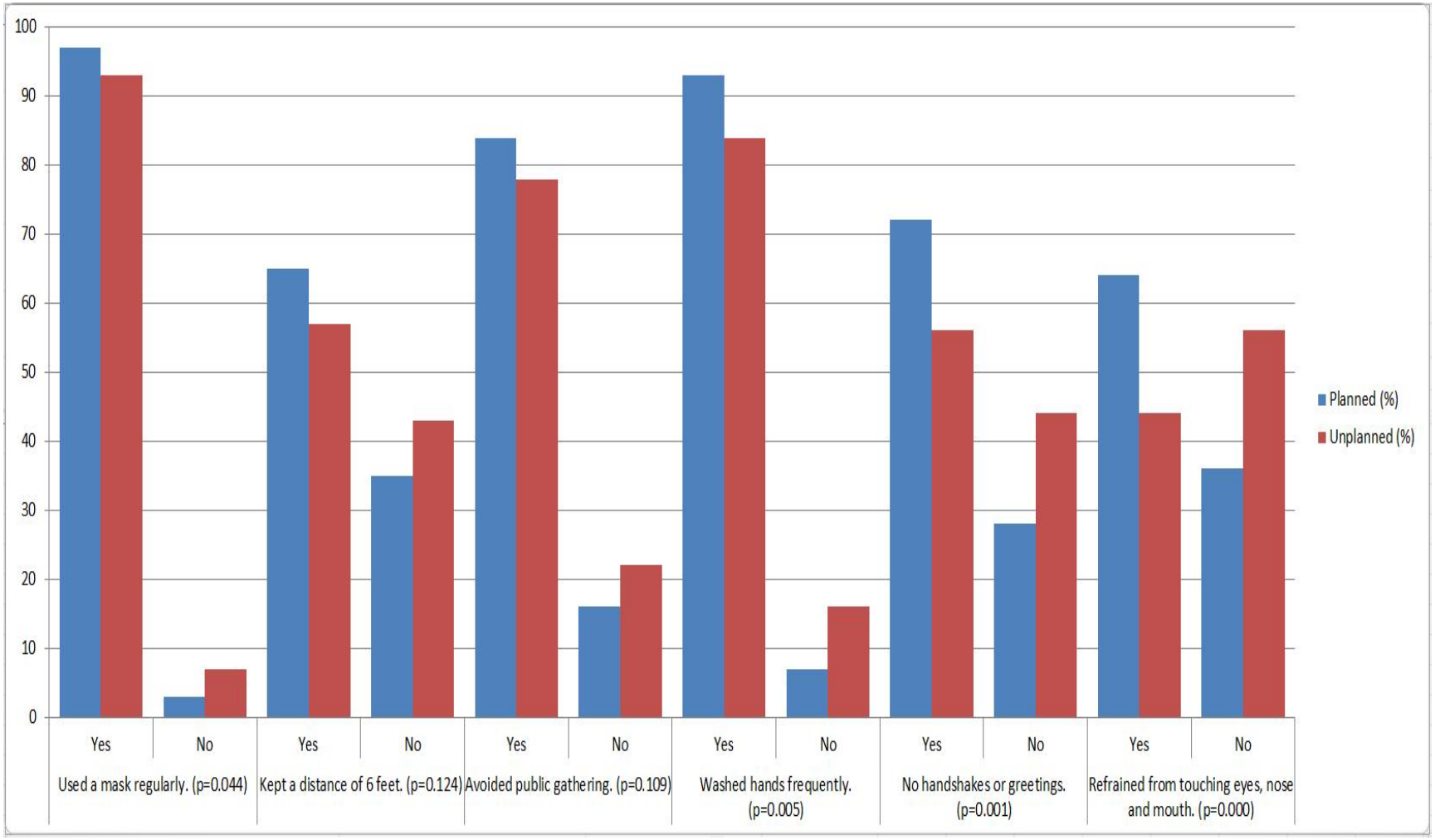

Figure 14 Coping strategies adopted by households to deal with Covid-19

First of all, the most basic coping strategy was asked from the households that if they wore mask regularly during Covid-19. 95% in total sample of households said that they wore mask regularly. The household who wore mask regularly were 97% in planned area sample and 93% in unplanned area sample. The households who regularly kept a distance of 6 feet from others were 61% in total sample. The same percentage for planned area sample is 65% and 57% in unplanned area sample. 81% of total household members avoided public gathering. 84% in planned area sample avoided public gathering and 78% avoided it in unplanned area sample. The households in planned area sample who washed hands frequently are 93% and in unplanned area they are 84%. A total of 64% households said that they avoided handshakes and greetings when meeting people. For planned area, the percentage is 72% and it is 56% in unplanned area. 54% in total sample refrained from touching mouth, nose and eyes. 64% in planned area sample and 44% in unplanned area sample refrained from touching eyes, nose and mouth during Covid-19.

