

**COVID-19 PANDEMIC AND COMMUNITY RESILIENCE:
STUDY OF GATED AND NON-GATED COMMUNITIES OF
GURUGRAM**

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of the requirement for the award of the degree of*

MASTER OF PHILOSOPHY

SUMEDHA



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DECLARATION

I, **Sumedha**, hereby declare that the dissertation entitled “**COVID-19 Pandemic and Community Resilience: Study of Gated and Non-Gated Communities of Gurugram**” submitted by me for the award of the degree of **Master of Philosophy** is my *bona fide* work and that it has not been submitted so far in part or in full, for any degree or diploma of this University or any other University.

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Chapter 1

Introduction

The COVID-19 pandemic has wreaked havoc on the worldwide economic and social order, putting millions of people's lives in jeopardy. It has revealed long-standing social inequalities and vulnerabilities, with the most vulnerable paying the brunt of the health, social, and economic costs (Shadmi et al., 2020). It has brought to the front critical challenges such as inefficient governance, which has resulted in inefficient resource usage, a constrained structure of the settlement, a lack of basic medical facilities, and limited public places which made social distancing a challenging task. As a result of the pandemic lead disorder, the international community has come to a consensus on the importance of increasing community resilience (South et al., 2020). Resilience refers to people's ability to cope in a vulnerable setting and to restart their lives in the post-pandemic phase. Building a resilient community involves adapting and enhancing community capacities, and having resources to lessen the damage caused by the pandemic, and having the ability to recover from the adverse conditions (Patel et al., 2017).

The impacts of COVID-19 are far-reaching, and the harms caused by it is beyond the scope of public health, thereby making it a global disaster (Alcántara-Ayala et al., 2021). Governments and organizations are now more concerned with disaster resilience than disaster vulnerability, which is “*viewed as a more proactive and positive expression of community engagement with natural hazard reduction*” (Cutter et al., 2008). According to post-disaster studies (Aldrich and Meyer, 2015), people's ability to survive and rehabilitate depends on how well they know one another and how much they have a feeling of obligation to one another.

“Community” refers to a group of individuals having certain characteristics in common, which may or may not be based on shared geographic space (MacQueen et al., 2001). There is a requirement of addressing the complex social dynamics which characterise a community, in order to enhance its resilience. Resilience building should be specific to the local context. There should be involvement of both state and communities in the process of building resilience and addressing community vulnerabilities. Resilience is a multi-sectoral concept (involving both state and non-state actors), and a multi-scale concept (occurs at different levels like individual, household, and community), that necessitates a ‘systems approach’, as interlinks vulnerability, livelihoods, and uncertainty.

The ambiguity, upheaval, anxiety, and precarity brought upon by COVID-19, calls for a reconsideration of the basic foundation of our society. Local governments' focus is now on incorporating resilience into their response and recovery strategies. Additionally, it has altered the way resilience is perceived, emphasizing the importance of strengthening the population against impending shocks, as well as their economic, environmental, and social effects. The collective efforts of the community make the process easier.

Experts in disaster management have embraced various forms of resilience as a strategy to deal with losses and recover from the effects as a result of escalating disaster losses. According to disaster research, communities often collaborate to survive and recover from the devastating impacts of disaster (Dynes and Fischer, 1995). While expertise of skilled professional and planned rescue efforts comes to the scene when the crisis occurs, researches have shown that neighbours and other informal connections often act as the first responders. In the events of disaster, governments and organizations provide relief to the affected population, however, they have limited resources. Due to these issues, recent researches concentrate on figuring out the best way to assist communities in helping themselves, with a focus on understanding what characteristics contribute to a community's ability to withstand a disaster (Patel et al., 2017a). Building community resilience offers a defence against present and impending hazards, including health shocks, like the emergence of infectious diseases like the COVID-19 pandemic.

Society and neighbourhoods have suffered from social damage and material loss due to the pandemic. The pandemic has put to test the governance capability of neighbourhoods, which represent a form of social life, and serves as the primary responding organisation. According to the studies, strong neighbourhood governance, civic engagement, trust in institutions, and willingness to follow official guidelines and instructions are among the factors that can affect how the COVID-19 outbreak takes place in a neighbourhood (Xu et al., 2021). The communities characterised by well-developed civic associations, volunteer groups, and community organisations, have a higher level of cooperation, mutual support, and trust, hence are more resilient to disasters (Klinenberg, 2018).

Evidence suggests that certain impoverished communities are more resilient despite experiencing extreme deprivation (Morgan, 2006). This may be due to community engagement, respect for one another, and communication at the level of community (Hoskins and Mascherini, 2009). However, in most cases, lack of support from the system, and

ineffective community responses in socio-economically deprived areas often lead to inequalities in health within the community (Friedli, 2013). Citizens and communities can alleviate inequities and boost resilience by adopting the health asset strategy (South et al., 2018).

The development and management of support networks as well as operation of informal groups in the domains which are usually held by formal entities form community response at the local level. Negotiations on shared responses for the provision of community support lead to the emergence of a new kind of interaction between community members, and sector leaders. By making use of public spaces for the provision of emergency assistance to the community members, the community organisations have engaged with the local populace. Transformative development calls for the local system's ability to facilitate the engagement of stakeholders and community members.

Communities should strengthen strong social networks in advance, in order to help people and communities absorb, emerge from, and eventually return to things as they were in order to be resilient. The pandemic has exerted a significant impact on the cities. Due to the comparatively high population density, urban populations are more likely to be vulnerable than their rural counterparts, but they are also better equipped to deal with a health crisis due to the close proximity of services, actors, and resources (Alonge et al., 2019).

Public health and urban planning are inextricably linked. Cities have developed historically to address public health challenges. Spanish flu of the 20th century emphasised that non-pharmacological measures could control epidemic and pandemic in cities. The rise of Renaissance cities and the spread of the bubonic plague in Europe in the 18th century, the final phase of the cholera epidemic that occurred in the 19th century, and the last phase of the cholera epidemic that occurred in the 20th century all made a significant contribution to the improvement in the health conditions of colonial cities (Lai et al., 2020).

Therefore, building resilient communities that safeguard citizens' health and foster a sense of community should be one of urban planning's key goals. These goals are all the more important during difficult times, like pandemics. In this situation, it is essential to take a proactive rather than a reactive strategy to create long-term plans that will make our urban environments more resilient in the face of future disasters.

There have been many studies illustrating the government's response to public health emergencies (Benavides and Nukpezah, 2020; Mei, 2020; Yan et al., 2020), but there have

been comparatively few research that have concentrated on the local responses to COVID-19. Building community resilience begins with identifying the indicators of resilience. Numerous studies have been conducted on resilience indicators, but not from the perspective of pandemic. Therefore, an attempt has been made to compare the community resilience of the gated and non-gated communities to the pandemic.

1.1 Review of Literature

Drawing upon the relevant literature, the importance of community resilience during the COVID-19 pandemic is discussed in the following section.

1.1.1 COVID-19 Pandemic: A Global Disaster

Pandemic is a disease that spreads over a large geographic area, is widely transmitted due to high contagiousness, and is generally a novel virus (Morens et al., 2009). It is the worldwide outbreak that defines a pandemic. A new pandemic emerges when a novel disease with a contagious nature infects people and communities. In the past 100 years, there have been three lethal influenza pandemics in 1918, 1957, and 1968. Over one-third of the world, population got infected by the Spanish flu of 1918 which claimed 50 million lives worldwide (Grennan, 2019). H1N1 in 2009, bubonic plague in the fourteenth century, severe acute respiratory syndrome (SARS) in 2003, and HIV/AIDS are some other examples of pandemics.

United Nations International Strategy for Disaster Reduction (UNISDR) has defined the term “disaster” as “a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources” (2009 *UNISDR Terminology on Disaster Risk Reduction* / *UNDRR*, n.d.).

With more than 5 million fatalities and 423 million cases documented through February 2, 2022, the COVID-19 pandemic is recognised as a global disaster (*WHO Coronavirus (COVID-19) Dashboard* / *WHO Coronavirus (COVID-19) Dashboard With Vaccination Data*, n.d.). According to the Centers for Disease Control and Prevention, the novel coronavirus is highly contagious, spreads from person to person, and its sustained transmission had a disastrous impact on humanity (*How Coronavirus Spreads* / *CDC*, n.d.). COVID-19 pandemic has been declared as a public health emergency of international concern (PHEIC), which is a sixth such

declaration by World Health Organization (WHO) in the 15 years of the modern International Health Regulations (IHRs) (Jee, 2020).

According to Barnett et al. (2020) a pandemic is a disaster that is distinct in terms of geographic scope and impact. The pandemic has threatened the whole population, with its effects continuing over months and years rather than just a few days, in contrast to other disasters that only affect a small area. Most significantly, it only affects humans; it has no negative effects on physical infrastructure (Barnett et al., 2020). There is a requirement of community resilience in the recovery process, according to National Disaster Response Force (NDRF)'s concept of 'build back stronger'. For a successful post-pandemic recovery, it is crucial to address the impacts of the pandemic, which might include morbidity and death as well as disruptions in income, food security and housing as well as increased cases of domestic violence (Barnett et al., 2020).

The COVID-19 pandemic has highlighted a close link between disaster risk reduction and health. This necessitates consideration of the health component of the Hyogo Framework for Action 2005-2015-based Sendai Framework for Disaster Risk Reduction 2015-2030 which calls for 'significant reduction in disaster risk and loss of lives, livelihood, and health in the social, economic, physical, environmental and cultural resources of individuals, businesses, communities and nations' (United Nations Office for Disaster Risk Reduction, n.d.). It makes it easier for communities to develop health security and resilience. there is the requirement for a multi-sectoral approach to disaster risk management for improved disaster risk mitigation across all sectors, and this would facilitate the management of health and related risks such as disease outbreaks.

1.1.2 Conceptualization of Community Resilience

The history of the word "resilience" is extensive and varied. In the mid-19th century, the idea was first applied in the natural sciences. The social sciences started using the phrase in the 1950s. The idea started to be applied to ecology in the 1970s (Alexander, 2013). The idea of resilience has been adopted into the field of disaster management due to a rise in the frequency of disasters, for coping with uncertainties and disasters at the community level (Abramson et al., 2015). The word "resilience" is used in a metaphorical sense to describe the relationship between man and nature.

In the field of ecology, the concept of resilience was introduced by Holling (1973) who defined resilience as “a measure of the ability of ecological systems to absorb changes of state variables, driving variables, and parameters, and still persist” (Holling, 2013). Since then the phrase has been used to refer to the adaptive capacities of individuals, communities, and society as a whole (Norris et al., 2008).

Norris et al. (2008) associated resilience with the process of connecting resources to outcomes, or the adaptive capacities to adaptation, and defined resilience as the system's ability to return to its initial state when the stressors are removed. Therefore, rather than being an outcome in itself, resilience is regarded as a process that results in an adaptive outcome. While discussing the 2009 Victorian Bushfire in Australia, Gibson (2010) who saw resilience as an outcome or product of an organization's ability to interact with its environment, stated in a paper that “...resilience is not a process, it is not a management system standard, nor is it a consulting product. Resilience is a demonstrable outcome of an organization’s capability to cope with uncertainty and change in an often-volatile environment” (Gibson, 2010).

Engineering resilience and ecosystem resilience are the two categories into which Norris (2008) has divided ecological resilience. While ecosystem resilience provides for a desirable state that fits the environment, engineering resilience permits a system to recover to its initial condition after any perturbation. It is the ecological resilience that human communities make use of.

Resilience is defined as the capacity of a system (or a component of the system) to adapt to and recover from hazardous occurrences by Timmerman (1981) while explaining resilience in social systems. He included aspects like vulnerability and adaptive capability. Early research on disaster resilience placed more of an emphasis on reducing losses due to disasters to the physical and natural environment. Later research switched its emphasis to investigating the innate capacities of both individuals and communities, such as adapting to and coping with any crisis, as well as developing and strengthening current capabilities and local knowledge (Long et al., 2010). Later, with a focus on disaster mitigation, the idea of resilience was used in the domain of urban planning. Community resilience became the focus of research in the context of cities in countries across Europe and North America (Wilson, 2015).

Community resilience being a population-based preventive strategy has consequences for both people and social groupings within the community. Although community resilience is mostly recognised at the local level, understanding the political, economic, and historical foundations

is necessary to comprehend a community's ability to endure the crisis (Alonge et al., 2019; Mihunov et al., 2019).

Resilience, according to Rutter (1987) is the ability to deal with challenges in life rather than reacting negatively to them. According to Rutter, there are two procedures. Adversity is one such risk factor, with the assumption being that adversity makes one more vulnerable and so more likely to experience unfavourable results. The second is the fostering of competency while being protected from risk factors and the detrimental effects they may have. Rutter (1987) defines resilience as not a static characteristic but rather a dynamic interplay between risks and protective mechanisms with the underlying idea that vulnerability and the protective impact are only visible in conjunction with risk factors.

According to Sonn and Fisher (1998) it is not necessary that communities always develop negative outcomes in the face of hardships, instead communities have the ability to achieve positive outcomes. Dysfunction is a negative consequence, resilience is a positive effect, and rejuvenation is a sign of healing (Sonn and Fisher, 1998). In order to define community resilience, Ahmed et al. (2004) presented a composite measure comprised of seven essential elements. Employment-seeking behaviour, the capacity to physically protect households, community networks and relationships, the presence of community structures and leadership, knowledge of injury treatment, hope, and the capacity to endure in the face of adversity are some of these (Ahmed et al., 2004).

Resilience has been discussed at three levels—region, city, and community (neighbourhood)—and Chen and Quan (2021) placed particular emphasis on fostering resilience at the neighbourhood level. Different authors have described community resilience in different ways. However, all definitions of community resilience, according to Bond et al. (2017), have three things in common. These are absorption capacities, which show how much shock the community can take and still resume its normal functioning. The second factor is adaptive capacity, which is the capacity of a community to carry on while making adjustments in response to perturbations. The third factor is restorative capacity, which refers to the ability of a community to resume normal operations after a crisis.

Thus, developing resilience does not mean preventing catastrophic event, rather it entails thriving under challenging circumstances, with the system alternating between times of normalcy and times of crisis. To foster a sense of community, there must be common

experiences and collective consciousness. There is a tendency of people to unite around shared negative experiences, in order to establish stability.

1.1.3 Vulnerability, Adaptive Capacity and Resilience

Social vulnerability and community resilience can be thought of as two distinct yet related ideas (Cutter et al., 2008). While resilience refers to the ability of a system to absorb, cope with, and adapt to disasters, vulnerability refers to the innate characteristic of a social system, even before the occurrence of disaster and refers to the risk associated with the physical, social, and economic aspects (Cutter et al., 2008).

According to Wisner et al., (2004) vulnerability is defined as “character of a person or a group and their situations that influence their capacity to anticipate, cope with, resist and recover from the impacts of natural hazard”. Both vulnerability and resilience are included in this definition. Vulnerability and resilience are two characteristics of socio-economic systems that are related. Gallopín (2006) however, disagreed, arguing that vulnerability is not resilience's opposite because resilience is defined as transition between domains of interest, whereas vulnerability relates to structural change within the system. Contrary to vulnerability, which is exposed to external disturbances, resilience refers to the way a system responds when exposed to disturbances. Thus, resilience is a property that a system possesses internally. Instead of being a reverse of vulnerability, resilience is a part of it that relates to the ability to respond.

Resilience is expected to be greater when the level of vulnerability is lower (Bergstrand et al., 2015). There however, may be an overlap between the indicators of resilience and vulnerability (Ainuddin and Routray, 2012). According to Turner (2010) resilience and vulnerability are two distinct but related aspects of the coupled human-environment system. When a coupled system is exposed to external disturbances, vulnerability is the weakest component, whereas, the resilience of a system makes it more immune to disturbances.

It is the health and socio-economic effects of the pandemic, which make a system vulnerable during the COVID-19 pandemic. Lack of health insurance (Kenny, 2020), work loss, and hence loss in income (Irlacher and Koch, 2021), increase the vulnerability of people to adverse conditions. The tendency to seek medical intervention on developing COVID-19 symptoms is determined by the health insurance status of people. Lack of health insurance would strain finances during a crisis and decrease the likelihood of receiving prompt treatment, which lowers resilience by increasing vulnerability. Loss of work and income impacts the economic well-being of citizens, and also impacts their health-seeking behaviour since the loss of income

can lead to people giving up their health insurance due to their inability to pay premiums, and hence this decreases their likeliness of getting timely treatment. Thereby, loss of income leads to an increase in vulnerability, and a decrease in the ability to recover.

At the same time, adaptation and resilience are used interchangeably. The two concept though are complementary, are marked by crucial differences. Adaptation refers to a process of adapting or developing changes that enhance the ability to survive in a new and altered environment, while resilience is the capacity to cope with the shock and recover from its impact effectively and timely.

Developing adaptation has both positive and negative implications on resilience. If adaptation efforts are costly, it is less likely to have diversity in responses to disaster. Moreover, developing adaptability to particular shocks may reduce the general resilience to new shocks.

Resilience capacity involves; absorbing and coping with shocks, evolving and adapting, and transforming. Hence, risk management involves coping as the first strategy, however, when the risk is beyond the ability to cope, adaptation to adverse changes should be the next strategy. Furthermore, if the adaptation measures are not sufficient to overcome disaster risk, there emerges a necessity for societies to transform which involves fundamental changes in the structure of the society (*What Is the Difference between Climate Change Adaptation and Resilience?*, 2022).

Adaptation can be short-term or long-term, reactive or proactive, or involves a single action or the entire gamut of actions. Whereas, resilience is more of a perspective that involves a variety of approaches to improve social, physical, and financial capacities, and developing plans for long-term capacity building. Incorporating resilience in adaptation policies gives a boost to the transition from a short-term, and reactive approach to long-term planning that is proactive or forward-looking. Hence, resilience and adaptation work complementarily while responding to external shocks.

1.1.4 Community Resilience in the context of Health

The concept of resilience gained popularity in the domain of health system, ever since there had been an outbreak of Ebola in West Africa between 2014 and 2015 (Kruk et al., 2015). The entire process of funding, organising, and delivering healthcare to the community is referred to as health system. It encompasses all institutions, people, resources, activities aimed at promoting, maintaining, and improving community health.

The COVID-19 pandemic has demonstrated how a health system's susceptibility can have a significant impact on people's health, economic development, and social cohesion. Due to COVID-19, there has been a shift in the priorities of the health system, which itself is overburdened, and has the restricted capacity to provide services. Services are negatively impacted due to disruption in the logistics and supplies. Patients with acute or chronic illness found difficulties to receive regular care since hospitals and healthcare facilities were overwhelmed by COVID-19 patients. Therefore, improving the health system's capability is crucial for a prompt and successful response.

A resilient health system can lower the vulnerability of the system during a crisis by successfully adapting to the new circumstances. In order for the health system to be resilient, it must not only be able to withstand sudden shocks brought on by new healthcare needs, but also maintain a steady improvement in patient care and promote people-centeredness. The link between resilience and disease outbreaks was highlighted by experience gained from earlier epidemics like Ebola and SARS (Nuzzo et al., 2019). Even in the phase of normalcy, a resilient community health system is more equipped to provide better routine healthcare and foster stronger social ties. A community-level health system becomes resilient when community health workers are given proper assistance, their salaries are paid on time, and there is an adequate supply of necessities. Local responses in the context of health can be examined at three different levels- individual responses (mutual help), community responses (provision of service), and local system (social services, health services, housing) (Rippon et al., 2020).

Community resilience is related to community health, and is determined by community capacity, competence, cohesion, and empowerment. Community capacity is aided by a federal health response, which relies on local networks and stimulates engagement and cohesion among the residents, and fosters a sense of community efficacy and empowerment, strengthening community resilience (Pfefferbaum et al., 2007). Communities must work towards achieving transformative community resilience even in the domain of health, which entails rebuilding more equitable and socially just communities that receive health services. This is necessary to ensure that one group is not privileged over another, when it comes to the distribution of health resources. Community health resilience should strive for equity, fairness, and access to healthcare services, as influences who participates and benefits from community resilience. The importance of strong leadership, community trust, and social capital at the level of the health system for resolving crisis situation has been highlighted by the outbreak of

infectious disease like the Ebola virus disease, and Sudden Acute Respiratory Syndrome (SARS) (Suleimany et al., 2022).

1.1.5 Community resilience during pandemic

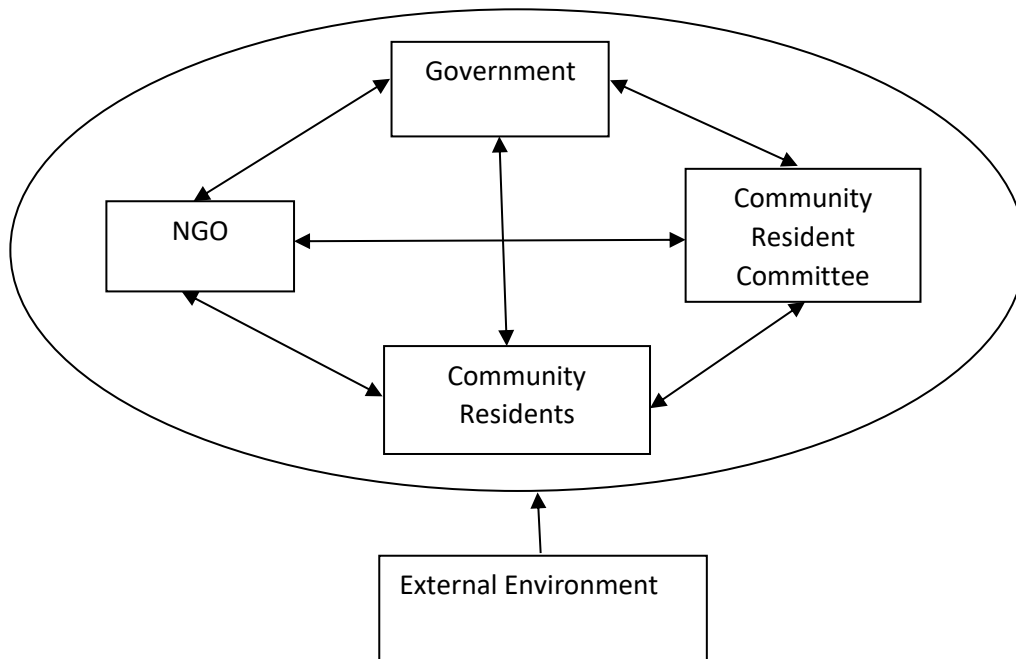
There has been less research done on community resilience to infectious disease outbreaks. Communities with stronger ties fared better during the West African Ebola Epidemic of 2014–16 than the others. Prior to the arrival of any external assistance, these communities pooled resources based on their social cohesion for the emergency situation (Alonge et al., 2019). In order to prevent transmission in cities, Afrin et al., (2021) have suggested a multi-layer strategy based on resilient planning and methods. The focus of building resilience is on eliminating uncertainties through the assessment of vulnerabilities (Lak et al., 2020). Resilience to the pandemic refers to the ability of urban environment to absorb a shock without significant alteration in their function and structure (Zhou et al., 2020).

The health emergency caused by the pandemic has highlighted the necessity of making the communities resilient, and the importance of establishing and strengthening resilience during times of stability so that communities can effectively handle the potential crisis in the future while effectively dealing with the crisis of the past. Since it is the community members who experience the stress first-hand, hence it is crucial to develop an integrated strategy for pandemic preparedness and response by empowering, enabling, and equipping the communities so that they can identify and respond to public health risks (Mackenzie and Jeggo, 2019). Pandemic require prevention, detection at an early stage, and a quick response to the risk of contagious disease, and this role should be led by the communities (Natoli et al., 2020). The resource utilization should be done through a community-centered approach. The value of community-level organisations in implementing public health measures and responding to the needs of the local communities has been acknowledged by scholars (Brodkin, 2021; Cheng et al., 2020; Liu et al., 2021).

Rippon et al. (2020) discussed the various ways in which communities have responded to the pandemic, from self-organizing at the level of neighbourhood to ensuring the delivery of food and medicine to the vulnerable members of society to ensure their welfare. These are some of the ways adaptive capacities can be developed (Rippon et al., 2020). There is a requirement of developing transformative capacities of communities that enable them to adapt to the altered, uncertain, and new conditions. Rippon et al. (2020) have discussed the proactive reaction to COVID-19 taken by community organisations, which played a major role in the mobilisation

of neighbourhood-level measures in deprived regions. Flexible responses from the government, which include flexible financing and adopting an inclusive strategy for local planning and decision-making, had made this possible. Collaborative governance as a response strategy to community public health emergencies has been talked about by Wang et al., (2021).

Figure 1.1 Collaborative governance system for community health emergencies



Source: Wang et al., (2021)

In order to establish adaptive governance while coping with the health disaster, the primary subjects of a system, such as government, NGOs, community resident committees, and community residents, collaborate with one another and also with the external environment. To improve community resilience during times of crisis, adaptive governance is necessary. Collaboration creates regulations that encourage resource sharing rather than competition, buys time to get ready for a possible surge in cases, and reflects the plan of action citizens must adopt in order to contain the spread of the virus (Cyr et al., 2021).

1.1.6 Urban implications of COVID-19

Cities are at the forefront of the COVID-19 pandemic when the transmission, impact, management, and recovery are concerned (McGuirk et al., 2021). The growth of cities is accompanied by a number of challenges, such as the ecological crisis, the class divide, and the marginalisation of some groups of people. The growth of the built environment of the cities at

an unregulated rate, and the cultural diversity has challenged the sustainability of cities, social cohesion, resilience, inclusivity, and economic prospects.

Contagious diseases are more common in cities because of the high density of population and crowding there, which creates an ideal environment for the spread of the virus (Carter, 2017), moreover, the cities are more spatially connected via means of public transportation, hence the early cases of COVID-19 were detected in the cities. However, Hamidi et al., (2020) attributed greater importance to connectivity as the factor of COVID-19 transmission rather than density. Sassen (2002) highlighted that global cities are characterised by flows of information, capital, and people, and these mobilities cause the spread of infection faster than before. During the first wave of the pandemic, “hypermobility” posed a global public health risk (da Silva Corrêa and Perl, 2022). Furthermore, urban areas are characterised by diverse populations and neighbourhoods with varied socio-cultural requirements and vulnerabilities with regard to public health emergencies like COVID-19, which can exacerbate such situations in urban areas. Although cities have specialised medical care, there is a large section of urban poor who have inadequate access to medical care, due to financial barriers. Collectively these attributes make urban settings unique during the outbreak of COVID-19 and call for unique preparedness measures for cities and other urban areas.

The pandemic has pitched an idea of how future cities should be planned so that they are more resilient. In addition to giving urban residents space and opportunity, the evolution of cities strives to address the issues of sanitation, hygiene, and accessibility to health care. The crisis has highlighted that just planning for the physical characteristics of the cities is not sufficient, rather citizens must be involved, social networks must be used, and social capital must be created. It has come to realization of planners the need of engaging with people more than before.

Alraouf (2021) has talked about strategies for designing and planning residential neighbourhoods that address the COVID-19 crisis. COVID-19 has shown that urban justice in modern societies cannot be achieved in contemporary societies in the near future. The pandemic has put forth hidden inequalities over who has access to parks and green spaces and who does not. Communities that lack access to open areas often suffer from hardships. Citizen-friendly spaces like public parks, neighbourhoods, etc, are necessities both for wealthy communities, and underdeveloped communities. It is necessary to bring in a new era of robust

and pandemic-resistant environments that promote a balance between public and private built environments (Alraouf, 2021).

Mendes (2020) has discussed the rise of social movements and neighbourhood initiatives in urban areas in response to the pandemic to address socioeconomic inequalities with regard to the right to housing. In order to address inequalities, these movements have strengthened social support and solidarity.

1.2 Theoretical Framework

Resilience refers to the system's ability to function efficiently even under stress or to recover from the impact of disruptive events without undergoing significant changes to its structure or function. With the rise in resilience, the degree of damage associated with a particular hazard reduces (Proag, 2014).

Three approaches are used to characterise community resilience: process, outcomes, and range of attributes (Pfefferbaum et al., 2017). "Process" denotes the process of change and adaptation to disasters in affected communities (Norris et al., 2008); "Outcomes" denotes the desired outcome of "maintaining stable functioning" (Gibson, 2010); "Range of attributes" denotes the abilities of a community including maintenance, adaptation, recovery, and improvement in capacity to cope with disaster (Cutter et al., 2008). Definitions of resilience given by scholars is based on one or more of these approaches.

Community resilience for instance was described by Ostadtaghizadeh et al. (2015) as the capacity of a system, community, or society to effectively resist, absorb, accommodate, and recover from the consequences of hazards to ensure functioning at an acceptable level. The United Nations International Strategy for Disaster Reduction has likewise accepted this definition (UNISDR). The ability of a system to sustain steady functioning, or the "absence of adverse effects," is another way to define community resilience. Community resilience as defined by Lemyre et al. (2005) is "a process or the attainment of positive outcomes at the individual, family, and community levels despite adversity (e.g., natural disaster, terrorist attack)" and Castleden et al. (2011) defined it as the "capacity of a community adjusting and operating in the face of disturbance". Scholars have variously defined community resilience by making use of either process, outcome, range of attributes, or absence of adverse effects as follows-

Table 1.1 Definitions of community resilience

Author	Level	Definition
Definitions incorporating process and the absence of adverse effects		
Sonn and Fisher (1998)	Community	“The process through which mediating elements (like peer groups, family, friends) moderate the impact of oppressive systems and result in a successful adaptation to these systems.”
Lemyre et al. (2005)	Individual, Household, Community	“The attainment of positive outcomes at the individual, family, and community levels despite adversity”
Castleden et al. (2011)	Community	“Capability (or process) of a community adapting and functioning in the face of disturbance”
Definitions incorporating range of attributes and the absence of adverse effects		
Paton et al. (2001)	Community	“The capability to bounce back and to use physical and economic resources effectively to aid recovery following exposure to hazards”
Ahmed et al. (2004)	Community	“The development of material, physical, socio-political, socio-cultural, and psychological resources to cope with adversity and promote safety of residents, and serve as a buffer against adversity”
Kimhi and Shomai, (2004)	Community	“Individuals’ sense of the ability of their own community to deal successfully with the ongoing political violence”
Coles and Buckle (2004)	Community	“A community’s capacities, skills and knowledge that allow it to participate in the recovery process of a disaster”

Continued

Pfefferbaum et al. (2007)	Community	“The ability of community members to take meaningful, deliberate collective action to remedy the impact of a problem, including the ability to interpret the environment, intervene and move on”
Bond et al. (2017)	Household, Community	“The capacity of a system, a household, a community, an organisation or a coupled natural–human system — to prepare for disruptions from outside of the system, to recover from shocks and stresses, and to adapt and grow from a disruptive experience”
Definitions incorporating both process and range of attributes along with the absence of adverse effects		
Norris et al. (2008)	Community	“A process linking a network of adaptive capacities (resources with dynamic attributes) to adaptation after a disturbance or adversity”

Source: Bhandari and Alonge (2020)

Based upon the definition of Norris et al. (2008), Bhandari and Alonge (2020) defined community resilience as a process that links adaptive capacity at the level of individual or community to positive trajectory of functioning and adaptation of the health system at the level of community after a health shock. The definition incorporates. This incorporates adaptive capacities such as interconnected economic resources and social capital for the positive functioning of the health system. With community as the primary focus, this concept emphasises the complex and dynamic structure of the health system, as well as resources to deal with health shocks.

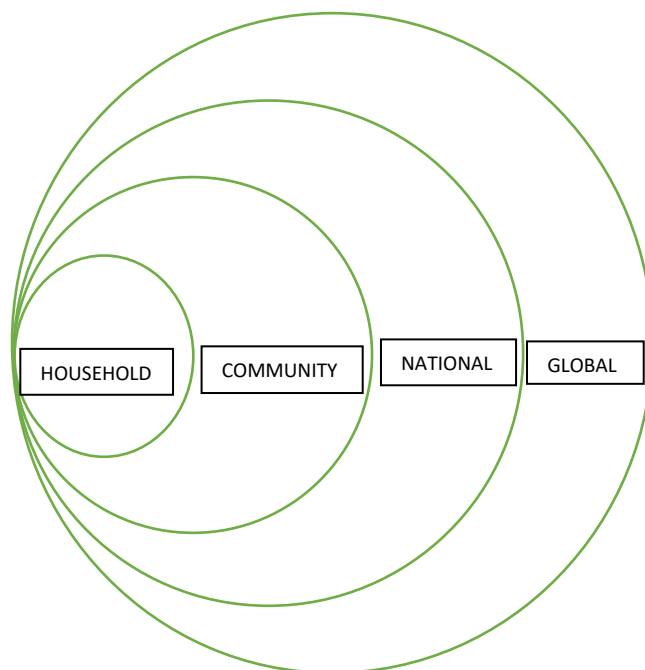
Social resilience is defined by Cox and Perry (2011) as “*a reflection of people’s shared and unique capacities to manage and adaptively respond to the extraordinary demands on resources and the losses associated with disasters*” (Norris et al., 2008; Paton and Johnston, 2001). Magis (2010) defines community resilience as the “existence, development and engagement of community resources by community members to thrive in an environment characterized by change, uncertainty, unpredictability, and surprise.” Communities have been categorised by Halder (2021) into five main groups, such as communities based on a particular

geographic area, occupation, language, race or ethnicity, or religion. This classification is based on the idea that a community's capacity for resilience will vary depending on its lifestyle, means of subsistence, knowledge base, culture, and other factors. Policy formulation for the communities that are not efficient enough to manage the pandemic, can be aided by the process of analysis of cross-community variations.

A resilient community is one as defined by IFRC (International Federation of Red Cross and Red Crescent Societies) that is informed, healthy, and capable of meeting its needs, as well as one that is socially cohesive, has access to economic opportunities, has adequate infrastructure and services, can administer its natural resources, and is connected to external stakeholders. Therefore, mitigating the effects of a shock, speeding up recovery, and minimizing future vulnerabilities are the resilience's key priority areas (Koliou et al., 2018).

Halder (2021) created a multi-level framework model that emphasises resilience at four levels, i.e., individual, community, national, and global levels. In public health emergency and preparedness, household (individual) and community resilience are the first-responding agents (Reissman et al., 2006).

Figure 1.2 A multilevel framework of research action on community resilience



Source: Halder (2021)

- On the first layer is the household level, it is the family with its structure, income, level of knowledge among members, and culture, which contributes to coping with any health crisis, such as COVID-19.
- On the second layer is the community-level measures such as community characteristics including population, awareness, principal occupation, and the history of the community.
- On the third layer is the national level indicators such as demography, occupational divisions, employment, education, safety, and environmental indicators like land-use management, slow onset of pandemic, rapid onset of pandemic, indicators of infrastructure, health, and wellbeing such as infrastructure for public health, humanitarian relief, and transportation and communication, indicators of society and economy like policy and law, initiatives taken by institutions, warning and awareness.
- The fourth layer depicts the resilience at the global level as evaluated by indicators like society and economy, the environment, infrastructure, health and well-being, and management of the global community (Naja and Hamadeh, 2020).

Table 1.2 Elements of Community Resilience

Elements of Community Resilience	Community Networks and Relationships
	Community members' sense of connection and cohesion during a crisis are used to measure social network. Community resilience is strengthened by community ties which are strengthened through trust and shared values.
	Local Knowledge
	Communities can become more resilient if they are aware of their vulnerabilities and resolve them before the disaster. This comprises a factual knowledge, education, and training, collective power and performance
	Resources
	Include physical resources like food, water, and first aid kits; technological resources like shelter, cars, and machines social and financial resources
	Health
	Provision of healthcare post-disaster and the community's pre-existing health. Provision of short-term and long-term healthcare through capacity building
	Communication
Open discussion enables communities to create infrastructure for pre- and post-disaster situations. Dissemination of accurate, socially acceptable information about potential dangers prepares the community for any crisis situation Providing real-time updates on the impacts and relief activities via social media.	
Governance	
Emergency management and coordination within communities. Participation of the community in strategic planning, intervention, and recovery	
Economic Investment	
Addressal of post-disaster economic situation involves reallocation of financial resources, cost-effective interventions, and economically developing post-disaster infrastructure, and diversifying financial resource.	
Mental outlook	
Decides the willingness and hence the ability of community members to continue in face of uncertainty	
Preparedness	
Active involvement of community members in planning for risk management in pre-event scenario	

Source: Patel et al. (2017)

1.3 Statement of Problem

The COVID-19 pandemic is more than simply a health issue; it has also put count communities of urban administration at risk. The current epidemic has revealed how ill-equipped urban communities are to handle the pandemic. In terms of disaster response, communities are both the first to be impacted and the first line of defence. Community resilience is crucial for minimizing the impact of pandemics like COVID-19. Moreover, the pandemic has made the already existing inequalities across social groups and residential communities exacerbate (Maroko et al., 2020). However, variations in the socio-economic endowments of communities cause variation in the resilience capacities of communities.

