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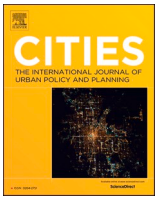

Compliance and the social space of cities: Variations in compliance with Covid-19 regulations and capital forms in urban communities

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ABSTRACT

Cities' planned and built environments are key to healthier communities. The Covid-19 pandemic challenged this relationship, when the issue of communities' compliance with government restrictions to mitigate the spread of the pandemic became apparent. Despite the growing literature on the relationship between communities' characteristics and Covid-19 throughout the pandemic, little attention has been paid to the drivers of compliance at the city and community levels. Our paper addresses this lack through the Bourdieusian concept of communities' capital resources. Using Israel as a test case, we explore how the economic, social and cultural capital of urban communities affected compliance with Covid-19 related restrictions. The analysis reveals how the spatial dispersion of the components of these forms of capital explains the likelihood of communities' level of compliance. In particular, it shows how the accumulation of various forms of capital increased compliance with health regulations. The study highlights the explanatory power of local resources in collective spatial behavior patterns, as well as the possibility of exacerbating existing injustices.

1. Introduction

Cities' planned and built environments are key to healthier communities (de Leeuw, 2022). The promotion of a healthy way of life has become an important factor in urban strategies that aim to ensure the long-term viability and resilience of city life (Faskunger, 2013; Hassen, 2022; Lowe et al., 2022). The global Covid-19 pandemic put this connection to the test when it became clear that communities needed to comply with certain government regulations to prevent the pandemic from spreading further (Corren & Perry-Hazan, 2021). Examples include lockdowns, shelter-in-place orders, masking, bans on social gatherings, and vaccinations (Deb et al., 2022; Friedson et al., 2021; Ueki et al., 2020). Urban populations worldwide responded in a variety of ways to the restrictions, ranging from compliance to defiance (Bargain & Aminjonov, 2020; Nivette et al., 2021). The pandemic also created a natural experiment through which researchers could identify the community characteristics that motivate individuals to follow regulations designed to promote their health (e.g., Kalagy et al., 2021; Papageorge et al., 2021). Using the Covid-19 outbreak as a case study, we examine the relationship between compliance and health in urban contexts.

Compliance, in the context of health behavior, is defined as "the extent to which a person's behavior coincides with medical or health advice" (Winnick et al., 2005, p. 718). The mitigation of Covid-19 depended on people's compliance with preventive measures. Given that people's behavior is embedded in and influenced by their social context, researchers have investigated the social factors that impact compliance (Clark et al., 2020) and the factors associated with compliance with Covid-19 regulations at the individual level (e.g., Painter & Qiu, 2020; Plohl & Musil, 2021; Wright et al., 2020). However, despite the numerous studies about the association between communities' characteristics and Covid-19 (e.g., Barak et al., 2021; Braun-Lewensohn et al., 2021; Coşkun et al., 2021), less attention has been paid to the determinants of compliance at the city and community levels.

Our objective is to better understand the relationship between community characteristics and compliance with laws and guidelines that promote health. We do so using the concept of communities' capital resources rooted in the theories of the French sociologist Pierre Bourdieu who conceptualized three forms of capital: economic, cultural, and social. Bourdieu (2018) developed the notions of the production, accumulation, and transmission of capital to depict the class structure of modern capitalist societies that were later used to study communities' spatial opportunity structures (Frenkel & Porat, 2017; Israel & Frenkel,

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2018; Mace, 2017). Not surprisingly, the Bourdieusian approach is also used in studying the Covid-19 crisis, and the effect of social class on various domains of life during the pandemic (e.g., Bawidamann et al., 2021; Frohn, 2021; Tayal & Bharathi, 2021).