Table 17. Coping strategies adopted by households to deal with Covid-19

Variables	Total (N=385)	Planned (n=196)	Unplanned (n=189)	p-value
Stayed at home in case of Covid-19 symptoms.				.069
Yes	84	87	80	
No	16	13	20	
Practiced home quarantine in case of symptoms.				.002
Yes	73	80	66	
No	27	20	34	
Avoided use of public transport.				.125
Yes	77	81	74	
No	23	19	26	
Avoided unnecessary travel.				.763
Yes	82	82	81	
No	18	18	19	
Avoided going to school or work in face to face meetings.				.415
Yes	59	61	57	
No	41	39	43	
Frequent use of sanitizers or disinfectants.				.126
Yes	83	86	80	
No	17	14	20	

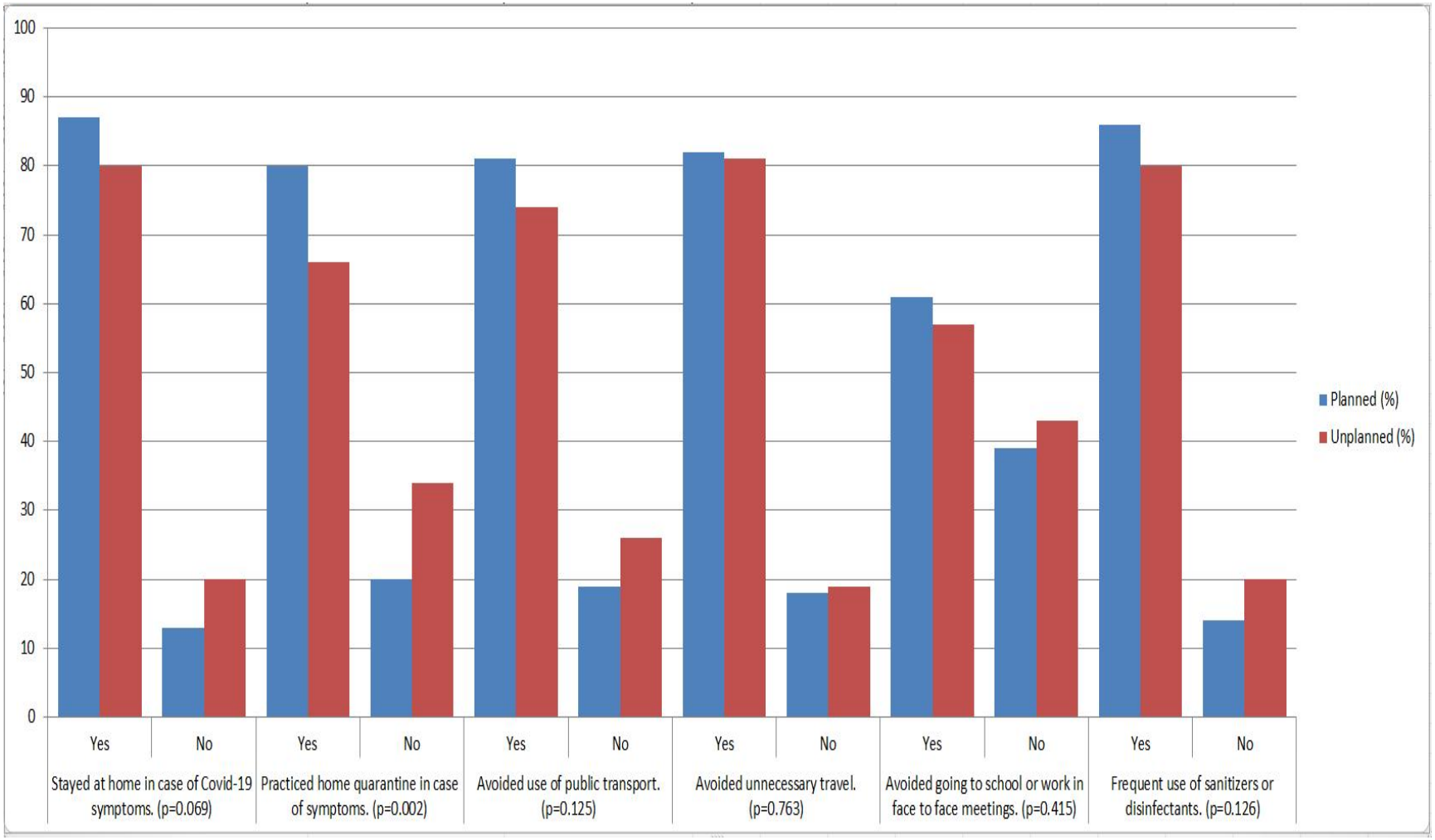

Figure 15. Coping strategies adopted by households to deal with Covid-19

Respondents were asked that if they stayed at home in case of identification of Covid-19 symptoms either they were originally effected or not. A total of 84% respondents said yes to this and the remaining said no. The percentage of planned area type who said “yes” were 87% and for unplanned area type it was 80%. Sometimes, sample population expressed that they stayed at home but didn’t remained distant from the family members so a question was added to know that if they practiced quarantine or not. Percentages of 73, 80 and 66 respondents said that they practiced quarantine in total, planned and unplanned data sets respectively. A total of 77% avoided use of public transport. The same percentage for planned area type dataset is 81 % and for unplanned area type is 74%. A total of 82% avoided unnecessary travel and the same percentage for planned and unplanned area type responses were 82% and 81%. A total of 59% avoided going to scholl during face to face meetings and same percentage for planned and unplanned area type were 61% and 57%. Respondents were asked if they frequently used sanitizers or disinfectants. The percentage who said “yes” to the question were 83% and for planned and unplanned area type datasets were 86% and 80% respectively.