Communities still heavily rely on the higher government today to implement COVID-19 preventative strategies, early warning systems, and disaster response plans. However, relying entirely on top-down administrative intervention makes it impossible to reduce the detrimental effects of COVID-19. The COVID-19 pandemic has stressed upon the need of strengthening community initiatives for building a resilient society that is better prepared for the crisis and able to handle effectively the adverse outcomes associated with the crisis.

Communities raise financial and human resources through community mobilization and civic engagement to prioritize their aims when the government is unable to fulfill the urgent needs of localities. According to studies, societies with strong social networks built on mutual trust and reciprocity do better during times of crisis (Aldrich, 2012). However, when there is a disconnect between a municipality's requirements and the government's response to a disaster, it may cause mistrust in the community, especially those which lack social cohesion and community resilience (I. Townshend et al., 2015).

Understanding the dynamics of urban communities during a pandemic is essential since urban environments are unique because of their high population density, extensive transportation systems, and a population with varied socio-cultural requirements and vulnerable groups. There has been a great deal of research on the urban framework of the pandemic, but little on the dynamics of the pandemic at the level of neighbourhood (Hu et al., 2021; Li et al., 2021). It is essential to investigate the linkage between neighbourhood and pandemic because people spend the majority of their time in their neighbourhoods, where they also experience shocks first-hand and are more informed about the neighbourhood's primary requirements (Lak et al., 2021). The COVID-19 pandemic has brought to the forefront, the characteristics necessary to build a resilient community. The ability of the city for planning, absorbing, and adapting to the

pandemic would be improved with a better understanding of the elements influencing pandemic resilience (Sharifi and Khavarian-Garmsir, 2020).

1.4 Objectives

The study would be a cross-sectional one whose objective is to:

- Assess the resilience of residential communities in the wake pandemic, from four perspectives i.e., social, economic, health and infrastructure, and institutional.
- Assess the factors leading to the difference between the Gated Communities¹ and the Non-Gated Communities² in their resilience capacity during the pandemic situation.
- Assess the preparedness measures of the two residential communities.
- Assess the adaptation strategies adopted by the residential communities and how these vary from Licensed Residential Colonies to HSVP Plotted Residential Colonies.

1.5 Research Questions

- What are the social, economic, health, and institutional dimensions of resilience during the pandemic?
- How does the resilience of the Gated Communities and the Non-Gated Communities differ?
- What are the adaptation strategies adopted by residential communities in response to the pandemic?
- What lessons are to be learned from the current pandemic for better preparedness measures in case of any unforeseen health emergency in the future?

1.6 Methodology

1.6.1 Study Area

Gurugram is a city of Haryana located in the National Capital Region. It had experienced a rapid transition from a village to a millennium city. The state of Haryana's removal of limits on the land-acquisition process is the major factor that has fueled the city's spectacular growth. In addition to this, Gurugram has the inherent benefit of its proximity to Delhi, allowing private developers to build infrastructure to meet the demand of India's rapidly growing high-tech

¹ Privately developed and maintained Licensed Residential Colonies are referred to here as Gated Communities

² Haryana Shehri Vikas Pradhikaran (HSVP) plotted colonies are referred to here as Non-Gated Communities

sectors during the high-growth phase accompanied by the liberalisation of priority sectors in the early 1990s. The city of Gurugram is now regarded as a hyper-potential area that has grown as a consequence of both private-sector and public-sector investment. The city is referred to as India's "Millennium City" since it satisfies the needs of an urban lifestyle (Gururani, 2013). However, it was only in 2008, that Gurugram got its municipal body called the Municipal Corporation of Gurugram (MCG). The body nevertheless, had limited powers with itself, as Gurugram had been majorly under the state body called the Haryana Urban Development Authority (HUDA), which is now known as Haryana Shehri Vikas Pradhikaran (HSVP). Gurugram Metropolitan Development Authority (GMDA), is a newly constituted planning body, formed through GMDA Act of 2017.

Gurugram is a satellite town of NCT of Delhi, is located in Haryana, southwest of Delhi. The population of city was 100,000 in 1981, and it increased to 1.5 million in 2011 (Census of India, 2001 and 2011). About 45–48% of Haryana's tax revenue comes from the city of Gurugram (Puri and Roychowdhury, 2017). Following the economic reforms of 1991, Gurugram saw a huge increase in both population and the growth of the private and real estate sectors. The three Master plans were implemented within five years due to the fast growth rate of the population. Three master plans—the first (Master Plan 2021) was published in 2007, the second (Master Plan 2025) was published in 2011, and the third (Master Plan 2031) was published in 2012.

According to Gurugram's most recent master plan, out of the city's total 32988 acres of developed land, 16021 acres will be used for residential development, with a projected population of 42.50 lac people (Government of Haryana, 2012). Due to the fact that the Gurugram region is home to 69% of the state's gated group housing units, Gurugram is notable in terms of gated development (Kaushik, 2019).

The neighbourhood units known as sectors are planned by Haryana Shehri Vikas Pradhikaran (HSVP) has planned (earlier Haryana Urban Development Authority, HUDA). The growth of new industries in Gurugram demonstrates the separation between private and public places. It is standard practise for developers to buy property from landowners, obtain a permit to build a colony or a group housing, and then sell the residential units having multiple facilities. It is the private development that gives the housing localities a character of gated complexes.

Gurugram, a city known for its cosmopolitan character, had been greatly impacted by the pandemic. On May 21, Gurugram reported the first COVID-19 death. The city's health system

was crippled as a result of the increase in cases that coincided with a spike in cases in neighbouring Delhi. Various state and non-state entities have contributed to resolving the problem by containing the disease's spread in the city and reducing its negative effects (Naik, 2020).

1.6.2 Selection of Residential Localities

As per HSVP i.e., Haryana Shehri Vikas Pradhikaran (new name of HUDA- Haryana Urban Development Authority) classification, Residential localities which are developed and maintained by private developers are called Licenced Colonies (which include Licensed Plotted and Licensed Group Housing). For the present study, both Licensed Plotted and Licensed Group Housing Residential Localities are considered, so collectively they are referred to as Licensed Residential Colonies. These are the ‘Gated Communities’ which have been considered for the study since these townships are characterized by strict entry/exit, a closed perimeter, twenty-four by seven security arrangement, full-time surveillance, and a bundle of other amenities which are privately bought.

Other types of residential colonies are those which are plotted by the State body i.e., HSVP, hence called HSVP Plotted. In these colonies, the individual house is constructed over the land plotted by the state body. These localities are not gated since they have an open entry/exit, and lack other characteristics of a gated community, hence called non-gated communities.

Figure 1.3 Restricted entry of Gated Community

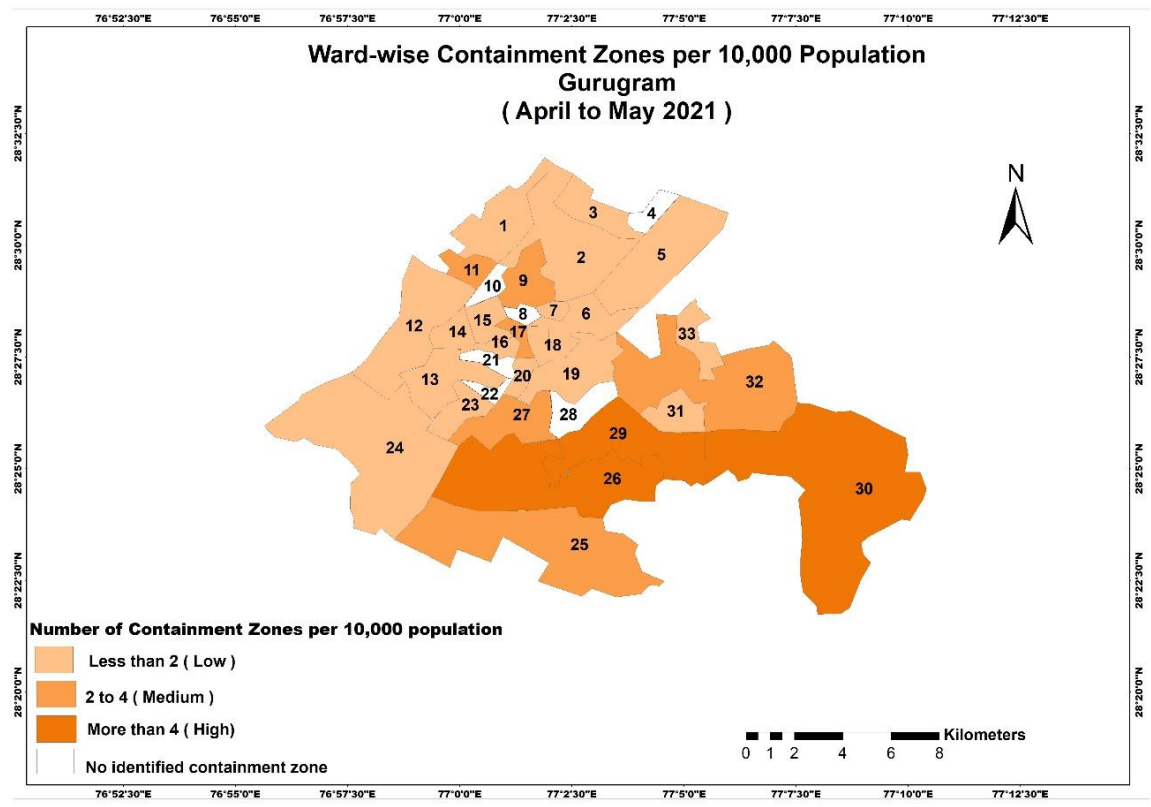


Since it is required to pay property taxes by all residents of a municipality of Gurugram, be they, residents of gated or non-gated communities, hence, all residents have access to the same range of “soft” social services provided by the municipality resided by them, such as public

education, civil hospitals, and protection by police. Soft services are those which are crucial for the proper functioning of the premises. The only exceptions are 'hard' services that are extremely localized and often provided under private contracts to privately developed gated localities. These include stringent surveillance of outsiders entering a locality, and water and power supply backups. Hard services pertain to the physical structure of the premises which makes the premises more comfortable.

The present study aims to compare Licensed Residential Colonies (LRC) which are the 'Gated Communities' with HSVP Plotted Residential Colonies (HPRC) or the Non-Gated Communities.

Figure 1.4 Ward-wise containment zones per 10,000 population, Gurugram, April-May, 2021



Source: Prepared using the orders and advisories on containment zones³ from April to May, released by the District Administration Gurugram (<https://gurugram.gov.in/orders-and-advisories/>)

The map is prepared using the containment zones identified by the district administration Gurugram during the month of April to May 2021 (second wave), which are identified at the PHC/UPHC level. These containment zones are then grouped as per wards (Municipal

³ Five positive cases within radius of 1 km

Corporation wards). To know the actual situation, the containment zones are identified in the backdrop of the population of the ward (i.e., number of containment zones per 10,000 population). The population of each ward is obtained from the Primary Census Abstract, Census of India, 2011.

For the purpose of the study, wards are classified into three strata i.e., high, moderate, and low, based on the number of containment zones per 10,000 population of the ward. From each stratum of the sample, a ward is selected, where the probability of selection of each ward from the sampling frame is equal. In the high category (more than 4 containment zones per 10,000 population) each ward has a 33.3% chance of being selected. Hence, based on the randomly generated number, Ward Number 29 is chosen. In the moderate category (2 to 4 containment zones per 10,000 population), each ward has a 16.67% chance of being selected. Hence, based on the randomly generated number using excel, Ward Number 32 is chosen. In the low category (less than 2 containment zones per 10,000 population), each ward has a 5.5% chance of being selected. Hence, based on the randomly generated numbers using excel, Ward Number 5 is chosen.

The containment zones identified by the district administration for the months of April to May 2021, is used to prepare the sampling frame. The Licensed Residential Colonies are identified from the district authority's list of containment zones, and this has served as the sampling frame required to sample the gated communities. The HSVP Plotted Residential Colonies are selected from the same sector from which Licensed Residential Colonies are chosen, to have a better comparison.

1.6.3 Data Source

Data is collected along the four dimensions considered from the pandemic perspective i.e., social, economic, health and infrastructure, and institutional. (Refer to Appendix No. 2)

Data pertaining to social aspects is obtained through questionnaires, and interviews with the residents. Demographic data including the percentage of the elderly population (population aged 60 years and more, divided by total population of all the sampled households), female population, comorbid population, duration of residence in the locality, highest education of the head of the household, and whether households have received any form of assistance from any social network, whether domestic workers are paid by the households during the complete lockdown, is collected.

Data pertaining to economic aspects is obtained through questionnaires, and interviews with the residents. Data pertaining to the number of family members earning, whether they are engaged in the formal or informal sector, possession of health insurance, and the impact of COVID-19 on jobs is collected.

The health and infrastructure aspect is assessed by interviewing the local authorities/ RWAs, and also the residents of the locality at the same time. Responses of RWA authorities is gathered on whether they possess oxygen cylinders/concentrators for the community members, possession of emergency vehicles, number of vaccination drives in the locality in a year, the average distance to the nearest tertiary hospital.

The institutional aspect is assessed by interviewing the officers of the local authorities/ RWAs, and also the residents of the locality at the same time. Responses are gathered on whether help is provided to families of COVID-positive patients by the RWA, whether entry to the locality is restricted, and whether a record of maids and other helpers in the locality is kept by the RWA. Data is also be gathered from different sources like newspapers, local authorities, RWAs, and social media, regarding the initiatives taken by the different stakeholders for the containment of the disease in the city, etc.

Further, to assess the self-perceived community resilience, self-reported questions were asked along the dimensions of leadership, collective efficacy, preparedness, place attachment, and social trust, on which residents rated on a five-point Likert scale (1-Strongly Disagree, 2 - Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly Agree) (Refer Chapter 4 for variables under each dimension).

1.6.4 Measuring Community Resilience

There are different themes of literature for measuring community resilience.

i) One of the themes measures community resilience from the geographical perspective at the level of the county, using data from a variety of sources including census, survey data, and archives. The Community Resilience Index developed by Qin et al., (2017) is an example of this.

The present study is based on the adaptation of the Community Resilience Index (CRI) developed by Qin et al., (2017). There are four dimensions included in the Community Resilience Index (CRI) developed by Qin et al., (2017) these are- institutional resilience, infrastructure resilience, social resilience, and economic resilience. Under each dimension,

there are 13 elements (including demographic characteristics, education, etc.). To evaluate community resilience, 55 indicators were chosen. Then, these variables were transformed into forms that were comparable, such as percentage, per person, density, etc. Each variable's impact on community resilience was also identified as positive or negative based on earlier research.

Community Resilience Index (CRI) is relevant for assessing community resilience against the COVID-19 pandemic, as it measures resilience from social, economic, health and infrastructure, and environmental aspects. It takes into account the role of local institutions which have emerged as the major players in the containment of the pandemic situation.

ii) The other theme focuses on the intervention-related priority areas of social and health scientists. This includes CCRAM (Conjoint Community Resilience Assessment Measures) (Cohen et al., 2013).

For the present study, an adaptation of CCRAM is also used in the later section of the study, for assessing the community resilience of the gated and non-gated communities. CCRAM is an integrated, multifaceted technique that measures community resilience. It is based on an inductive, experimental, sequential mixed methods design. CCRAM enables estimating an overall community resilience score and determines the strength of five key components of the function of the community after the disaster has stricken. As a result, the CCRAM can be used as a tool for community leaders to evaluate, track, and emphasize on initiatives that will improve a community's capacity to deal with challenging circumstances.

Relevance of CCRAM for measuring community resilience against the COVID-19 pandemic- CCRAM gathers data about the community using a bottom-up manner. To evaluate the actual resource mobilization capacity of the community, items that based on perception such as the perception that community members can be relied upon to assist in times of need and that the requirements of senior citizens in the community are met. Strong leadership demonstrated by “those who are in authority” is another aspect that is measured by it, and is crucial during the COVID-19 pandemic because it shows that the community is led by a strategic plan while recovering from the uncertain conditions brought by the pandemic. Additionally, CCRAM is an efficient measurement instrument based on a well-established theory (Aharonson-Daniel et al., 2014; Cohen et al., 2013, 2019).

The study is based on the two themes of resilience measurement. However, the usefulness of resilience measures has been questioned by some scholars because the reality of the situation is hidden by it (Cumming et al., 2005; Levine, 2014; Weichselgartner and Kelman, 2015). However, the usefulness of these measures has been upheld by some other scholars (Burton, 2015; Cutter, 2016; Sanderson and Sharma, 2016). Thus, it is highlighted that comparison between entities is made possible by the quantitative resilience measures, while keeping a record of the progress, and identifying the problem areas (Béné, 2013). Therefore, they allow planning at different levels, be it local, regional, and national.

1.6.5 Construction of Community Resilience Index (CRI)

Community resilience index (CRI) has been derived from composite score assessment method developed by Qin et al., (2017), which considers Community resilience (CR) has been described as a function of social resilience, economic resilience, infrastructure resilience, and institutional resilience (Qin et al., 2017).

$$CR = f(\text{Social Resilience, Economic Resilience, Health and Infrastructure Resilience, Institutional Resilience})$$

Under each dimension or the function of community resilience, there are various variables to assess community resilience. The impact of each variable on resilience (either positive or negative impact) is identified based on previous works of literature.

Table 1.3 Components of Community Resilience Index

Dimension/ Component	Variable	Relation with Community Resilience	Literature
Social	Percentage of elderly population (>60 years)	Negative	(Wu et al., 2020)
	Percentage of comorbid population	Negative	(Ejaz et al., 2020)
	Percentage of postgraduates and above	Positive	(Frankenberg et al., 2013)
	Any kind of assistance received from any social network	Positive	(Fransen et al., 2022)

Continued

	Percentage of residents who have resided for shorter duration in the community (less than 3 years)	Negative	(Shi et al., 2022)
	Percentage of households which have paid the domestic maids during complete lockdown	Positive	(Imperiale and Vanclay, 2021)
Economic	Percentage of households which have more than one source of livelihood	Positive	(X. Chen and Quan, 2021b)
	Percentage of households whose head is engaged in informal sector	Negative	(Mamgain, 2021)
	Percentage of households which have all members registered under health insurance scheme	Positive	(Lurie and Dubowitz, 2007)
	Percentage of households whose earning members have lost job and had to adopt new means of earning	Negative	(Mamgain, 2021)
	Percentage of households whose earning members have experienced a reduction in pay	Negative	(Mamgain, 2021)
	Percentage of households whose earning members have not experienced any significant impact on job	Positive	(Mamgain, 2021)
	Percentage of households whose earning members have profited during lockdown	Positive	
Health and Infrastructure	Provision of oxygen cylinders/concentrator in locality	Positive	(F. Wang et al., 2022)
	Provision of emergency vehicles for emergency	Positive	(F. Wang et al., 2022)
	No of vaccination drive in locality in a year	Positive	(F. Wang et al., 2022)
	Average distance to the nearest tertiary hospital	Negative	
	Frequency of sanitation drive in locality in a month	Positive	(Halder, 2021)

Continued

Institutional	Help provided to families of COVID patients by RWA	Positive	(Leykin et al., 2016)
	Restricted entry	Positive	(Asfour, 2022)
	Record of maids and other helps working in society kept by RWA which could help in contact tracing	Positive	
	Provision of circulation of all emergency number among the residents	Positive	(Leykin et al., 2016)
	Information regarding households with COVID positive patients circulated among the residents of locality	Positive	(Leykin et al., 2016)

The Community Resilience Index (CRI) is an indicator-based resilience assessment technique. CRI is built using a balanced weight technique, in which each variable has an equal contribution to the production of each component of the index. The balanced weight approach is applicable for the assessment of the composite score and its appropriateness can be justified by the fact that it treats every variable equitably when the study is related to diverse geographical regions. The inverse value is taken for the factors that exert a negative influence on resilience, in order to lower its value.

Since, the variables are measured on different scales, they are normalized by maximum-minimum transformation, to bring into comparable form.

$$S_{var} = \frac{(var_v - var_{min})}{var_{max} - var_{min}}$$

Where, S_{var} is the index value for each variable,

var_v is the original value of variables for v^{th} residential community,

var_{max} and var_{min} is the maximum and minimum value of each variable

The variables are aggregated after being normalized-

$$C_v = \frac{\sum_{i=0}^n S_{var}}{n}$$

C_v is one of the four components of CRI (social, economic, health and infrastructure, institutional)

S_{var} is the i^{th} variable, belonging to component C_v for the v^{th} residential community, n is the number of variables under each component.

After the computation of the values of each of the four components and the CRI (Community Resilience Index) is averaged,

$$CRI_v = (W_S S_v + W_E E_v + W_H H_v + W_I I_v) / W_S + W_E + W_H + W_I$$

Where,

CRI_v represents the Community Resilience Index for a residential community v , which is the weighted average of the four dimensions. Weights are given to each dimension so as to assure that there is an equal contribution to the overall Community Resilience Index (CRI). Here, S_v , E_v , H_v , I_v are the values of social, economic, health and infrastructure, and institutional components, and W_S , W_E , W_H , W_I are their respective weights.

While the weight of each component (W) is built on the basis of the number of variables that build each component (C_v). Dimensions of community resilience are assessed on a scale of 0 to 1, where values near to 0 indicate lower resilience, and values closer to 1 indicate higher resilience.

1.6.6 Self-Perceived Community Resilience Assessment

Further, an assessment of the perception of resilience by community members is done to assess whether the perception-based resilience assessment is in consonance with indicator-based resilience assessment. The assessment of perception-based resilience should be viewed as complementary to indicator-based assessment, and not as an alternative (Jones and d'Errico, 2019). Indicator-based resilience mainly captures experienced resilience to infer future resilience capacities and perception-based resilience attributes reasoning for it (Spiegel et al., 2021). Since, the assessment of perception-based resilience provides information about a variety of socio-economic, institutional, and psychological elements, hence this approach combined with indicator-based assessment help in formulating policies and interventions,

aimed at enhancing resilience (Jones and Tanner, 2017). Moreover, the perception of resilience by the community members significantly impacts the resilience outcomes, by determining their collective capacity to deal with adverse conditions (Zhang and Shay, 2019).

For this purpose, self-reported questions were asked from the residents which they rated on a five-point Likert scale on the basis of their perception. Based on the adaptation of CCRAM (Conjoint Community Resilience Assessment Measures), the questions addressed the various dimensions of community resilience like leadership, collective efficacy, preparedness, place attachment, and social trust.

Table 1.4 Dimensions of perceived community resilience

Dimensions of Perceived Community Resilience	Variable
Leadership	RWA/Local organization functions well
	Trust in local decision-makers
	Needs of older people of the community attended well
	Leadership qualities shown by those in authority
Collective Efficacy	Mutual assistance and care for community members
	Community members can be counted upon to help in the crisis situation
	Community members can help cope with an emergency situation
	Ability of the community can be trusted upon to overcome an emergency situation.
	People work together to improve the community
	Active participation of residents in the activities of the community
Preparedness	Preparedness of community for an emergency situation
	All the needful information received from community during emergency situations
Place Attachment	Sense of belonging to community
	Feel safe in place of residence
Social Trust	Trust among the residents of community
	Friendly nature of neighbours

Source: Cohen et al (2013)

The mean score of each dimension of community resilience is calculated for both gated communities and non-gated communities. The T-test is done to test whether there is a significant difference between gated and non-gated communities along each dimension of perceived community resilience i.e., leadership, preparedness, place attachment, social trust, and collective efficacy, and an attempt is made to understand the underpinning of perception of members of the two communities.

It is followed by the construction of a self-perceived community resilience score, which is a mean of all the dimensions of perceived community resilience considered for each residential community type i.e., gated and non-gated communities.

For the analysis of the factors that influence self-perceived community resilience, a multiple linear regression model is run, with overall self-perceived community resilience as the predicted variable and predictor variables taken are the duration of residence, the highest level of education, age of the respondents, annual family income from all sources.

1.7 Scope and Limitations

Since the survey for the study was conducted in February 2022, i.e., during the period of the pandemic, there were several kinds of restrictions experienced. The pandemic added to the reluctance of people (from urban settings) to participate in the survey, due to this the sample size was constrained. Even the RWAs of the societies showed reluctance in disclosing several details. This added to the limitation of the study. Moreover, community resilience during the pandemic in urban communities is a very dynamic phenomenon involving several processes operating simultaneously, either conspicuously or inconspicuously. Hence, the phenomenon of resilience cannot be captured completely through any technique involving few variables, therefore, the techniques used in the study have their own limitations. Moreover, time constraints were other limitations of the study. However, the study has put forth questions for further research like capacitating communities to enhance their overall resilience to disasters and analysing the relative importance of strong social capital and greater economic endowments in achieving the same.

1.8 Chapterisation Scheme

The present study is organised into the following chapters,

Chapter 1 is introductory and gives a brief background of the study. It includes a review of the literature, conceptual framework, statement of problem, objectives, hypotheses, database, and research methodology.

Chapter 2 presents the scenario of COVID-19 pandemic in Gurugram. It also discusses the the role played by the various state and non-state actors like the district authority, municipal body (Municipal Corporation of Gurugram), planning body (Gurugram Metropolitan Development Authority), civil society, and Residential Welfare Associations, in containment of the pandemic situation in the city.

Chapter 3 assesses the community resilience of the two residential communities i.e., gated and non-gated communities along the dimensions of social, economic, health and infrastructure, and institutional, by constructing a composite index called community resilience index.

Chapter 4 discusses about the perception of resilience by members of gated and non-gated communities during the COVID-19 pandemic, along the dimension of leadership, preparedness, place attachment, social trust, and collective efficacy. The later part of the chapter discusses about the factors influencing community resilience across gated and non-gated communities.

Chapter 5 illustrates the conclusion that has emerged from the study and the relevance of the study for future policies.

Chapter 2

State and Non-State Actors and The City-Level Governance during Pandemic

As the rate of urbanisation increased, there has been greater recognition of the significance of enhancing administration at the level of the city, for addressing increasingly explicit societal changes. The strategy of integrated urban governance includes long-term planning, early warning, adequate investment in primary healthcare, and coordination of activities of different stakeholders. These strategies call for a collaboration of state and non-state actors in matters of urban governance and help cities to respond quickly and effectively to pandemics.

The integrated urban governance strategy has facilitated timely detection of infected persons through extensive testing and surveillance, along with lockdown and social distancing measures implemented on time, allowing cities to contain the virus spread. Urban resilience to any event that has disrupted normal functioning, such as a pandemic, is determined by pre-event and long-term planning in order to mitigate, absorb, recover, and adapt to such events (Duggal, 2020). This enables communities to learn from the mistakes of the past and develop plans to lessen the effects of any disruptive events in the future.

Urban local bodies must be given more power to respond to the pandemic. In Indian cities, Municipalities and local corporations' primary functions do not include providing for public health. The pandemic has demonstrated the importance of giving urban local bodies the power, authority, and resources to oversee effective health infrastructure of hospitals. This would incorporate into urban planning, development, and service delivery, the issue of public health, which is a crucial factor in determining the susceptibility of urban communities to the pandemic (Praharaj & Vaidya, 2020). Along with this, it is necessary to give local officials the power to generate their own revenues since increased fiscal autonomy and expanded role of municipal administration are essential for enhancing the ability to adapt to crisis situations.

Kasargod, Kerala has through effective decentralisation of power through provisions of 74th amendment of the constitution, controlled the spread of the virus at the initial stage (Praharaj & Vaidya, 2020) and there has been a timely response from the local authorities of those cities which have better devolution of functions.

Cooperation between the various levels of government is necessary to prevent confusion and conflicts and to make efficient use of scarce resources. A government structure that is fragmented in the sense has disputes between stakeholders at different levels, can lead to ineffective control of the spread of the virus. Due to the limited local autonomy and the concentration of authority at the national level of government, a conflict may arise. Multi-level governance having coordination between different levels leads to prompt actions.

Instances where there is coordination between top-down i.e., state initiatives, and bottom-up i.e., community initiatives to contain the virus transmission in cities. A structure that fosters trust in government programmes and enhances citizens' participation have found to be successful (Sharifi & Khavarian-Garmsir, 2020). Efforts of community-based organisations like sharing of information, providing socio-economic support to marginalised population, sanitization of public spaces, and enactment of social distancing measures, have helped the local governments (Sharifi & Khavarian-Garmsir, 2020).

When the government in its own capacity cannot meet the emergency of the situation, strengthening non-governmental organizations (NGOs) and community-based initiatives is crucial. Serious hunger has been prevented by initiatives led by communities like the provision of meals and other supplies during the lockdown period (Duggal, 2020). Formulation of effective emergency plans require participation by community, since community members are better informed about their primary needs and those of their neighbours (Wilkinson et al., 2020). Consequently, in situations when the state's efforts have not been very effective, community-based initiatives have succeeded.

2.1 COVID-19 Pandemic in Gurugram

One of Haryana's worst-affected districts, Gurugram had seen a considerable number of deaths as a result of COVID-19. The Haryana Health Department conducted a serological test in September 2021 to check for the presence of antibodies against SARS-CoV 2. According to this survey, the positive rate in Gurgaon's urban areas was 80.3%, as opposed to 77 percent in rural clusters (“Gurgaon: 78% Population Has Antibodies against Covid”, 2021). The concentration of population and economic activities in the urban area has made it vulnerable to the pandemic. The greater movement of people both across the borders and within the borders after the partial unlock measures lead to an increased positivity rate.

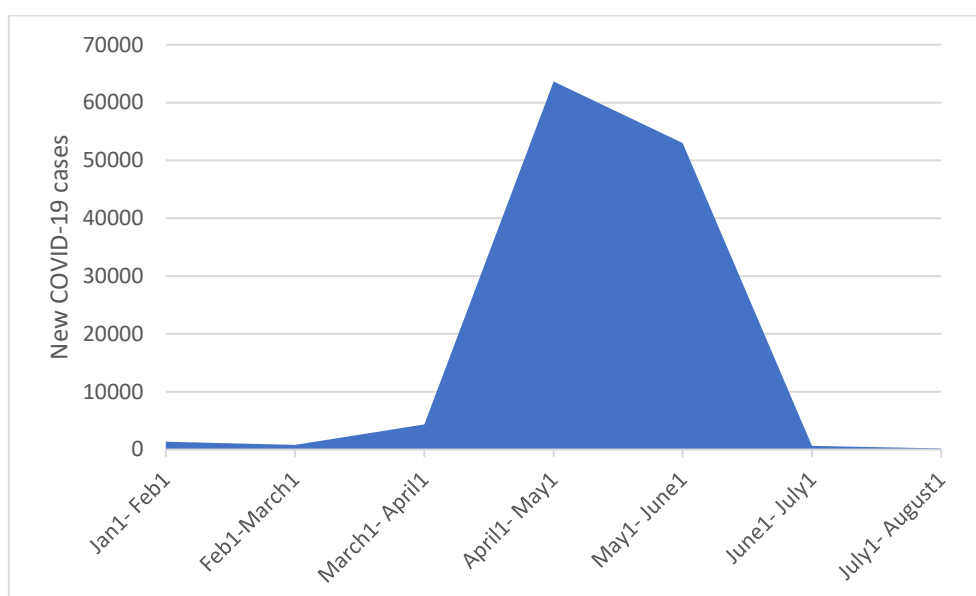
The second wave of COVID-19 in Gurugram continued over months, starting from April 2021 and continued till June 2021, with the peak spanning over the months of April and May 2021.

Table 2.1 Cumulative COVID-19 cases and deaths, Gurugram, 2021

Year: 2021	January	February	March	April	May	June	July	August
Registered cases of COVID-19 (cumulative)	56855	58237	59029	63394	127033	180032	180685	180900
Registered Deaths due to COVID-19 (Cumulative)	343	354	357	365	488	827	904	920

Source: Civil Surgeon, Health Department, Gurugram

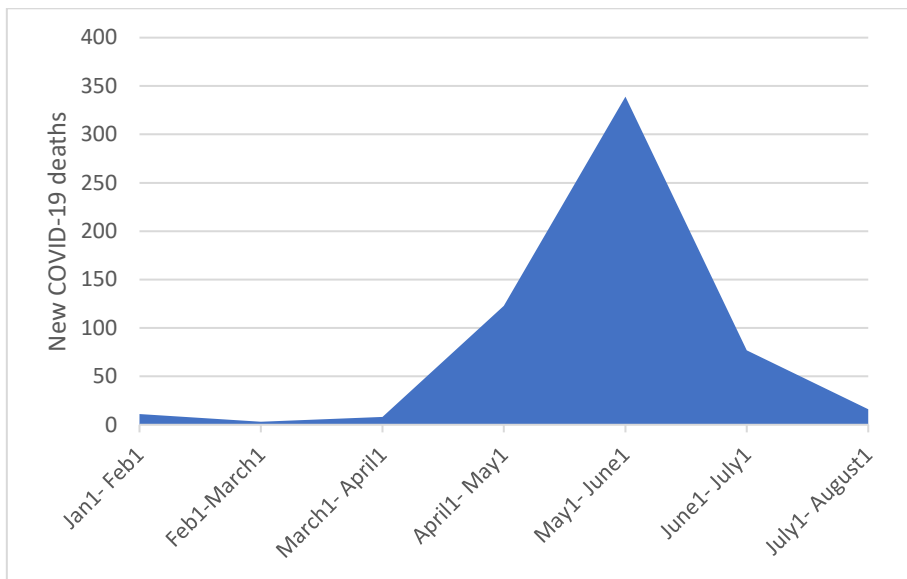
Figure 2.1 COVID-19 Cases in Gurugram, 2021



Source: Civil Surgeon, Health Department, Gurugram

The highest increase in the number of cases was in the month of April when 63,639 new cases were recorded, it was followed by the month of May when 52,999 new cases were recorded. Thereafter, there was a decline in the number of new cases in Gurugram. Gurugram being the hub of IT industries in north India, is the job location for many people residing in Delhi, and also a lot many residents of Gurugram, have Delhi as their job location, thus, there is constant interaction across the Delhi-Gurugram border. National Capital Territory of Delhi itself had been worst affected, hence having a porous border with Delhi had made Gurugram more vulnerable, with the city having a high positivity rate of COVID-19 infection.

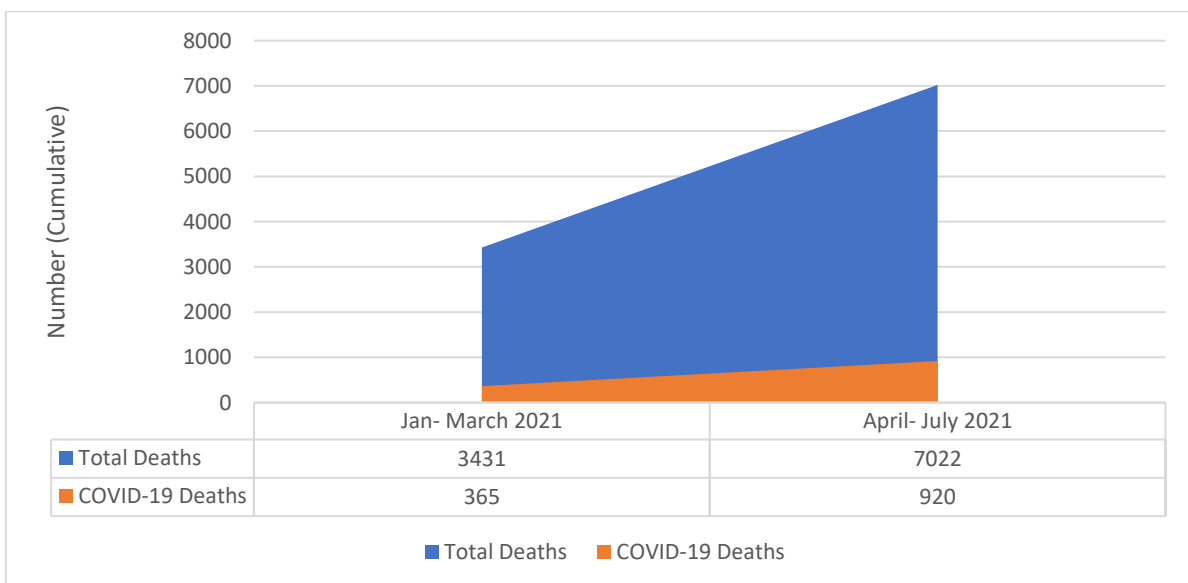
Figure 2.2 COVID-19 Deaths in Gurugram, 2021



Source: Civil Surgeon, Health Department, Gurugram

The deaths due to COVID-19 followed the same trend as the COVID-19 cases followed, with a high death rate due to COVID-19 spanning over the months from April 2021 to August 2021. The peak in the number of deaths due to COVID-19 was however in the month of May. The probable reason could be that the highest positivity rate was in the month of April, and those who died due to COVID in the month of May got infected by COVID in the month of April. Thereafter, there had been a decline in the number of deaths due to COVID-19.