Previous research has investigated the relationship between people's social class and their level of compliance with medical recommendations (Oncini & Guetto, 2017). We explore Bourdieu's three forms of capital at the local level and their associations with compliance with national Covid-19 regulations. The three forms of capital refer to the economic level of the community, its social cohesion and its level of education, and public investment in culture. Theoretically, the accumulation of more capital is expected to influence compliance with health regulations and recommendations. We utilize various sources of official Israeli data to test the theory, and construct scales for these three forms of capital. We then use factor analysis to distinguish between several dimensions within each form of capital and to construct indices of the level of capital of various Israeli cities (Frenkel & Ashkenazi, 2008). We consider vaccination rates, morbidity rates, and Covid-19-related police fines as measures of compliance. We then run a series of regression analyses to estimate the influence of the three forms of municipal-level capital on the degree of compliance with state-imposed Covid-19 regulations. Our results indicate that in general, economic, social, and cultural municipal capital have a positive influence on compliance with national Covid-19 regulations.

This study contributes to the existing literature by developing a novel framework that examines health-promoting behavior (i.e., agency) in the context of an urban habitus, and demonstrates its empirical applicability. Connecting sociology to geo-urban variations in compliance with Covid-19 laws during the pandemic might shed light on the social mechanisms that drive health behaviors, as well as human practices that may influence morbidity and mortality rates. These contributions can benefit public health and urban resilience programs.

The paper contains four sections. First, we review the literature on health behavior and urban residency, Covid-19-related compliance, and local levels of capital. Second, we present the study's theoretical framework, followed by our measures of compliance and local economic, social, and cultural capital. After discussing our analysis strategy, we elaborate on the findings. In the last section, we discuss them and their implications.

2. Theoretical background

2.1. Cities, health and compliance

Most of the world's population today–>4.3 billion people–lives in cities (Ritchie & Roser, 2018). Living in a city has major implications for the lives of its residents, including their health and well-being. Living in cities has been associated with poorer health in comparison to non-urban areas and has been called the "urban health penalty" (Freudenberg et al., 2005; Zhu et al., 2021). However, urban residency also has positive outcomes for health (Dye, 2008; Glaeser, 2011). Cities have better healthcare facilities than rural locations (Cosby et al., 2019), lower infant mortality rates, and higher height-to-age ratios (Vlahov et al., 2005). Thus, the promotion of healthy lifestyles is an important consideration in the sustainability and resilience of urban policies (Faskunger, 2013; Hassen, 2022; Lowe et al., 2022).

The literature has identified several factors in the association between city life and health. The morphologic structure of cities strongly influences the lifestyle of its residents (HaGani et al., 2019; Mahabee-Gittens et al., 2022; Moran et al., 2016). The physical and spatial format of people's living environment, such as their need for a car and levels of air pollution, affects their levels of physical activity and chronic diseases (Carlson et al., 2015; Moran et al., 2016; Mouratidis, 2021; Papas et al., 2007). Research has established an association between urban factors and perceptions about safety, mental health, and tolerance (Hall, 2012; Sennett, 2018; Tonkiss, 2013), and physical and social disorder (Jongeneel-Grimena et al., 2014). Urban green spaces are crucial for promoting health (World Health Organization (WHO), 2016), as was evident during Covid-19 (Douglas et al., 2020). Infections can spread more easily in larger, more densely populated cities (Galea et al., 2005), and the urban infrastructure impacts communities' wellbeing (Evans & Kantrowitz, 2002; Ou et al., 2018). Factors including water, waste and the sanitation infrastructure, pollutants, public transportation, and land use have been linked to health problems such as respiratory disease and cancer (Barton, 2009; Pineo & Rydin, 2018).

Urban planning theories have established a connection between multiple factors in the urban environment and human behavior and health (Kent & Thompson, 2014; Pfeiffer & Cloutier, 2016). As a result, urban planning policies have encouraged cycling and walking, and discouraged dependency on cars (Edwards & Tsouros, 2008; Frumkin et al., 2004). Empirical studies have demonstrated an association between factors such as social networks, social capital, and segregation and communities' health (Galea et al., 2005; Leviton et al., 2000). For example, ethnic segregation has a negative effect on health (Acevedo-Garcia et al., 2003). In contrast, social networks and social support have a positive impact on health (Berkman et al., 2000).