5.5. SUMMARY

Table 18. Summary of results

Key Indicator	**Total Variable**	**Strong Relationship**	**Weak Relationship**	**Variables effecting planned area type negatively**	**Variables effecting unplanned area type negatively**
Income	5	3	2	0	3
Expenditure	7	6	1	1	5
Employment	13	4	9	0	4
Medical	6	4	2	3	1
Psychological	8	2	6	2	0
Food	10	6	4	0	6
Social Trips	5	3	2	3	0
Coping Strategy	12	5	7	0	5

CHAPTER 6: THE ROLE OF GOVERNMENT INSTITUTIONS

The government of Pakistan, along with several other institutions, has taken multiple steps to respond to the COVID-19 pandemic. These steps can be broadly classified into three categories: healthcare, economic, and social.

6.1. HEALTHCARE RESPONSE

One of the most significant challenges faced by Pakistan in responding to the pandemic has been the limited healthcare infrastructure. The country has a low doctor-to-patient ratio and a limited number of hospitals, which has made it challenging to provide adequate care to COVID-19 patients.

The government of Pakistan, along with various other institutions, has taken several steps to address these challenges. One of the most significant steps has been the establishment of COVID-19 treatment centers and hospitals. The government, along with the military, has converted several public facilities into COVID-19 treatment centers. Additionally, the government has set up mobile healthcare units to provide healthcare services to patients in remote areas.

The government has also increased its healthcare spending in response to the pandemic. The country's healthcare budget was increased by 22% in the fiscal year 2020-2021, with a significant portion of the funds allocated to the pandemic response.

The government has also ramped up its testing and tracing capabilities. Initially, the country faced challenges in procuring testing kits, but the government later increased its testing capacity significantly. Pakistan has also launched a contact tracing app to track and trace the spread of the virus.

6.2. ECONOMIC RESPONSE

The COVID-19 pandemic has had a severe impact on the global economy, and Pakistan has not been immune to these impacts. The country's economy was already struggling before the pandemic, with high levels of inflation and a trade deficit. The pandemic has further exacerbated these challenges, with the country's GDP contracting by 0.5% in the fiscal year 2020-2021.

The government of Pakistan, along with several other institutions, has taken multiple steps to address the economic challenges posed by the pandemic. The government launched a relief package worth PKR 1.2 trillion ($7.6 billion) to provide support to the poor and vulnerable segments of society. The package included cash transfers, food assistance, and support to small businesses.

The government has also taken steps to support the country's industrial and agricultural sectors. The government launched an export promotion package to support the country's exporters, and it has also provided support to the agriculture sector in the form of subsidies and other incentives.

6.3. SOCIAL RESPONSE

The COVID-19 pandemic has had a significant impact on Pakistan's social fabric. The country's education system was disrupted, with schools and universities closed for several months. The pandemic also had a severe impact on the country's informal sector, with many daily wage earners losing their jobs.

The government of Pakistan, along with several other institutions, has taken steps to address the social impacts of the pandemic. The government launched an education continuity program to ensure that students continue their education through online platforms. The government also announced a cash transfer program for low-income households, providing them with financial assistance during the pandemic.

The government also launched a public awareness campaign to educate people about the virus and the importance of social distancing and other preventive measures. The campaign included TV and radio ads, as well as billboards and posters in public places.

Several departments of the government of Pakistan have been responsible for the response to COVID-19. The role of some of the most significant ones is discussed below.

6.4. ROLE OF INSTITUTIONS

6.4.1. ROLE OF MINISTRY OF HEALTH

The Ministry of National Health Services, Regulations, and Coordination are responsible for overseeing the country's healthcare system. The ministry has been at the forefront of the

government's response to the pandemic, working to ensure the availability of medical supplies, equipment, and personnel. The action plan included several key strategies, including:

1. The ministry worked to establish COVID-19 treatment centers across the country to ensure that patients receive appropriate medical care. The treatment centers were equipped with necessary medical supplies, equipment, and personnel to provide treatment to COVID-19 patients.
2. The ministry worked to increase the country's COVID-19 testing capacity, making testing more widely available to the population. The ministry established several testing facilities across the country, including mobile testing units and drive-through testing centers.
3. The ministry worked to ensure the availability of medical supplies and equipment necessary for the treatment of COVID-19 patients. The ministry procured and distributed personal protective equipment (PPE) to healthcare workers, oxygen concentrators, ventilators, and other medical supplies.
4. The ministry launched several public awareness campaigns to educate the population about COVID-19 and the preventive measures that people can take to reduce the spread of the virus. The campaigns included TV and radio ads, as well as billboards and posters in public places.
5. The ministry worked to build the capacity of the country's healthcare system to respond to the pandemic. This included training healthcare workers on how to treat COVID-19 patients, establishing protocols for the treatment of COVID-19 patients, and developing guidelines for the use of medical equipment.
6. The ministry collaborated with other institutions, including provincial health departments, the National Disaster Management Authority, and the National Institute of Health, to ensure a coordinated response to the pandemic.

Overall, the Ministry of National Health Services, Regulations, and Coordination's COVID-19 response plan was aimed at addressing the healthcare impacts of the pandemic and ensuring that patients receive appropriate medical care. The plan also included strategies to increase testing capacity, provide medical supplies and equipment, and educate the population about the virus. The ministry worked closely with other institutions to ensure a coordinated response to the pandemic.