Figure 2.3 Cumulative COVID-19 cases and deaths



Source: Registrar Birth & Death, Municipal Corporation, Gurugram

The total number of deaths in Gurugram during the period between January 2021 to March 2021 was 3431, whereas, a cumulative of 365 deaths (10.64%) during this period, were due to COVID-19. Total deaths registered in Gurugram during the period between April 2021 to July 2021, coinciding with the second wave, were 7022, whereas, a cumulative of 920 deaths (13%) deaths during this period were due to COVID-19. Therefore, there had been an increase in mortality and also an increase in the proportion of deaths due to COVID-19, when we compare two time periods, i.e., January 2021 to March 2021 and April 2021 to July 2021, while the second time period coinciding with the second wave.

In Gurugram, excess deaths than those reported officially as COVID-19 deaths, have been registered by the Civil Registration System (CRS). This was because there were more COVID-19 fatalities than were reported officially. The difference between the deaths due to all causes reported in the pandemic year and the normal year constitutes “excess deaths”. Healthcare resources were diverted to treat people with COVID-19, which impeded patients with other illnesses from receiving healthcare. However, there is significant under-reporting because only those deaths that are confirmed by hospitals are counted as COVID deaths, whereas COVID-19-related deaths that occur along with comorbidity are not considered as COVID deaths (Srinivasan, 2021).

2.2 Status of Health Infrastructure during Pandemic in Gurugram

The health system of the city experienced a significant challenge as a result of the rise in COVID-19 cases and related deaths. Despite the fact that the city is known for medical tourism due to super-specialty private hospitals with skilled doctors and good infrastructure, the government hospitals and community health centres are in a sorry state. The poor condition of the health infrastructure has made the citizens depend on private healthcare which is associated with sky-high costs, hence burdening the pocket of the migrant labour class and other urban poor, thereby reducing their likeliness of getting required health care (S. Sharma, 2022). This worsened the situation during the pandemic, which put further strain on the city’s already overstretched healthcare facilities. It is unlikely that the public health infrastructure of the city which is not dependable in normal circumstances, will be dependable during the pandemic.

Table 2.2 Hospital beds in Government & Private Hospitals of Gurugram, 2021

	Private Hospitals	Government Hospitals
Beds	3427 with oxygen support	367 with oxygen support
Ventilator beds	434	6
ICU beds	952	19

Source: Health Department, Gurugram

The health department of Gurugram reports that the city had 5653 beds available during the second wave. Private hospitals had 3,427 beds with support of oxygen, and had 434 ventilator beds, 952 ICU beds. Whereas, there were only 367 beds in total, all of which had oxygen support in government hospitals, with 19 being ICU beds.

During the second wave, daily cases surge in the city crossed the 1000 mark, and there was acute shortage of oxygen in hospitals, and the health infrastructure of the city proved insufficient to meet the criticality of the situation. Therefore, there had been a significant between the demand for hospital beds, ICU beds, ventilators, and oxygen supplies at the city's hospitals and the supply of such resources.

The number of beds were raised by turning hotels and community centres into temporary COVID hospitals to manage the demands, as the number of cases rose that needed hospitalisation and the health system of the city could not meet the increased demand (Kumar, 2021). Additionally, majority of the ventilator beds were available in private hospitals, which offered healthcare facilities at very high costs. During pandemic, the problem grew worse due to the distressed patients being overcharged by the private hospitals. For individuals without health insurance, the situation becomes incredibly perilous, which had a negative impact on their financial stability as well. As a result, rather than being centred on the needs of its residents, the city's health infrastructure was perceived to be driven by a profit-making agenda. Also, as there was a surge in COVID-19 cases in the city, there were cases of denial of medical services to other patients due to a shortage of medical resources in the city.

The pandemic has therefore caused the public-private divide in health services to be more visible, and hence, brought attention to the need to improve public health infrastructure by making it more strong, more resilient, and more equitable.

Bringing the treatment of COVID-19 in private hospitals under the government health insurance schemes as a possible alternative to avoid the high costs of private hospitals is a

likely way by which the government administers the cost of the services, while making use of infrastructure and staff already present in the private sector.

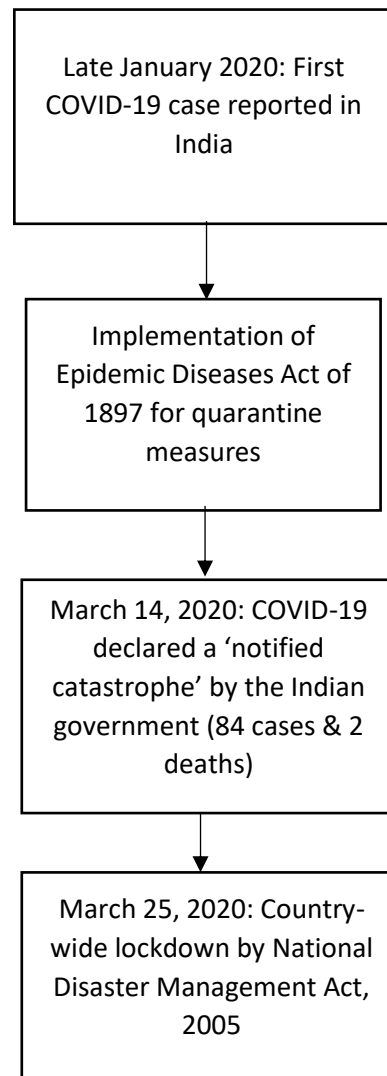
Looking at the vaccination status of the city, according to the Gurugram Health Department, the district became the first in the National Capital Region (NCR) to attain 100% vaccination of the adult population. In Gurugram the vaccination percentage has been reported to be 119 which means it exceeded 100 percent, due to the floating population in the city, which constantly comes and goes (“Gurugram Reviews Preparedness for Prevention of 3rd Covid-19 Wave,” 2021). There was a tie-up between private hospitals and RWAs to ensure community vaccination (Mathur, 2021). Even during vaccination drives, the public-private divide was conspicuous, since the public vaccination sites were often crowded during the initial days, with long queues to receive vaccine, while private vaccination offered an alternative but came at a cost. The unprecedented conditions put forth by the pandemic called for responses from various state and non-state actors, to mitigate the adverse impacts of the pandemic, on the residents of the city.

2.3 Response of State and Non-State Actors in the containment of pandemic

Despite the COVID-19 epidemic's global scale, the response to the pandemic had been at the national, state, city, and community levels. These responses are the outcome of a variety of leadership, and they give rise to a variety of disease management strategies that find a balance between political and economic imperatives. Various responses also reveal a diversity of mechanisms engaging with institutions and governance systems (Praharaj & Vaidya, 2020).

Gurugram had been a city with one of the highest transmission rates. The district's porous border with Delhi allowed for constant cross-border migration. It is argued that it is the unlocking measures that lead to an increase in the number of cases in the city (Dasgupta & Grewal, 2020). It called for the responses of multiple state and non-state actors to mitigate the socio-economic and health impacts of the pandemic. The conditions unfolded by the pandemic have highlighted the important role of urban municipalities in meeting the challenging circumstances, and urban governance which is distributed among the national and state governments, private actors, civil societies, and community-based organisations with a reach beyond the city limits.

Figure 2.4 Timeline of responses to contain the spread of COVID-19



Source: Naik (2020)

By putting COVID prevention guidelines in place, the regulation to stop the virus's spread at the national level has strengthened the government's involvement. In accordance with the National Disaster Management Act of 2005, the central government and the national disaster management authority were given the authority to implement lockdown measures (Naik, 2020). The law also permits state disaster management authorities to use equivalent authority within state borders. The Epidemic Diseases Act of 1897 and the National Disaster Management Act of 2005, on the other hand, give municipal governments the authority to manage disasters at the local level.

One of the primary responses of the state in the containment of the virus has been the bordering practices (i.e., practices to limit something e.g., mobility) which are manifested in different

ways. One is the territorial borders, manifested by the containment zones, and also the border with the administrative unit i.e., borders of the district which were sealed to limit inter-district commutation. Another way to think about borders is the state's practice of identity verification, which often caused a delay in the distribution of distress food relief to people who were not eligible for state-supplied relief. These borders have made the pandemic response, in the form of a trade-off between lives and livelihood, even more challenging.

Table 2.3 Responses of State & Non-State Actors to COVID-19

State and Non-State Actors	Response	Challenges and failures
Gurugram District Administration	<ul style="list-style-type: none"> - Identified containment zones - Integrated command and control centre to provide a multitude of services to citizens, by collaborating with police, civil society, citizen volunteers, RWAs - Rolled out a scheme for the local residents not able to find a bed. - Implemented mobility curbs with the help of police 	<ul style="list-style-type: none"> - Failed to enumerate migrant workers and identify hunger hotspots for targeted food relief to the migrant workers - Inadequate police force of just 1 personnel for around 2,500 residents for implementing mobility curbs.
Municipal Corporation of Gurugram	<ul style="list-style-type: none"> - Identify and update containment zones - Created awareness, organized relief camps for safety, sanitized the public places, empowered RWAs and provision of facilities like mobile grocery shops. - Drafted Crisis Management Strategy for Community Mobilization and Awareness, for sharing knowledge on COVID-19 responses and preparedness measures. 	<ul style="list-style-type: none"> - Inadequate devolution of power and functions to city government - Lack of requisite manpower required for management of COVID-19 crisis.

	<ul style="list-style-type: none"> - Enforcing lockdown to contain the spread of infection - Created alternative provisions to support essential services - Kept active communication to keep citizens informed - Encouraged community responsibility - Door step delivery of oxygen cylinders 	
Gurugram Metropolitan Development Authority (GMDA)	<ul style="list-style-type: none"> - Single online platform called HrHeal, wherein residents and officials can access any information, data or services related to the Covid-19 pandemic - Prepared heat map based on up-to-date data on COVID-19 cases in the city. 	Inadequate staff having technical knowledge hence the initiative of digital platform to provide up-to-date information about the COVID cases, and preparing a heat map based on that, couldn't be viable for a longer duration
Residential Welfare Associations (RWAs)	<ul style="list-style-type: none"> - Identified the members of their communities who had returned from affected countries, and also inform the administration about the same Informed the administration about the demands of the residents. - Set up small COVID care facilities to treat mild symptoms - Set up isolation centres - Ensured regular collection of bio-medical wastes. - Organised testing and vaccination camps in the locality 	<ul style="list-style-type: none"> - Continuation of everyday functioning of the society during the lockdown period proved to be a highly challenging task - There were cases of breach of jurisdictions by RWAs. The response of certain RWAs was hampered because of their inability to distinguish between the measures that will actually prevent the virus spread and those which

	<ul style="list-style-type: none"> - Restricted the entry of outsiders in the locality to prevent chances of infection 	are solely based on their tendency to act as autocratic institutions.
Civil Society	<ul style="list-style-type: none"> - Released food grains from public stock to migrants - Ran community kitchens - Provided oxygen cylinders - Collaborated with public and private interest groups, and the state, to exert pressure on the administration to perform its functions. 	<ul style="list-style-type: none"> - Experienced crunch of funds for proper functioning due to decline in their source of funding - Experienced a major challenge in enumerating the migrant workers in the city, since city administration itself had failed to enumerate them, hence experienced their resources to be overstretched

2.3.1 Gurugram District Administration

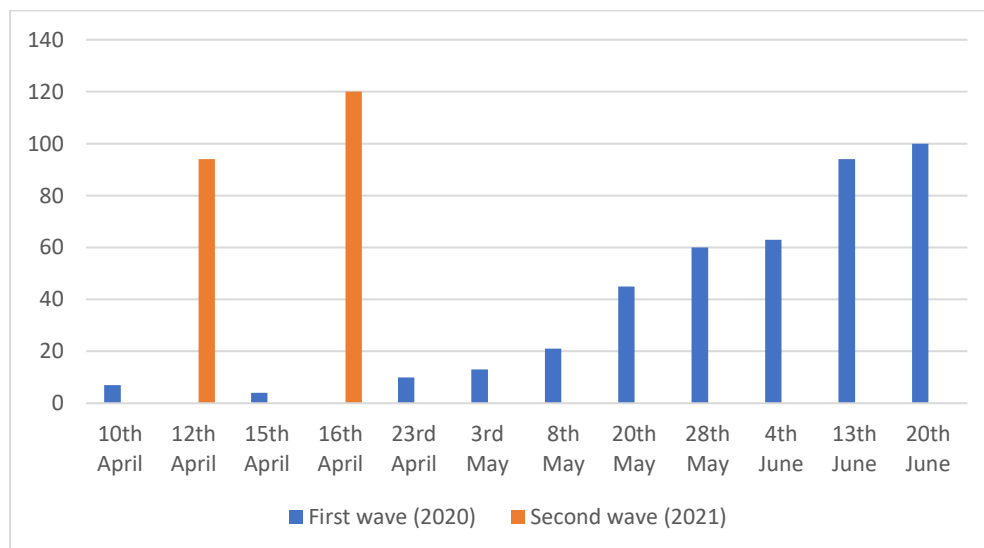
The district administration and elected local authorities are in charge of handling a health emergency like COVID-19 on a local level. The Epidemic Disease Act of 1897 gives the Deputy Commissioner authority to monitor the spread of the disease, oversee the medical system, and reallocate funds for management and relief. The District Disaster Management Authority (DDMA), which was created in accordance with the National Disaster Management Act of 2005, is led by a Deputy Commissioner, who is responsible for the District Disaster Response Fund and the District Disaster Mitigation Fund (Farooqui & Malhotra, 2020).

Haryana was the first state to declare COVID-19 an epidemic, on March 11, in accordance with the Epidemic Act (Kumar, 2020). Control measures implemented by district administration included mobility restrictions, with police support. The civil defence squad was established for community outreach with the purpose of enforcing lockdown via communication and information.

Containment of disease has been a significant disease management strategy adopted by the district administration. For the containment of the disease, containment zones had been identified. Containment zones are “the neighbourhoods, colonies, or housing societies where infected people live and so, are sealed, access is restricted, and only very basic services and supplies are allowed inside” (Explained: What Are Containment Zones, How Are They Demarcated, 2020). However, for the implementation of mobility curbs, Gurugram had an inadequate police force of just 1 personnel for around 2500 residents (Naik, 2020). With the meagre police force, implementation of mobility restrictions came out to be a significant challenge faced by the district administration.

The identification and confinement of containment zones created a dynamic mosaic of mobility in the city, as these containment zones, characterized by strict restrictions on mobility, are formed and dissolved as the cases are brought under control, and another new area with spike in COVID cases is identified as containment zone. As the number of cases surged, containment zones shrank, from entire localities to neighbourhoods, individual buildings, and finally certain floors. As a result, the number of containment zones grew during the second wave's peak compared to the first wave's peak (“What Are Containment Zones? 2020).

Figure 2.5 Number of Containment Zones in Gurugram During First & Second Waves



Source: Orders and advisories by District Administration Gurugram

<https://gurugram.gov.in/orders-and-advisories/>

There was a greater number of containment zones in Gurugram during the month of May and June in the year 2020, coinciding with the first wave. Whereas, in 2021, the number of containment zones was high in the month of April, coinciding with the second wave.

Apart from identifying containment zones, Information and Communication Technology (ICT) enabled Integrated Command and Control Centre (ICCC) was established, which brought together various stakeholders like the district administration, MCG, police, RWAs, NGOs, and citizen volunteers on a single platform to offer services like information on availability of beds, oxygen, online consultation, prepared meal etc. (“Haryana CM Inaugurates Integrated Command and Control Centre”, 2021). It was an attempt to create an effective communication network for a clear division of tasks, as well as to assure visibility among the actors for one another, resulting in transparency. This coordinated effort was made with the goal of making the provision of assistance simpler and quicker.

However, the use of ICT-based platforms for the provision of services by the different actors had limited on-ground coverage, with the digital divide being one of the biggest hurdles, as only those who had smartphones and had their know-how could avail of the services through these platforms. Further, inadequate knowledge about these initiatives among the masses limited their usage on the ground reality, as people prefer to opt for conventional means for availing of the services provided by the administration.

While the administration remained concerned with disease containment and remained unaware of the sufferings of daily wage workers. The administration also failed to enumerate the migrant workers who lived and worked in the city, hence was sluggish in food disbursement. It failed to map specifically and systematically, the hunger hotspots for targeted food relief to the migrant workers, hence experienced their capacities to be overstretched.

2.3.2 Municipal Corporation of Gurugram

Urban Local Bodies are crucial to providing municipal amenities and safeguarding people's welfare. But Gurugram didn't have an urban municipal body until 2008; before that it was under state body called HUDA (Haryana Urban Development Authority). Authorisation of Municipal Corporation of Gurugram (MCG) to control the disease is in accordance with National Disaster Management Act of 2005 and the Epidemic Diseases Act of 1897. Municipal Corporation Gurugram responded to the COVID-19 pandemic by raising awareness, setting up safety relief camps, disinfecting public areas, and offering amenities like mobile grocery stores.

“Crisis Management Strategy for Community Mobilization and Awareness” has been drafted by MCG to disseminate information on preventive measures, encourage communities to develop a sense of responsibility, and generate alternative provisions of essential services (Municipal Corporation Gurugram, n.d.). MCG collaborated with the District Red Cross

Society to facilitate the delivery of oxygen cylinders at the doorsteps of COVID patients in home isolation. NGOs and volunteer groups aided them throughout the process (Dayal, 2021). Provision of facilities at homes reduced the burden on hospitals.

There is, however, not a complete devolution of health function to the Municipal Corporation of Gurugram, since it is still dependent on the State government for funds, functions, and functionaries. It is because of this, that the functioning of the municipal body in controlling the spread of the virus has not been much effective. Hence, for a proactive addressal of the health emergency, there is a requirement of devolving more power to the MCG including the function of public health. As a local administrative body, it is more ingrained in the city and is hence likely to be more receptive to the public's urgent requirements. Being closely connected to the public, it is better able to deliver context-specific solutions. Hence, an empowered urban local government has significantly impacted COVID-19 prevention outcomes. Moreover, a lack of requisite manpower hindered the functioning of the Municipal Corporation of Gurugram.

2.3.3 Gurugram Metropolitan Development Authority

The Gurugram Metropolitan Development Authority (GMDA), the main urban planning body in the city, attempted to bring the information and services related to COVID-19 in the public domain, aimed at increasing the perception of trust among the residents for the authorities and their efforts to contain the spread of the virus so that there is more compliance of COVID protocols by the residents.

It developed a web portal and a mobile phone application called HrHeal, which provided access to information or services related to the COVID-19 pandemic, such as providing data about the district's health infrastructure, helping ASHA workers with contact tracing, and facilitated telemedicine consultations to patients. Using maps prepared by GIS, a team from GMDA monitored the disbursal of relief supplies to ensure that they arrived in a timely manner (Government of Haryana, n.d.). It also prepared heat maps based on up-to-date data on COVID-19 cases in the city, to aid the district administration in quicker intervention and monitoring the COVID positive patients. The body however experienced a shortage of staff having technical knowledge hence this initiative proved to be inviable over a longer duration.

2.3.4 Civil Society

The health impacts of COVID-19 and associated lockdowns have led to the emergence of initiatives by citizens and organisations in form of “pandemic solidarity” and mutual aid (sitrin 2020). As a result of such civic engagement, new governance capacities have been developed that operate both in conjunction with and independently of the government. In fact, they have managed urban issues that the government would have had a hard time handling effectively (senett 2020). These initiatives span local networks of provisioning of support to those who are vulnerable to pandemic and associated conditions through crowdsourcing, and arranging and delivering food, creating hardship funds, etc.

The COVID-induced lockdown had created distress, especially among the urban poor. In Gurugram, the issue of distress among the urban poor was taken up by Civil Society Organisations to ensure the delivery of support and end-to-end solutions (Naik, 2020).

NGOs such as “Gurugram Nagrik Ekta Manch”, “I Am Gurgaon”, “Janata Rasoi” (a community kitchen operated in DLF-III), and “Rasoi on the Wheels” took the initiative to ensure the last-mile-availability of essential commodities like groceries, fruits, and vegetables among those who have experienced extreme distress as a result of the COVID-19 pandemic and organised medical equipment, oxygen cylinders, medicines and attempted to improve the healthcare infrastructure. Self-help groups in Gurugram were supported by RKMFF Foundation (Hero), to encourage them to make masks and earn a livelihood from them (Haryana Institute of Public Administration, n.d.).

Gurugram has a huge population of workers who have migrated from other states, and the city authorities failed to enumerate them to give them with relief. Here, involvement of civil society organisations proved to be extremely advantageous. The district administration's priority was on disease containment, therefore civil society organisations had taken up the issues relating to migrant workers' hardship. Some civil society organisations collaborated with the state in distribution of logistics during lockdown, while others operated independently of the state.

Despite their own lack of resources, civil society organisations played an active role in providing distress relief. They have played a “systematic state-led response” to respond to the crisis situation. They took up the initiative of distributing food grains from public stock to those who were in need (Naik, 2020). The functioning of civil society groups was not without challenges, with the major challenge being the lack of resources as a result of the disruption of their financing sources brought on by the pandemic.

2.3.5 RWAs

The significance of neighbourhood-level governance came to be highlighted in the wake of the COVID-19 pandemic, as the city administration had to decide on the neighbourhood-level lockdowns and contact tracing. In order to enable a quick response from the healthcare organisations and to assure local community involvement, there is a requirement for decentralisation and transfer of authority and responsibilities to the neighbourhoods. Additionally, it is essential for enhancing accountability, enhancing health literacy, and developing policies that take into consideration local needs (Kickbusch & Gleicher, 2012). According to Bai et al., (2020), any voids in the top-down leadership are filled by the participation of local communities.

Residential Welfare Associations (RWAs) are representatives of neighbourhood-level governance. RWAs are set up as voluntary organisations, registered under the Societies Registration Act, 1860. RWAs emerged as active players who kept themselves up-to-date with the new developments, and dealt with the contradictory government directives by protecting the interests of the residential community.

RWAs, which served as an extended arm of the administrative authorities, carried out the state's duties. RWAs performed its function by identifying and notifying the administration of the community member who had returned from the affected nations.

In addition to serving as conduits for information from the administration to their communities, they also provided the administration with information on the needs of the locals, including the provision of essential services, requirement of testing facilities, and sanitization facilities. The Aarogyasetu App was used for monitoring and management by some RWAs.

For the management of asymptomatic and extremely mild COVID-19 cases, small COVID-19 care facilities were established by RWAs of gated residential societies using their own resources, easing the pressure on existing facilities. A surveillance unit from the Integrated Disease Surveillance Programme provided them with assistance (IDSP). Additionally, they organised testing and vaccination camps throughout the area in collaboration with private hospitals.

To safeguard the interests of the residents, RWAs negotiated with the government. For instance, RWAs of certain residential localities designated as containment zones, engaged with the police to allow certain outdoor activities in the locality. Later, with the shift in the attention

of the administration to rebuilding the livelihood of workers employed in the informal sector. Hence, RWAs refused to grant entry to domestic helpers, so as to alleviate the fear of possible infection among the residents (Naik, 2020).

The MCG has given RWAs some authority to contain the spread of the disease across the city since they are better equipped to manage the local issues. In addition to managing the waste collection from patients' households and better coordinating with medical staff and volunteers for check-ups of COVID-positive patients, RWAs have made it possible for residents' localised problems to be resolved more quickly.

RWA worked in coordination with MCG to ensure the timely disposal of medical waste. MCG and the district administration have helped RWAs set up isolation centres in their respective localities. Such facilities were essential during the times when the city lacked enough hospital beds to handle the COVID cases in the respective localities and reduced the burden on the already over-burdened health infrastructure of the city (“MCG Engages RWAs in Fight against Covid,” 2020).

Since RWAs are at the lowest level of the governmental structure and are deeply ingrained in the community, they are better suited to deal with local issues and respond to and recover during times of crisis because they can create efficient emergency plans. RWAs are not granted any statutory authority, but there have been instances where they have acted in an autocratic manner, overstepped their authority, and imposed unnecessary restrictions during the COVID-19 pandemic under the pretext of protecting residents' safety, such as banning helpers of the locality from using the lift. Recognising the measures that will genuinely stop the virus from spreading and those which are only based on their tendency to act as an autocratic form of a local authority would have enabled RWAs to perform better.

Thus, the state and the non-state actors have tried to perform in their capacities to bring the severity of the situation under control, while their efforts were not devoid of numerous challenges. Apart from managing the spike in the daily COVID cases and deaths, curbing the rumours surrounding the vaccine, and addressing hunger was a major challenge for the administration. Although initiatives were taken, these initiatives could have yielded a better outcome if there had been a greater level of cooperation between the different actors, and better devolutions of funds, functions, and functionaries.

2.3.6 Communication Strategy

The city saw an innovative way of dissemination of all useful information through Gurugram Community Radio Station "Gurgaon Ki Awaz," which had grown into a significant community voice and played a major role in disseminating information about the strategies and plans the city administration had developed to stop the spread of COVID-19 (Sharma, 2020). The information pertaining to the initiatives of the municipal government during the COVID-19-induced lockdown and the containment zones identified in the city were made available to the citizens through the radio-station. It also functioned by notifying masses of the timing, schedule, and location of food delivery vans advised them about mobility restrictions and the quarantine status in different parts of the city and offered counselling sessions for addressing the anxiety of the urban poor due to job loss and associated fear. During this period, the station served as a hyperlocal communication system to manage local issues.

Thus, at times when the conventional forms of media struggled to reach the masses, community radio emerged as the best option. They served as the link between the government and communities of all types i.e., urban and rural, literate and illiterate. Their local flavour enabled them to have greater community outreach, thus serving as an important tool for disaster response. During COVID-19 community radio of Gurugram proved to be effective in dealing with the distress of migrant workers in the city, and disseminated all the essential information to the general public.

2.4 Conclusion

The lessons from the pandemic have taught us that an integrated urban governance strategy enables the formulation of emergency plans that are long-term, avoids conflicts between different sectors, and enhancement of the benefits resulting from the involvement of multiple stakeholders, especially when the health infrastructure of the city crumpled, with a surge in daily cases, and the urban poor reeled under the adverse socio-economic impacts of the pandemic induced lockdown.

The pandemic has brought to the front the necessity of strengthening the public health infrastructure, as private health facilities come at a higher cost, and access to healthcare is inequitable and this has been exacerbated during health emergencies such as the COVID-19 pandemic. This called for responses from various state and non-state actors in order to contain

the spread of the virus, and mitigate the negative socio-economic consequences of the measures of containment.

The Municipal Corporation of Gurugram responded by identifying the containment zones and bringing multiple stakeholders on a single platform to curb the spread of the virus and mitigate its adverse impact. Along with the city government, civil society organizations in Gurugram have played a significant role by ensuring the last-mile delivery of essential commodities. They responded by relieving the pressure on medical infrastructure by making the availability of medical equipment, oxygen cylinders, beds, and medicines. At the residential level, RWAs of residential localities took cognizance of the local problems and addressed these by providing local solutions. Authority had been devolved to them by the municipal government to ensure that COVID-19 protocols are followed in their respective locality and they acted as conduits of communication between the residents and the city authorities. However, these fragmented capacities need to be coordinated and more effectively integrated in a multi-level governance framework.

Thus, the pandemic has put forth the altered way of city governance, where along with the state actors, non-state actors are empowered to participate and bring in grassroots-specific solutions for providing an effective face-off to any crisis situation. Effective response in the face of crisis, calls for effective devolution of the funds and function including the function of public health to local governments, which have an autonomous responsibility in order to respond effectively to a situation of this kind, there is a need for better coordination between the various levels of government as well as among the various agencies operating in the city, including the state governments, municipal authorities, health administrators, and community groups. The social realities and everyday dynamics, which involve discussions, pushbacks, and adherence to norms and procedures, complicate the city's governance structure, which affects the function of institutions and creates a dynamic relationship between the state and its residents. Thus, throughout the pandemic, avoidance, negotiations, and collaboration became typical political strategies. These localised yet complex responses influenced the ability of the city of Gurugram to deal with the crisis.

Chapter 3

Resilience of Residential Communities To COVID-19 Pandemic

The cities and their communities must be resilient in order to minimize the risk associated with the pandemic and improve citizens' safety and well-being. Public health experts have recognized the importance of maintaining and enhancing community resilience in the face of the COVID-19 pandemic. Recent studies have shown that building community resilience is a practical strategy to deal with and negotiate the effects of COVID-19 policies (Fransen et al., 2022; South et al., 2020). Community-level actions are crucial for reducing virus transmission and the associated losses since communities serve as the fundamental unit of pandemic prevention and control. However, there are substantial variations in the pandemic preventive strategies used by various communities. Local community resilience can be viewed from both a physical and social viewpoint. The community's socioeconomic position is reflected in the physical resources, which also include the infrastructure and services now in place.

A multidimensional concept, community resilience includes social, economic, and institutional components (Cutter et al., 2008; Norris et al., 2008; Qin et al., 2017; Sherrieb et al., 2010). Community resilience is the aggregation of capacities of individuals belonging to a focussed human group that that enhances the ability of a group as a whole to withstand unexpected shocks. Hence, in order to absorb shock, the collective notion considers individual members of a community rather than the community as a whole.

Abdalla et al. (2021) have indicated that emergence of community resilience at the local level is associated with positive emotions like empathy and solidarity, a positive attitude like social responsibility, and positive behaviours like collaboration and mutual aid. According to Abdalla et al. (2021), the creation of community resilience occurs when local communities experience positive emotions like empathy and solidarity, a positive attitude like social responsibility, and positive behaviours like collaboration and mutual aid. The ability of people to deal with uncertainty and volatility is what makes human settlements resilient. When there is an emergency, human capabilities function in three levels (Wang et al., 2022). These are preparedness and prevention/ mitigation; response; and recovery and reconstruction.

There may be variations in the disaster resilience capacity of two different residential communities located in the same area, this difference is attributed to the socio-economic profile of the residents, and hence the adoption of disaster risk reduction practices by them.

Variations in disaster resilience may also be due to certain types of vulnerabilities which are specific to communities. The relationship between vulnerability and resilience incorporates many complexities, hence is not simply understood. Resilience is expected to be higher when the level of vulnerability is lower (Bergstrand et al., 2015). However, no generalisation can be drawn of the relationship between vulnerability and resilience, as the two may overlap, and a vulnerable community can be resilient in the face of an emergency. However, in case of the COVID-19 pandemic, vulnerability related to age, health, poor social capital, job profile (whether engaged in the formal or informal sector), single source of livelihood, adversely impact the recovery process of the communities, since these vulnerabilities worsen the situation induced by the pandemic. hence, the ability of these communities to bounce back to normal (though altered) conditions is compromised, thereby reducing their resilience.

In the present study, community resilience of gated and non-gated communities is assessed quantitatively by constructing community resilience index (CRI), which is a composite index.

3.1 Measuring Community Resilience across Gated and Non-Gated Communities

Community Resilience Index (CRI) used in the study has been derived from the work of Qin et al. (2017), and is based upon four dimensions of resilience including social resilience, economic resilience, health and infrastructure resilience, and institutional resilience. Under each dimension, there are various variables to assess community resilience (Method of construction of index discussed in chapter 1).

It is a quantifiable index, which measures overall pre-existing community resilience. It is useful in identifying appropriate strategies in different spheres- social, economic, infrastructural, and institutional, for building and enhancing community resilience. Based on this model disaster resilience of two or more communities can be compared.

Usefulness of this index for measuring community resilience during the COVID-19 pandemic can be assessed by the fact that the index is applicable across different types of hazards, having varying intensities, and duration. Since pandemic is a disaster spanning over a larger duration i.e., years, and the applicability of the index for measuring resilience to any disaster spanning

over any duration of time provides an advantage over other techniques. The index is applicable for communities of varying types and sizes. Moreover, it can be easily comprehended.

The input variables under the four dimensions, used for the construction of the composite index are discussed the following sections.

3.1.1 Social Dimension of Resilience

Social resilience reflects the capacity of a community to participate in hazard reduction activities, and develop and implement disaster mitigation plans (Berkes & Ross, 2013; Cutter et al., 2008). The process of community recovery is aided by social resilience, which also strengthens social networks both inside and outside the community.

Pandemic has put at risk the foundation of social resilience i.e., social relationships, social bonds, and social networks. Social resilience is assessed through the variables like percentage of the elderly population, percentage of the comorbid population, percentage of head of households whose education level is post-graduation and above, percentage of households that received any kind of assistance from any social network during the lockdown phase, and young residential community in terms of duration of residence (percentage of residents who have resided for less than 3 years), percentage of households which have paid the domestic staff during the complete lockdown.

Age and comorbid conditions are some of the major indicators of severity of disease and progression. **Ageing** itself poses a significant risk for developing a serious illness and death from COVID-19. (Wu et al., 2020). Due to a compromised immune response to the viral infection, older adults are more vulnerable to COVID-19 infection (Y. Chen et al., 2021). There is a higher percentage of the elderly population in gated communities (13.3 percent), as compared to non-gated communities (10.37 percent). Moreover, there are some of the households in the gated communities where elderly people live by themselves. Gated communities are preferable options for the old age population who live by themselves, because of the safety and security aspect, easily available housekeeping services, healthcare facilities like emergency facilities, in-house doctors, and disabled-friendly infrastructure.

The elderly population is more vulnerable to COVID-19 infection. The COVID-19 pandemic has caused widespread fear and stress, which extensively challenges the resilience of older adults, by increasing the health risk for older adults by increasing the psychological burden. Resilience impacts the recovery of physical, cognitive, and mental health during COVID-19,

resilience is worse among older adults, with chronic conditions, this makes them more vulnerable. However, recovery of an individual is dependent not only on one's own resilience, but also requires a strong resilience of the whole community.

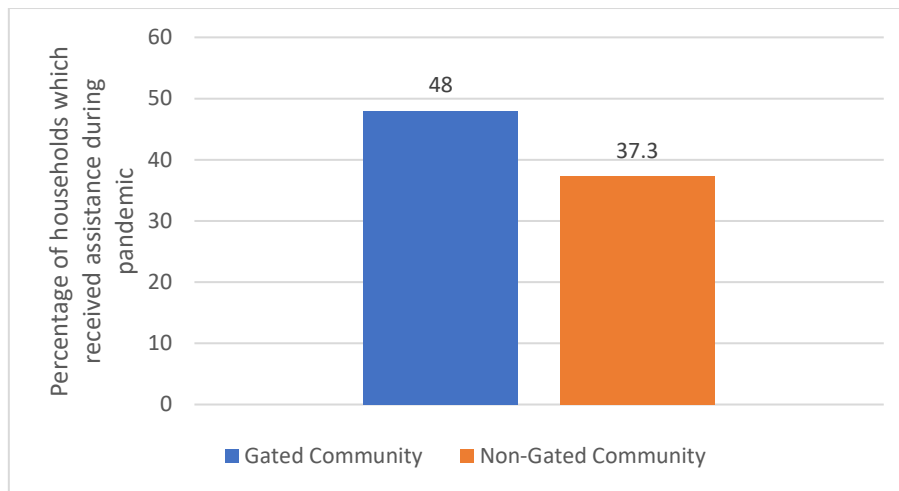
High percentages of unhealthy people are seen as indicators of low resilience in environmental disasters (Cutter et al., 2010). This also seems to hold for pandemic crises, in which more people will fall seriously ill if their overall health status is bad. **Comorbidity** including chronic illness like hypertension, diabetes, obesity, chronic obstructive pulmonary disease, asthma, cardiovascular diseases, renal diseases provide a major risk factor to COVID-19 infection, as it becomes detrimental when a person with comorbidity gets infected by COVID-19 (Ejaz et al., 2020). 41.1 percent of the sample population from gated communities have comorbid conditions in the form of chronic illness, whereas, in non-gated communities, it is 37.78 percent. A comorbid population increases the vulnerability of a community. The higher proportion of healthy people in a community who can support others, contribute to a higher social resilience.

The **level of education** plays a role in coping with a disaster in a long term. Better educated are better able to mitigate the adverse consequences and find new opportunities in the aftermath of a disaster (Frankenberg et al., 2013). In gated communities, the education level of 66.67 percent of the head of households is post-graduation and above, whereas, in non-gated communities, 50 percent of the head of households have an education level of post-graduation and above. The greater resilience of better educated may be due to better access to financial resources, and greater availability of social resources after a disaster. A higher level of education allows better choices in times of adversity.

A resilient community is socially connected and is able to mobilize internal resources, to foster community recovery. A strong social capital allows for greater **mutual support** during emergency situations unfolded by external shocks, strengthening the resilience of communities. Social support is a critical dimension of community resiliency (Norris et al., 2011). A community having good internal and external contacts will be able to get outside support promptly and reduce the possible losses in all aspects. This assistance may be generated from within the community, among community members, or outside the community, from any external agency. Internal mobilization of resources, ushered by Residential Welfare Associations, provides a source of assistance to members and even to the supporting staff of the community during emergency situations. External support is in the form of support from

any governmental or non-governmental agency. Gated communities have greater social connectedness within the community, whereas their social interaction with the outside communities is the least.