Other factors that affect people's health are space (Pampel, 2011) and social class (Hu et al., 2021). Those in the upper classes are more likely to have more room and have better health than those in the lower classes (Demakakos et al., 2008). Low-income urban and rural communities frequently have less access to healthy retail food options and an overabundance of unhealthy options (Gittelsohn et al., 2022). In addition, fast-food outlets are more likely to be located in more deprived areas (Black et al., 2014; Wiki et al., 2019). Racially and ethnically diverse or low socioeconomic neighborhoods are also more likely to have stores selling tobacco products. The lower prices of these products are designed to encourage smoking (Raskind et al., 2022), which leads to higher passive smoking levels among children (Mahabee-Gittens et al., 2022).

Not surprisingly then, a city's diversity is a core element in achieving urban justice (Fainstein, 2005; Young, 2011). However, as this diversity increases, governments find it more difficult to allocate appropriate social, cultural, and economic resources to the community. An increase in a location's class diversity may widen the range and the discrepancies between residents' dispositions and proclivities (Israel, 2021). These discrepancies can weaken social control and, as a result, policymakers are faced with more complicated challenges in promoting public health and encouraging compliance with relevant guidelines (Kalagy et al., 2021; McCartney et al., 2019). People are more likely to comply with their health care providers' instructions when they are in environments that elicit strong attachments (Rosenbaum et al., 2022). With no such emotional bonding, urban areas' health crises can worsen, as in the case of the lack of culturally relevant welfare and health services (Braun-Lewensohn et al., 2021). Lack of access to medical facilities, the inability to communicate effectively with authorities due to language or cultural obstacles, and a general lack of faith in government institutions and their ability to address problems effectively hurt people's health (Barak et al., 2021).

All of these factors strengthen the relationship between the city and its communities in terms of the behaviors of its people that promote or impede their health. The Covid-19 pandemic highlighted the importance of behavioral factors in explaining health outcomes. It imposed a set of global health regulations that brought the issue of compliance to the fore (Van Rooij et al., 2020). People varied in their levels of obedience to these regulations.

2.2. Compliance and Covid-19 – measurement and determinants

Following the pandemic's outbreak, researchers investigated the public's compliance with government regulations. For example, using a compliance index they created, Barak et al. (2021) looked at data about restrictions on movement in 76 major cities in Israel. Using mobility data

collected through mobile phone tracking in the UK, Jeffrey et al. (2020) showed variations between geographical areas in compliance with mobility restrictions. Using survey data, Becher et al. (2020) demonstrated variations in compliance with social distancing measures in nine countries. However, the research on compliance during Covid-19 has produced equivocal results as to the individual and contextual factors that influence it for several reasons.

The first challenge is measuring compliance. Researchers have used two methods: traditional surveys and big data approaches. The former ask respondents directly about their health behavior during the pandemic including their level of adherence with specific restrictions (Plohl & Musil, 2021; Wang et al., 2021). In contrast, alternative methods that use big data focus on drops in mobility because many of the restrictions such as lockdowns, shelter-at-home orders, and social distancing resulted in less physical mobility. Studies have used several methods to measure mobility using big data. Sheikh et al. (2020) suggested three possible sources: GPS data provided by mobile phone carriers, GPS data provided by other technology companies such as Uber and Google, and traffic congestion and public transport use data. Researchers have used these methods on the national (Painter & Qiu, 2020; Wright et al., 2020) and international levels (Bargain & Aminjonov, 2020). The differences in the data collection methods have consequences for the models used to study the determinants of compliance. Studies that use surveys can collect individual level data on sociodemographic characteristics, attitudes, and behavior and analyze how they impact compliance. In contrast, the big data approach cannot collect individual-level data due to privacy and data availability constraints. Therefore, it must look at aggregated or higher level variables as predictors of compliance. Examples include voting patterns and state partisanship (Painter & Qiu, 2020), regional trust levels (Bargain & Aminjonov, 2020), and regional economic levels (Wright et al., 2020).