6.4.2. ROLE OF NATIONAL DISASTER MANAGEMENT AUTHORITY

The National Disaster Management Authority is responsible for coordinating the country's response to natural disasters and emergencies. The authority has played a crucial role in coordinating the country's response to COVID-19, working closely with provincial governments and other institutions.

The National Disaster Management Authority (NDMA) of Pakistan developed a comprehensive COVID-19 response plan to address the country's emergency management and disaster risk reduction in the wake of the pandemic. The response plan includes the following strategies:

1. The NDMA established National and Provincial Emergency Operations Centers to coordinate and manage the country's response to the pandemic. These centers were responsible for monitoring the situation, collecting data, and disseminating information to relevant stakeholders.
2. The NDMA was responsible for procuring and distributing PPE to healthcare workers across the country. This included gloves, masks, face shields, and other protective gear.
3. The NDMA provided training to healthcare workers and emergency responders to prepare them to respond to the pandemic. This training included infection prevention and control measures, patient care, and the use of PPE.
4. The NDMA developed guidelines for the management of COVID-19 patients, including protocols for screening, testing, and treatment. The guidelines also provided information on infection prevention and control measures and the use of PPE.
5. The NDMA established quarantine and isolation centers to house COVID-19 patients and individuals who were exposed to the virus. These centers were equipped with medical supplies, equipment, and personnel to provide care to patients.
6. The NDMA collaborated with other institutions, including the Ministry of National Health Services, Regulations, and Coordination, provincial health departments, and the National Institute of Health, to ensure a coordinated response to the pandemic.
7. The NDMA launched public awareness campaigns to educate the public about the virus and how to prevent its spread. These campaigns included TV and radio ads, billboards, and posters in public places.

Overall, the NDMA's COVID-19 response plan was aimed at addressing emergency management and disaster risk reduction in the wake of the pandemic. The plan included strategies to provide PPE to healthcare workers, develop guidelines for the management of COVID-19 patients, establish quarantine and isolation centers, and collaborate with other institutions to ensure a coordinated response. The NDMA also worked to educate the public about the virus and how to prevent its spread.

6.4.3. ROLE OF NATIONAL COMMAND AND OPERATION CENTER

The National Command and Operation Center (NCOC) in Pakistan played a crucial role in managing the response to the COVID-19 pandemic. The NCOC was established in March 2020 as a dedicated body to coordinate and monitor the country's response to the pandemic.

Some of the key roles and responsibilities of the NCOC during COVID-19 in Pakistan include:

1. NCOC was responsible for formulating and implementing policies related to COVID-19 response, including the imposition of lockdowns, the closure of educational institutions, and the implementation of standard operating procedures (SOPs) to contain the spread of the virus.
2. The NCOC also played a key role in allocating resources to different provinces and regions to ensure that they had the necessary equipment, supplies, and personnel to manage the pandemic.
3. The NCOC was responsible for collecting, analyzing, and reporting data related to COVID-19 cases, deaths, and recoveries. This helped to inform policymakers and the public about the state of the pandemic in the country.
4. The NCOC also played a crucial role in communicating with the public about the importance of following SOPs, getting vaccinated, and taking other measures to prevent the spread of the virus.

Overall, the NCOC played a critical role in coordinating and managing Pakistan's response to the COVID-19 pandemic, and its efforts helped to mitigate the impact of the pandemic on the country's population.

The National Command and Operation Center (NCOC) in Pakistan developed a comprehensive socio-economic response plan to deal with the COVID-19 pandemic. The plan aimed to address the social and economic impacts of the pandemic on the country's population

and ensure the availability of essential services during the crisis. Some of the key elements of the plan include:

1. The NCOC launched a cash transfer program to provide financial assistance to vulnerable households affected by the pandemic. The program was designed to provide support to low-income families, daily wage earners, and other vulnerable groups to help them cope with the economic impact of the pandemic.
2. The government of Pakistan announced several relief packages to provide financial assistance to businesses, industries, and other sectors affected by the pandemic. The packages included tax exemptions, loan deferments, and other measures to support the country's economy.
3. The NCOC worked with the government to ensure the availability of essential food items during the pandemic. The government launched several initiatives to provide food assistance to vulnerable households and ensure the smooth functioning of supply chains.
4. The NCOC also focused on strengthening the country's health infrastructure to cope with the pandemic. The government invested in the construction of new hospitals and the expansion of existing facilities to provide adequate care to COVID-19 patients.
5. The NCOC developed a plan to ensure the continuity of education during the pandemic. The government launched online learning platforms and provided educational materials to students to ensure that they could continue their studies from home.

Overall, the socio-economic response plan of the NCOC aimed to address the challenges posed by the pandemic and ensure that the country's population had access to essential services during the crisis.

6.4.4. ROLE OF MINISTRY OF FINANCE

The Ministry of Finance is responsible for managing the country's finances. The ministry has played a crucial role in providing financial support to the country's healthcare system and implementing economic stimulus packages to support businesses and households impacted by the pandemic. The Ministry of Finance of Pakistan developed a COVID-19 response plan to address the economic impacts of the pandemic. The plan included several key strategies, including:

1. The Ministry of Finance developed stimulus packages to support businesses and individuals affected by the pandemic. The packages included tax breaks, interest rate reductions, and financial assistance for small businesses.
2. The Ministry of Finance allocated funds to support the healthcare system, including the procurement of medical supplies and equipment, and the establishment of COVID-19 treatment centers.
3. The Ministry of Finance developed social safety net programs to provide financial support to vulnerable populations affected by the pandemic. These programs included cash transfers and food assistance to low-income households.
4. The Ministry of Finance developed employment support programs to help workers affected by the pandemic. These programs included job training and placement, as well as financial assistance for workers who lost their jobs due to the pandemic.
5. The Ministry of Finance worked to negotiate debt relief with international lenders to reduce the financial burden on the country.
6. The Ministry of Finance facilitated public-private partnerships to support the COVID-19 response. This included working with private sector companies to produce medical supplies and equipment, and providing financial incentives for businesses to support the pandemic response.