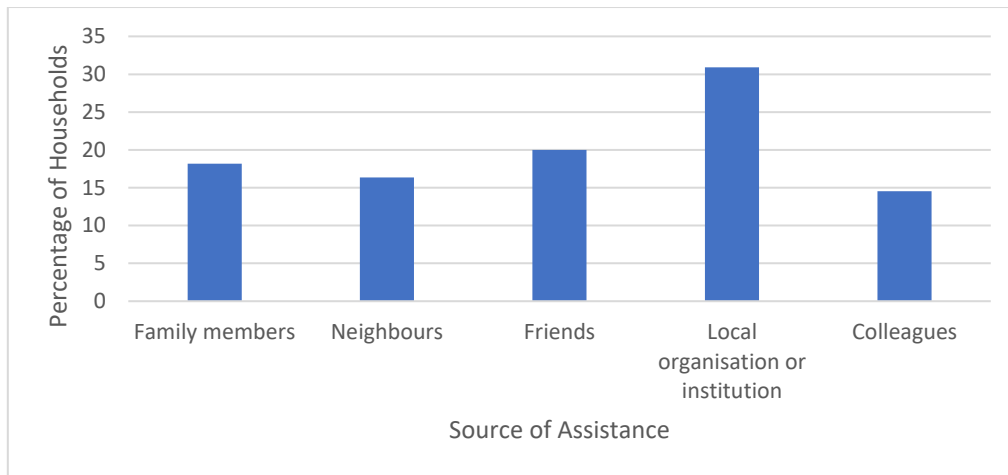
Figure 3.1
Assistance received during pandemic



Source: Based on primary survey

A higher percentage of respondents from gated communities have received assistance during the pandemic and associated lockdown, as compared to respondents from non-gated communities. This assistance is mainly through the internal mobilization of resources of the community, administered by the RWA, through which community members themselves arranged resources for the community's use. While the respondents were also asked whether they were aware of the other members of their community who have received assistance, and this accounted for 65.8 percent in the gated communities. The source of assistance, however, varied across gated and non-gated communities.

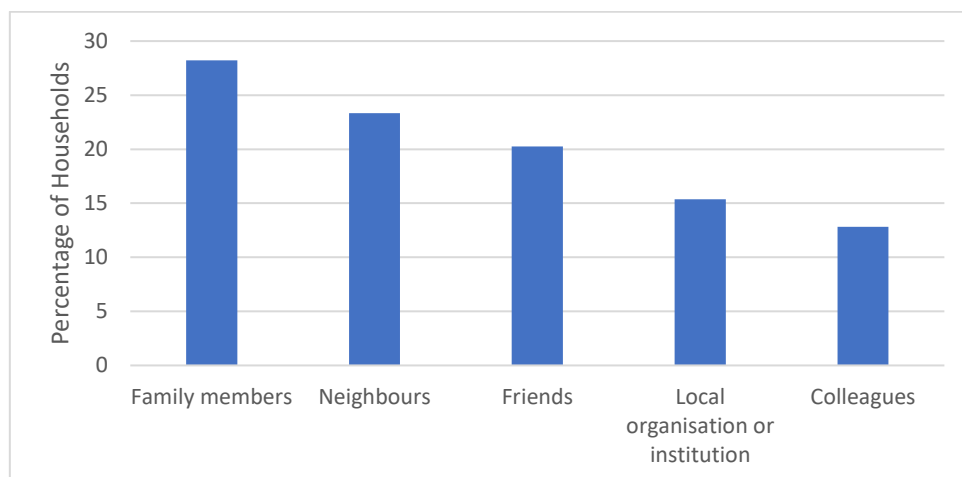
Figure 3.2
Source of support in face of emergency- Gated Communities



Source: Based on primary survey

As is evident from the graph, the major source of relief for the members of gated communities had been local organisation i.e., the Residential Welfare Association (RWA). It is followed by assistance from colleagues, friends, family members, and neighbours. Since gated communities have a proactive RWA which played a major role in providing support to the residents through internal mobilization of resources. Hence, the support from other sources had been less because residents sought assistance from the local organisation which is formed by the representatives elected by the residents.

Figure 3.3
Source of support in face of emergency- Non-Gated Communities



Source: Based on primary survey

About 37.3 percent of the respondents from the non-gated communities have received assistance. This is in the form of aid received from either governmental or non-governmental

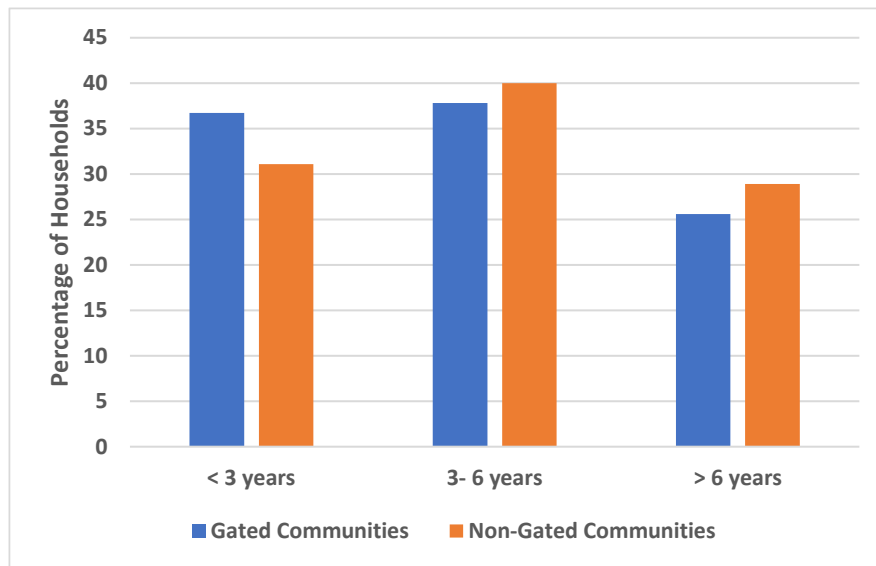
agencies, or from the kith and kin. In these communities, there is no provision for mobilization of resources at the level of residential association, since the function of the body in these communities is limited to the general maintenance of the society, and their role during the pandemic was limited. Hence, any assistance received or taken, took place at the level of individual households.

The major source of relief for members of non-gated communities had been family members, followed by neighbours, friends, local organisation or institutions, and colleagues.

Thus, a higher percentage of residents from gated communities have received assistance, and this assistance is mainly from the RWAs, since the RWAs of these localities took the initiative of providing groceries and other essential items to the households with all members infected. RWAs of gated communities also ensured that there is the provision of oxygen cylinders, and other emergency equipment for the community members by mobilizing community resources. Hence the leadership of RWA members of the gated communities ensured a support system for the community members. Whereas the main source of support for members of the non-gated communities were family and friends, a number of them also received support from NGOs like Hemkunt, for oxygen cylinders. Hence, the ability to receive assistance from social networks, during a crisis situation enhances the resilience of the communities.

Duration of residence in the community has an impact on the resilience of the community. Young communities (whose members have a shorter duration of stay or duration of being members of the community) have a lower duration of interpersonal interaction, and hence, due to a shorter period of interaction, have lower levels of mutual trust, cohesion, and cooperation (Guest et al., 2006). The leadership, hence the mobilization capacity of the community is often low, hence these have weak social capital and poor collective action capacities (Shi et al., 2022). Thus, their ability to respond to a disaster is often poor. Hence, younger communities i.e., communities with a higher percentage of members who have lived for a shorter duration in the community, tend to have lower resilience, as compared to members who have had a longer duration of stay in the community.

Figure 3.4
Duration of Residence in the Community



Source: Based on primary survey

Gated communities have a comparatively higher proportion of respondents who have resided for a shorter duration i.e., less than 3 years, whereas a higher proportion of respondents in non-gated communities have stayed for a longer duration i.e., 3 to 6 years and more than 6 years. A shorter duration of residence implies a shorter duration of social capital formation requisite for building a resilient community. New residents have relatively lesser interactions with the community members, hence being a new member of the community, have a feeble sense of belonging to the community.

Thus, the aspect of shorter duration of residence of members in the gated communities has a negative influence on the resilience of these communities. Considering the aspect of the duration of residence alone, then gated communities tend to have lower resilience than non-gated communities. However, in the later part of the study, it is seen that the community infrastructure and activities in the gated communities enhance social interaction among the members, hence they develop greater cohesion. Hence, it is seen that the aspect of the duration of stay has a negative influence on the resilience of gated communities, whereas, other aspects, like community infrastructure and activities, exert a positive influence on the resilience of communities. It is the interplay of these aspects, and finally, the aspect that comes out to dominate determines the overall resilience of the communities.

The communities that are themselves resilient are able to support the vulnerable communities during the exposure to external shocks, for e.g., **paying the domestic staff during complete**

lockdown, is one way. Domestic staff were denied entry by the residential communities from the middle of March, and complete lockdown orders had stopped them working altogether.

However, since, these people needed wages for running their households, many residents continued to pay them full wages, and some had paid them an advance of a few months. In gated communities, 65.5 percent of the respondents paid their domestic staff, whereas in non-gated communities 51.1 percent had paid their domestic staff. Thus, supporting the vulnerable communities, by itself does not directly impact the resilience of the supporting community, but indicates to the fact that the community which is supporting has enough resources for its own recovery in financial terms, and can even help the vulnerable sections to recover.

3.1.2 Economic Dimension of Resilience

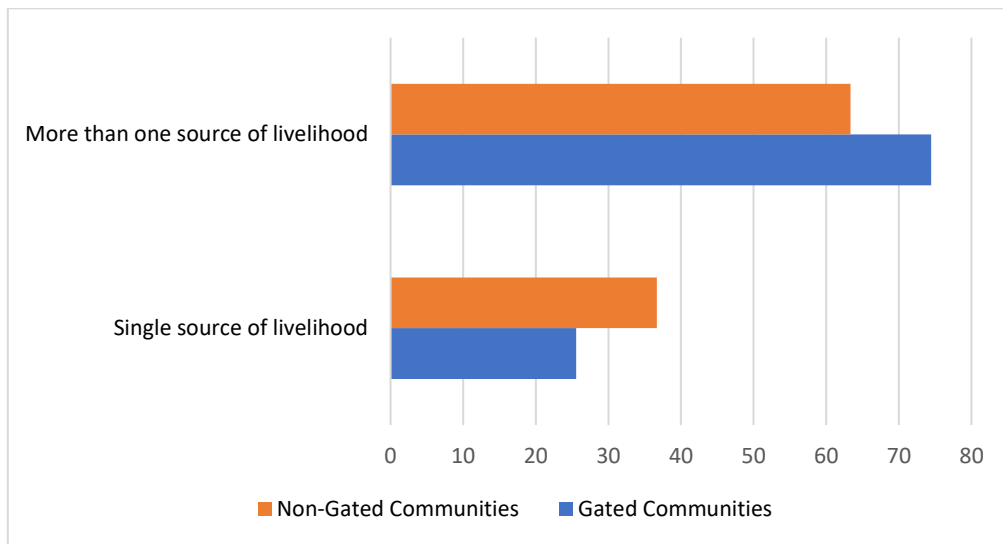
Economic resilience is an important aspect of resilience during the COVID scenario (Ompad et al., 2018). Members of communities have experienced an impact on their livelihood brought about by pandemic and associated lockdown measures. Economic resilience is measured through variables like the percentage of households with more than one source of livelihood, the percentage of households with the head of household engaged in informal sector, percentage of households with all members registered under health insurance scheme, percentage of households whose earning members have lost job & had to adopt new means of earning, percentage of households whose earning members have experienced a reduction in income, percentage of households whose earning members have not experienced any significant impact on job, percentage of households whose earning members have profited during lockdown.

Economic diversification in the face of pandemic helps avoid devastating effects due to economic reliance on a single economic source. It is measured through the indicator of the **percentage of households with more than one source of livelihood**. Economic resilience is enhanced by stable and diverse livelihood sources and availability of resources, whereas dependence on a single source decreases resilience (Norris et al., 2008).

In the recovery phase, livelihood diversity can offer a range of financial resources and service support. Along with supporting urban recovery and construction, it ensures a financial guarantee to reduce the harm from the pandemic and addresses the issues related to employment, particularly during an emergency. In order to be resilient, communities with a poor economic base must depend on multiple sources of the economy (X. Chen & Quan, 2021). Livelihood diversification is an essential strategy of risk management and a source of resilience

for households. Diversity in the livelihood of household members ensures that disruption of one source of livelihood does not dismantle the economic condition of the household. It provides greater resilience from economic crises by addressing different aspects of the economic activities of different sectors.

Figure 3.5
Sources of Livelihood



Source: Based on primary survey

It is evident from the graph that the gated communities have a higher proportion of households with more than one source of livelihood than non-gated communities indicating multiple sources of household income. The economic diversification at the level of households ensures household-level resilience, by ensuring that all means of livelihood are not disrupted at once and that there are alternate sources of livelihood to run the household and meet emergent needs. Greater livelihood diversification in gated communities is associated with small average household size and higher median income. This is linked to higher per capita expenditure by the household members in the gated communities, which signifies the higher well-being of the household members. The household-level resilience contributes to the resilience of the community since community resilience is a collective concept that takes into account individual members of the community.

The **percentage of workers engaged in the informal sector** determines the precarity of the working conditions. There are diverse economic impacts of COVID-19, depending on the socioeconomic status of individuals in a community. The Impacts of COVID-19 could be felt by workers engaged in both formal and informal sectors; however, the intensity and the nature of impact are different for different sectors. Variable impacts include job loss, reduction in

income, extra working hours, or over-burdening of work. The decline in income is influenced by consumption patterns.

All sectors of the economy were severely impacted by the preventative measures adopted to prevent the spread of disease, such as restricted going out by people, and closure of non-essential shops by the government, which resulted in reduced income on both supply and demand side of the economy. Loss of income as a result of the closure of businesses, particularly in informal sector, which do not have paid leaves.

Table 3.1
Employment in formal or informal sector and impact on job

	Employment in formal or informal sector	Impact on Job				
		Job loss, had to adopt new means of earning	Reduction in income	No impact	Profited	Total
Gated Community	Formal sector	2	31	41	5	79
		2.5%	39.2%	51.9%	6.3%	100%
	Informal sector	3	4	2	2	11
		27.3%	36.4%	18.2%	18.2%	100%
	Total	5	35	43	7	90
		5.5%	38.9%	47.8%	7.8%	100%
Non-Gated Community	Formal sector	4	27	27	2	60
		6.7%	45%	45%	3.3%	100%
	Informal sector	8	13	8	1	30
		26.7%	43.3%	26.7%	3.3%	100%
	Total	12	40	35	3	90
		13.3%	44.4%	38.9%	3.3%	100%

Source: Based on primary survey

The concentration of residents who are employed in informal sector jobs associated with uncertain contractual working conditions in inexpensive residential localities leads to socio-spatial segregation. Compared to higher-end residential areas like gated communities, these inexpensive neighbourhoods have a higher number of residents working in low-skilled service

jobs (Mangi et al., 2021). This is in consonance with the findings of the present study where a higher percentage of respondents who are engaged in the informal sector are residents of the non-gated residential communities. Whereas, gated neighbourhoods are resided by those who are mainly engaged in formal sector, since gated neighbourhoods being highly expensive can be afforded by only economically prosperous sections who have a regular source of income.

Of the sampled households from gated communities, 12.2 percent of the head of households are engaged in informal sector. The COVID-19 pandemic has impacted the job market in diverse ways. Of the total respondents from gated communities, 38.9 percent have experienced a reduction in income, 5.5 percent have suffered a job loss and had to adopt new means of earning, 47.8 percent have not been impacted, whereas, 7.8 percent have earned a higher income during the pandemic phase.

Of the sampled households from non-gated communities, 33.33 percent of the head of households are engaged in informal sector. Of the total respondents, 44.4 percent have experienced a reduction in income, 13.3 percent have suffered a job loss and had to adopt new means of earning, 38.9 percent have not been impacted, whereas, 3.3 percent have earned a higher income during the pandemic phase.

Hence, the economic impact of the pandemic-induced lockdown has been less severe among the members of gated residential communities, who have experienced the economic impact of the pandemic, mainly in the form of a reduction in income. Moreover, the nature of work, which allowed work from home, ensured the continuity of work even during the lockdown, hence exerting no major impact on jobs. This is linked to a higher percentage of residents here employed in formal sector which is associated with fixed working conditions and regular salary.

Apart from the adverse impacts of COVID-19 on the job market, there are some positives associated with it as people found new entrepreneurial opportunities, supported by information technology. According to some respondents, they have benefitted by running the business from home, especially those that do not need commercial space. This is due to lower operating costs, and greater flexibility in the operations, such as home-based enterprises have flexibility to run full-time. The pandemic has caused severe economic damage, and the informal sector has faced the brunt of the problem, with the lockdown-induced reduction in wages of workers due to slump in the business performance, and closure of businesses, which rendered many workers

jobless. Precarious contracts and lack of social protection have left many of them without any alternative.

Percentage of households with all members registered under health insurance scheme-

The pandemic has brought into realization the significance of protective investments especially when it comes to health and life security. Health insurance is essential for accessing quality healthcare and investing in healthcare finances. During times of pandemic, it has come to the realization that a health insurance policy is essential for the provision of monetary support and ensures quality treatment during medical emergencies. The pandemic has caused the loss of many lives due to the non-receipt of timely treatment and medical attention, partly due to the unaffordability of expensive treatment. Hence, possession of a health insurance scheme avoids such a situation.

Resilience due to health insurance is influenced by purchasing power of people, internal funding, social justice, and deprivation (Kharazmi et al., 2021). Benefits of having health insurance typically result from less financial stress. It lessens the possibility of running out of money to pay bills and purchase essentials like medicine (Mirowsky & Ross, 1999). The lack of comprehensive coverage of health insurance has been brought to the forefront by the pandemic, highlighting the unmet healthcare needs of certain sections of society. Thus, insurance coverage, quality of care, public health measures, and community resources are important in addressing disparities in care and in health (Lurie & Dubowitz, 2007). An important indicator that gives a fair idea of the financial impact of the pandemic on individuals is the number of people enrolling in basic health insurance. Their relative resilience increases with the increase in number of enrollees (X. Chen & Quan, 2021).

Table 3.2
Registered under any government or private health scheme

Gated Communities				
Registered under any health insurance scheme	Type of health scheme		NA	TOTAL
	Government	Private		
YES	25	55	0	80
Percentage of registered under health insurance	31.25%	68.75%	0%	100%
NO	0	0	10	10
Percentage of registered under health insurance	0%	0%	100%	100%
TOTAL	25	55	10	90
Percentage of total	27.78%	61.11%	11.11%	100%
Non-Gated Communities				
Registered under any health insurance scheme	Type of health scheme		NA	TOTAL
	Government	Private		
YES	34	24	0	58
Percentage of registered under health insurance	58.6%	41.4%	0%	100%
NO	0	0	32	32
Percentage of registered under health insurance	0%	0%	100%	100%
TOTAL	34	24	32	90
Percentage of total	37.8%	26.7%	35.6%	100%

Source: Based on primary survey

Hence, a higher percentage of respondents from gated communities (88.9 percent) possess health insurance schemes, as compared to respondents from non-gated neighbourhoods (64.4 percent). Moreover, most of them possess private health insurance coverage. Whereas, most of the respondents from non-gated communities possessed government health insurance schemes.

The existing challenges in healthcare costs increase during the pandemic due to loss of job and income, and hence loss of health insurance coverage due to the inability to pay premiums, as is found in the study where some of the respondents both from gated and non-gated communities had to give up their health insurance coverage due to a reduction in income or job loss, although the proportion of such respondents varied across both the neighbourhoods. This can be attributed to the impacts of the pandemic-induced lockdown on jobs.

The out-of-pocket expenses determine the decision to seek care on having the symptoms of COVID-19. Failure to receive timely testing and treatment because of cost prolongs the pandemic, increases mortality, and exacerbates economic impacts, thereby reducing the resilience of the community. In such situations health insurance scheme

The type of ownership of health insurance i.e., whether government or private health insurance, is an indicator of purchasing power since private health insurances have a higher premium than government health insurance. The higher percentage of respondents from gated communities having private health schemes as compared to the respondents from non-gated communities is a clear indication difference in the purchasing power of the residents from the two communities.

3.1.3 Health and Infrastructure Dimension of resilience

Community health resilience is the ability of the health system of the community to absorb and adapt in order to deal with changes due to external shocks. It also refers to the community or the system's preparedness for major health shocks to reduce the vulnerability. Shocks to the health systems caused by COVID-19 and other health crises are unexpected and sudden. For developing resilience, the presence of shock is not a prerequisite, and a resilient health system may be prepared for the occurrence of a shock, which may or may not happen.

Health resilience is measured through indicators like the availability of oxygen cylinders/concentrators in the residential locality, provision of emergency vehicles during emergencies, number of vaccinations drives in the locality in a year, the average distance to the nearest hospital, frequency of sanitation drives in the locality in a month.

During the pandemic, the availability of proper community medical facilities within the locality facilitates the preparedness, prevention, mitigation, recovery, and responses to the pandemic for the betterment of the community members, which would ultimately enhance the resilience of a community. Community medical facilities have been at the core of enhancing

community resilience in public health emergency during the pandemic. They are the drivers of community's defence system, facilitating community members to self-organise and self-govern, and play a crucial part in fostering community resilience (Wang et al., 2022).

Community medical facilities support the ability to enhance resilience at the urban level through the flexibility of policies; at the level of community, through networks; and at individual level through infrastructure and functioning facilities (Wang et al., 2022).

During pandemic, community medical facilities are an alternative and important medical resource outside the hospital system. It includes hard facilities like health centres and important medical equipment and soft facilities like medical care by medical practitioners. Community medical facilities are the primary defence providers, needed for prevention and rescue during any health emergency.

It has been highlighted by research that the health standards of the community can be improved, diseases can be prevented, and medical care can be better addressed by the community medical facilities and medical staff (Agarwal et al., 2015), which also promote residents' sense of participation (González et al., 2020). Community medical facilities also protect the interests of vulnerable groups like the old age people of the community who live by themselves.

The interviews with the members of the Residential Welfare Associations and residents of the two types of residential communities have revealed the very fact that the gated communities are better equipped with the medical facilities for the community, which made them better prepared during the first and the second waves. The community members had collectively arranged for oxygen cylinders and concentrators, beds for quarantine, emergency vehicles, instruments for measuring the SPO₂ level, for the community members. Doctors residing in the community had come forward to provide consultation using digital platforms. They had also arranged a makeshift COVID care facility in the community centre, clubhouse, within the premise of the residential complex. Moreover, RWAs of gated communities collaborated with private hospitals to arrange for vaccination drives for the residents and the supporting staff of the community. Hence, the presence of community medical facilities in the gated communities, ensured alternate medical support to the members of the community when the hospitals across the city were flocked with COVID-positive patients, hence this had a positive contribution to resilience of the community, in face of health emergency. RWA of gated communities even collaborated with the private hospitals like Fortis and Max, for organising vaccination drives in the locality. These sites of private vaccination provided relief to residents from the long

queues at public vaccination sites, which the respondents opined could increase the chances of infection, due to huge public gatherings. Moreover, vaccination camps were organised in the society for residents and staff alike, and the residents financially contributed for those who couldn't afford private vaccination. According to the respondents, some of the domestic helpers were hesitant to get a job, hence, for them special camps were organised for busting myths and misconceptions relating to the vaccines.

Whereas, non-gated communities do not have such arrangements at the community level, except for the reallocation of the community spaces in the locality like the community centre for the purpose of quarantining COVID-positive patients. Hence, during the first and the second waves, the community members had to depend on the health infrastructure of the city, which was flocked with COVID patients, and many of the hospitals had shut their OPDs. Hence, apart from COVID patients, non-COVID patients also found it challenging to get timely medical treatment.

3.1.4 Institutional Dimension of Community Resilience

Institutional resilience refers to the ability of an institution (institution here refers to Residential Welfare Associations) to withstand, adapt, and restore its structures and functions during a crisis. One of the most important aspects of institutional resilience is the degree to which an institution allocates its resources to crisis preparedness. Strategies of risk management are taken into consideration while assessing the preparedness of institutions. The literature on disaster management serves as the foundation for the dimension of institutional preparedness (Paton & Johnston, 2001). This has an impact on the ability of organisations to manage the emergency. Resources that an organisation possesses such as capital and staff; as well as procedures established by it such as preparedness and risk management procedures, are referred to by the resilience of institutions. Institutions that are resilient engage with society extensively and lead to enhanced societal resilience (Gherghina et al., 2022), while leadership, preparedness of local authorities and emergency services enhance resilience (Leykin et al., 2016) even during the pandemic condition.

The institutional dimension is assessed through indicators like whether help is provided to residents by RWA, restricted access to the locality to outsiders, is the record of maids and other supporting staff in the locality kept by the security of the locality, is there a provision of circulating emergency numbers among the residents.

RWA assisted households with COVID-positive patients in gated-communities, by deploying housekeeping staff (which stayed within the residential complex). The housekeeping staff brought the essential items that the household needed, like essential medicines, groceries, and other daily use items. Even cooked food was provided to households which needed it. Special assistance was provided to the elderly like navigating wheelchair.

RWA conducted weekly webinars with residents to help neighbours interact with each other, which proved to be especially beneficial for those who had shifted in recently and had no opportunity to socialise.

Members of gated communities relied on RWA for crucial information. RWA made use of a mobile-based community management solutions which ensured minimum disruption to the community in the time of the COVID pandemic, by offering a variety of features such as communications, accounts and payments, complaint management and partnerships to ensure delivery of essential services such as groceries, newspapers and healthcare.

Restricted access to the locality determines the extent of contact with the outsiders, hence the chances of the spread of the infection. Since gated communities had increased the security at the gates, only residents and authorised people were allowed access. This facilitated implementation of pandemic prevention norms. To enable more control, traffic of people and vehicles was redirected to the main gate. Security personnel also monitored and recorded the temperature at the entrance point as well as movement through the checkpoint. This restricted entry checked the spread of infection within the community and also ingrained a sense of community.

RWA of gated communities keep a record of maids and other workers working within the compound. This is essential during the COVID-19 pandemic, as it would help in contact tracing, so that that the potential infected person can have precautions, and so as to break the chain of the infection.

Circulation of emergency numbers among the community members would enable a quicker action plan in case of emergency, as residents would know whom to contact for what service, this would lower the criticality of the situation.

Circulation of information regarding COVID cases in the neighbour is very crucial since it would make residents more alert, and would enhance compliance with COVID prevention

norms. RWAs of both gated and non-gated communities circulated information regarding the current COVID cases and recovered cases, through digital platforms.

Thus, all these measures taken by Residential Welfare Association, as an institution, aimed toward the containment of the spread of the virus, contributing positively to the resilience of communities. However, there is a variation in the extent of role played by the institution of RWA in different communities. An appropriate level of intervention of RWA in mitigating the impacts of the pandemic, has a positive contribution to resilience of communities.

Hence, based upon the above discussed input variables, the output is the Community Resilience Index, which has been illustrated in the following section, in a tabular form.

Table 3.3
Community Resilience Index (CRI)

Dimension	Variable	Relation with Community Resilience	Gated Community	Non-Gated Community	Unit	Normalization		
							Gated Community	Non-Gated Community
						g	ng	
Social	Percentage of elderly population (>60 years)	Negative	10.24	9.05	Percentage (percent)	S ₁	0.89	0.9
	Percentage of comorbid population	Negative	41.1	37.78	Percentage (percent)	S ₂	0.56	0.63
	Percentage of postgraduates and above	Positive	66.67	50	Percentage (percent)	S ₃	0.67	0.5
	Any kind of assistance received from any social network	Positive	48	52	Binary [YES=1; NO=0]	S ₄	0.48	0.52
	Percentage of residents who have resided for shorter duration in the community (less than 3 years)	Negative	36.7	31.1	Percentage (percent)	S ₅	0.63	0.68
	Percentage of households which have paid the domestic maids during complete lockdown	Positive	65.5	51.1	Percentage (percent)	S ₆	0.65	0.51
	Social Resilience Score							0.65
Economic	Percentage of households which have more than one source of livelihood	Positive	74.4	63.3	Percentage (percent)	E ₁	0.74	0.63
	Percentage of households whose head is engaged in informal sector	Negative	17.8	33.3	Percentage (percent)	E ₂	0.82	0.67
	Percentage of households which have all members registered under health insurance scheme	Positive	88.9	64.4	Percentage (percent)	E ₃	0.89	0.64
	Percentage of households whose earning members have lost job & had to adopt new means of earning	Negative	6.7	13.3	Percentage (percent)	E ₄	0.93	0.87
	Percentage of households whose earning members have experienced a reduction in income	Negative	33.3	44.4	Percentage (percent)	E ₅	0.67	0.56

	Percentage of households whose earning members have not experienced any significant impact on job	Positive	52.2	38.9	Percentage (percent)	E ₆	0.52	0.39
	Percentage of households whose earning members have profited during lockdown	Positive	7.8	3.3	Percentage (percent)	E ₇	0.08	0.03
	Economic Resilience Score						0.66	0.54
Health & Infrastructure	Is there a provision of oxygen cylinders/concentrator in locality?	Positive	1	0	Binary [YES=1; NO=0]	H ₁	1	0
	Is there provision of emergency vehicles for emergency?	Positive	1	0	Binary [YES=1; NO=0]	H ₂	1	0
	No of vaccination drive in locality in a year	Positive	5	3	Count	H ₃	1	0
	Average distance to the nearest tertiary hospital	Negative	1.7	3.4	Kilometre	H ₄	1	0
	What is the frequency of sanitation drive in locality in a month?	Positive	3	1	Count	H ₅	1	0
	Health & Infrastructure Resilience Score						1	0
Institutional	Is any help provided to families of COVID patients by RWA?	Positive	1	1	Binary [YES=1; NO=0]	I ₁	1	1
	Restricted entry	Positive	1	0	Binary [YES=1; NO=0]	I ₂	1	0
	Is the record of maids and other helpers working in society kept by RWA which could help in contact tracing?	Positive	1	0	Binary [YES=1; NO=0]	I ₃	1	0
	Is there a provision of circulation of all emergency number among the residents?	Positive	1	1	Binary [YES=1; NO=0]	I ₄	1	1
	Is the information regarding COVID positive patients circulated among the residents of locality	Positive	1	1	Binary [YES=1; NO=0]	I ₅	1	1
	Institutional Resilience Score						1	0.5
	Community Resilience Score						0.79	0.43

Source: Computed by author (Refer Appendix 3 for calculation)

Hence, the composite resilience index (CRI) of gated communities (CRI_g) has a higher value than CRI of non-gated communities (CRI_{ng}). A higher value indicates a greater degree of resilience of gated communities as compared to non-gated ones. However, gated communities have a lower score in some of the variables chosen for the social component of community resilience, for e.g., gated communities have a higher percentage of old age population and population with comorbidity, who can have severe symptoms, and form a vulnerable group. A higher proportion of vulnerable groups decreases the resilience during the pandemic situation since a large part of efforts would be directed towards their care, which would affect the recovery in other spheres of social life, whereas a population with a higher proportion of healthy people would be able to recover quickly from the impacts of pandemic. Along the economic dimension, since residents of gated communities have a higher income, and are mostly engaged in formal sector, the economic implications of the lockdown induced crisis had been meagre. Moreover, a high proportion of them even economically supported the domestic staff, during the complete lockdown. The preparedness of the highly educated residents and their resourcefulness enabled them to arrange for community medical facilities for emergency situations. However, all these collective efforts were undertaken by the institution of RWA, which is more efficient and active in gated communities, as compared to the non-gated communities, whose RWA had a limited role to play in the containment of the spread of the virus, and recovery at the level of community.

3.2 Limitations of CRI

The composite score, however, hides the interplay of various factors influencing the resilience of communities, and hence the actual scenario. The index makes use of uniform variables across the communities, and does not take into account the community-specific variables. Moreover, the index presents a picture based on the variables included in the index, there are many other variables that inconspicuously influence community resilience and have not been taken into account for the construction of the composite index. Moreover, the index presents a static picture of a dynamic phenomenon, which is influenced by multiple events varying over time.

3.3 Conclusion

The current pandemic has led to an increasing realization of the necessity of strengthening community resilience, in order to reduce the social, economic, and health risks associated with the pandemic. However, there is a difference in the ways communities deal with the crisis situation brought by the pandemic, and this depends upon the nature of the communities. The demographic profile of the gated communities however, indicates presence of a higher proportion of vulnerable population like the elderly population and the population with comorbidity in the form of chronic illness, which exert a negative influence on resilience, by slowing down the recovery process. Whereas, the economic profile indicates that the gated communities are resided by high-income population, on which the economic impact of the COVID-induced lockdown had been less. Though COVID-19 had impacted people from all walks of life, people from higher income groups, were better able to manage the emergency requirements, and prepare for the emergency response, and recovery. The collective efforts of the gated communities are led by the residential welfare associations which had arranged for community medical facilities. RWAs of gated communities, as an institution, had played a significant role in combating the virus and recover from the disruptions caused by it. Whereas, the role of RWAs of non-gated communities had been majorly the information provided regarding the COVID cases in society. Therefore, the overall resilience of gated communities is higher than non-gated communities, as obtained from the calculation of the composite index based on interview responses. The composite index has its own limitations, as it does not portray the actual scenario, by following a uniform variable approach for all communities and disregarding community-specific contexts.

Chapter 4

Community Perception Regarding Pandemic Resilience

Community members are at the forefront while responding to the consequences of a disaster (Aldrich, 2017) and neighbourhood-based organisations organise and build social networks locally, essential for a long-term and short-term recovery. The social character of a community has an impact on how it responds to emergencies and its capacity to overcome its impacts. Social capital, social support, collective efficacy, connectivity, trust, a sense of belonging to the community, and location attachment are interlinked ideas that form social character (Cohen et al., 2013). The basic foundations of a resilient community are Community cohesion, neighbourhood influence on individual and community wellbeing, social equity, trust, and knowledge (Aldrich, 2017; Norris et al., 2008; B. Pfefferbaum et al., 2017).

The way members perceive the resilience of their community has a significant impact on their resilience outcomes. Perceived community resilience reflects the belief of community members in the ability of their community to withstand and recover from disasters (Zhang & Shay, 2019). To evaluate the degree of community resilience, it is crucial to comprehend how residents perceive their collective capacity to deal with a common challenge (Spialek & Houston, 2019). Perceived resilience is determined by the involvement of individuals in social networks (Smith et al., 2012).

Community members are better capable of identifying the existing problems since they are better able to evaluate the strength and weaknesses of their community in response to the shared crisis. This would enable them to undertake actions to strengthen their adaptive capacities, and hence enhance community resilience (R. L. Pfefferbaum & Klomp, 2013).

According to Norris' studies (Norris et al., 2008, 2011), social support is divided into “received support,” receipt of actual help, and “perceived support” which refers to the belief that help would be available if needed. During adversities, social support was proven to be a primary defence factor (Moscardino et al., 2010). According to disaster Drogendijk et al., (2011), the absence of perceived social support had a significant impact on the response of victims on exposure to a disaster.

Hence, an attempt is made to study the community's perception of disaster resilience and understand the factors that influence the community to be resilient.

4.1 Dimensions of Perceived Community Resilience

Based on Conjoint Community Resilience (CCRM)⁴, the dimensions of perceived community resilience that have been considered in the present study are – leadership, collective efficacy, preparedness, place attachment, and social trust (Cohen et al., 2013), which exert an influence over the resilient outcomes of communities in the face of an external shock. In the aftermath of a disaster, the perspective of individuals regarding the survival of their community, particularly the perceived level of preparedness, connectivity, and social trust, may be more important than physical resources and infrastructure (Watson, 2018). Perceptions of individuals of their own community reflect how the community would cooperate and mobilize resources to overcome adverse conditions (Chaskin, 2008).

In the sampled gated and non-gated communities, the perception of members regarding the resilience of their communities against the COVID-19 pandemic is influenced by their social and economic profile, and the health infrastructure, and institutional profile of the community, as discussed in the previous chapter.

⁴ Conjoint Community Resilience Assessment Measure (CCRAM) is a self-report tool for assessing community resilience in face of a disaster. It computes the overall community resilience score and also assesses the strength of components of community resilience, and facilitates cross-community comparison.