Variations in the methodologies and the factors investigated also affect the ability to integrate these findings. While some factors appear to be important, the impact of others is more ambiguous. An important factor that is unequivocally associated positively with compliance with Covid-19 restrictions is risk perceptions and fear of the pandemic (Clark et al., 2020; Harper et al., 2021; Plohl & Musil, 2021). Trust is also positively linked to compliance, especially trust in government (Nivette et al., 2021; Wang et al., 2021), and trust in science (Plohl & Musil, 2021). Social responsibility and social conformity are positively linked to compliance according to some studies (Nivette et al., 2021; Wang et al., 2021), but Harper et al. (2021) found ingroup loyalty to be uncorrelated with compliance.

The evidence regarding the link between level of education and compliance with Covid-19 restrictions is also equivocal. Wang et al. (2021) reported that those with a college education complied more with preventive behavior. Plohl and Musil (2021) documented a positive association between intellectual curiosity and compliance, but it was mediated by trust in science. In addition, they indicated that educational level itself showed only weak associations with compliance with Covid-19 regulations. Indeed, Nivette et al. (2021) indicated that higher education, higher socio-economic status, and a non-immigrant background were negatively linked to compliance. At the regional level, Wright et al. (2020) demonstrated that those with more income and more economic security were more likely to comply. Finally, Van Rooij et al. (2020) found that compliance was linked to lack of fear of the authorities, and the behavior of the social surrounding.

As this review indicates, most studies about compliance with Covid-19 government restrictions have been conducted on the individual level, with little attention paid to the spatial, communal dimension. Reasons for compliance or defiance include both personal and contextual factors (Clark et al., 2020). Furthermore, given the equivocal results, we speculated that community-level contextual variables might provide more insights into compliance patterns. Given that communities vary in their characteristics and resources, we need a multidimensional theoretical concept that can capture these factors. Here, Bourdieu's theory of the three forms of capital and its application to the municipal level becomes useful.

2.3. Bourdieusian foundations, compliance with health regulations, and implications for municipalities

Similar to Ugwudike (2017) and Bawidamann et al. (2021), we use Bourdieu's notions of habitus, field, and capital to develop a spatial municipal perspective on the constraints imposed by Covid-19. In particular, we focus on Bourdieu's three forms of capital: economic, cultural, and social (Bourdieu, 2018). *Economic* capital refers to economic resources that are convertible into money. *Cultural* capital generally describes the acquisition of education and cultural competency. Cultural capital can be embodied in the form of mental and corporal dispositions, objectified in the form of cultural and meaning-bearing objects, or institutionalized in the form of educational qualifications. *Social* capital pertains to the embeddedness of individuals in social networks and the strength of their connection to the social groups to which they belong.

In theory, these various forms of capital determine a social space. Thus, social stratification involves various structural fields, (e.g., health, community) in which people use their capital (Bourdieu, 2018; Israel & Frenkel, 2018). The level of capital affects their proclivities and dispositions, meaning their habitus (Sayer, 2011), which is the result of the internalization of their capital (Hillier, 2005). From the perspective of field theory, habitus helps or hinders a person's agency in structuring what will be seen as reasonable and what will be seen as unreasonable to do (Bourdieu, 1977). It is as if symbolic "… violence … is exercised upon a social agent" (Bourdieu & Wacquant, 1992: 142–3), prompting mechanisms of social control (Kamoche et al., 2014) that produce behaviors related to compliance and social beliefs.