Overall, the Ministry of Finance's COVID-19 response plan was aimed at addressing the economic impacts of the pandemic. The plan included strategies to support businesses and individuals affected by the pandemic, allocate funds to support the healthcare system, provide social safety nets to vulnerable populations, develop employment support programs, negotiate debt relief, and facilitate public-private partnerships. The ministry worked closely with other institutions to ensure a coordinated response to the pandemic.

6.4.5. ROLE OF MINISTRY OF INFORMATION AND BROADCASTING

The Ministry of Information and Broadcasting is responsible for managing the country's media and communication. The ministry has been involved in the government's public awareness campaign, disseminating information about COVID-19 and the preventive measures that people can take to reduce the spread of the virus. The Ministry of Information and Broadcasting of Pakistan played an important role in the country's response to the COVID-19 pandemic. The

ministry developed a comprehensive COVID-19 response plan that included several key strategies, including:

1. The Ministry of Information and Broadcasting launched public awareness campaigns to educate the public about the virus and how to prevent its spread. These campaigns included TV and radio ads, social media posts, and other forms of communication.
2. The ministry was responsible for disseminating information about the pandemic to the public and the media. This included information on the number of cases, the government's response to the pandemic, and guidelines for preventing the spread of the virus.
3. The Ministry of Information and Broadcasting regulated media coverage of the pandemic to ensure that accurate and timely information was being disseminated to the public. The ministry worked closely with media outlets to ensure that they were adhering to ethical guidelines and providing accurate information.
4. The ministry worked closely with other institutions, including the Ministry of National Health Services, Regulations, and Coordination, to ensure a coordinated response to the pandemic. The ministry was responsible for communicating information between institutions and ensuring that the public was informed of the government's response to the pandemic.
5. The Ministry of Information and Broadcasting provided support to media workers who were affected by the pandemic. This included financial assistance and PPE for journalists and media workers who were covering the pandemic.

Overall, the Ministry of Information and Broadcasting's COVID-19 response plan was aimed at ensuring that accurate and timely information about the pandemic was being disseminated to the public. The ministry played a critical role in regulating media coverage of the pandemic and coordinating with other institutions to ensure a coordinated response. The ministry's public awareness campaigns helped to educate the public about the virus and how to prevent its spread. Additionally, the ministry provided support to media workers who were covering the pandemic.

6.5. CHALLENGES FACED BY GOVERNMENT INSTITUTIONS

Despite the efforts of government institutions, several challenges have hindered the country's response to the pandemic. One of the most significant challenges has been the limited healthcare

infrastructure in the country. The healthcare system was already under-resourced before the pandemic, and the sudden influx of COVID-19 patients has overwhelmed the system.

Another significant challenge has been the limited financial resources available to the government. Pakistan was already facing economic challenges before the pandemic, and the government's response to the pandemic has further strained the country's finances. The government has had to borrow from international institutions to fund its pandemic response.

The government has also faced challenges in implementing its policies and programs. The country's bureaucracy has been criticized for being slow to respond to the pandemic, and there have been allegations of corruption and mismanagement in the distribution of relief funds.

The COVID-19 pandemic has been one of the most significant challenges faced by governments all around the world. Pakistan, a developing country with limited resources, has faced immense challenges in responding to the pandemic. The government of Pakistan, along with several other institutions, has taken multiple steps to address the healthcare, economic, and social impacts of the pandemic. These steps have included the establishment of COVID-19 treatment centers, cash transfer programs, and public awareness campaigns.

However, several challenges have hindered the country's response to the pandemic, including limited healthcare infrastructure, limited financial resources, and bureaucratic challenges. It is essential for the government to continue its efforts to respond to the pandemic and to address these challenges to ensure that the country can recover from the pandemic's impacts.

CHAPTER 7: DISCUSSION AND RECOMMENDATIONS

The Covid-19 pandemic has had a significant impact on the socio-economic well-being of households in both planned and unplanned areas. This research aimed to investigate the impact of the pandemic on household sustainability in planned and unplanned areas and identify the key indicators that were affected.

The research used income, expenditure, employment, psychological well-being, food security, medical access, social trips, and coping strategies as key indicators to assess the socio-economic impact of the pandemic. The study used both quantitative and qualitative methods to collect and analyze data.

The results of the study showed that planned and unplanned areas were affected differently by the pandemic. The planned area type was affected more adversely in the indicators of medical, psychological, and social trips. On the other hand, the unplanned area type was more adversely affected in the indicators of income, expenditure, employment, food security, and coping strategies.

The adverse impact on medical, psychological, and social trips in planned areas could be attributed to the high population density, which increases the risk of transmission of the virus. The closure of schools and colleges, as well as the restriction on social gatherings, could have affected the psychological well-being of individuals living in planned areas. The closure of parks and other recreational areas could have impacted social trips in planned areas more significantly.