Table 4.1 Dimensions of Self-Perceived Community Resilience

Dimensions of Self-Perceived Community Resilience	Variables
Leadership	RWA/Local organization functions well
	Trust in local decision-makers
	Needs of older people of the community attended well
	Leadership qualities shown by those in authority
Preparedness	Preparedness of community for an emergency situation
	All the needful information received from community during emergency situations
Place Attachment	Sense of belonging to community
	Feel safe in place of residence
Social Trust	Trust among the residents of community
	Friendly nature of neighbours
Collective Efficacy	Mutual assistance and care for community members
	Community members can be counted upon to help in the crisis situation
	Community members can help cope with an emergency situation
	Ability of the community can be trusted upon to overcome an emergency situation.
	People work together to improve the community
	Active participation of residents in the activities of the community

Cohen et al., (2013)

Leadership in the form of governance or authority is a crucial component of community resilience (Baker & Refsgaard, 2007; Longstaff & Yang, 2008; Wilson, 2012). According to Castleden et al. (2011) “good governance” plays an important role in ensuring resiliency. Leadership is important at different stages crisis: during the pre-event stage when there is formulation of an emergency response plan; during the stage when disaster has stricken; and throughout the recovery process (Baker & Refsgaard, 2007). Strong leadership is demonstrated

by the capacity to guide first responders and modify policies and procedures in response to changing circumstances (Wyche et al., 2011). According to Stewart, Kolluru and Smith (2009), in order to be resilient, leadership must be active in managing the crisis situations and willing to act when necessary. Another aspect linked to this factor is the issue of trust (Longstaff & Yang, 2008). According to Stewart, Kolluru and Smith (Stewart et al., 2009) trust can encourage people to build more friendly ties, which improves communication. The leadership factor also takes into account aspects of trust and confidence in the leadership. Some authors have found that when the political trust was high, adherence to social distancing, stay-at-home measures, and hygiene during the COVID-19 epidemic tended to be more respected (Bargain & Aminjonov, 2020; Nivette et al., 2021). As demonstrated by prior experiences, trust in local governance is a crucial component of efficient communication during disasters, while mistrust in government institutions impedes adherence to public health recommendations, particularly during times of crisis (Quinn et al., 2013).

Emergency preparedness is considered an important component of community resilience by the World Health Organization-supported Hyogo framework for building resilient communities (UNISDR, 2005). Preparedness is an indicator of social learning while developing resilience (Cutter et al., 2008). Preparedness at the local level is associated with leadership and authority, and preparedness and public participation have a positive association with community resilience (Sim et al., 2021). According to McDaniels et al. (2008), resilient infrastructure systems, particularly, the basic services, are crucial for minimizing the societal impact of extreme events. Stewart et al. (2009) argue that at the microeconomic level, resilience is increased by actions like resource conservation to help communities better adapt to disaster-related events and finding alternate sources of supply when the primary sources are disrupted.

Place attachment is another important dimension of community resilience. Place attachment implies a sort of bond between people and places, strengthened by emotions, behaviour, knowledge and beliefs, and activities in relation to a place (Mishra et al., 2010). According to Ross et al. (2010) strengthening the bond between people and place increases people's sense of belonging to a community, which promotes community resilience. A strong sense of place among the residents, give them a sense of security, as a result, they are better equipped to adjust to changing circumstances and capitalize on new opportunities that arise from them.

Social trust is the perception that community members can be relied upon to help in emergency conditions, and it influences the willingness to act on the presumption of their trustworthiness

(Cohen et al., 2013). Social trust has been linked to variety of aspects of community resilience. According to Cacioppo et al. (2011), when people have confidence in one another, collaboration and activities that benefit both parties are more likely to occur. Numerous research studies have found a link between social trust and community resilience that is beneficial (Cacioppo et al., 2011; Poortinga, 2012; Wyche et al., 2011; Zautra et al., 2010). Urban models like the ones dealing with neighbourhood units have emphasised the benefits of a sense of trust and a sense of community (Asfour & Zourob, 2017). It is thought to strengthen neighbourhood cohesion and satisfaction by increasing residents' perceptions of safety and connection, as well as their awareness of and adherence to common needs and values (Mohamed Salah & Ayad, 2018). The homogeneous nature of a group, along with common history and regular engagement with other members fosters a sense of trust (Haas et al., 2021).

Collective efficacy describes the social cohesiveness and willingness of neighbours to work together for the common good. Communities' main source of support during a crisis has been recognised as social cohesion. Social capital promotes social cohesiveness via stakeholder participation and collaboration. Through stakeholder involvement and collaboration, social capital fosters social cohesiveness and improves the use of knowledge, resources, and communication for responding to and recovering from disasters (Jewett et al., 2021). Social connections improve emotional health required for returning to the normalcy. Social capital, which consists of networks, norms, and trust, enables members of a community to work together toward a common goal.

Social networks help people make better judgments, which minimizes the impact of potentially disastrous situations. Social capital is the basis of a community. Communities with higher perceptions of their collective efficacy are better equipped to manage their common resources, operate collectively, and are more resilient to the external shocks (Bandura et al., 1999).

Table 4.2 Descriptive Statistics of Attributes of Self-Perceived Community Resilience

Attributes	N	Min	Max	Gated Community		Non-Gated Community	
				Mean	Std. Dev	Mean	Std. Dev
Leadership							
RWA/local organisation functions well	90	1.00*	5.00*	3.74	0.81	3.00	0.83
I trust local decision-makers	90	1.00	5.00	3.47	0.77	3.20	0.89
Appropriate attention is given to the needs of old people of the community	90	1.00	5.00	3.62	0.80	2.94	0.95
Those who are in authority show leadership qualities	90	1.00	5.00	3.54	0.82	3.19	0.86
Preparedness							
My community is prepared for an emergency situation	90	1.00	5.00	3.63	0.84	2.98	0.86
I receive all the needful information during emergency situations	90	1.00	5.00	3.49	0.75	2.93	0.94
Place Attachment							
I feel a sense of belonging to my community	90	1.00	5.00	3.67	0.86	3.54	0.850
I feel safe in my place of residence.	90	1.00	5.00	3.63	0.69	3.42	0.78
Social Trust							
Residents in my community trust each other	90	1.00	5.00	3.54	0.71	3.53	0.79
My neighbours are of friendly nature	90	1.00	5.00	3.54	0.79	3.36	0.96
Collective Efficacy							
There is mutual assistance and people care for one another	90	1.00	5.00	3.58	0.78	3.64	0.85
I can count on people in my community to help me in a crisis situation	90	1.00	5.00	3.59	0.73	3.53	0.81
There are people in my community who can help to cope with an emergency situation	90	1.00	5.00	3.44	0.77	3.41	0.82
I trust the ability of my community to overcome an emergency situation	90	1.00	5.00	3.63	0.79	3.38	0.87
People work together to improve the community	90	1.00	5.00	3.52	0.84	3.24	0.79
The residents actively participate in the activities of community	90	1.00	5.00	3.62	0.78	3.25	0.92

Source: Bases on primary survey

* 5 and 1 in the table represent the maximum and minimum value on a five-point Likert scale, with 5 representing strongest agreement, and 1 representing strongest disagreement. Mean represents the mean of responses on a five-point Likert scale, Std. Dev represents the standard deviation of responses from the mean.

The leadership aspect of community resilience is measured by taking the mean of responses measured on a five-point Likert scale of indicators like the functioning of RWA, trust on local decision-makers, leadership qualities, and attention given to the needs of older people of community. The collective efficacy aspect of community resilience is measured by taking the mean of responses measured on a five-point Likert scale of indicators like mutual assistance among the community members, trust the ability of community to overcome the crisis situation, working together of members to improve the community, active participation in the activities of community. Preparedness aspect of community resilience is measured by taking the mean of responses measured on a five-point scale of indicators like all needful information received from community during emergency situation, preparedness of community for an emergency situation. Place attachment aspect of community resilience is measured by taking the mean of responses measured on a five-point scale of indicators like sense of belonging to community, feel safe in place of residence, social trust aspect of community resilience is measured through indicators like trust among the residents of community, and friendly nature of neighbours. Whereas, the overall resilience is measured by taking the mean of all five aspects of community resilience i.e., leadership, collective efficacy, preparedness, place attachment, social trust.

Table 4.3 Group Statistics of Dimensions of Self-Perceived Community Resilience

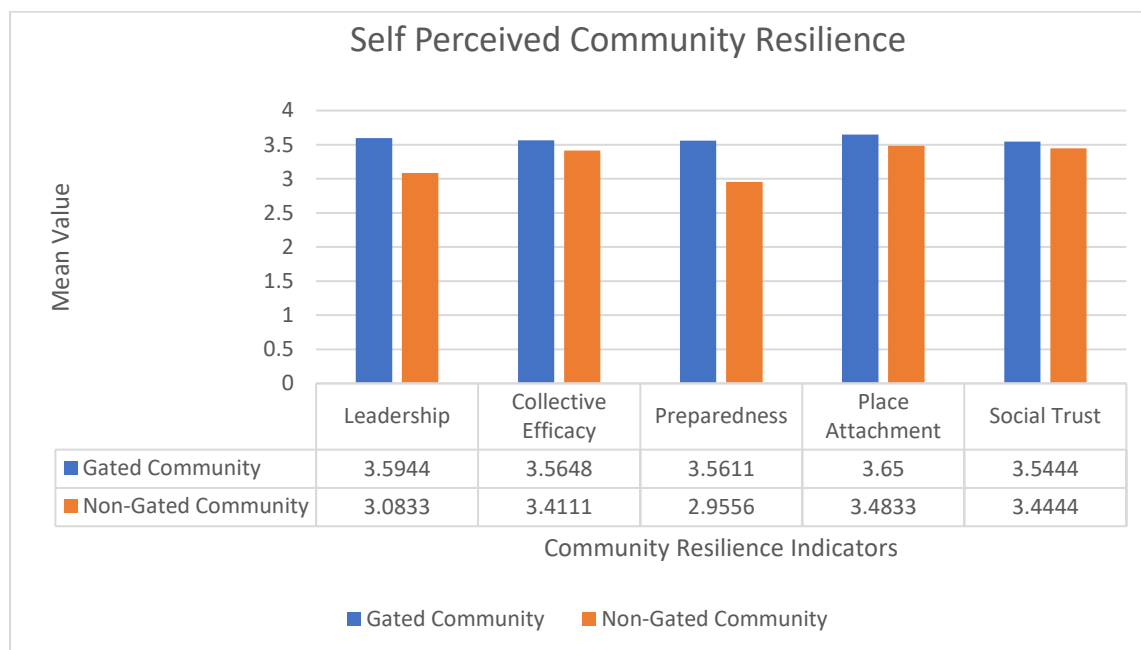
Dimensions of Community Resilience	Whether Gated or Non-Gated Community	N	Mean	Std. Deviation	Std. Error Mean
Leadership	Gated Community	90	3.5944	.45681	.04815
	Non-Gated Community	90	3.0833	.44972	.04740
Preparedness	Gated Community	90	3.5611	.53960	.05688
	Non-Gated Community	90	2.9556	.62551	.06593
Place Attachment	Gated Community	90	3.6500	.57304	.06040
	Non-Gated Community	90	3.4833	.52172	.05499
Social Trust	Gated Community	90	3.5444	.56412	.05946
	Non-Gated Community	90	3.4444	.61555	.06488

Continued

Collective Efficacy	Gated Community	90	3.5648	.29318	.03090
	Non-Gated Community	90	3.4111	.37410	.03943
Overall Perceived Community Resilience	Gated Community	90	3.5799	.21873	.02306
	Non-Gated Community	90	3.2861	.24142	.02545

Source: Computed by author

Figure 4.1 Self-Perceived Community Resilience across gated & non-gated communities



Source: Based on primary survey

The highest difference in the mean value is of the preparedness of gated and non-gated communities in the face of an emergency situation, followed by leadership. There is, however, a negligible difference in the mean value for the social trust aspect of community resilience of the two communities.

Independent samples t-test is done to test the significance of the difference in the mean value of the various aspects contributing to community resilience of gated and non-gated communities (Refer Appendix 4).

The result of independent samples t-test shows that there is a significant difference in the mean value of perception of leadership ($t=7.564$, $p=.000<0.05$), preparedness ($t=6.954$, $p=.000<0.05$), place attachment ($t=2.040$, $p=.043<0.05$) and collective efficacy ($t=3.068$, $p=.002<0.05$) aspects of community resilience across gated and non-gated communities, at a

95% level of confidence. However, the difference in the mean in the social trust aspect across gated and non-gated communities is not significant at a 95% confidence interval.

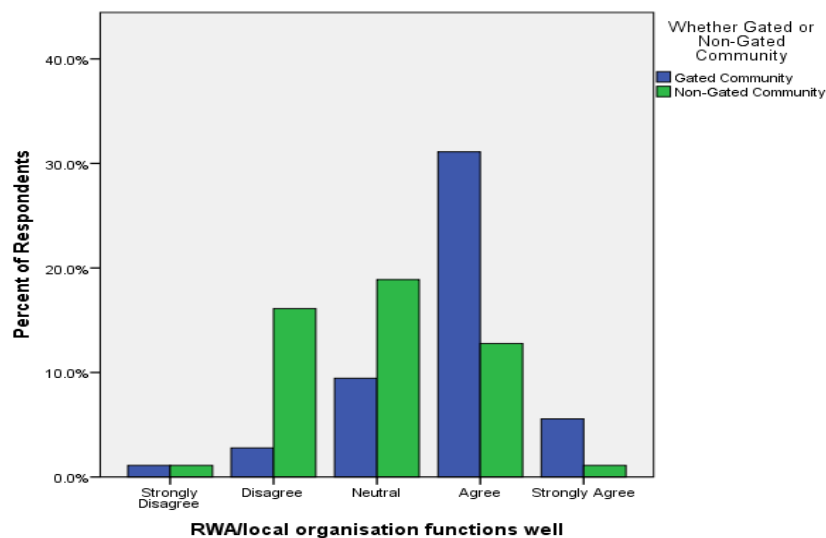
4.1.1 Leadership

The mean of all aspects of leadership for gated communities is 3.59 out of 5, it indicates that the residents of Gated communities agree that their community has strong leadership. Whereas, for non-gated communities, the mean of leadership aspect is 3.083 out of 5, it indicates that residents are neutral to the fact that their community has a strong leadership. There is a significant difference between gated and non-gated communities in the domain of leadership ($t=7.564$, $p= 0.000<0.05$). A well-functioning RWA, trust in local decision-makers, proper attention paid to the needs of older people of the community, leadership qualities shown by those in authority, all these aspects contribute to strong leadership of the community.

i) Well-functioning of RWA

Residential Welfare Associations (RWAs) are formed on a voluntary basis and are registered under the Societies Registration Act, 1860. Strong leadership of gated communities can be attributed to the well-functioning Residential Welfare Association (RWA), since RWAs have been the first line of defence against coronavirus. Interviews with RWAs and residents of gated localities have revealed that during the time of the pandemic, RWAs have taken upon themselves the responsibility of slowing down the spread of the virus in the community, by enforcing strict social distancing norms.

Figure 4.2 Functioning of RWAs/ Local Organisations



Hence, 73.33% of the respondents from gated communities, while 27.78% of the respondents from non-gated communities agreed to the fact that they have a well-functioning RWA. In the sampled gated communities, apart from the usual function of RWA in overseeing the maintenance and other community affairs of the housing complex, they had a specially constituted task force for combating COVID-19, which had stipulated their own lockdown rules apart from those issued by the district administration.

Some of these restrictions included disallowing the entry of part-time domestic helpers who did not live inside the premises of the community and instead commuted daily to their work place, restricted the entry of drivers and other service providers, and stopped the delivery of newspapers. The RWA of these gated communities had also arranged for oxygen cylinders, concentrators, and other emergency items within the premise of the locality. They had also arranged for emergency vehicles. They have also taken upon themselves the responsibility of getting the helping staff of the locality vaccinated along with the residents. RWAs of these localities have also provided for the provision of assistance to the families of COVID-positive patients in the form of cooked food, essential medicines, herbal medicines, and consultation with doctors. Hence, the higher perception of residents of gated communities regarding the efficient functioning of their RWA, can be linked to their institutional resilience as discussed in the previous chapter.

Whereas the RWAs of the sampled non-gated communities played a relatively lesser role in combating COVID-19, as the function of the body in these localities is mainly the maintenance of the housing complexes. However, since the sampled non-gated communities are those which had been designated as containment zone at one point of time or the other during the peak of the pandemic. Hence the RWAs of these localities though took up the management cases emerging in the locality, when these localities when designated as containment zones. However, the role played by RWA in these localities was active mainly for the duration for which these localities had been designated as containment zones. RWAs during this time took up the responsibility of sticking up posters to mark people under home quarantine in the locality, and kept a watch on those homes to ensure that quarantine rules are being strictly followed. RWA also collated data on the number of active and recovered cases in the locality, and circulated the information on what's app group of the locality. RWA also collaborated with MCG for separate garbage collection from the houses of COVID-positive patients who have been marked to be under quarantine and followed other rules as stipulated by the health department. However, RWAs in these localities have played an active role in controlling the

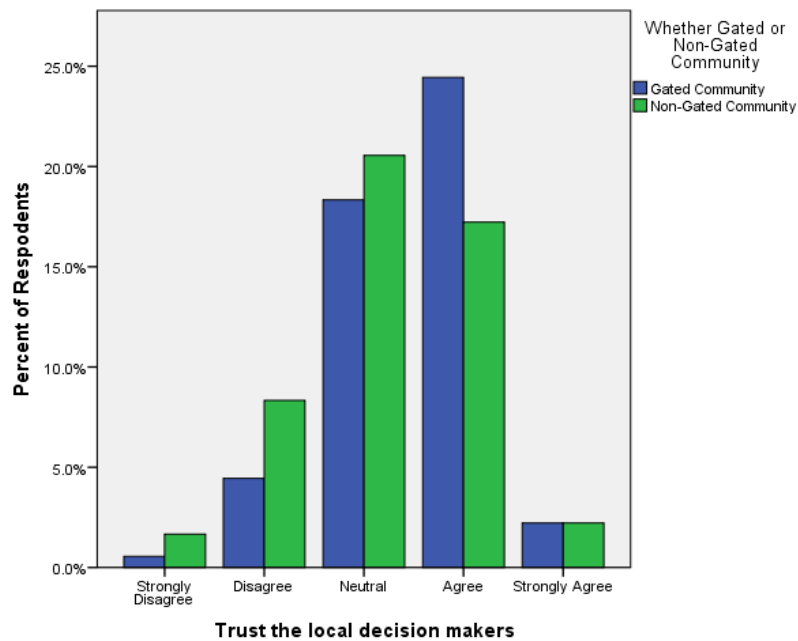
spread of the virus, mainly for the period for which they have been designated as containment zones, and hence their role in disease containment was assigned to them by the higher authorities. However, once these localities moved out of the category of containment zone, the role of RWAs of these localities relating to disease containment decreased.

i) Trust in Local Decision Makers

A higher percentage of residents of gated residential communities trust the local decision-makers, as compared to the members of non-gated communities. This can be attributed to the fact that members of gated communities, having a higher average level of education, are better equipped with the information on local policies and programs of the decision-makers, and therefore, are better able to reap the benefits (Ugur-Cinar et al., 2020). For the formation of trust, it is necessary that community members are aware of the initiatives of the authorities.

During times of crisis, knowledge of the initiatives taken by the local decision-makers to overcome the precarious conditions caused by the pandemic has helped build trust for the local decision-makers among people. This has reinforced people to strictly follow rules and restrictions imposed by the local authority to curb the spread of the virus.

Figure 4.3 Trust in Local Decision Makers



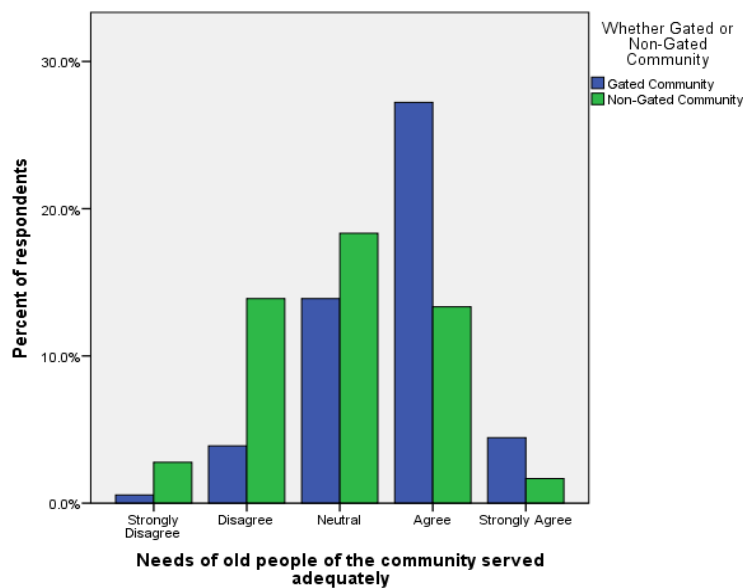
While 53.32% of the respondents from gated communities, and 38.9% of the respondents from non-gated communities trust the local decision-makers. At the level of a residential community, the RWA functions as a decision-making body at the grassroots level, whose office-bearers are elected by the residents from amongst themselves. Since, in gated communities, the ecological

designs like mini parks, pedestrian walkways, common club houses are there, which encourage outdoor activities in the space provided (in the normal days). These activities give a boost to social interaction and networking among the residents of the gated neighbourhoods, as compared to other neighbourhoods which have lesser out-door activities in their premises. These social interactions inculcate a sense of trust among the residents of the locality for the office bearers of RWA, who are elected from amongst themselves. Higher the level of trust in the local decision-makers, it is more likely that people will abide by the local rules and regulations to contain the spread of the virus (Bargain & Aminjonov, 2020).

ii) **Needs of Older People Attended Well**

The elderly population has specific needs, and since old age people are more vulnerable to COVID-19, hence they require special care and attention during the pandemic.

Figure 4.4 Fulfilment of Needs of Older People of Community



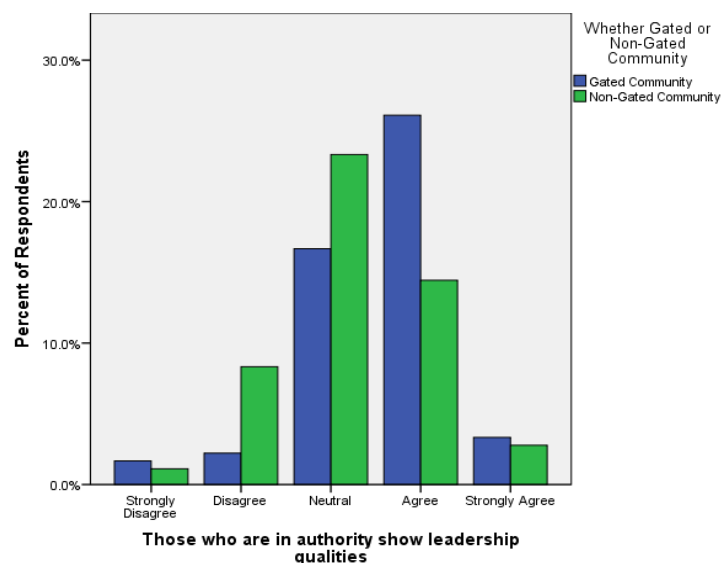
63.32% of the respondents from gated communities, while 30% of the respondents from non-gated communities, perceive that the needs of older people of their community is served adequately within the community. Gated communities take special care of geriatric health and the safety and security of the older population. The sampled gated communities have made a special provision for the elderlies who live by themselves, such as during normal days, there was the organization of health camps on a regular basis which were visited by health specialists, moreover, they have community health centres with basic medical facilities. Whereas during the COVID-19 pandemic, when the entry of part-time house helps in the locality was prohibited, there was made arrangement for house helps who resided within the complex of the

society, and also ensured that these house helps were fully vaccinated. There is a tele-assistance system to keep track of the needs of the elderly. Apart from this, special yoga sessions were conducted in online mode for old people, and also sessions to ensure their psychological well-being were organized. Therefore, it is the effective community health infrastructure, and community medical resources for geriatric health, along with disabled friendly infrastructure of the gated communities, which render a perception among the residents regarding the adequate fulfilment of the needs of older people. Whereas, no such targeted initiatives have been taken by the members of the sampled non-gated residential communities.

iii) Leadership Qualities

Strong leadership is essential for an effective organization and mobilization of resources in emergency situations, and for evolving effective strategies to deal with inevitable events that may occur. Strong leadership in the face of crisis involve an effective and trustworthy communication.

Figure 4.5 Leadership Qualities of Authorities



58.9% of the respondents from gated, while 34.4% of the respondents from the non-gated communities perceive that the leadership qualities are shown by those who are in authority. The authority-bearing body at the residential level is the RWAs. Since the RWAs of gated neighbourhoods are more effective, as has been understood from the responses of the residents and interviews with the RWA members. The effectiveness in their functioning can be attributed to the strong leadership shown by the office bearers of the RWAs of the gated neighbourhoods, as compared to other neighbourhoods.

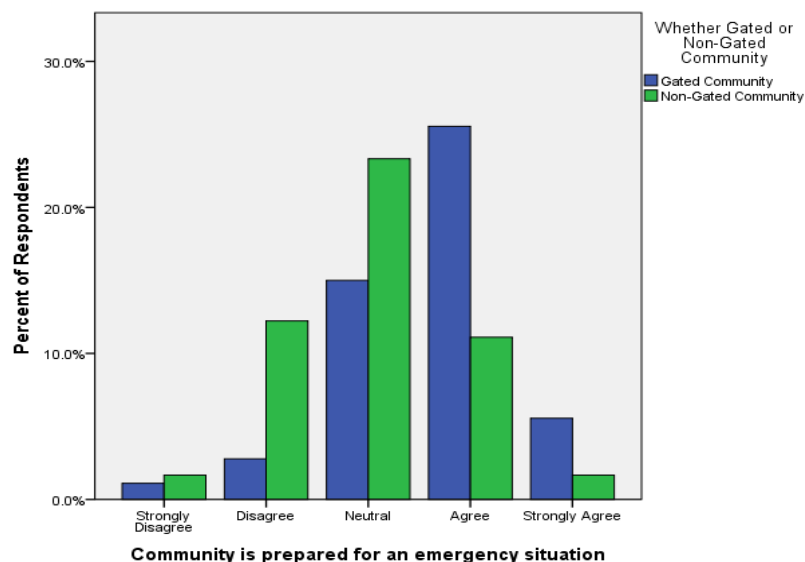
4.1.2 Preparedness

The mean of all aspects of preparedness for gated communities is 3.56 out of 5, it indicates that the residents agree that their community is prepared if any disaster strikes. Whereas for non-gated communities, the mean value is 2.95 out of 5, it indicates that the residents of the non-gated communities disagree to the fact that their community is prepared if any disaster strikes. There is a significant difference between gated and non-gated communities in their preparedness in face of emergency ($t=6.954$, $p= 0.000<0.05$).

i) Emergency Preparedness

Strong leadership is required for preparedness for any emergency situation. Preparedness involves identifying an alternative supply of resources when the original supply is disrupted due to any unforeseen event.

Figure 4.6 Preparedness of community for an emergency situation



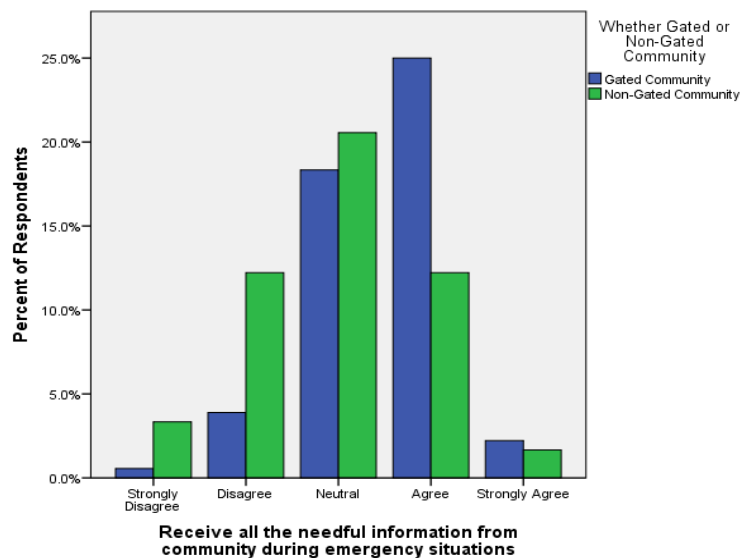
A strong clinical preparedness could have made the situation less bad in the face of the pandemic. Though the entire health system of the country wasn't prepared to face the toll associated with this health emergency. However, at the micro-scale, the gated residential communities had equipped themselves with essential food items, medicines, and medical equipment, ever since the first wave had stricken the nation. The sampled gated communities had prepared themselves by pooling the resources to make the availability of oxygen cylinders, concentrators, beds, and other essential medicines and equipment. This preparedness of theirs had helped them during the second and the third waves when the health system of the city had crumbled and it became very difficult to get oxygen cylinders, and beds in hospitals. The non-

gated residential communities on the other hand had no such preparedness at the community level. Hence, 62.24% of the respondents from gated communities agree with the fact that their community is prepared for an emergency situation, whereas, only 25.56% of the respondents from non-gated communities perceive that their community is prepared for an emergency situation. Hence the institutional profile of the gated communities form the basis of higher perception of the residents regarding the preparedness of their communities.

ii) Dissemination of Needful Information During Emergency Situation

For the recognition of shared grievances, it is necessary that all the community members receive timely and correct information either in the form of communication through community mechanisms (like community what’s app group, email, community newspaper/notice board). Improvement in overall resilience is expected with better access to reliable information. Access to reliable information enhances compliance with COVID-19 recommendations (Busic & Schubert, 2021). During a disaster, crisis communication should involve the dissemination of up-to-date information to community members about the ongoing impact and relief efforts (Patel et al., 2017). While digital platforms remained invaluable in this effort.

Figure 4.7 Receival of Needful Information from Community During Emergency Situation



The sampled gated communities have the provision of timely dissemination of all the needful information through what’s app groups and email. One of the sampled gated communities had resorted to the usage of an app called ‘servizing’ for the dissemination of all the necessary information and precautions. The information disseminated included, the number of active and recovered cases, number of deaths, emergency contact numbers, information regarding the opening of selected grocery shops in the locality, vaccination drives, testing camps in the

locality, and contact details of the doctors available in the locality who are ready to provide consultation. All this information provided ease to the residents during the emergency situation. Hence, 54.44% of the respondents from sampled gated communities agree to the fact that they receive all the necessary information from the community during any emergency situation, whereas only 27.8% of the respondents from non-gated communities.

The sampled non-gated communities also have the mechanism of dissemination of information through what's app groups and email id, however, the information was limited to the number of active and recovered cases in the locality, and testing camps in the locality. Hence, the information dissemination through WhatsApp groups by gated communities had not been much effective and lacked much-needed information.

4.1.3 Place Attachment

The mean of all aspects of place attachment for gated communities is 3.65, out of 5, which indicates that the members of gated communities agree to the fact that they have an attachment to a place. Whereas for non-gated communities, the mean value is 3.483, which indicates the members of non-gated residential communities also agree to the fact that they have an attachment to place. However, there is a difference between gated and non-gated communities in their level of agreement to having an attachment to place ($t=2.040$, $p=0.043<0.05$). The confinement to one's own place has provided an opportunity to spend more time in the neighbourhood. Deeper attachment to the place of residence results in psychological well-being. Place attachment can be understood through the aspects of sense of belonging to the community, and having a feeling of safety in the place of residence.

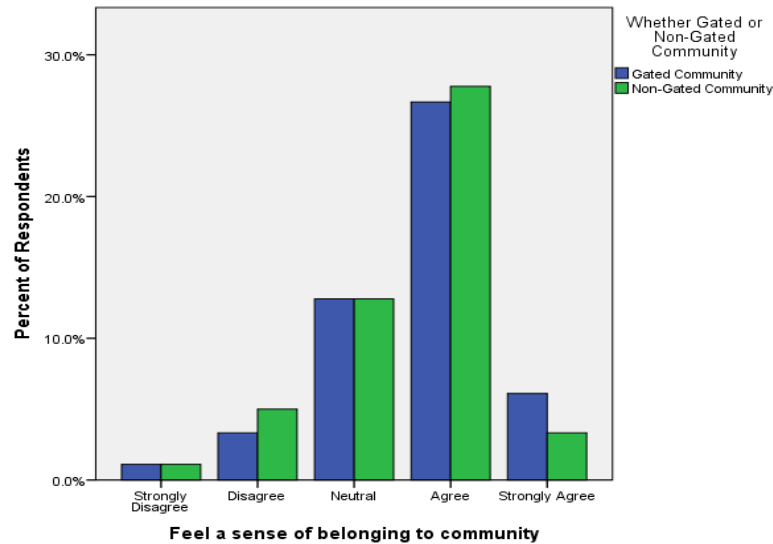
i) Sense of Belonging

'Sense of community is a relationship involving social interaction within a community resulting in a sense of belonging within the group and a perception of ownership through sharing of needs and requiring each other's commitment' (McMillan & Chavis, 1986). A sense of belonging to the community is the result of interaction with other members of the community and involvement in community organizations and activities.

A sense of belonging to a community positively influences individual and community resilience by promoting the well-being of people and communities, particularly in times of crisis. It is less likely that a person having a sense of belonging to a community experiences psychological distress, and is more likely to experience positive mental health outcomes (Lyons

et al., 2016). Studies conducted during the COVID-19 pandemic have shown that community resilience is associated with a sense of community (Compare et al., 2021).

Figure 4.8 Sense of Belonging to Community



65.6% of the respondents from gated communities feel a sense of belonging to their community, whereas, in non-gated communities, 62.2% of the respondents feel a sense of belonging to their community.

The ecological layout of gated communities increases the opportunity for social interaction by conducting outdoor gatherings in neighbourhood parks, clubhouses, and walkways for pedestrians, in normal days. Hence, the physical environment of gated communities increases the sense of community as neighbourhood spaces provide for greater social integration within the community. Meeting up with neighbours and other inhabitants in common areas like the clubhouse or the garden creates a sense of connection and warmth. Therefore, it is the physical elements that have enforced a sense of place and community in such neighbourhoods. Along with the physical infrastructure, it is the occupational homogeneity of the community members that contributes to a sense of belonging to the community.

The responses from the residents of gated communities highlight that most of the residents feel a sense of belonging to the residential community. According to the residents, the organisation of online Happiness and Yoga sessions during the lockdown period gave a sense of being united in difficult times. The RWA took the initiative of organising special sessions for addressing Post COVID Stress Disorder (PCSD), conducted by mental health experts. Here, pandemic played a major influencing factor in generating a sense of community among the members of the gated communities.

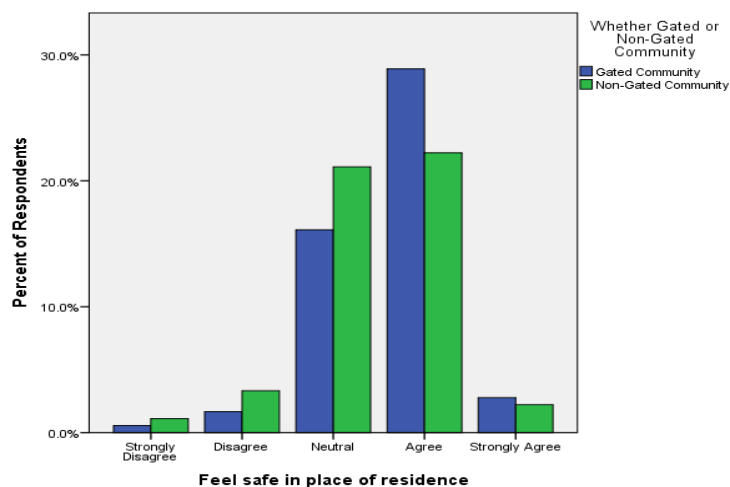
Moreover, the initiative of pooling resources to equip the community with all emergency equipment for the members, also generated a sense of being united and the sense of belonging to the community. Here, income criteria played a role in generating a sense of community. According to a study by Blandy et al. (2003), income level has less influence on generating a sense of community, whereas according to a study by Wilson-Doenges (2000), income level is one of the important factors influencing the sense of community.

A sense of belonging to the community among the members of a non-gated community is attributed to the fact that there is much more social interaction among them. Moreover, shared negative experiences have the potential to generate bonding among people and stimulate collective activity. This is consistent with the findings of Sakip et al. (2012). A shared feeling of belonging to the community promotes a feeling of safety in the place of residence, as it provides assurance to the community members that during any emergency situation, there would be their community to stand by them and provide support.

ii) Sense of Safety

A sense of attachment to a place has a positive influence on everyday mood, health and well-being (Majeed & Ramkissoon, 2020). Positive emotions of people enable them to cope with pandemics and prepare for future emergencies, which leads to better results (Pathak & Joshi, 2020). Positive emotions during COVID-19 are indicators of well-being (Schlegel et al., 2021). A sense of community in a neighbourhood enhances a feeling of safety (Austin et al., 2002). A sense of love for one’s own place gives rise to the feeling of safety particularly when people are confined to their spaces during the pandemic (Ramkissoon, 2020).

Figure 4.9 Sense of Safety in Place of Residence



63.34% of the respondents from the gated communities agree that they have a feeling of safety in their place of residence, whereas, in non-gated communities, only 48.9% of the respondents agree to have a feeling of safety in their place of residence.

Members of gated residential communities feel safer in their place of residence as compared to non-gated neighbourhoods, in normal circumstances and particularly in emergency situations. Gated residential communities are earmarked to be resided by higher income populations; hence members are willing to spend money collectively to ensure that the community is equipped with all necessary items that could be used during an emergency, hence they feel themselves relatively safer as compared to other neighbourhoods.