In contrast, the adverse impact on income, expenditure, employment, food security, and coping strategies in unplanned areas could be attributed to the higher percentage of informal and daily wage workers who were hit the hardest by the pandemic-induced lockdowns. The closure of small businesses and markets, which are prevalent in unplanned areas, could have adversely impacted the income and expenditure of households in these areas.

The results of this study suggest that policymakers need to develop targeted policies and interventions that take into account the unique socio-economic impacts of the pandemic on planned and unplanned areas. In planned areas, policies could focus on improving access to mental health services, creating alternative recreational spaces, and promoting social distancing

measures. In contrast, in unplanned areas, policies could focus on providing financial and food assistance, creating job opportunities, and supporting small businesses.

Further research is needed to identify the long-term impacts of the pandemic on household sustainability in both planned and unplanned areas. Future research could focus on identifying the impact of the pandemic on education, healthcare, and gender disparities.

Based on the research outcomes on the differential impact of the Covid-19 pandemic on household sustainability in planned and unplanned areas in Pakistan, the following are some strategies and a response plan that the government of Pakistan can consider implementing:

1. Targeted financial and food assistance for households in unplanned areas: Given that the unplanned areas were more adversely affected in the indicators of income, expenditure, and food security, the government could provide targeted financial and food assistance to these households. This could be in the form of cash transfers, food rations, and subsidies.
2. Job creation and support for small businesses in unplanned areas: To address the adverse impact of the pandemic on employment in unplanned areas, the government could provide incentives for the creation of new jobs, support for small businesses, and training programs for unemployed individuals.
3. Mental health services and alternative recreational spaces in planned areas: To address the adverse impact of the pandemic on psychological well-being and social trips in planned areas, the government could improve access to mental health services and create alternative recreational spaces that adhere to social distancing measures.
4. Promoting social distancing measures and vaccinations: To prevent the further spread of the virus, the government could promote social distancing measures and ensure that individuals have access to vaccinations.
5. Long-term planning for pandemic preparedness: The government could develop long-term plans for pandemic preparedness, including strengthening the healthcare system, investing in education and awareness campaigns, and improving access to technology for remote work and education.

There are some differences between the recommended strategies and the role played by the government in Pakistan during the Covid-19 pandemic.

Firstly, the recommended strategies suggest that the government should provide targeted financial and food assistance to households in unplanned areas. However, during the pandemic, the government's efforts to provide financial and food assistance were criticized for being insufficient and poorly targeted. The government provided cash transfers and food rations through the Ehsaas Emergency Cash Program, but these were not able to reach all vulnerable households in unplanned areas.

Secondly, the recommended strategies suggest that the government should create new job opportunities and provide support for small businesses in unplanned areas. However, the government's efforts to support small businesses were limited and there were few initiatives to create new jobs. Instead, the government focused on providing relief packages to large businesses and industries.

Thirdly, the recommended strategies suggest that the government should improve access to mental health services and create alternative recreational spaces in planned areas. However, the government did not prioritize mental health services during the pandemic and there were few efforts to create alternative recreational spaces.

Fourthly, the recommended strategies suggest that the government should promote social distancing measures and ensure that individuals have access to vaccinations. Although the government did promote social distancing measures and implemented lockdowns, there were instances where these measures were not enforced strictly. Additionally, the vaccination rollout in Pakistan has been slow and has faced logistical challenges, leading to a low vaccination rate in the country.

The outcomes of the research on the socio-economic impact of the Covid-19 pandemic on household sustainability in planned and unplanned areas of Pakistan suggest the need for changes in urban planning practices to address the unique challenges faced by different areas and communities. Specifically, the research highlights the need for more sustainable and equitable urban planning practices that address the underlying socio-economic inequalities and challenges that have been exacerbated by the pandemic.

One key change in urban planning practices that could be implemented in response to the research findings is a shift towards more inclusive and participatory planning processes that take

into account the unique needs and challenges faced by different areas and communities. Such planning processes could involve greater engagement with community organizations, civil society organizations, and local residents in the planning and decision-making processes. This could help ensure that planning decisions are more responsive to the needs and priorities of local communities and are better aligned with their socio-economic realities.

Another important change in urban planning practices could be a greater emphasis on the provision of basic services and infrastructure in unplanned areas. Unplanned areas are typically characterized by inadequate infrastructure, limited access to basic services such as healthcare, education, and clean water, and high levels of poverty and unemployment. To address these challenges, urban planning practices could prioritize the provision of basic services and infrastructure in these areas, including the development of new housing, the provision of improved water and sanitation facilities, and the expansion of healthcare services.

The outcomes of the research also suggest the need for greater investment in sustainable transportation and mobility infrastructure in urban areas. The pandemic has highlighted the importance of active transportation modes such as walking and cycling in promoting physical activity, reducing congestion and air pollution, and improving public health outcomes. Urban planning practices could prioritize the development of more sustainable and equitable transportation infrastructure, including the expansion of pedestrian and cycling networks, the development of public transit systems, and the provision of safe and accessible public spaces.

Finally, the outcomes of the research suggest the need for greater emphasis on green and open spaces in urban planning practices. The pandemic has highlighted the importance of green and open spaces in promoting mental health and well-being, providing opportunities for physical activity, and reducing air pollution and heat stress. Urban planning practices could prioritize the development of new parks, green spaces, and public spaces that are accessible and inclusive for all residents, regardless of their socio-economic status.

In conclusion, the outcomes of the research on the socio-economic impact of the Covid-19 pandemic on household sustainability in planned and unplanned areas of Pakistan suggest the need for changes in urban planning practices to address the unique challenges faced by different areas and communities. Specifically, urban planning practices could shift towards more inclusive

and participatory planning processes, prioritize the provision of basic services and infrastructure in unplanned areas, invest in sustainable transportation and mobility infrastructure, and prioritize the development of green and open spaces. These changes could help create more sustainable, equitable, and resilient urban environments that are better equipped to respond to future pandemics and other socio-economic challenges.

Overall, the recommended strategies emphasize the need for targeted interventions that address the unique socio-economic impacts of the pandemic on different areas and communities. However, the government's response to the pandemic was criticized for being insufficient and poorly targeted. To effectively address the impacts of the pandemic on household sustainability in Pakistan, the government needs to take a more proactive and targeted approach, especially in addressing the needs of vulnerable households in unplanned areas.

CHAPTER 8: CONCLUSION

The Covid-19 pandemic has had a profound impact on societies worldwide, and Pakistan is no exception. The research conducted on the socio-economic impact of the pandemic on household sustainability in planned and unplanned areas of Pakistan provides valuable insights into the differential impacts of the pandemic on different areas and communities. The research findings suggest that the planned area type was affected more adversely in indicators such as medical, psychological, and social trips, while the unplanned area type was more adversely affected in indicators such as income, expenditure, employment, food, and coping strategies.

The findings of the research highlight the urgent need for targeted interventions that address the unique challenges faced by different areas and communities in Pakistan. The strategies recommended, including targeted financial and food assistance, job creation and support for small businesses, and improving access to mental health services and creating alternative recreational spaces, could help mitigate the impact of the pandemic on household sustainability. However, the role played by the government during the pandemic was criticized for being insufficient and poorly targeted, particularly in addressing the needs of vulnerable households in unplanned areas.

The pandemic has exposed pre-existing socio-economic inequalities in Pakistan, particularly in terms of access to basic services and resources. The impact of the pandemic has been particularly severe in unplanned areas, where households face challenges related to income, expenditure, and food security. Unplanned areas are typically characterized by informal settlements, inadequate infrastructure, and limited access to basic services such as healthcare, education, and clean water. The pandemic has exacerbated these pre-existing challenges and highlighted the urgent need for investment in basic services and infrastructure in unplanned areas.

The differential impacts of the pandemic on planned and unplanned areas suggest that there is a need for more nuanced policy responses that take into account the unique challenges faced by different areas and communities. Policy responses that are based on a one-size-fits-all approach are unlikely to be effective in addressing the diverse needs and challenges faced by different areas and communities in Pakistan. For instance, the pandemic has highlighted the need for

targeted interventions that address the unique challenges faced by women, children, and vulnerable households in unplanned areas.

The findings of the research also suggest the importance of effective coordination between different government agencies, non-governmental organizations, civil society organizations, and the private sector in implementing policy responses to the pandemic. Effective coordination could help ensure that policy responses are targeted, well-coordinated, and based on evidence-based approaches. Additionally, effective coordination could help ensure that policy responses are well-resourced and implemented in a timely manner.

The research findings also suggest that there is a need for long-term planning for pandemic preparedness. Pandemics are likely to occur in the future, and Pakistan needs to be better prepared to respond to future pandemics. Long-term planning could involve strengthening the healthcare system, investing in education and awareness campaigns, and improving access to technology for remote work and education. Additionally, long-term planning could involve investing in basic services and infrastructure in unplanned areas to ensure that these areas are better equipped to respond to future pandemics.

In conclusion, the research conducted on the socio-economic impact of the Covid-19 pandemic on household sustainability in planned and unplanned areas of Pakistan provides valuable insights into the differential impacts of the pandemic on different areas and communities. The findings of the research highlight the need for targeted interventions that address the unique challenges faced by different areas and communities in Pakistan. Additionally, the findings highlight the importance of effective coordination between different government agencies, non-governmental organizations, civil society organizations, and the private sector in implementing policy responses to the pandemic. Long-term planning for pandemic preparedness is also crucial to ensure that Pakistan is better equipped to respond to future pandemics.

APPENDIX A

Questionnaire for Identification of the Socio-Economic Impact of Covid-19 on Households and Strategies Adopted

General Instruction

- This questionnaire is a part of MS research work lead by a student of NUST under discipline of urban and regional planning.
- The responses would only be used in the analysis part of research work and the information provided by respondents would be kept confidential.
- Only to be filled by households of Islamabad.