During the COVID-19 pandemic, as mentioned before the members of the sampled gated communities had collectively ensured that the community is equipped with oxygen cylinders, concentrators, essential medicines, and emergency vehicles.

Apart from being equipped with emergency items, the other factor that the residents perceive as crucial in providing greater safety to gated residential communities is their restricted entry. Entry to these localities was strictly regulated, and during the peak of the cases, there was no entry to any outsider into the society, not even the relatives of any of the members. Housekeeping staff of the community delivered the items to the houses, as the delivery person had no entry. The other helping staff and shopkeepers in the society were issued a pass which they had to show at the gate. Hence, residents believe that their community is effective in reducing the risk associated with the pandemic, by restricting access to outsiders, hence creating a 'security zone'. This is considered an ideal situation for the implementation of pandemic prevention norms during the lockdown period.

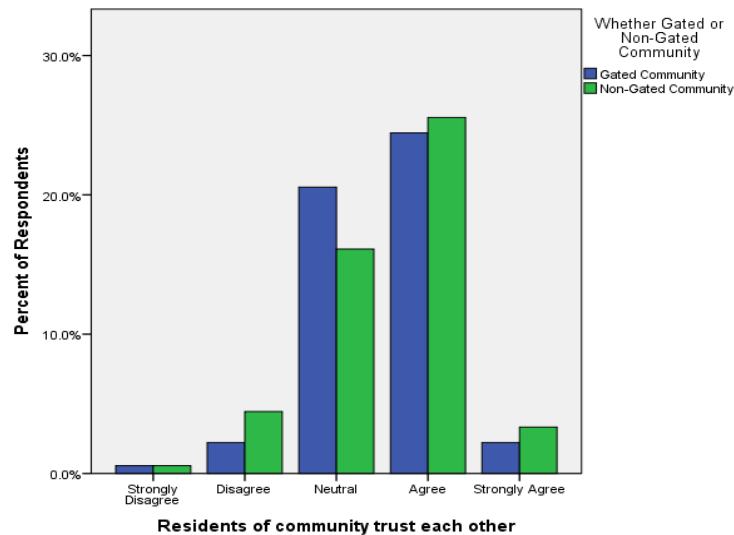
4.1.4 Social Trust

The mean value of all aspects of social trust, for the gated communities, is 3.54, which indicates that members of gated communities agree with the fact that there exists social trust among the members of their community. Whereas for non-gated communities, the mean value is 3.44, it indicates that the members of non-gated communities agree to the fact that there exists social trust among the members of their community. There is no significant difference between gated and non-gated communities in having social trust among the community members ($t=1.136$, $p=0.257>0.05$).

i) Trust Among Community Members

Trust among the members of the community help in building a strong social network that promotes coordination and cooperation to overcome the emergency situation unfolded by a disaster (Saja et al., 2018). Trust among the neighbours strengthens relationships and encourages the exchange of resources.

Figure 4.10 Trust Among the Members of Community



53.32% of the respondents from gated communities trust each other; while of the respondents from non-gated communities, 57.8% trust each other.

Members of gated communities have awareness of who belongs to the community & who are strangers because the coming & going out of the gates are controlled. This allows a greater level of trust and familiarity between the neighbours. Another factor that contributes to trust and familiarity among the members is the organization of several events like health camps, cultural activities, picnics, etc. by the residential association. These social activities strengthen the relationship and trust with neighbours.

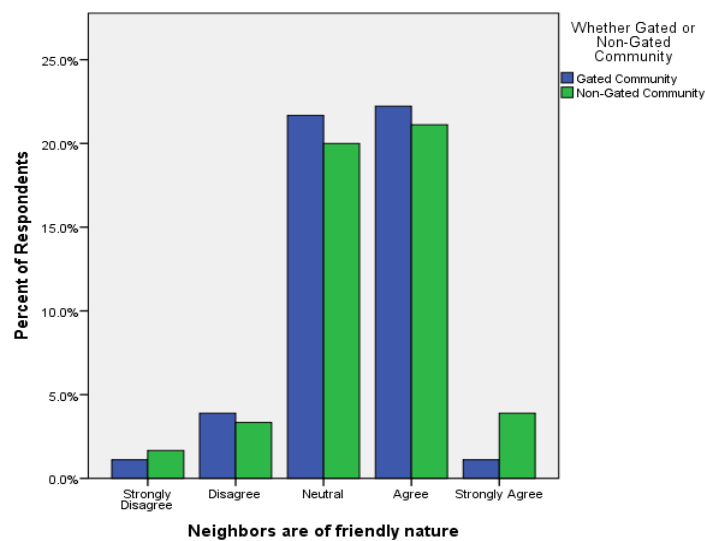
Whereas in non-gated neighbourhoods, this social trust is not induced by the activities organized by any residential association (since the residential associations of these localities is mainly concerned with the maintenance of the locality), rather it is the individual member's initiative to engage with the neighbours, and in this process develop trust and familiarity with the neighbours. The interaction between the members of the non-gated communities is mainly driven by mutual support and this fosters the trust for the members.

The survey of the two types of residential communities shows that the individual member's engagement with neighbours and hence a sense of trust among the neighbours is more in non-gated neighbourhoods than in gated neighbourhoods. This is consistent with the findings of Sakip et al. (2012) and Wilson-Doenges (2000). The interviews with the residents of gated communities have brought up the fact that long hours of work and short time spared for social interactions have been the cause of limited interaction with the neighbours. The only social interaction that occurs is through the gatherings organized by the residential association.

ii) Neighbourliness

The friendly nature of neighbours allows for the free exchange of resources and an enhanced probability of receipt of support during the pandemic-induced lockdown. Neighbours are an important source of local support, particularly during the pandemic, and are the first responders, once the pandemic would be over.

Figure 4.11 Friendly Nature of Neighbours



46.67% of the respondents from gated communities agree to the fact that their neighbours are of friendly nature, while 50% of the residents from the non-gated communities agree that their neighbours are of friendly nature.

One of the interviewees from one of the sampled non-gated communities stated that he believes that his neighbours would be the first ones to help him, and he felt himself closest to his neighbours, and consider them as a part of his family.

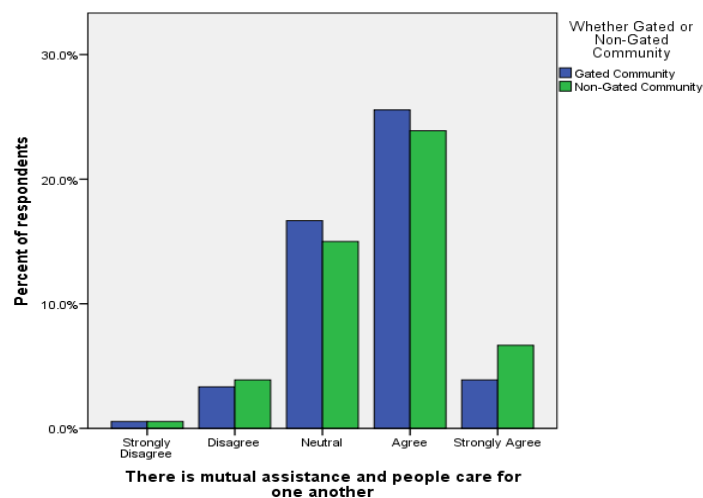
4.1.5 Collective Efficacy

The mean of all aspects of collective efficacy for gated communities is 3.564, which indicates residents agree with the fact that there is collective efficacy among the community members. Whereas for non-gated communities, the mean value is 3.41 out of 5, which indicates that residents agree to the fact that there is collective efficacy among the community members, however, its mean value is less than that of the gated communities. There is a significant difference between the gated and non-gated communities in the domain of collective efficacy ($t=3.068$, $p=0.002 < 0.05$).

i) Mutual assistance and care

Residential amenities such as recreational facilities and community amenities are provided within the gated community, and the community facilities contribute to the improvement of internal social cohesion (Grant & Mittelsteadt, 2004; Townshend, 2002). The more cooperative an individual is with the community, the more they can get various information and benefits from the community, and they want to belong to the community (Kawachi et al., 2008).

Figure 4.12 Mutual Assistance & Care Among Members



58.9% of the residents from gated communities, while 61.1% of the residents from the non-gated communities agree to the fact that there is mutual assistance and people care for one another.

However, during the pandemic situation, mutual assistance and care were seen mainly through digital support and networking. Digital platforms have connected people in need during the pandemic with people who want to help in a safe manner. Possible help on such platforms ranges from support in buying food and meeting financial needs, to just having someone to talk

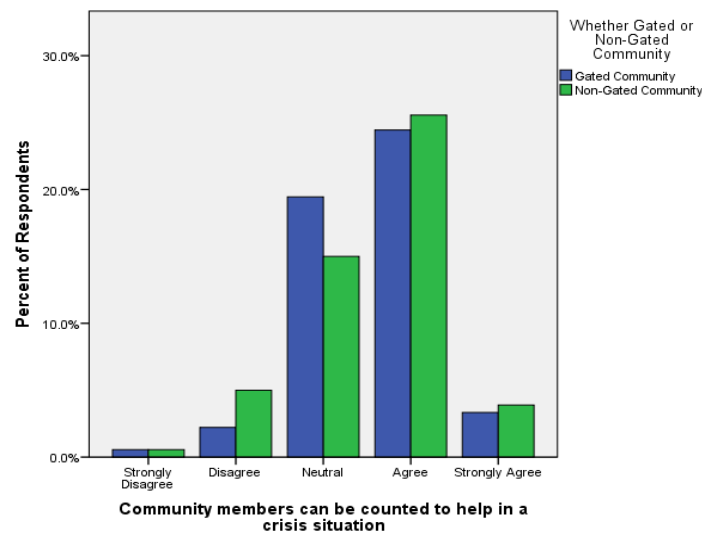
to about everyday problems, including the feeling of isolation or being overwhelmed with working from home.

A few of the volunteering residents of one of the gated communities took the initiative of distributing plants and face masks, along with a motivational message among the residents to elevate their mood, by encouraging them to look at the brighter future ahead.

ii) Community members can be counted upon to help in crisis situation

Since community members are the ones who experience any external shock at the first hand, hence mutual support among the community members is an essential way of overcoming the emergency situation.

Figure 4.13 Community Members Can be Counted Upon to Help in the Crisis Situation



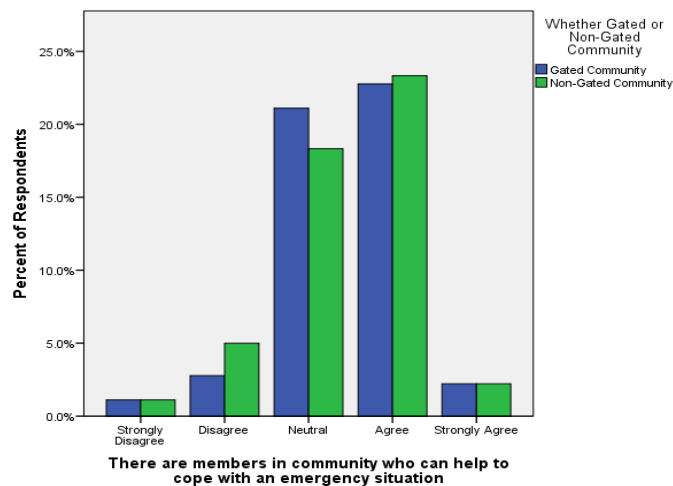
58.9% of the respondents both from gated and non-gated communities agree to the fact that the community members can be counted to help in a crisis situation.

However, some interviewees both from gated and non-gated communities reported that their neighbours mind their own business, and cannot be counted upon to help in a crisis situation. Moreover, these interviewees found themselves to be closer to their families and friends rather than their neighbours.

iii) Community members can help cope with an emergency situation

50% of the respondents from gated communities, while 51.1% of the respondents from non-gated communities have agreed that there are members in the community who can help to cope with an emergency situation.

Figure 4.14 Community Members Can Help Cope with an Emergency Situation

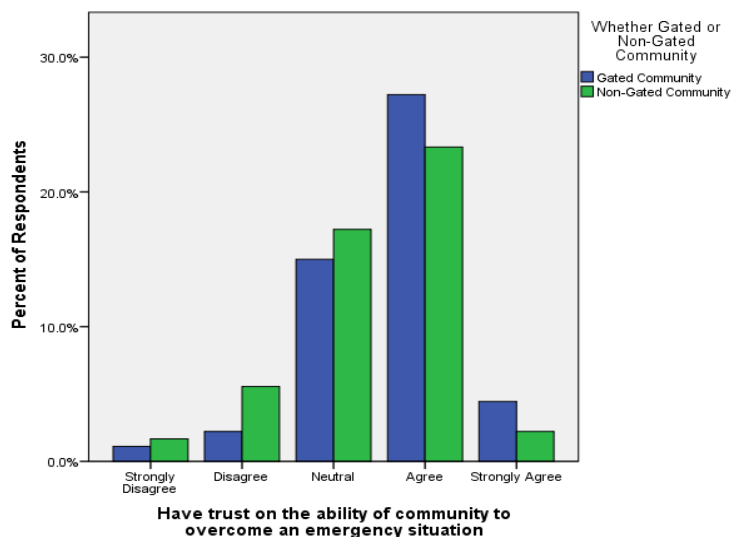


The RWAs of gated communities apart from performing the regular function of maintenance formed a COVID-19 task force to contain the spread of the virus in the locality, hence interviewees showed a level of trust in the office bearers of RWAs, who they believed have made all possible efforts to cope with the emergency situation. Apart from RWA, residents came forward to help in whatever way they could, for e.g., doctors in the locality offered their help by providing consultation to patients, and monitoring critical patients.

iv) Trust the ability of the community to overcome emergency situation

If the community members act in their capacities for the welfare of the community, the ability of the community as a whole to overcome any emergency situation is enhanced. Moreover, socioeconomic endowments of communities (due to community members) cause them to differ from each other in terms of their ability to overcome the emergency situation.

Figure 4.15 Trust the ability of community to overcome emergency situation



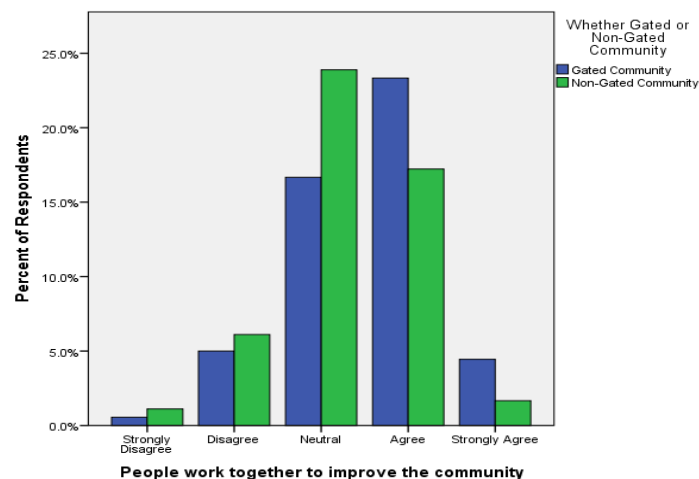
63.32% of the respondents from gated communities, and 51.1% of respondents from non-gated communities agree that they trust the ability of their community to overcome the emergency situation.

Interviewees from gated residential communities trusted the ability of their community to overcome the crisis situation brought by the pandemic more than those from non-gated communities. One of the interviewees from the gated community stated “though the pandemic has brought in a precarious condition for all, but we feel our community would and have performed relatively better than many of the other communities”.

v) People work together to improve the community

A sense of belonging to the community, encourage people to work together to improve the community.

Figure 4.16 People work together to improve the community



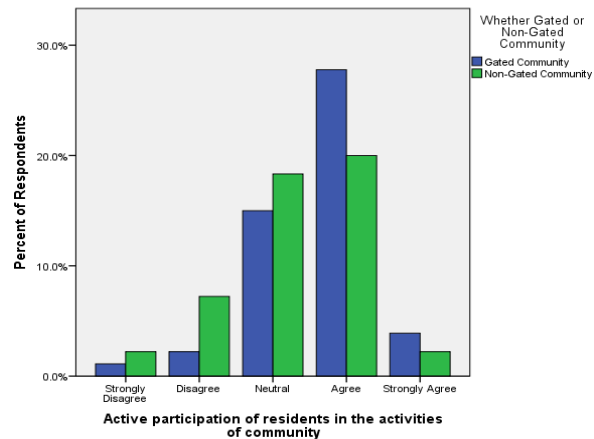
55.54% of the respondents from gated-communities, while 37.8% of respondents from non-gated communities have agreed with the fact that people work together to improve the community. Compliance with the recommendations of authorities, aligning the behaviour of residents (Taberner et al., 2020), and fostering collective actions, like physical distancing and wearing of masks in public spaces during the pandemic.

One of the interviewees responded that “people of our community are able and know what to do with an issue affecting them, in a collective manner”. The collective efforts of the members of the gated communities aimed at the improvement of the community, can be attributed to the gated nature of the community, governed by an active residential welfare association.

vi) Active participation in community activities

Community improvement requires the active participation of community members, who identify the emergent needs of the community and work towards achieving the same.

Figure 4.17 Active participation of residents in the activities of community



63.34% of the respondents from gated-communities, and 44.4% of respondents from non-gated communities, agreed that residents participate actively in the activities of the communities.

Members of gated communities more actively participate in the welfare of the community. One of the interviewees from the gated community stated “being the member of the community, we should have a voice in deciding what works for our welfare and what does not”. Another interviewee stated that the older residents of the community more actively participate in the activities of the community on normal days. During the COVID-19 pandemic, residents strictly followed the COVID protocols rolled by the residential association apart from the government advisory, at the same time residents came forward to support their fellow residents in their possible capacity. RWA of one of the sampled gated communities organised a contest in a virtual mode, which called for innovative ideas from the residents regarding dancing, singing, painting, cooking, cleaning, decoration etc. all these were captured as memories and uploaded them on the society’s website, and what’s app group in the form of pictures and videos.

4.2 Overall Perceived Community Resilience

The mean of all aspects of community resilience i.e., leadership, preparedness, place attachment, social trust, and collective efficacy for the gated communities is 3.5799, whereas for non-gated communities it is 3.2861. There is a significant difference between gated and non-gated communities in overall community resilience ($t= 8.554, p= 0.000 < 0.05$). This difference in the overall score of community resilience of gated and non-gated communities is

not due to a difference in the social capital, rather it is better community infrastructure, and preparedness at the level of communities that render it a higher score of perceived community resilience. The overall score of perceived community resilience is consistent with the result of the community resilience index (CRI) computed in the previous chapter. It indicates that the inherent resilience of communities due to their socioeconomic, infrastructure, and institutional profile determines the perception of the members regarding the resilience of their communities in the face of a disaster.

4.3 Factors influencing community resilience across gated and non-gated communities

To analyse which factors, have an impact on the resilience of communities, a multiple linear regression model is run. This model allows the assessment of the strength of the relationship between the single outcome variable, and several predictor variables, and the importance of each predictor to the relationship.

Assumptions of linear regression

- Outcome is continuous variable
- Outcome is normally distributed
- observations should be independent

$$Y = a + b_1 X_1 + b_2 X_2 + \dots + b_n X_n$$

‘Y’ is the dependent variable

‘a’ is the constant term

‘b’ is the slope coefficient with each explanatory variable

‘X’ is the explanatory variable

‘n’ is the number of explanatory variables

Predictor Variables- Based on works of literature, the variables defining socio-economic characteristics of the community like duration of residence (N. Ross, 2002), the highest level of education (Lindström, 2008), age of residents (Xu et al., 2021), and annual family income from all sources (Panzeri et al., 2021), are taken as explanatory variables.

Predicted Variable- The overall perceived community resilience is taken as the predicted variable.

Table 4.4 Regression Output

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	3.858	.027		140.342	.000	3.804	3.912
Duration of Residence (in years)							
< 3 years	-.292	.039	-.436	-7.525	.000	-.368	-.215
3-6 years	-.099	.029	-.173	-3.390	.001	-.157	-.042
> 6 years	0 ^a						
Highest Level of Education							
High School	-.237	.058	-.122	-4.063	.000	-.353	-.122
Graduation	-.067	.022	-.116	-3.120	.002	-.110	-.025
Post-Graduation & above	0 ^a						
Annual Family income from all sources							
< 20 lakhs	-.483	.049	-.570	-9.941	.000	-.579	-.387
20-30 lakhs	-.349	.040	-.607	-8.817	.000	-.428	-.271
30-40 lakhs	-.195	.030	-.297	-6.467	.000	-.254	-.135
> 40 lakhs	0 ^a						
Age (in years)							
< 30 years	-.042	.026	-.052	-1.598	.112	-.094	.010
30-50 years	.033	.019	.057	1.692	.093	-.005	.071
> 50 years	0 ^a						
Number of observations	180						
R-squared	.876						
Adjusted R-squared	.869						

a. This parameter is set to zero because it is the reference category

The model has an appropriate fitness with an adjusted R^2 value of .869 i.e., the model proved useful in explaining 86.9% of the variance in the outcome variable i.e., self-perceived resilience. All explanatory variables have passed 95% confidence intervals, except for age. It means we are 95% confident that the community resilience score will fall between the upper and lower boundary as mentioned in the table for each parameter. Duration of residence, the highest level of education, and annual family income from all sources are the influencing

factors of perceived community resilience. The last category of each major parameter is the reference category, and the effect of other categories is measured relative to this category.

The above table indicates that a community got a higher resilience score if the duration of residence in the community is higher. Under the parameter of the duration of residence, 'more than 6 years of residence' is taken as the reference category, and the effects of other parameters are measured relative to this. From the table, it is evident that communities whose residents have a duration of residence in the community of less than 3 years have an overall perceived community resilience score of .292 less than the community whose residents have duration of residence in the community of more than 6 years. The community whose residents have a duration of residence in the community between 3 to 6 years have an overall perceived community resilience score of .099 less than the community with residents having more than 6 years of residence. This is consistent with the findings of N. Ross (2002), according to whom the longer a person lives in an area, their sense of community increases as they are more likely to participate in the community, resulting in increased interaction with their neighbours. In the sampled neighbourhoods, the respondents who have been residing in the locality for a longer duration, have more amicable relations with the neighbours, and are more participative in the community activities. This has been the case for both gated and non-gated communities.

Communities with residents having the higher highest level of education of the head of household have scored a higher resilience score. Under the parameter of the highest level of education, post-graduation and above is taken as the reference category. Communities with head of household whose highest level of education is high school have an overall perceived community resilience score .237 less than communities whose head of household have post-graduation and above as the highest level of education. Communities whose head of households have graduation as the highest level of education have a resilience score .067 less than the communities whose head of households have post-graduation as the highest level of education. This is in consistence with the findings of Lindström (2008) whose work has found high correlation of educational attainment with access to community resources. Highly educated individuals and communities are reported to have better preparedness and response to the emergency situations like the COVID-19 pandemic, and hence suffer lower negative impacts, and are able to recover faster. Educated communities have greater flexibility in taking up new opportunities during the crisis situation. Hence, educated communities take less time to recover. The gated neighbourhoods are resided by members who are highly educated, and these neighbourhoods have been able to develop plans and strategies for a quick recovery.

It is, however, inconsistent with the study by Robinson & Wilkinson (1995) and Bishop et al. (1997), which have found a negative relationship between education level and community resilience. Other research, however, has not found education level to influence sense of community (Mak et al., 2009; Peterson et al., 2008).

Communities with residents whose annual family income is less than 20 lakhs have a resilience score of .483 less than communities whose residents have an income of more than 40 lakhs. Communities with residents whose income is between 20 to 30 lakhs have a resilience score of .195 less than that of communities whose residents have an income of more than 40 lakhs. Communities whose residents have income between 30 to 40 lakhs have a resilience score of .349 less than that of communities whose members have an income of more than 40 lakhs. This is in line with the findings of Xu et al., (2021) who found that income levels positively affect the economic capital of the community and result in enhanced disaster resilience. The sampled gated communities, with members belonging to higher income group, have arranged the oxygen cylinders and concentrators for the community members, and were ready to spend any sum of money to keep themselves prepared for any unforeseen circumstances. Their preparedness is a way of enhancing their resilience. Moreover, many of them also paid full salary to their domestic servants during complete lockdown, hence aided the recovery of the vulnerable groups.

However, the parameter of age is not significant at 95% confidence level. Less than 30 years age category is significant at 80% confidence level, and 30 to 50 years age category is significant at 90% confidence level. Communities that are resided by residents who are less than 30 years of age have a resilience score of .042 less than that of communities which are resided by residents who are more than 50 years of age. Communities whose residents are aged between 30 and 50 years have a resilience score of .022 more than communities with residents aged 50 years and more. Though elderlies through their experiences can help overcome disastrous situations, but the current health emergency in the form of COVID-19 is a different kind of scenario altogether. Since a large proportion of the elderly suffers from comorbidity in the form of chronic illnesses like high blood pressure, diabetes, CVD, renal dysfunction etc., hence, they suffer from serious symptoms if infected by COVID-19 and form a vulnerable group in the face of the pandemic. Younger populations i.e., aged 30 years and less have a higher prevalence of infection, hence it would slow down the recovery of the community since less proportion of healthy people would be there who could help other members of the community. Hence there is a differential impact of the pandemic on people of different age

groups, hence it influences the resilience capacity of a community depending upon the proportion of the vulnerable age group people in the community. This is in line with the study by Panzeri et al., (2021), whose study has found a curvilinear relationship between age and resilience, with younger and elder people at higher risks of psychological issues, hence particular attention is needed for the vulnerable groups, such as elderlies, and patients with pre-existing medical issues, for whom COVID-19 may result in an increased risk of developing dangerous consequences and detrimental effects on both mental and physical health.

Hence, the factors which lead to the higher value of CRI (e.g., higher education level, higher duration of residence, a lower proportion of the old-age population) also lead to a higher perception of the resilience of communities to disasters.

4.4 Conclusion

Community members are the first-hand responders to any crisis situation, and the COVID-19 pandemic is no exception. The social capital of the community along with the preparedness helps a community in effectively overcoming the crisis situation rolled out by the pandemic. A neighbourhood unit is an essential place where community members live and interact with one another, develop social cohesion, and social trust, and develop a sense of belonging to the community, which influences the response of community members to the shared crisis. Community members' perception of the resilience of their communities determines the outcomes while dealing with the crisis. Hence, communities which have a higher perception of leadership, collective efficacy, preparedness, place attachment, and social trust among the community members are better able to mobilize and use resources and cooperate to overcome adversity. There is a significant difference between gated communities and non-gated communities in the aspects of preparedness in the face of a crisis situation, leadership, place attachment, and collective efficacy. These differences can be attributed to the difference in the institutional structure of the two residential community types. However, gated and non-gated communities do not have a significant difference in the social trust aspect of community resilience. Community resilience is influenced by the duration of residence, the highest level of education, and annual family income from all sources, each having a positive relationship with community resilience. Hence, community resilience is influenced by a multitude of factors operating together, and the interplay of these factors determines the resilience of each community.

Chapter 5

Conclusion

The community members are at the forefront in experiencing a disaster and are the first ones to respond to the crisis. When a pandemic strikes, the state is not always in a position to instantly deliver aid to the communities, hence, enabling communities to enhance their local capacities, so that they are able to mobilize community resources during the emergency, is a way to mitigate the adverse impacts of the disaster.

The COVID-19 pandemic has created an unprecedented global emergency and the entire world is grappling with the challenge of curbing its spread and providing medical care to the huge numbers of people infected. COVID-19 is considered a global disaster, it is, however, distinct from other man-made or natural disasters in terms of its geographic scope and impacts. Since it has impacted the entire population and its impact span over a longer period of time, hence the recovery process from the pandemic is entirely different from other disasters, and communities had not been prepared to face the consequences drawn upon by it.

5.1 Major Findings

Responses to the pandemic have been at multiple levels, i.e., at global, national, community, and household. The development of interdependencies between communities, civil societies, the government sector, and the private sector is necessary for effective leadership and participation of various stakeholders, through a top-down, multi-level governance approach, in order to respond to the pandemic in an integrated city-level governance framework. The integrated approach to governance allows for long-term emergency planning, avoidance of conflicts between different sectors of governance, and the maximisation of advantages from the participation of numerous stakeholders, each contributing its own expertise for efficient management. The city of Gurugram saw the involvement of several state and non-state actors like the municipal body (Municipal Corporation of Gurugram), the planning body (Gurugram Metropolitan Development Authority), civil society organizations, and the residential welfare associations, for the management of the pandemic situation in the city, when there was a surge in the daily cases and the health infrastructure of the city could not meet the demand.

The diverse and complex nature of the COVID-19 pandemic, calls for informal bottom-up approaches for implementing prevention strategies and emergency response to the pandemic,

since relying solely on top-down administrative measures is insufficient and challenging to mitigate the negative effects of the pandemic. Therefore, it calls for the empowerment of communities to develop their capacity and capability to prevent disasters, and recover quickly from the detrimental consequences of COVID-19. Thus, by enhancing community resilience, the spread of pandemics like COVID-19 can be restricted, and it would aid local decision-makers to develop effective and rapid response strategy aimed at mitigating the impacts of the pandemic, and aid the recovery process.

At the level of residential localities, the pandemic has highlighted the need for residential associations to take cognizance of the local problems by providing local solutions. However, different communities in the same geographical area have different levels of disaster resilience in the whole process of disaster response, based upon their socio-economic endowments and certain levels of community-specific vulnerabilities. Thus, resilience is an inherent capacity of a community which can be enhanced by community-specific solutions, instead of general interventions.

Every community is associated with certain positive and negative attributes. Negative attributes are pre-disaster vulnerabilities and social risks of varied nature, and positive attributes are capacities, resilience and adaptability. The interplay of these positive and negative elements determines the overall resilience of communities. In a neighbourhood unit, community members live and develop social cohesion and social trust by interacting with one another, which influences their response strategies during the pandemic. This is evident from the two types of neighbourhoods sampled for the study i.e., gated neighbourhoods and non-gated neighbourhoods.

Community resilience assessment findings of the two neighbourhoods, assessed through indicator-based and perception-based assessment measures, are consistent with one another. The two assessment measures are used because the perception-based assessment of resilience takes into consideration the socio-economic and institutional profile of the community, and provides information relating to the psychological component of the community, hence this approach used along with the indicator-based approach aids a more comprehensive assessment required for policy interventions aimed at enhancing resilience. Moreover, the perception of resilience by the community members impacts their resilience outcomes by influencing the community's ability to collectively use the resources to overcome adverse conditions.

A higher perception of the aspects of community resilience like 'leadership', 'preparedness', 'collective efficacy', 'place attachment', and 'social trust' in the sampled gated communities lead to effective mobilization of community resources, and their productive utilization to meet the crisis. This has enabled them to respond and recover in a comparatively better way from the pandemic-induced crisis. The infrastructural design like the restricted access to the gated communities, collective services, and community spaces that encourage social interaction are trigger factors for the formation of social capital in these communities. Gated communities have an active and effectively functioning RWA, whose office bearers have assumed strong leadership while navigating through uncharted waters during the pandemic. The infrastructure and the facilities of these communities serve the needs of elderlies during normal conditions, and specifically so in pandemic situations. The collective efficacy of gated communities is attributed to the gated nature of the community, with an actively functioning welfare body, which has a tendency to foster collective efforts for the improvement of the community. Whereas, in non-gated communities, mutual assistance and care for one another foster collective efficacy. Gated communities in the study are better prepared than non-gated communities, in terms of pandemic-related emergency plans and equipment in the form of community medical facilities. The restricted entry to the gated neighbourhood has given a sense of security to the residents, especially so during the pandemic time when it fostered the implementation of COVID prevention protocols, which enabled a sense of place among the residents, and fostered a sense of community. Due to all these reasons, there is a higher perception of community resilience among the members of gated communities, as compared to non-gated communities.

Whereas, in respect of the perceived social trust aspect of community resilience, gated and non-gated communities do not have a significant difference. The trust among the members of the community, and the friendly nature of the neighbours, aid the process of building up social trust among the community members. The restricted entry of gated communities has ensured a closely knitted network among the community members, and the social events in the form of community activities have strengthened this relationship. This enhances the availability of local support, with community members being the first responders. While in non-gated communities, social trust is a result of individual member's initiative to get into social interaction with the community members and develop a sense of trust and friendship.

Community resilience is influenced by several socio-demographic and economic factors like the duration of residence, the highest level of education, and annual family income from all sources, each having a positive relationship with community resilience.

The socio-demographic profile of the gated communities reveals that they have a higher proportion of the vulnerable population in the face of the COVID-19 pandemic like the elderly population and population with comorbidity in the form of chronic illness than the non-gated communities, which lowers the resilience of the community since, the vulnerable groups have the chances of developing severe symptoms, and also a high proportion of vulnerable group also means less number of healthy people who could help other community members. Whereas residents of gated communities have a higher level of education than the residents of non-gated communities, and higher education level has a positive influence on community resilience since it offers wise choices during times of crisis. Gated communities have a higher proportion of residents who have resided in the community for a shorter duration, and generally have less social capital developed, because of the shorter period of interaction, which exert a negative influence on resilience. The economic profile of the gated communities reveals that residents of gated communities are more resilient due to a higher proportion of households with more than one source of livelihood, and the engagement of a greater proportion of residents in the formal sector. Moreover, the impact of the pandemic on them had been mainly in the form of a reduction in income, and most of the residents had not experienced a major impact of the pandemic on their income. Their individual resilience aggregates to community resilience. The health and infrastructure profile of gated communities reveals that gated communities are better equipped with community medical facilities, had frequent vaccination and sanitation drives, and are in close proximity to tertiary hospitals, this ensures a quick response to any emergency situation and positively contributes to the community resilience. The institutional profile of gated communities reveals that they have an actively functioning RWA, which has led the initiative of providing help to families of COVID-positive patients and kept the records of maids, and other supporting staff of the society, which could help in contact tracing, thus contributing positively to community resilience. Therefore, it is seen that some traits of gated communities lead to a lowering of the resilience of such communities, whereas, there are some other traits which render these communities higher resilience. Hence, it is the interplay of negative and positive causative factors which determine the overall resilience of communities, depending upon which factor comes out to play a dominant role.

The composite community resilience index prepared to assess the community resilience of the two sampled neighbourhood types, along the social, economic, health and infrastructure, and institutional dimensions indicates that the gated communities have a higher resilience score along these dimensions. The index, however, captures a static image of a continuous and dynamic process, and hence, hides various realities, and follows a common approach for the varied community types.

Thus, the different community types have responded differently to the pandemic and had their own adaptation strategies. During the lockdown period when people were confined within their houses, residents evolved ideas to adapt to the 'new normal' to overcome the monotonous life, through ways of organizing online competitions among the households of the communities. This not only maintained vigour among the community members, but also generated a sense of being united in difficult times, and promoted emotional and psychological well-being. The work-from-home culture has been in trend, is an adaptation to COVID-19 disruption of routine office work. This adaptation measure though is associated with the upsetting of work-life balance. To resolve these issues related to psychological stress, resulting due to lockdown, gated communities have come up with initiatives like online one-to-one sessions with specialists, and yoga and happiness sessions.

The concept of resilience, however, does not imply that the state is relieved of all responsibilities and that communities must bear the entire burden of recovery. In order for communities to absorb, adapt, and recover from the crisis situation, government assistance is crucial. The focus should be to restore the status quo as early as possible. There is a requirement for a combined intervention by the state and community. Community-based organisations' efforts of providing social and economic assistance to the vulnerable sections, disseminating information, promoting social distancing and encouraging residents to stay in their homes, and have contributed significantly to the local governments.

5.2 Policy Relevance

The findings of the study indicate towards the policy intervention for community-based pandemic prevention and control. A resilient community takes care of the needs of the vulnerable population. The ability of the vulnerable group to cope with the impacts of the pandemic is relatively weak, hence they require special attention. Therefore, the post-pandemic era necessitates learning lessons from both successes and failures during the COVID-19 pandemic, so as to improve the ability of residents, community leaders, and governments at all

levels, to deal with the crisis situation, and to develop long-term policies that guarantee the communities are resilient in the event of any future crisis, by adopting a proactive rather than reactive strategy.

The study highlights the necessity of formulation of urban policies that address social inequalities relating to access to healthcare during pandemic. Cities must emphasise upon fostering resilience by implementing policies that promote inclusion and equitable resource distribution while creating new infrastructure and urban spaces. This will enable them to effectively address any future such public health crisis. Moreover, there is a requirement of effective devolution of jurisdictions to the city governments in terms of funds, functions, and functionaries. This became evident from the experiences of the pandemic where a greater autonomy of local governing body was crucial since they were better equipped with the knowledge of emergent needs of the local communities.

The existing socio-economic inequalities among the city's neighbourhoods (i.e., gated and non-gated neighbourhoods) are brought to the forefront by the pandemic, and resolving these inequalities should be a top priority of the authorities for the effective recovery of the cities from the pandemic. It is the local neighbourhood and local leadership which is at forefront of collective activity to help those who were affected by the pandemic and pandemic-induced lockdown. The goal of post-pandemic-urban development should be neighbourhood-centric which aims toward building neighbourhoods that are resident-friendly and caters to the requirements of residents of all age groups. As the cities begin to recover, economic development should not be the sole priority, social and environmental sustainability must, however, be taken into account in addition to economic progress. To develop resilient urban community designs, urban planners must leverage the experiences of communities. Urban planners should borrow from the gated neighbourhoods, the idea of residential space infrastructure that safeguard people's health, and foster identity formation, community building, and social interactions, that would aid the recovery process if the community is stricken by a disaster, and promote such infrastructure across all types of neighbourhoods of the city.

5.3 Potential for Future Research

The study had tried to address a range of issues, given the time constraints, but has the potential for future research addressing questions like how can the newly gained state capabilities that are focused on serving the public interest be preserved and integrated into innovative urban governance models; what advancements in urban governance can lead to a change from models of government that emphasis urban competitiveness to those that emphasise cooperation and inclusivity with a focus on enhancing community capacities; what has been the distribution of constraints and costs across communities having varying resilience capacities. Research on these themes would probably aid the urban communities to become more resilient and sustainable and urban governance be more collaborative.

BIBLIOGRAPHY

- 2009 UNISDR terminology on disaster risk reduction / UNDRR. (n.d.). Retrieved February 25, 2022, from <https://www.undrr.org/publication/2009-unisdr-terminology-disaster-risk-reduction>
- Abdalla, S. M., Koya, S. F., Jamieson, M., Verma, M., Haldane, V., Jung, A. S., Singh, S., Nordström, A., Obaid, T., Legido-Quigley, H., & McNab, C. (2021). Investing in trust and community resilience: Lessons from the early months of the first digital pandemic. *The BMJ*, 375. <https://doi.org/10.1136/bmj-2021-067487>
- Abramson, D. M., Grattan, L. M., Mayer, B., Colten, C. E., Arosemena, F. A., Bedimo-Rung, A., & Lichtveld, M. (2015). The Resilience Activation Framework: a Conceptual Model of How Access to Social Resources Promotes Adaptation and Rapid Recovery in Post-disaster Settings. *Journal of Behavioral Health Services and Research*, 42(1). <https://doi.org/10.1007/s11414-014-9410-2>
- Afrin, S., Chowdhury, F. J., & Rahman, Md. M. (2021). COVID-19 Pandemic: Rethinking Strategies for Resilient Urban Design, Perceptions, and Planning. *Frontiers in Sustainable Cities*, 3. <https://doi.org/10.3389/frsc.2021.668263>
- Agarwal, G., McDonough, B., Angeles, R., Pirrie, M., Marzanek, F., McLeod, B., & Dolovich, L. (2015). Rationale and methods of a multicentre randomised controlled trial of the effectiveness of a Community Health Assessment Programme with Emergency Medical Services (CHAP-EMS) implemented on residents aged 55 years and older in subsidised seniors' housing buildings in Ontario, Canada. *BMJ Open*, 5(6). <https://doi.org/10.1136/bmjopen-2015-008110>
- Aharonson-Daniel, L., Lahad, M., Leykin, D., Cohen, O., Goldberg, A., & Nato. (2014). Community Resilience Assessment Meeting the Challenge - the Development of the Conjoint Community Resiliency Assessment. *NATO Advanced Research Workshop on Resiliency - Enhancing Coping with Crisis and Terrorism*, 119(PG-108-127).
- Ahmed, R., Seedat, M., van Niekerk, A., & Bulbulia, S. (2004). Discerning community resilience in disadvantaged communities in the context of violence and injury prevention. *South African Journal of Psychology*, 34(3). <https://doi.org/10.1177/008124630403400304>
- Ainuddin, S., & Routray, J. K. (2012). Earthquake hazards and community resilience in Baluchistan. *Natural Hazards*, 63(2). <https://doi.org/10.1007/s11069-012-0201-x>
- Alcántara-Ayala, I., Burton, I., Lavell, A., Mansilla, E., Maskrey, A., Oliver-Smith, A., & Ramírez-Gómez, F. (2021). Editorial: Root causes and policy dilemmas of the COVID-19 pandemic global disaster. In *International Journal of Disaster Risk Reduction* (Vol. 52). <https://doi.org/10.1016/j.ijdr.2020.101892>
- Aldrich, D. P. (2012). Social, not physical, infrastructure: The critical role of civil society after the 1923 Tokyo earthquake. *Disasters*, 36(3). <https://doi.org/10.1111/j.1467-7717.2011.01263.x>
- Aldrich, D. P., & Meyer, M. A. (2015). Social Capital and Community Resilience. *American Behavioral Scientist*, 59(2). <https://doi.org/10.1177/0002764214550299>
- Aldrich, D. P. (2017). The importance of social capital in building community resilience. In *Rethinking Resilience, Adaptation and Transformation in a Time of Change*. https://doi.org/10.1007/978-3-319-50171-0_23

- Alexander, D. E. (2013). Resilience and disaster risk reduction: An etymological journey. *Natural Hazards and Earth System Sciences*, 13(11). <https://doi.org/10.5194/nhess-13-2707-2013>
- Alonge, O., Sonkarlay, S., Gwaikolo, W., Fahim, C., Cooper, J. L., & Peters, D. H. (2019). Understanding the role of community resilience in addressing the Ebola virus disease epidemic in Liberia: a qualitative study (community resilience in Liberia). *Global Health Action*, 12(1). <https://doi.org/10.1080/16549716.2019.1662682>
- Alraouf, A. A. (2021). The new normal or the forgotten normal: contesting COVID-19 impact on contemporary architecture and urbanism. *Archnet-IJAR*, 15(1). <https://doi.org/10.1108/ARCH-10-2020-0249>
- Asfour, O. S., & Zourob, N. (2017). The neighbourhood unit adequacy: An analysis of the case of Gaza, Palestine. *Cities*, 69. <https://doi.org/10.1016/j.cities.2017.05.014>
- Asfour, O. S. (2022). Housing Experience in Gated Communities in the Time of Pandemics: Lessons Learned from COVID-19. *International Journal of Environmental Research and Public Health*, 19(4). <https://doi.org/10.3390/ijerph19041925>
- Austin, D. M., Furr, L. A., & Spine, M. (2002). The effects of neighborhood conditions on perceptions of safety. *Journal of Criminal Justice*, 30(5). [https://doi.org/10.1016/S0047-2352\(02\)00148-4](https://doi.org/10.1016/S0047-2352(02)00148-4)
- Bai, X., Nagendra, H., Shi, P., & Liu, H. (2020). Cities: build networks and share plans to emerge stronger from COVID-19. *Nature*, 584(7822). <https://doi.org/10.1038/d41586-020-02459-2>
- Baker, D., & Refsgaard, K. (2007). Institutional development and scale matching in disaster response management. *Ecological Economics*, 63(2–3). <https://doi.org/10.1016/j.ecolecon.2007.01.007>
- Bandura, A., Freeman, W. H., & Lightsey, R. (1999). Self-Efficacy: The Exercise of Control. *Journal of Cognitive Psychotherapy*, 13(2). <https://doi.org/10.1891/0889-8391.13.2.158>
- Bargain, O., & Aminjonov, U. (2020). Trust and compliance to public health policies in times of COVID-19. *Journal of Public Economics*, 192. <https://doi.org/10.1016/j.jpubeco.2020.104316>
- Barnett, D. J., Rosenblum, A. J., Strauss-Riggs, K., & Kirsch, T. D. (2020). Readying for a post-COVID-19world: The case for concurrent pandemic disaster response and recovery efforts in public health. In *Journal of Public Health Management and Practice* (Vol. 26, Issue 4). <https://doi.org/10.1097/PHH.0000000000001199>
- Benavides, A. D., & Nukpezah, J. A. (2020). How Local Governments Are Caring for the Homeless During the COVID-19 Pandemic. *American Review of Public Administration*, 50(6–7). <https://doi.org/10.1177/0275074020942062>
- Béné, C. (2013). Towards a Quantifiable Measure of Resilience. *IDS Working Papers*, 2013(434). <https://doi.org/10.1111/j.2040-0209.2013.00434.x>
- Bergstrand, K., Mayer, B., Brumback, B., & Zhang, Y. (2015). Assessing the Relationship Between Social Vulnerability and Community Resilience to Hazards. *Social Indicators Research*, 122(2). <https://doi.org/10.1007/s11205-014-0698-3>

- Berkes, F., & Ross, H. (2013). Community Resilience: Toward an Integrated Approach. *Society and Natural Resources*, 26(1). <https://doi.org/10.1080/08941920.2012.736605>
- Bhandari, S., & Alonge, O. (2020). Measuring the resilience of health systems in low- and middle-income countries: A focus on community resilience. In *Health Research Policy and Systems* (Vol. 18, Issue 1). <https://doi.org/10.1186/s12961-020-00594-w>
- Bishop, P. D., Chertok, F., & Jason, L. A. (1997). Measuring sense of community: Beyond local boundaries. *Journal of Primary Prevention*, 18(2). <https://doi.org/10.1023/A:1024690424655>
- Blandy, S., Lister, D., Rowland, A., & Flint, J. (2003). Gated communities: a systematic review of the research evidence. In *hba.org.my*.
- Bond, C., Strong, A., Burger, N., Weiland, S., Saya, U., & Chandra, A. (2017). Resilience Dividend Valuation Model: Framework Development and Initial Case Studies. In *Resilience Dividend Valuation Model: Framework Development and Initial Case Studies*. <https://doi.org/10.7249/rr2129>
- Brodkin, E. Z. (2021). Street-Level Organizations at the Front Lines of Crises. *Journal of Comparative Policy Analysis: Research and Practice*, 23(1). <https://doi.org/10.1080/13876988.2020.1848352>
- Burton, C. G. (2015). A Validation of Metrics for Community Resilience to Natural Hazards and Disasters Using the Recovery from Hurricane Katrina as a Case Study. *Annals of the Association of American Geographers*, 105(1). <https://doi.org/10.1080/00045608.2014.960039>
- Basic, A., & Schubert, R. (2021). Social Resilience Indicators for Pandemic Crises. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3938198>
- Cacioppo, J. T., Reis, H. T., & Zautra, A. J. (2011). Social Resilience: The Value of Social Fitness With an Application to the Military. *American Psychologist*, 66(1). <https://doi.org/10.1037/a0021419>
- Carter, E. D. (2017). Pandemic: Tracking Contagions, from Cholera to Ebola and Beyond. *The AAG Review of Books*, 5(2). <https://doi.org/10.1080/2325548x.2017.1292580>
- Castleden, M., McKee, M., Murray, V., & Leonardi, G. (2011). Resilience thinking in health protection. In *Journal of Public Health* (Vol. 33, Issue 3). <https://doi.org/10.1093/pubmed/fdr027>
- Chaskin, R. J. (2008). Resilience, community, and resilient communities: Conditioning contexts and collective action. *Child Care in Practice*, 14(1). <https://doi.org/10.1080/13575270701733724>
- Chen, X., & Quan, R. (2021). A spatiotemporal analysis of urban resilience to the COVID-19 pandemic in the Yangtze River Delta. *Natural Hazards*, 106(1). <https://doi.org/10.1007/s11069-020-04493-9>
- Cheng, Y., Yu, J., Shen, Y., & Huang, B. (2020). Coproducing Responses to COVID-19 with Community-Based Organizations: Lessons from Zhejiang Province, China. *Public Administration Review*, 80(5). <https://doi.org/10.1111/puar.13244>

- Chen, Y., Klein, S. L., Garibaldi, B. T., Li, H., Wu, C., Osevala, N. M., Li, T., Margolick, J. B., Pawelec, G., & Leng, S. X. (2021). Aging in COVID-19: Vulnerability, immunity and intervention. In *Ageing Research Reviews* (Vol. 65). <https://doi.org/10.1016/j.arr.2020.101205>
- Cohen, O., Leykin, D., Lahad, M., Goldberg, A., & Aharonson-Daniel, L. (2013). The conjoint community resiliency assessment measure as a baseline for profiling and predicting community resilience for emergencies. *Technological Forecasting and Social Change*, 80(9). <https://doi.org/10.1016/j.techfore.2012.12.009>
- Cohen, O., Shapira, S., Aharonson-Daniel, L., & Shamian, J. (2019). Confidence in health-services availability during disasters and emergency situations-does it matter?-lessons learned from an israeli population survey. *International Journal of Environmental Research and Public Health*, 16(19). <https://doi.org/10.3390/ijerph16193519>
- Coles, E., & Buckle, P. (2004). Developing community resilience as a foundation for effective disaster recovery. *Australian Journal of Emergency Management, The*, 19(4).
- Compare, C., Prati, G., Guarino, A., Gatti, F., Procentese, F., Fedi, A., Aresi, G. U., Gattino, S., Marzana, D., Tzankova, I., & Albanesi, C. (2021). Predictors of prosocial behavior during the covid-19 national lockdown in italy: Testing the role of psychological sense of community and other community assets. *Community Psychology in Global Perspective.*, 7(2). <https://doi.org/10.1285/i24212113v7i2p22>
- Cox, R. S., & Perry, K. M. E. (2011). Like a Fish Out of Water: Reconsidering Disaster Recovery and the Role of Place and Social Capital in Community Disaster Resilience. *American Journal of Community Psychology*, 48(3–4). <https://doi.org/10.1007/s10464-011-9427-0>
- Cumming, G. S., Barnes, G., Perz, S., Schmink, M., Sieving, K. E., Southworth, J., Binford, M., Holt, R. D., Stickler, C., & van Holt, T. (2005). An exploratory framework for the empirical measurement of resilience. *Ecosystems*, 8(8). <https://doi.org/10.1007/s10021-005-0129-z>
- Cutter, S. L., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E., & Webb, J. (2008). A place-based model for understanding community resilience to natural disasters. *Global Environmental Change*, 18(4). <https://doi.org/10.1016/j.gloenvcha.2008.07.013>
- Cutter, S. L., Burton, C. G., & Emrich, C. T. (2010). Disaster Resilience Indicators for Benchmarking Baseline Conditions. *Journal of Homeland Security and Emergency Management*, 7(1). <https://doi.org/10.2202/1547-7355.1732>
- Cutter, S. L. (2016). The landscape of disaster resilience indicators in the USA. *Natural Hazards*, 80(2). <https://doi.org/10.1007/s11069-015-1993-2>
- Cyr, J., Bianchi, M., González, L., & Perini, A. (2021). Governing a Pandemic: Assessing the Role of Collaboration on Latin American Responses to the COVID-19 Crisis. *Journal of Politics in Latin America*, 13(3). <https://doi.org/10.1177/1866802x211049250>
- da Silva Corrêa, L., & Perl, A. (2022). Global cities, hypermobility, and Covid-19. *Cities*, 122. <https://doi.org/10.1016/j.cities.2021.103537>
- Dasgupta, S., & Grewal, K. (2020, September 11). Delhi's Covid burden spills into Faridabad & Gurugram, officials blame porous border, 'unlock.' *The Print*. <https://theprint.in/health/delhis-covid-burden-spills-into-faridabad-gurugram-officials-blame-porous-border-unlock/500550/>

- Dayal, S. (2021, May 11). Gurgaon: 20 NGOs, 100 volunteers, 2 delivery agencies help with doorstep O2 delivery. *The Indian EXPRESS*.
- Drogendijk, A. N., van der Velden, P. G., Gersons, B. P. R., & Kleber, R. J. (2011). Lack of perceived social support among immigrants after a disaster: Comparative study. *British Journal of Psychiatry*, 198(4). <https://doi.org/10.1192/bjp.bp.110.077644>
- Duggal, R. (2020). Mumbai's struggles with public health crises from plague to COVID-19. In *Economic and Political Weekly* (Vol. 55, Issue 21).
- Dynes, R. R., & Fischer, H. W. (1995). Response to Disaster: Fact Versus Fiction and Its Perpetuation, the Sociology of Disaster. *Social Forces*, 74(1). <https://doi.org/10.2307/2580659>
- Early Insights from Haryana Haryana Institute of Public Administration*. (n.d.).
- Ejaz, H., Alsrhani, A., Zafar, A., Javed, H., Junaid, K., Abdalla, A. E., Abosalif, K. O. A., Ahmed, Z., & Younas, S. (2020). COVID-19 and comorbidities: Deleterious impact on infected patients. In *Journal of Infection and Public Health* (Vol. 13, Issue 12). <https://doi.org/10.1016/j.jiph.2020.07.014>
- Explained: What are containment zones, how are they demarcated?* (2020, July 3).
- Farooqui, M. H., & Malhotra, S. (2020). Role of the District Collector (District Magistrate or Deputy Commissioner) in the COVID-19 Response. In *Accountability Initiative*. <https://doi.org/10.13140/RG.2.2.12101.88807>
- Frankenberg, E., Sikoki, B., Sumantri, C., Suriastini, W., & Thomas, D. (2013). Education, vulnerability, and resilience after a natural disaster. *Ecology and Society*, 18(2). <https://doi.org/10.5751/ES-05377-180216>
- Fransen, J., Peralta, D. O., Vanelli, F., Edelenbos, J., & Olvera, B. C. (2022). The emergence of Urban Community Resilience Initiatives During the COVID-19 Pandemic: An International Exploratory Study. *European Journal of Development Research*, 34(1). <https://doi.org/10.1057/s41287-020-00348-y>
- Friedli, L. (2013). "What we've tried, hasn't worked": The politics of assets based public health 1. *Critical Public Health*, 23(2). <https://doi.org/10.1080/09581596.2012.748882>
- Gallopín, G. C. (2006). Linkages between vulnerability, resilience, and adaptive capacity. *Global Environmental Change*, 16(3). <https://doi.org/10.1016/j.gloenvcha.2006.02.004>
- Gherghina, S., Volintiru, C., & Sigurjonsson, T. O. (2022). Making a Difference: The Effects of Institutional Resilience in Society during COVID-19. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4030191>
- Gibson, C. A. (2010). An integrated approach to managing disruption-related risk: life and death in a model community. *Journal of Business Continuity & Emergency Planning*, 4(3).
- González, M. E. C., Vera, C. E. M., Calatayud, M. M., Dueñas, R. G., González, Á. R. M., Pérez, Á. R. L., & Oramas, R. M. A. (2020). Social knowledge networks for promoting environmental education in coastal communities from central-southern region of Cuba. *Regional Studies in Marine Science*, 35. <https://doi.org/10.1016/j.rsma.2020.101115>

- Government of Haryana. (n.d.). *Best Practices in Haryana: Fight Against COVID 19*.
- Grant, J., & Mittelsteadt, L. (2004). Types of gated communities. *Environment and Planning B: Planning and Design*, 31(6). <https://doi.org/10.1068/b3165>
- Grennan, D. (2019). What Is a Pandemic? In *JAMA - Journal of the American Medical Association* (Vol. 321, Issue 9). <https://doi.org/10.1001/jama.2019.0700>
- Guest, A. M., Cover, J. K., Matsueda, R. L., & Kubrin, C. E. (2006). Neighborhood Context and Neighboring Ties. *City & Community*, 5(4). <https://doi.org/10.1111/j.1540-6040.2006.00189.x>
- Gurgaon: 78% population has antibodies against Covid, finds third serological survey. (2021, October 19). *The Indian EXPRESS*. <https://indianexpress.com/article/cities/delhi/78-of-gurgaons-population-has-antibodies-against-covid-finds-third-serological-survey-7578958/>
- Gurugram reviews preparedness for prevention of 3rd Covid-19 wave. (2021, September 6). *Business Standard*. https://www.business-standard.com/article/current-affairs/gurugram-reviews-preparedness-for-prevention-of-3rd-covid-19-wave-121090601183_1.html
- Gururani, S. (2013). Flexible planning: The making of India's 'Millennium City,' Gurgaon. In *Ecologies of Urbanism in India: Metropolitan Civility and Sustainability*. <https://doi.org/10.5790/hongkong/9789888139767.003.0005>
- Haas, S., Gianoli, A., & van Eerd, M. (2021). The roles of community resilience and risk appraisal in climate change adaptation: the experience of the Kannagi Nagar resettlement in Chennai. *Environment and Urbanization*, 33(2). <https://doi.org/10.1177/0956247821993391>
- Halder, S. (2021). *Community Resilience: A Potential Answer to the Emerging Pandemic*. https://doi.org/10.1007/978-981-33-6440-0_15
- Hamidi, S., Sabouri, S., & Ewing, R. (2020). Does Density Aggravate the COVID-19 Pandemic? *Journal of the American Planning Association*, 86(4). <https://doi.org/10.1080/01944363.2020.1777891>
- Haryana CM inaugurates Integrated Command and Control Centre Gurugram for managing COVID. (2021, May 17). *The Statesman*. <https://www.thestatesman.com/india/haryana-cm-inaugurates-integrated-command-control-centre-gurugram-managing-covid-1502967855.html>
- Holling, C. S. (1973). Resilience and stability of ecological systems. *Annual Review of Ecology and Systematics*, 4.
- Holling, C. S. (2013). Resilience and stability of ecological systems. In *The Future of Nature: Documents of Global Change*. <https://doi.org/10.12987/9780300188479-023>
- Hoskins, B. L., & Mascherini, M. (2009). Measuring active citizenship through the development of a composite indicator. *Social Indicators Research*, 90(3). <https://doi.org/10.1007/s11205-008-9271-2>
- How Coronavirus Spreads | CDC*. (n.d.). Retrieved February 25, 2022, from <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html>

- Hu, M., Roberts, J. D., Azevedo, G. P., & Milner, D. (2021). The role of built and social environmental factors in Covid-19 transmission: A look at America's capital city. *Sustainable Cities and Society*, 65. <https://doi.org/10.1016/j.scs.2020.102580>
- Imperiale, A. J., & Vanclay, F. (2021). Conceptualizing community resilience and the social dimensions of risk to overcome barriers to disaster risk reduction and sustainable development. *Sustainable Development*, 29(5). <https://doi.org/10.1002/sd.2182>
- Irlacher, M., & Koch, M. (2021). Working from Home, Wages, and Regional Inequality in the Light of COVID-19. *Jahrbucher Fur Nationalokonomie Und Statistik*, 241(3). <https://doi.org/10.1515/jbnst-2020-0030>
- Jee, Y. (2020). WHO International Health Regulations Emergency Committee for the COVID-19 outbreak. In *Epidemiology and Health* (Vol. 42). <https://doi.org/10.4178/epih.e2020013>
- Jewett, R. L., Mah, S. M., Howell, N., & Larsen, M. M. (2021). Social Cohesion and Community Resilience During COVID-19 and Pandemics: A Rapid Scoping Review to Inform the United Nations Research Roadmap for COVID-19 Recovery. *International Journal of Health Services*, 51(3). <https://doi.org/10.1177/0020731421997092>
- Jones, L., & Tanner, T. (2017). 'Subjective resilience': using perceptions to quantify household resilience to climate extremes and disasters. *Regional Environmental Change*, 17(1). <https://doi.org/10.1007/s10113-016-0995-2>
- Jones, L., & d'Errico, M. (2019). Whose resilience matters? Like-for-like comparison of objective and subjective evaluations of resilience. *World Development*, 124. <https://doi.org/10.1016/j.worlddev.2019.104632>
- Kaushik, A. (2019). Planning of private gated development: An analysis of gated vs non-gated neighbourhoods, city of gurugram, India. *Planning Malaysia*, 17(2). <https://doi.org/10.21837/pmjournal.v17.i10.643>
- Kawachi, I., Subramanian, S. v., & Kim, D. (2008). Social capital and health: A decade of progress and beyond. In *Social Capital and Health*. https://doi.org/10.1007/978-0-387-71311-3_1
- Kenny, S. (2020). Covid-19 and community development. *Community Development Journal*, 55(4). <https://doi.org/10.1093/cdj/bsaa020>
- Kharazmi, E., Bordbar, S., & Gholampoor, H. (2021). The pattern of health insurance economic resilience in the Covid 19 pandemic shock. *BMC Research Notes*, 14(1). <https://doi.org/10.1186/s13104-021-05779-2>
- Kickbusch, I., & Gleicher, D. (2012). Governance for health in: the 21st century. World Health Organization. *WHO Regional Office for Europe*.
- Kimhi, S., & Shomai, M. (2004). Community resilience and the impact of stress: Adult response to Israel's withdrawal from Lebanon. In *Journal of Community Psychology* (Vol. 32, Issue 4). <https://doi.org/10.1002/jcop.20012>
- Klinenberg, E. (2018). *Palaces for the people: How social infrastructure can help fight inequality, polarization, and the decline of civic life*. Crown.

- Koliou, M., van de Lindt, J. W., Mcallister, T. P., Ellingwood, B. R., Dillard, M., & Cutler, H. (2018). Sustainable and Resilient Infrastructure State of the research in community resilience: progress and challenges. *Sustainable and Resilient Infrastructure*, 0(0).
- Kruk, M. E., Myers, M., Varpilah, S. T., & Dahn, B. T. (2015). What is a resilient health system? Lessons from Ebola. In *The Lancet* (Vol. 385, Issue 9980). [https://doi.org/10.1016/S0140-6736\(15\)60755-3](https://doi.org/10.1016/S0140-6736(15)60755-3)
- Kumar, A. (2020, March 12). Haryana declares COVID-19 an epidemic. *The Hindu*.
- Kumar, A. (2021, April 26). *Gurugram health system crippled amid COVID crisis*. <https://www.thehindu.com/news/cities/Delhi/gurugram-health-system-crippled-amid-covid-crisis/article34409612.ece>
- Lai, K. Y., Webster, C., Kumari, S., & Sarkar, C. (2020). The nature of cities and the Covid-19 pandemic. In *Current Opinion in Environmental Sustainability* (Vol. 46). <https://doi.org/10.1016/j.cosust.2020.08.008>
- Lak, A., Hasankhan, F., & Garakani, S. A. (2020). Principles in practice: Toward a conceptual framework for resilient urban design. *Journal of Environmental Planning and Management*, 63(12). <https://doi.org/10.1080/09640568.2020.1714561>
- Lak, A., Hakimian, P., & Sharifi, A. (2021). An evaluative model for assessing pandemic resilience at the neighborhood level: The case of Tehran. *Sustainable Cities and Society*, 75. <https://doi.org/10.1016/j.scs.2021.103410>
- Lemyre, L., Clément, M., Corneil, W., Craig, L., Boutette, P., Tyshenko, M., Karyakina, N., Clarke, R., & Krewski, D. (2005). A psychosocial risk assessment and management framework to enhance response to CBRN terrorism threats and attacks. *Biosecurity and Bioterrorism*, 3(4). <https://doi.org/c>
- Levine, S. (2014). Assessing resilience: why quantification misses the point. *Overseas Development Institute*, July.
- Leykin, D., Lahad, M., Cohen, R., Goldberg, A., & Aharonson-Daniel, L. (2016). The dynamics of community resilience between routine and emergency situations. *International Journal of Disaster Risk Reduction*, 15. <https://doi.org/10.1016/j.ijdr.2016.01.008>
- Li, S., Ma, S., & Zhang, J. (2021). Association of built environment attributes with the spread of COVID-19 at its initial stage in China. *Sustainable Cities and Society*, 67. <https://doi.org/10.1016/j.scs.2021.102752>
- Lindström, M. (2008). Social capital and health-related behaviors. In *Social Capital and Health*. https://doi.org/10.1007/978-0-387-71311-3_10
- Liu, Z., Lin, S., Shen, Y., & Lu, T. (2021). Collaborative neighborhood governance and its effectiveness in community mitigation to COVID-19 pandemic: From the perspective of community workers in six Chinese cities. *Cities*, 116. <https://doi.org/10.1016/j.cities.2021.103274>
- Long, P., Armstrong, N., Perrin, K., Parker, W. M., & Hidek, M. (2010). Building Resilient Communities: A Preliminary Framework for Assessment. *Homeland Security Affairs*, 6(3).

- Longstaff, P. H., & Yang, S. U. (2008). Communication management and trust: Their role in building resilience to “surprises” such as natural disasters, pandemic flu, and terrorism. *Ecology and Society*, 13(1). <https://doi.org/10.5751/ES-02232-130103>
- Lurie, N., & Dubowitz, T. (2007). Health disparities and access to health. In *Journal of the American Medical Association* (Vol. 297, Issue 10). <https://doi.org/10.1001/jama.297.10.1118>
- Lyons, A., Fletcher, G., & Bariola, E. (2016). Assessing the well-being benefits of belonging to resilient groups and communities: Development and testing of the Fletcher-Lyons collective resilience scale (FLCRS). *Group Dynamics*, 20(2). <https://doi.org/10.1037/gdn0000041>
- Mackenzie, J. S., & Jeggo, M. (2019). The one health approach-why is it so important? In *Tropical Medicine and Infectious Disease* (Vol. 4, Issue 2). <https://doi.org/10.3390/tropicalmed4020088>
- MacQueen, K. M., McLellan, E., Metzger, D. S., Kegeles, S., Strauss, R. P., Scotti, R., Blanchard, L., & Trotter, R. T. (2001). What is community? An evidence-based definition for participatory public health. *American Journal of Public Health*, 91(12). <https://doi.org/10.2105/AJPH.91.12.1929>
- Magis, K. (2010). Community resilience: An indicator of social sustainability. *Society and Natural Resources*, 23(5). <https://doi.org/10.1080/08941920903305674>
- Majeed, S., & Ramkissoon, H. (2020). Health, Wellness, and Place Attachment During and Post Health Pandemics. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.573220>
- Mak, W. W. S., Cheung, R. Y. M., & Law, L. S. C. (2009). Sense of community in Hong Kong: Relations with community-level characteristics and residents’ well-being. *American Journal of Community Psychology*, 44(1–2). <https://doi.org/10.1007/s10464-009-9242-z>
- Mamgain, R. P. (2021). Understanding labour market disruptions and job losses amidst COVID-19. *Journal of Social and Economic Development*, 23(S2). <https://doi.org/10.1007/s40847-020-00125-x>
- Mangi, E., Cheshmehzangi, A., & Botti, G. (2021). COVID-19, Gated Communities, and Urban Resilience: A Comparative Analysis Between China and Colombia. In *Urban Book Series*. https://doi.org/10.1007/978-3-030-84134-8_2
- Maroko, A. R., Nash, D., & Pavilonis, B. T. (2020). COVID-19 and Inequity: a Comparative Spatial Analysis of New York City and Chicago Hot Spots. *Journal of Urban Health*, 97(4). <https://doi.org/10.1007/s11524-020-00468-0>
- Mathur, A. (2021, April 2). Gurugram RWAs, firms tie up with Medanta Hospital for vaccination camps. *India Today*. <https://www.indiatoday.in/coronavirus-outbreak/vaccine-updates/story/gurugram-rwas-firms-tie-up-with-medanta-hospital-for-vaccination-camps-1786557-2021-04-02>
- McDaniels, T., Chang, S., Cole, D., Mikawoz, J., & Longstaff, H. (2008). Fostering resilience to extreme events within infrastructure systems: Characterizing decision contexts for mitigation and adaptation. *Global Environmental Change*, 18(2). <https://doi.org/10.1016/j.gloenvcha.2008.03.001>

- MCG engages RWAs in fight against Covid. (2020, June 19). *Hindustan Times*. <https://www.hindustantimes.com/cities/gurugram-mcg-engages-rwas-in-fight-against-covid/story-jjpGhfVmfgnHHDmlT7GW4H.html>
- McGuirk, P., Dowling, R., Maalsen, S., & Baker, T. (2021). Urban governance innovation and COVID-19. *Geographical Research*, 59(2). <https://doi.org/10.1111/1745-5871.12456>
- McMillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, 14(1). [https://doi.org/10.1002/1520-6629\(198601\)14:1<::AID-JCOP2290140103>3.0.CO;2-I](https://doi.org/10.1002/1520-6629(198601)14:1<::AID-JCOP2290140103>3.0.CO;2-I)
- Mei, C. (2020). Policy style, consistency and the effectiveness of the policy mix in China's fight against COVID-19. *Policy and Society*, 39(3). <https://doi.org/10.1080/14494035.2020.1787627>
- Mendes, L. (2020). How Can We Quarantine Without a Home? Responses of Activism and Urban Social Movements in Times of COVID-19 Pandemic Crisis in Lisbon. *Tijdschrift Voor Economische En Sociale Geografie*, 111(3). <https://doi.org/10.1111/tesg.12450>
- Mihunov, V. v., Lam, N. S. N., Rohli, R. v., & Zou, L. (2019). Emerging disparities in community resilience to drought hazard in south-central United States. *International Journal of Disaster Risk Reduction*, 41. <https://doi.org/10.1016/j.ijdr.2019.101302>
- Mirowsky, J., & Ross, C. E. (1999). Economic hardship across the life course. *American Sociological Review*, 64(4). <https://doi.org/10.2307/2657255>
- Mishra, S., Mazumdar, S., & Suar, D. (2010). Place attachment and flood preparedness. *Journal of Environmental Psychology*, 30(2). <https://doi.org/10.1016/j.jenvp.2009.11.005>
- Mohamed Salah, N., & Ayad, H. M. (2018). Why people choose gated communities: A case study of Alexandria metropolitan area. *Alexandria Engineering Journal*, 57(4). <https://doi.org/10.1016/j.aej.2017.10.008>
- Morens, D. M., Folkers, G. K., & Fauci, A. S. (2009). What is a pandemic? In *Journal of Infectious Diseases* (Vol. 200, Issue 7). <https://doi.org/10.1086/644537>
- Morgan, A. (2006). *Capability and Resilience: Beating the Odds*. www.ucl.ac.uk/capabilityandresilience
- Moscardino, U., Scrimin, S., Capello, F., & Altoè, G. (2010). Social support, sense of community, collectivistic values, and depressive symptoms in adolescent survivors of the 2004 Beslan terrorist attack. *Social Science and Medicine*, 70(1). <https://doi.org/10.1016/j.socscimed.2009.09.035>
- Municipal Corporation Gurugram. (n.d.). *MCG Fight Against COVID-19*.
- Naik, M. (2020). State-society Interactions and Bordering Practices in Gurugram's Pandemic Response. *Urbanisation*, 5(2). <https://doi.org/10.1177/2455747120974531>
- Naja, F., & Hamadeh, R. (2020). Nutrition amid the COVID-19 pandemic: a multi-level framework for action. *European Journal of Clinical Nutrition*, 74(8). <https://doi.org/10.1038/s41430-020-0634-3>

- Natoli, L., Bell, V., Byrne, A., Tingberg, T., & McClelland, A. (2020). Community Engagement to Advance the GHSA: It's about Time. In *Health Security* (Vol. 18, Issue 4). <https://doi.org/10.1089/hs.2019.0099>
- Nivette, A., Ribeaud, D., Murray, A., Steinhoff, A., Bechtiger, L., Hepp, U., Shanahan, L., & Eisner, M. (2021). Non-compliance with COVID-19-related public health measures among young adults in Switzerland: Insights from a longitudinal cohort study. *Social Science and Medicine*, 268. <https://doi.org/10.1016/j.socscimed.2020.113370>
- Norris, F. H., Stevens, S. P., Pfefferbaum, B., Wyche, K. F., & Pfefferbaum, R. L. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, 41(1–2). <https://doi.org/10.1007/s10464-007-9156-6>
- Norris, F. H., Sherrieb, K., & Pfefferbaum, B. (2011). Community resilience: Concepts, assessment, and implications for intervention. In *Resilience and Mental Health: Challenges Across the Lifespan*. <https://doi.org/10.1017/CBO9780511994791.013>
- Nuzzo, J. B., Meyer, D., Snyder, M., Ravi, S. J., Lapascu, A., Souleles, J., Andrada, C. I., & Bishai, D. (2019). What makes health systems resilient against infectious disease outbreaks and natural hazards? Results from a scoping review. *BMC Public Health*, 19(1). <https://doi.org/10.1186/s12889-019-7707-z>
- Ompad, D. C., Palamar, J. J., Krause, K. D., Kapadia, F., & Halkitis, P. N. (2018). Reliability and Validity of a Material Resources Scale and Its Association With Depression Among Young Men Who Have Sex With Men: The P18 Cohort Study. *American Journal of Men's Health*, 12(5). <https://doi.org/10.1177/1557988316651206>
- Ostadtaghizadeh, A., Ardalan, A., Paton, D., Jabbari, H., & Khankeh, H. R. (2015). Community disaster resilience: A systematic review on assessment models and tools. *PLoS Currents*, 7(DISASTERS). <https://doi.org/10.1371/currents.dis.f224ef8efbdfcf1d508dd0de4d8210ed>
- Panzeri, A., Komici, K., Cerutti, P., Sacco, D., Pistono, M., & Ferrario, S. R. (2021). Gender differences and long-term outcome of over 75 elderlies in cardiac rehabilitation: Highlighting the role of psychological and physical factors through a secondary analysis of a cohort study. *European Journal of Physical and Rehabilitation Medicine*, 57(2). <https://doi.org/10.23736/S1973-9087.21.06484-4>
- Patel, S. S., Rogers, M. B., Amlôt, R., & Rubin, G. J. (2017). What Do We Mean by “Community Resilience”? A Systematic Literature Review of How It Is Defined in the Literature. *PLoS Currents*, 9. <https://doi.org/10.1371/currents.dis.db775aff25efc5ac4f0660ad9c9f7db2>
- Pathak, D., & Joshi, G. (2020). Impact of psychological capital and life satisfaction on organizational resilience during COVID-19: Indian tourism insights. In *Current Issues in Tourism*. <https://doi.org/10.1080/13683500.2020.1844643>
- Paton, D., & Johnston, D. (2001). Disasters and communities: Vulnerability, resilience and preparedness. *Disaster Prevention and Management: An International Journal*, 10(4). <https://doi.org/10.1108/EUM0000000005930>
- Paton, D., Millar, M., & Johnston, D. (2001). Community resilience to volcanic hazard consequences. *Natural Hazards*, 24(2). <https://doi.org/10.1023/A:1011882106373>