Basic Information

Gender: Male ☐ Female ☐	**Age:** _____	**Household Income:** _____Rs
Income Source: Business ☐ Job ☐ Investments ☐ Support from others ☐		
Education: Matric/O-levels ☐ FSc/A-Levels ☐ Graduate ☐ Post-Graduate ☐ Doctoral ☐		
Sector/Area/Address: _____		
Educational Institute Type: Government ☐ Semi-Government ☐ Private ☐		
Family Type: Nuclear ☐ Extended ☐ Joint ☐		**Occupation:** _____
Household Members: _____	**House Ownership:** Owned ☐ Rented ☐	
Type of House: Apartment ☐ Detached ☐ Semi-Detached ☐		

Socio-Economic Impact

How many household members are earning?	_____		
How many household members is under-18?	_____		
How many household members are students?	_____		
How many household members are 60+?	_____		
How many household members are looking for a job?	_____		
How many household members are under 6?	_____		
How many of your earning household members changed occupation?	_____		
How many of your household members received reduced salaries during Covid-19?	_____		
How many non-earning members of household started earning during Covid-19?	_____		
How many household members work on daily wages?	_____		
How many studying household members discontinued study due to financial shortcomings during Covid-19?	_____		
How many household members have regular medical condition?	_____		
How many household members were tested positive of Covid-19?	_____		
How many household members were hospitalized as COVID patients?	_____		
How many household members recovered safely from Covid-19?	_____		
What kind of facility was preferred for Covid-19 tests, vaccination and treatment?	Government ☐	Private ☐	None ☐
How many of your earning household members faced unemployment in Covid-19?	_____		
If not zero, how many days did they stay unemployed?	_____		

Average Monthly Expenditures (in Rupees):

	Total	Utilities	Education	Health Services	Food	Tourism and Entertainment	Transport
Before Covid-19							
During Covid-19							

Did your household start any business in Covid-19?	Yes ☐		No ☐
If yes, what kind of business was it?	Home Based	Online	Other: _____
If your income source was business before Covid-19, did sales and clientage drop during Covid-19?	Yes ☐		No ☐
If yes, by what percentage?	_____%		
How much extra money did your household spent on stockpiling food items during lockdown?	_____Rs		
How much financial relief from government was received by your household	_____Rs		
What percentage of financial savings of household was used in Covid-19?	_____%		Didn't had any savings ☐
How much money did your household borrowed from relatives/friends during Covid-19?	_____Rs		

Questions	**Yes**	**No**
Did your household members spent extra money for work-from-home or online classes (buying a laptop, etc.)?	☐	☐
Did the grades of studying household members drop during Covid-19?	☐	☐
Did your household run out of food during lockdown?	☐	☐
Did your household reduce the quantity of food (times of meal) per day?	☐	☐
Did your household receive free food supply from government during Covid-19?	☐	☐
Did your household members spend a whole day without having a single meal?	☐	☐
Did your household faced shortage of any food item in market during Covid-19?	☐	☐
If yes, what food item was short?	_____	
Did any of your household members consult a psychologist during Covid-19?	☐	☐
Did your household members change the mode of transportation during Covid-19 to save money?	☐	☐
Were your household members able to get standard medical services during lockdowns?	☐	☐

Questions	Significantly Decreased	Slightly Decreased	Grossly Similar	Slightly Increased	Significantly Increased
During COVID-19 pandemic, how has the total daily trips of household members changed as compared to pre-COVID-19 period?	☐	☐	☐	☐	☐
During COVID-19 pandemic, how has the frequency of visiting friends and relatives per month changed as compared to pre-COVID-19 period?	☐	☐	☐	☐	☐
During COVID-19 pandemic, how has the frequency of visiting public spaces per month changed as compared to pre-COVID-19 period?	☐	☐	☐	☐	☐
During COVID-19 pandemic, how has the frequency of visiting mosque per week changed as compared to pre-COVID-19 period?	☐	☐	☐	☐	☐
During COVID-19 pandemic, how has the probability of exercising regularly changed as compared to pre-COVID-19 period?	☐	☐	☐	☐	☐
How has the quality of your sleep changed during Covid-19 as compared to before it?	☐	☐	☐	☐	☐
During COVID-19 pandemic, how has your intake of fried and junk foods changed as compared to pre-COVID-19 period?	☐	☐	☐	☐	☐
What was the level of family conflicts and fights among siblings during Covid-19, in comparison to before it?	☐	☐	☐	☐	☐
How was the quality of food accessible during Covid-19 in comparison to pre-Covid-19?	☐	☐	☐	☐	☐

Questions	Not At All	A Little	Somewhat	Considerably	Extremely
How much do you avoid reading or listening COVID-19 related news and messages?	☐	☐	☐	☐	☐
How much has the fear of getting infected with COVID-19 affected your life?	☐	☐	☐	☐	☐
Did household members show any symptoms of anxiety or depression during Covid-19?	☐	☐	☐	☐	☐
Were your household members worried that they would not have enough to eat?	☐	☐	☐	☐	☐

Did you household delay utility bill or loan payments in Covid-19 due to financial issues?	☐	☐	☐	☐	☐
What was the level of satisfaction from the services of the hospital?	Very Poor	Poor	Average	Good	Excellent

Strategies Adopted By Households

1. Tick from the following list that was adopted during Covid-19:

1.	Used a Mask	☐
2.	Kept a distance of 6 Feet	☐
3.	Avoided Public Gathering	☐
4.	Washed hands frequently	☐
5.	No handshakes or greetings	☐
6.	Refrained from touching eyes, nose, mouth and ears	☐
7.	Stayed at home in case of Covid-19 symptoms	☐
8.	Practiced home quarantine in case of symptoms	☐
9.	Avoided use of public transport	☐
10.	Avoided unnecessary travel	☐
11.	Avoided going to school or work in face to face meetings	☐
12.	Frequent use of sanitizers or disinfectants	☐

2. What other techniques your household adopted to mitigate the socio-economic impact of Covid-19? (Open ended question).

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