- Peterson, N. A., Speer, P. W., & McMillan, D. W. (2008). Validation of a brief sense of community scale: Confirmation of the principal theory of sense of community. *Journal of Community Psychology*, *36*(1). <https://doi.org/10.1002/jcop.20217>
- Pfefferbaum, B. J., Reissman, D. B., Pfefferbaum, R. L., Klomp, R. W., & Gurwitch, R. H. (2007). Building Resilience to Mass Trauma Events. In *Handbook of Injury and Violence Prevention*. https://doi.org/10.1007/978-0-387-29457-5_19
- Pfefferbaum, R. L., & Klomp, R. W. (2013). Community resilience, disasters, and the public's health. In *Community Engagement, Organization, and Development for Public Health Practice*.
- Pfefferbaum, B., van Horn, R. L., & Pfefferbaum, R. L. (2017). A Conceptual Framework to Enhance Community Resilience Using Social Capital. *Clinical Social Work Journal*, *45*(2). <https://doi.org/10.1007/s10615-015-0556-z>
- Poortinga, W. (2012). Community resilience and health: The role of bonding, bridging, and linking aspects of social capital. *Health and Place*, *18*(2). <https://doi.org/10.1016/j.healthplace.2011.09.017>
- Praharaj, S., & Vaidya, H. (2020). *The urban dimension of COVID-19: COVID Outbreak and Lessons for Future Cities*. <https://doi.org/10.13140/RG.2.2.31417.60004>
- Proag, V. (2014). The Concept of Vulnerability and Resilience. *Procedia Economics and Finance*, *18*. [https://doi.org/10.1016/s2212-5671\(14\)00952-6](https://doi.org/10.1016/s2212-5671(14)00952-6)
- Puri, S., & Roychowdhury, A. (2017). GURUGRAM: A Framework for Sustainable Development. *Centre for Science and Environment*.
- Qin, W., Lin, A., Fang, J., Wang, L., & Li, M. (2017). Spatial and temporal evolution of community resilience to natural hazards in the coastal areas of China. *Natural Hazards*, *89*(1). <https://doi.org/10.1007/s11069-017-2967-3>
- Quinn, S. C., Parmer, J., Freimuth, V. S., Hilyard, K. M., Musa, D., & Kim, K. H. (2013). Exploring communication, trust in government, and vaccination intention later in the 2009 H1N1 pandemic: Results of a national survey. *Biosecurity and Bioterrorism*, *11*(2). <https://doi.org/10.1089/bsp.2012.0048>
- Ramkissoon, H. (2020). COVID-19 Place Confinement, Pro-Social, Pro-environmental Behaviors, and Residents' Wellbeing: A New Conceptual Framework. *Frontiers in Psychology*, *11*. <https://doi.org/10.3389/fpsyg.2020.02248>
- Reissman, D. B., Watson, P. J., Klomp, R. W., Tanielian, T. L., & Prior, S. D. (2006). Pandemic Influenza Preparedness: Adaptive Responses to an Evolving Challenge. *Journal of Homeland Security and Emergency Management*, *3*(2). <https://doi.org/10.2202/1547-7355.1233>
- Rippon, S., Bagnall, A.-M., Gamsu, M., South, J., Trigwell, J., Southby, K., Warwick-Booth, L., Coan, S., & Woodward, J. (2020). Towards transformative resilience: community, neighbourhood and system responses during the COVID-19 pandemic. *Cities & Health*. <https://doi.org/10.1080/23748834.2020.1788321>

- Robinson, D., & Wilkinson, D. (1995). Sense of community in a remote mining town: Validating a Neighborhood Cohesion scale. *American Journal of Community Psychology*, 23(1). <https://doi.org/10.1007/BF02506926>
- Ross, H., Cuthill, M., Maclean, K., Jansen, D., & Witt, B. (2010). Understanding, Enhancing and Managing for Social Resilience at the Regional Scale: Opportunities in North Queensland. In *Report to the Marine and Tropical Sciences Research Facility* (Vol. 1, Issue January).
- Ross, N. (2002). Community belonging and health. *Health Reports / Statistics Canada, Canadian Centre for Health Information = Rapports Sur La Santé / Statistique Canada, Centre Canadien d'information Sur La Santé*, 13(3).
- Rutter, M. (1987). PSYCHOSOCIAL RESILIENCE AND PROTECTIVE MECHANISMS. *American Journal of Orthopsychiatry*, 57(3). <https://doi.org/10.1111/j.1939-0025.1987.tb03541.x>
- Saja, A. M. A., Teo, M., Goonetilleke, A., & Ziyath, A. M. (2018). An inclusive and adaptive framework for measuring social resilience to disasters. In *International Journal of Disaster Risk Reduction* (Vol. 28). <https://doi.org/10.1016/j.ijdr.2018.02.004>
- Sakip, S. R. M., Johari, N., & Salleh, M. N. M. (2012). Sense of Community in Gated and Non-Gated Residential Neighborhoods. *Procedia - Social and Behavioral Sciences*, 50. <https://doi.org/10.1016/j.sbspro.2012.08.084>
- Sanderson, D., & Sharma, A. eds. (2016). Resilience: saving lives today, investing for tomorrow. In *World Disaster Report*.
- Sassen, S. (2002). Locating cities on global circuits. *Environment and Urbanization*, 14(1). <https://doi.org/10.1177/095624780201400102>
- Schlegel, K., Gugelberg, H. M. von, Makowski, L. M., Gubler, D. A., & Troche, S. J. (2021). Emotion Recognition Ability as a Predictor of Well-Being During the COVID-19 Pandemic. *Social Psychological and Personality Science*, 12(7). <https://doi.org/10.1177/1948550620982851>
- Shadmi, E., Chen, Y., Dourado, I., Faran-Perach, I., Furler, J., Hangoma, P., Hanvoravongchai, P., Obando, C., Petrosyan, V., Rao, K. D., Ruano, A. L., Shi, L., de Souza, L. E., Spitzer-Shohat, S., Sturgiss, E., Suphanchaimat, R., Uribe, M. V., & Willems, S. (2020). Health equity and COVID-19: Global perspectives. In *International Journal for Equity in Health* (Vol. 19, Issue 1). <https://doi.org/10.1186/s12939-020-01218-z>
- Sharifi, A., & Khavarian-Garmsir, A. R. (2020). The COVID-19 pandemic: Impacts on cities and major lessons for urban planning, design, and management. In *Science of the Total Environment* (Vol. 749). <https://doi.org/10.1016/j.scitotenv.2020.142391>
- Sharma, M. (2020, May 29). How community radios are helping fight Covid-19. *Hindustan Times*. <https://www.hindustantimes.com/delhi-news/how-community-radios-are-helping-fight-covid-19/story-ayZfnpitU3OMoG8FYoRVoM.html>
- Sharma, S. (2022, June 4). Replicating Delhi? Gurugram has a long way to go. *The Tribune*.

- Sherrieb, K., Norris, F. H., & Galea, S. (2010). Measuring Capacities for Community Resilience. *Social Indicators Research*, 99(2). <https://doi.org/10.1007/s11205-010-9576-9>
- Shi, C., Liao, L., Li, H., & Su, Z. (2022). Which urban communities are susceptible to COVID-19? An empirical study through the lens of community resilience. *BMC Public Health*, 22(1). <https://doi.org/10.1186/s12889-021-12419-8>
- Sim, T., Han, Z., Guo, C., Lau, J., Yu, J., & Su, G. (2021). Disaster preparedness, perceived community resilience, and place of rural villages in northwest China. *Natural Hazards*, 108(1). <https://doi.org/10.1007/s11069-021-04712-x>
- Smith, J. W., Anderson, D. H., & Moore, R. L. (2012). Social Capital, Place Meanings, and Perceived Resilience to Climate Change. *Rural Sociology*, 77(3). <https://doi.org/10.1111/j.1549-0831.2012.00082.x>
- Sonn, C. C., & Fisher, A. T. (1998). Sense of community: Community resilient responses to oppression and change. *Journal of Community Psychology*, 26(5), 457–472. <https://doi.org/c>
- South, J., Jones, R., Stansfield, J., & Bagnall, A. (2018). What quantitative and qualitative methods have been developed to measure health-related community resilience at a national and local level? *WHO Regional Office for Europe (Health Evidence Network), Synthesis*.
- South, J., Stansfield, J., Amlôt, R., & Weston, D. (2020). Sustaining and strengthening community resilience throughout the COVID-19 pandemic and beyond. In *Perspectives in Public Health* (Vol. 140, Issue 6). <https://doi.org/10.1177/1757913920949582>
- Spialek, M. L., & Houston, J. B. (2019). The influence of citizen disaster communication on perceptions of neighborhood belonging and community resilience. *Journal of Applied Communication Research*, 47(1). <https://doi.org/10.1080/00909882.2018.1544718>
- Spiegel, A., Slijper, T., de Mey, Y., Meuwissen, M. P. M., Poortvliet, P. M., Rommel, J., Hansson, H., Vigani, M., Soriano, B., Wauters, E., Appel, F., Antonioli, F., Gavrilescu, C., Gradziuk, P., Finger, R., & Feindt, P. H. (2021). Resilience capacities as perceived by European farmers. *Agricultural Systems*, 193. <https://doi.org/10.1016/j.agsy.2021.103224>
- Srinivasan, R. (2021, November 27). Excess deaths' in Haryana seven times official COVID-19 toll. *The Hindu*.
- Stewart, G. T., Kolluru, R., & Smith, M. (2009). Leveraging public-private partnerships to improve community resilience in times of disaster. *International Journal of Physical Distribution & Logistics Management*, 39(5), 343–364. <https://doi.org/10.1108/09600030910973724/FULL/PDF>
- Suleimany, M., Mokhtarzadeh, S., & Sharifi, A. (2022). Community resilience to pandemics: An assessment framework developed based on the review of COVID-19 literature. *International Journal of Disaster Risk Reduction*, 80, 103248. <https://doi.org/10.1016/J.IJDRR.2022.103248>
- Taberner, C., Castillo-Mayén, R., Luque, B., & Cuadrado, E. (2020). Social values, self- And collective efficacy explaining behaviours in coping with Covid-19: Self-interested consumption and physical distancing in the first 10 days of confinement in Spain. *PLoS ONE*, 15(9 September). <https://doi.org/10.1371/journal.pone.0238682>

- Timmerman, P. (1981). Vulnerability, Resilience and the Collapse of Society: A Review of Models and Possible Climatic Applications. In *Environmental Monograph* (Vol. 1).
- Townshend, I. J. (2002). Age-segregated and gated retirement communities in the third age: The differential contribution of place - Community to self-actualization. *Environment and Planning B: Planning and Design*, 29(3). <https://doi.org/10.1068/b2761t>
- Townshend, I., Awosoga, O., Kulig, J., & Fan, H. Y. (2015). Social cohesion and resilience across communities that have experienced a disaster. *Natural Hazards*, 76(2). <https://doi.org/10.1007/s11069-014-1526-4>
- Turner, B. L. (2010). Vulnerability and resilience: Coalescing or paralleling approaches for sustainability science? *Global Environmental Change*, 20(4). <https://doi.org/10.1016/j.gloenvcha.2010.07.003>
- Ugur-Cinar, M., Cinar, K., & Kose, T. (2020). How Does Education Affect Political Trust?: An Analysis of Moderating Factors. *Social Indicators Research*, 152(2). <https://doi.org/10.1007/s11205-020-02463-z>
- UNISDR. (2005). UNISDR (United Nations International Strategy for Disaster Reduction). Hyogo framework for action 2005–2015: Building the resilience of nations and communities to disasters. Geneva: UNISDR. *Geneva:UNISDR*.
- United Nations Office for Disaster Risk Reduction. (n.d.). *Sendai Framework for Disaster Risk Reduction 2015 - 2030*.
- Wang, C., Dong, X., Zhang, Y., & Luo, Y. (2021). Community resilience governance on public health crisis in china. *International Journal of Environmental Research and Public Health*, 18(4). <https://doi.org/10.3390/ijerph18042123>
- Wang, F., Fang, Y., Deng, H., & Wei, F. (2022). How community medical facilities can promote resilient community constructions under the background of pandemics. *Indoor and Built Environment*, 31(4). <https://doi.org/10.1177/1420326X211048537>
- Watson, B. R. (2018). “A window into shock, pain, and attempted recovery”: A decade of blogging as a coping strategy in New Orleans. *New Media and Society*, 20(3). <https://doi.org/10.1177/1461444816681523>
- Weichselgartner, J., & Kelman, I. (2015). Geographies of resilience: Challenges and opportunities of a descriptive concept. *Progress in Human Geography*, 39(3). <https://doi.org/10.1177/0309132513518834>
- What are containment zones, how are they demarcated? (2020, July 3). *The Indian EXPRESS*. <https://indianexpress.com/article/explained/coronavirus-cases-india-containment-zones-6487494/>
- What is the difference between climate change adaptation and resilience?* (2022, September 12). Grantham Research Institute on Climate Change and the Environment.
- WHO Coronavirus (COVID-19) Dashboard | WHO Coronavirus (COVID-19) Dashboard With Vaccination Data.* (n.d.). Retrieved February 25, 2022, from <https://covid19.who.int/>

- Wilkinson, A., Ali, H., Bedford, J., Boonyabancha, S., Connolly, C., Conteh, A., Dean, L., Decorte, F., Dercon, B., Dias, S., Dodman, D., Duijsens, R., D'Urzo, S., Eamer, G., Earle, L., Gupte, J., Frediani, A. A., Hasan, A., Hawkins, K., ... Whittaker, L. (2020). Local response in health emergencies: key considerations for addressing the COVID-19 pandemic in informal urban settlements. *Environment and Urbanization*, 32(2). <https://doi.org/10.1177/0956247820922843>
- Wilson, G. A. (2012). Community resilience, globalization, and transitional pathways of decision-making. *Geoforum*, 43(6). <https://doi.org/10.1016/j.geoforum.2012.03.008>
- Wilson, G. A. (2015). Community resilience and social memory. *Environmental Values*, 24(2). <https://doi.org/10.3197/096327114X13947900182157>
- Wilson-Doenges, G. (2000). An exploration of sense of community and fear of crime in gated communities. *Environment and Behavior*, 32(5). <https://doi.org/10.1177/00139160021972694>
- Winsler, B., Blaikie, P., Cannon, T., Davis, I., Torres, R., Azócar, G., Rojas, J., Montecinos, A., Paredes, P., Cutter, S. L., Boruff, B. J., & Shirley, W. L. (2004). At Risk: Natural Hazards, People's Vulnerability and Disasters - Piers Blaikie, Terry Cannon, Ian Davis, Ben Wisner - Google Books. *Geoforum*, 60(2).
- Wu, C., Chen, X., Cai, Y., Xia, J., Zhou, X., Xu, S., Huang, H., Zhang, L., Zhou, X., Du, C., Zhang, Y., Song, J., Wang, S., Chao, Y., Yang, Z., Xu, J., Zhou, X., Chen, D., Xiong, W., ... Song, Y. (2020). Risk Factors Associated with Acute Respiratory Distress Syndrome and Death in Patients with Coronavirus Disease 2019 Pneumonia in Wuhan, China. *JAMA Internal Medicine*, 180(7). <https://doi.org/10.1001/jamainternmed.2020.0994>
- Wyche, K. F., Pfefferbaum, R. L., Pfefferbaum, B., Norris, F. H., Wisnieski, D., & Younger, H. (2011). Exploring community resilience in workforce communities of first responders serving katrina survivors. *American Journal of Orthopsychiatry*, 81(1). <https://doi.org/10.1111/j.1939-0025.2010.01068.x>
- Xu, W., Xiang, L., Proverbs, D., & Xiong, S. (2021). The influence of covid-19 on community disaster resilience. *International Journal of Environmental Research and Public Health*, 18(1). <https://doi.org/10.3390/ijerph18010088>
- Yan, B., Zhang, X., Wu, L., Zhu, H., & Chen, B. (2020). Why Do Countries Respond Differently to COVID-19? A Comparative Study of Sweden, China, France, and Japan. *American Review of Public Administration*, 50(6-7). <https://doi.org/10.1177/0275074020942445>
- Zautra, A., Hall, J., & Murray, K. (2010). Resilience: A New Definition of Health for People and Communities. In *Handbook of Adult Resilience*.
- Zhang, X. A., & Shay, R. (2019). An Examination of Antecedents to Perceived Community Resilience in Disaster Postcrisis Communication. *Journalism and Mass Communication Quarterly*, 96(1). <https://doi.org/10.1177/1077699018793612>
- Zhou, C., Su, F., Pei, T., Zhang, A., Du, Y., Luo, B., Cao, Z., Wang, J., Yuan, W., Zhu, Y., Song, C., Chen, J., Xu, J., Li, F., Ma, T., Jiang, L., Yan, F., Yi, J., Hu, Y., ... Xiao, H. (2020). COVID-19: Challenges to GIS with Big Data. *Geography and Sustainability*, 1(1). <https://doi.org/10.1016/j.geosus.2020.03.005>

APPENDIX 1

Questionnaire

Household Identification:

Ward Number:

Name of the residential area:

Kind of residential area (whether developed and maintained by private developer or by state body):

Social profile

1) How many members are there in the household? Mention with age and sex.

S. No.	Member Name	Age	Sex	Education	Occupation	Earning

2) Duration of residence in the locality

- a) < 3 years
- b) 3 – 6 years
- c) 6 years

3) Does anyone in the house suffer from any pre-existing illness (like chronic illness)? If yes, mention the disease and age and sex of the member.

	Disease	Age	Sex
Person	_____	_____	_____

4) Did any of the family members develop COVID complications? If yes, did he /she receive timely medical care? (Yes/No)

4.1) Where was he/she taken for medical treatment?

- a) Dedicated Govt. Covid hospital
- b) Private Hospital

- 5) Are the members of the household registered under any health insurance scheme? If yes, whether Union/State government-sponsored health scheme or private health scheme?
- 6) Have you received any form of assistance to recover from the pandemic-induced hardships?
 - 6.1) If yes, then what is the source of assistance
 - a) Family members
 - b) Neighbours
 - c) Friends
 - d) Local organization (e.g., RWA)
 - e) Colleagues
 - 6.2) If yes, then what form of assistance
 - a) Essential medicines
 - b) Groceries
 - c) Arrangement of beds in hospital
 - d) Oxygen cylinders/ concentrators
- 7) Do you allow maids to work during Covid?

If not, did you pay them for that duration?

Economic Profile

- 8) How many earning members are there in the family?
- 9) Whether earning members employed in organized or unorganized sector?
- 10) Had there been any impact of COVID-19 on jobs? If yes, then what impact?
 - a) Reduction in income
 - b) Lost job, had to adopt new means of earning
 - c) No impact
 - d) Profited

Locational Profile

- 11) What is the distance to nearest
 - a) government health care center where covid testing is done?
 - b) covid care facility you are aware of for treating covid positive patients?

For RWAs (To assess Infrastructural & Institutional Profile)

- 12) What has been the frequency of area sanitation (per month) in the locality during the peak of COVID cases?
- 13) Is there any provision of providing crucial updates to community members relating to COVID-19 cases in the locality, and administrative orders relating to pandemic regulations? [YES = 1; NO= 0]
- 14) Has any COVID testing camp been organised for residents? If YES, Mention number of times such camps have been organized? _____
- 15) How easy is the access to outsiders in the locality?
 - a) Easily accessible/ No restriction
 - b) Strict restriction by cross-checking with the resident of the society about the visitor
- 16) Were the maids allowed during the peak of COVID-19 incidence? [YES=1; NO=0; No such protocol=3]
- 17) How strict was the rule regarding vaccination of maids or other helps in locality [[Vaccination made mandatory=1; Recommended=2]
- 18) Do you keep a record of maids/ car washers/ or other helpers in the locality? [YES = 1; NO= 0]
- 19) Is there any provision of checking temperature of outsiders who are entering into the locality? [YES = 1; NO= 0]
- 20) Is there any provision of separate garbage collection from the houses of COVID-positive patients, apart from the one conducted by MCG? [YES = 1; NO= 0]
- 21) Are vaccination drives conducted in the locality? If yes, what is the frequency of such drives? [YES=1; NO=0]
 - 22.1) Whether vaccination drives are organized by private hospitals or government camps?
- 22) Is there a provision of oxygen cylinders/concentrators or other emergency use items in the locality? [YES=1; NO=0]
- 23) Is there anything done for emotional upliftment of residents of locality? [YES=1; NO=0]. If yes, what is done for the same?

Questions based on self-perception

Answer the following questions based on your perception on a five-point scale, where

26) The RWA / local authority functions well.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

27) I trust the local decision-makers.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

28) In my community, appropriate attention is given to the needs of older people.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

29) Those who are in authority at the local level show strong leadership qualities.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

30) There is mutual assistance and people care for one another.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

31) I can count on people in my community to help me in a crisis situation.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

32) In my community, there are people who can help cope with an emergency situation.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

33) I have faith in my community's ability to overcome an emergency situation.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

34) Residents work together for the improvement of the community.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

35) Residents actively participate in the activities of the community.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

36) My community is prepared for an emergency situation.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

37) I receive all the needful information from the local authority during emergency situations.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

38) I have a sense of belonging to my community.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

39) I feel safe in my place of residence.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

40) Residents in my community trust each other.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

41) My neighbours are of friendly nature.

(1) Strongly Disagree (2) Disagree (3) Neutral (4) Agree (5) Strongly Agree

APPENDIX 2

Profile	Gated Community No. 1	Gated Community No. 2	Gated Community No. 3	Non-Gated Community No. 1	Non-Gated Community No. 2	Non-Gated Community No. 3	
Developed By	BPTP	DLF	Bestech	HUDA	HUDA	HUDA	
LOCATIONAL PROFILE							
Ward No.	29	32	5	32	29	5	
Distance to nearest tertiary Hospital	1.5 km	1.2 km	2.5 km	3.4 km	2.5 km	4.2 km	
Total number of houses in the society	584	368	680	712	690	882	
SOCIAL/ DEMOGRAPHIC PROFILE							
Duration of Stay (In Years)	<3	40%	33.33%	36.67%	30%	36.67%	30%
	3-6	36.67%	40%	36.67%	30%	33.33%	43.33%
	>6	23.33%	26.67%	26.67%	40%	30%	26.67%
Age (in years)	< 30 years	27.6%	26.67%	27.32%	28.12%	28.53%	29.12%
	30 – 60 years	62.73%	62.59%	62.36%	62.58%	61.95%	62.55%
	>60 years	9.67%	10.74%	10.32%	9.30%	9.52%	8.33%
Number of females per 100 males	97.80	103.25	95.88	83.82	86.32	76.36	

Highest Education of head of household		Graduation- 33.3% Post-Graduation & above- 66.67%	Graduation- 30% Post-Graduation & above- 70%	Graduation- 36.67% Post-Graduation & above- 63.33%	High School- 3.33% Graduation- 46.67% Post-Graduation & above- 50%	Graduation- 43.33% Post-Graduation & above-56.67%	High School- 3.3% Graduation- 53.33% Post-Graduation & above- 43.33%
Households with all members registered under any health insurance scheme		90% of the respondents	93.3% of the respondents	86.67%	76.67%	66.6%	63.33%
Whether government or private health scheme	Private	73.3%	78.6%	66.7%	45.8%	41.2%	38.1%
	Government	26.7%	21.4%	33.3%	54.2%	58.8%	61.9%
Households with any member suffering from comorbidity		26.67%	28%	23.3%	26.67%	23.3%	20%
ECONOMIC PROFILE							
Households with more than one earning member		70%	76.66%	73.33%	66.67%	63.33%	60%
Median annual income		34 lakhs	37 lakhs	30 lakhs	24 lakhs	21 lakhs	19 lakhs
Impact of COVID lockdown on jobs	Salary got reduced	33.33%	30%	30%	46.67%	37.5%	40%
	Had to adopt new	6.7%	6.7%	10%	13.33%	13.33%	20%

	means of earning						
	Job loss	3.3%	3.3%	6.7%	10%	4.2%	10%
	No impact	56.7%	60%	53.3%	33.33%	41.7%	36.67%
AWARENESS							
Households with all eligible members completely vaccinated		86.7%	93.3%	83.3%	80%	73.3%	70%
Households with members who have attended social gathering during the peak of COVID incidence		6.7%	3.3%	13.3%	23.3%	13.3%	10%
PROFILE OF RWA							
Utilized any community infrastructure for quarantine		Club House used as quarantine centre during 2 nd wave	Community club used for storing oxygen cylinders, concentrators, beds and other emergency use items.	Government designated quarantine centres in the nearby location, no separate infrastructure utilized	Government designated quarantine centres in the nearby location, no separate infrastructure utilized	Government designated quarantine centres in the nearby location, no separate infrastructure utilized	Government designated quarantine centres in the nearby location, no separate infrastructure utilized
Frequency of area sanitization		By RWA- Weekly By MCG- once in a month	By RWA- Weekly By MCG- once in a month	By RWA- Weekly By MCG- once in a month	MCG sanitization drive- once in a month	MCG sanitization drive- once in a month	MCG sanitization drive- once in a month

Restricted Entry/exit	Yes, Visitors are cross-checked with the residents via intercom, and allowed entry only after getting confirmation from the residents. No delivery person allowed entry inside the locality during the peak of COVID incidence. Maids given the entry pass.	Yes Visitors are cross-checked with the residents via intercom, and allowed entry only after getting confirmation from the residents. No delivery person allowed entry inside the locality during the peak of COVID incidence. Maids given the entry pass. Residents had to show their Id proof along with a valid reason for going out. Their reason for going out and place they have to visit was noted.	Yes House number along with vehicle number, along with time of visit of the visitors noted. No delivery person allowed entry inside the locality during the peak of COVID incidence.	No	No	No
Provision of circulating information regarding active COVID cases in the locality	Yes, through what's app group, and mail	Yes, through an app called 'servizing'	Yes, through what's app group	Yes, through what's app group	Yes, through what's app group	No
COVID testing camps organised in the locality	Tied up with a private lab	Yes, tied up with Fortis Hospital	Tied up with a private lab	Governments testing camps	Governments testing camps	Governments testing camps

				organised in nearby locations	organised in nearby locations	organised in nearby locations
Vaccination drives in the locality	Tied up with Artemis Hospital	Tied up with Fortis Hospital for vaccination drives	Tied up with Columbia Asia	Vaccination at nearby vaccination sites	Vaccination at nearby vaccination sites	Vaccination at nearby vaccination sites
Vaccination drives by private or government organised camps	Private	Private	Private	Government	Government	Government
Is there any arrangement by RWA for those who have travelled from abroad	They have to get them registered with RWA, with information like from where they have travelled, date of arrival. They have to compulsorily get quarantined for a period of 14 days, with RT-PCR test at the end of quarantine period.	They have to get them registered with RWA, with information like from where they have travelled, date of arrival. They have to compulsorily get quarantined for a period of 14 days, with RT-PCR test at the end of quarantine period.	They have to get them registered with RWA, with information like from where they have travelled, date of arrival. They have to compulsorily get quarantined for a period of 14 days, with RT-PCR test at the end of quarantine period.	No such record kept at local level	No such record kept at local level	No such record kept at local level
Is the number of COVID patients in the locality kept under track	Yes	Yes	Yes	No	Yes	No
Any help provided by RWA to residents who have tested positive for COVID 19. If	Yes Medicines,	Yes Medicines,	Yes Medicines,	Yes	No	No

yes, then form of assistance provided	Essential items, team of in-house doctors to assist patients	Food, Essential items, providing medical consultation with doctors, arranging nurses, providing RTPCR tests. Assistance provided by COVID emergency response team that comprised resident doctors, senior citizens, RWA office bearers, and volunteers.	Essential items, consultation with resident doctors	Medicines, Home cooked food,		
Provision of checking temperature of those entering into the locality	Yes	Yes	Yes	No	No	No
Provision of separate waste collection from the houses of COVID positive patients	Yes, Biomedical waste of quarantined houses is disposed off in a yellow bag which is provided to these houses. Housekeeping staff collects this biomedical waste separately. This	Yes, Biomedical waste of quarantined houses is disposed off in a yellow bag which is provided to these houses. Housekeeping staff collects this biomedical waste separately. This	Yes, Biomedical waste of quarantined houses is disposed of in a yellow bag which is provided to these houses. Housekeeping staff collects this biomedical waste separately. This	Biomedical waste from quarantined houses is collected by MCG workers. Residents come outside and drop the waste into the van own their own.	Biomedical waste from quarantined houses is collected by MCG workers. Residents come outside and drop the waste into the van own their own	Biomedical waste from quarantined houses is collected by MCG workers. Residents come outside and drop the waste into the

	is further picked up by MCG van every alternate day.	is further picked up by MCG van every alternate day.	is further picked up by MCG van every alternate day.			van own their own Irregular waste collection by MCG van
Is the record of maids/ car washers/ other helps in the locality kept, which could help in contact tracing	Yes	Yes	Yes	No	No	No
Is the vaccination of maids/ other helps in the locality made mandatory	Not mandatory, but made it highly recommended	Yes	No	No	No	No
Were the maids allowed during the peak of COVID incidence	Maids were allowed only for those households which are resided by elderly people, and that too after proper precautions.	Only 24*7 maids allowed	Only 24*7 maids allowed	Depends on individual household	Depends on individual household	Depends on individual household
Any kind of assistance provided by RWA to helpers in the locality. If yes, form of assistance	Yes, Medical and food supply to maintenance staff and security guards of society	Yes, Apart from medical and food supply, RWA has tied up with Gurudwaras and local	Yes, Monetary help provided	Yes, Monetary help provided	Yes, Monetary help provided	Yes, Monetary help provided

		NGOs to provide accommodation for isolation purpose of maintenance staffers of the society who have tested positive for COVID 19.				
Any initiative for emotional upliftment of residents	Messages on emotional wellbeing sent on what's app group. Once in a month virtual meeting for activities for the residents to generate a feeling of being united in difficult times	Yes, virtual yoga and happiness sessions. One-to-one sessions with specialists. 'IWill CARE' an AI based application system for 24*7 mental health counselling by mental health experts.	Messages on emotional wellbeing sent on what's app group.	No	Messages on emotional wellbeing sent on what's app group.	No
Any arrangement of oxygen cylinders, concentrators or other emergency use items	Yes, oxygen cylinders, concentrators, ambulance	Yes 24*7 oxygen seva kendra, concentrators, plasma coordination service, hospital beds coordination service	Tied up with hospital for any emergency situation.	No	No	No

APPENDIX 3

Index construction

Variables under each dimension have different values, hence, they are normalised using the below formula

$$S_{var} = \frac{(var_v - var_{min})}{var_{max} - var_{min}}$$

Where, S_{var} is the index value for each variable,

var_v is the original value of variables for v^{th} residential community,

var_{max} and var_{min} is the maximum and minimum value of each variable

$S_1, S_2, S_3, S_4, S_5, S_6$ are index value of variables (obtained after normalisation) under the social component; $E_1, E_2, E_3, E_4, E_5, E_6, E_7$, are index values under economic component; H_1, H_2, H_3, H_4, H_5 are index values under health and infrastructure component; I_1, I_2, I_3, I_4, I_5 are index values obtained after normalisation under institutional component.

These variables are aggregated after being standardized, using formula

$$C_v = \frac{\sum_{i=0}^n S_{var}}{n}$$

C_v is one of the major components of CRI

S_{var} is the i^{th} variable belonging to major component C_v for the v^{th} residential community, n is the number of variables under the major component.

Here, variables are aggregated for each major component. There are four major components- social, economic, health and infrastructure, and institution.

$$C_{S_g} = \frac{\sum(S_{1g} + S_{2g} + S_{3g} + S_{4g} + S_{5g} + S_{6g})}{6} = \sum(0.89 + 0.59 + 0.67 + 0.48 + 0.63 + 0.65) / 6 = 0.65$$

$$C_{S_{ng}} = \frac{\sum(S_{1ng} + S_{2ng} + S_{3ng} + S_{4ng} + S_{5ng} + S_{6ng})}{6} = \sum(0.90 + 0.62 + 0.5 + 0.52 + 0.69 + 0.51) / 6 = 0.62$$

Here, C_{S_g} represents the aggregate of variables listed under social component of resilience of gated communities.

Here, $C_{S_{ng}}$ represents the aggregate of variables listed under social component of resilience of non-gated communities.

$$C_{E_g} = \frac{\sum(E_{1g}+E_{2g}+E_{3g}+E_{4g}+E_{5g}+E_{6g}+E_{7g})}{7} = \sum(0.74+0.82+0.89+0.93+0.67+0.52+0.08)/7 = 0.66$$

$$C_{E_{ng}} = \frac{\sum(E_{1ng}+E_{2ng}+E_{3ng}+E_{4ng}+E_{5ng}+E_{6ng}+E_{7ng})}{7} = \sum(0.63+0.67+0.64+0.87+0.56+0.39+0.03)/7 = 0.54$$

Here, C_{E_g} represents the aggregate of variables listed under economic component of resilience of gated communities.

Here, $C_{E_{ng}}$ represents the aggregate of variables listed under economic component of resilience of non-gated communities.

$$C_{H_g} = \frac{\sum(H_{1g}+H_{2g}+H_{3g}+H_{4g}+H_{5g})}{5} = \sum(1+1+1+1+1)/5 = 1$$

$$C_{H_{ng}} = \frac{\sum(H_{1ng}+H_{2ng}+H_{3ng}+H_{4ng}+H_{5ng})}{5} = \sum(0+0+0+0+0)/5 = 0$$

Here, C_{H_g} represents the aggregate of variables listed under health and infrastructure component of resilience of gated communities.

Here, $C_{H_{ng}}$ represents the aggregate of variables listed under health and infrastructure component of resilience of non-gated communities.

$$C_{I_g} = \frac{\sum(I_{1g}+I_{2g}+I_{3g}+I_{4g}+I_{5g})}{5} = \sum(1+1+1+1+1)/4 = 1$$

$$C_{I_{ng}} = \frac{\sum(I_{1ng}+I_{2ng}+I_{3ng}+I_{4ng}+I_{5ng})}{5} = \sum(1+0+0+1+1)/4 = 0.5$$

Here, C_{I_g} represents the aggregate of variables listed under institution component of resilience of gated communities.

Here, $C_{I_{ng}}$ represents the aggregate of variables listed under institution component of resilience of non-gated communities.

After the computation of the values of each of the four major components and the CRI (Community Resilience Index) is averaged, which is a weighted average of the four dimensions, each dimension having an equal contribution to community resilience. Weight of the major component is based on the number of variables which build a major component.

Here, social component is given the weight of six, since six indicators build the social component. Economic component is built by seven components hence, its weight is seven. Health and infrastructure and institution as the components of resilience are built by five indicators each, hence given the weightage of five.

$$CRI_g = (W_{S_g} C_{S_g} + W_{E_g} C_{E_g} + W_{H_g} C_{H_g} + W_{I_g} C_{I_g}) / W_{S_g} + W_{E_g} + W_{H_g} + W_{I_g}$$

$$CRI_g = (6*0.65 + 7*0.66 + 5*1 + 5*1) / (5+7+5+5) = 18.5 / 23 = 0.79$$

$$CRI_{ng} = (W_{S_{ng}} C_{S_{ng}} + W_{E_{ng}} C_{E_{ng}} + W_{H_{ng}} C_{H_{ng}} + W_{I_{ng}} C_{I_{ng}}) / W_{S_{ng}} + W_{E_{ng}} + W_{H_{ng}} + W_{I_{ng}}$$

$$CRI_{ng} = (6*0.62 + 7*0.54 + 5*0 + 5*0.6) / (5+7+5+5) = 10.51 / 23 = 0.43$$

APPENDIX 4

Independent Samples Test

	T value	df	Sig (2 tailed)	Mean Difference	Std. Error Difference	95% Confidence interval of the difference	
						Lower	Upper
Leadership	7.564	178	.000	.51111	.06757	.37777	.64445
Preparedness	6.954	178	.000	.60556	.08708	.43372	.77739
Place attachment	2.040	178	.043	.16667	.08169	.00547	.32787
Social trust	1.136	178	.257	.10000	.08801	-.07368	.27368
Collective efficacy	3.068	178	.002	.15370	.05010	.05484	.26257
Overall Community Resilience	8.554	178	.000	.29375	.03434	.22599	.36151