Recently, Bourdieu's theory was also used to explain Covid-19 related behavior, although in topics unrelated to our study (e.g., Akkermans et al., 2020; Graham, 2020). Researchers have investigated the intergenerational transmission of both social advantage and health to demonstrate their synergistic operation (Mollborn & Modile, 2022). For instance, children's compliance with dietary recommendations was associated with their social origins (Oncini & Guetto, 2017). Researchers claimed that knowing what constitutes a healthy meal (i.e., cultural capital) influences people's food choices and greater compliance with nutritional advice (Oncini & Guetto, 2017).

Not only do healthy lifestyles consist of individual behaviors and the habitus that frequently drives them (Bourdieu, 1986), but they also involve group-based components, such as identities and norms that either support or inhibit health (Cockerham, 2005; Krueger et al., 2009). Groups with distinct accumulations of capital and different habitus make decisions that promote or hurt their health (Frohlich & Abel, 2014). For instance, the lifestyles of the poor are limited by their habitus (Scott-Arthur et al., 2021), because social capital can help ensure rule compliance and reduce monitoring costs (Pretty, 2003). Social belonging, networks, and a sense of pride in the community promote health and wellbeing (Smith & Anderson, 2018). Ogentho et al. (2022) found that citizens come together, leveraging their social capital to reach a critical mass that drives compliance. Rosenbaum et al. (2022) showed that social interaction and bonding within a community promote people's attachment to a place and thus encourage compliance with health providers' directives. Beyond the individual level, these community effects pertain to the spatial aspect of Bourdieu's theory. In this sense, while Bourdieu outlined his theory at the individual level, his theoretical framework can be adapted to the community level as well.

Bourdieu (2000) paid attention to how the materiality of place affects its social aspects. Given that social space is located in actual places, it is a subtle reflection of the place's social structure (Fogle, 2011; Israel & Frenkel, 2018). Indeed, Hillier and Rooksby (2005) claimed that the habitus is "a sense of a place," or an "internalization of social practices in its origin, … reaching out to place, a being or becoming in place" as

Casey (2001, p. 687) said. A place's habitus is a communal spirit defined by its ethnicity, class divisions, gender, and so forth, and encompasses the residents' shared dispositions and social practices (Easthope, 2004; Pain, 2008; Simpson, 2016). Mace (2017) emphasized the potential of Bourdieu's concept of cultural capital for developing narratives that focus people's actions within a place alongside the influence of the place on people. Lévy (2014) claimed that Bourdieu's concept of capital "… can be accumulated and used to produce other social goods" (pp. 47–48), enabling "… him or her to benefit, according to their strategy, from using society's spatial dimension" (Barthon & Monfroy, 2010, p. 178).

The analysis of communities' forms of capital is evolving, but remains relatively scarce. For example, research that makes use of economic indicators at the city level is common. Previous studies have also looked at indicators related to social capital at the city level, such as Foster's (2006) study that showed how urban policy impacts trust and cooperation in social networks. Blokland and Savage's (2016) volume presents multiple contributions exploring the links between urban residency and social networks. However, the study and measurement of cultural capital at the city level are less frequent. Savage et al. (2018) explored cultural capital in London and Brussels, while Frenkel and Porat (2017) created a model for local strategic planning based on the concept of spatial capital. They assessed "the accumulated assets and capabilities of a region" and measured various regional capabilities including types of economic, human and cultural, and social capital (Frenkel & Porat, 2017). Similarly, Israel and Frenkel (2015) measured the three forms of capital in Israeli cities. They reported that suburban municipalities accumulated more forms of capital than urban centers and that the levels of these forms of capital affect people's chances in life. Later, Israel and Frenkel (2018) used a similar empirical method to explore how these capital resources and their effect on people's chances in life are related to social justice and the spatial equality of opportunity.

3. The study's framework

3.1. Theoretical setting – health promoting agency in the context of an urban habitus

Fig. 1 demonstrates how the city's social space manifests itself in an urban habitus. An urban habitus influences social control and potential conformist conduct among community members. The urban habitus is a city's "communal spirit," which encapsulates collective beliefs and dispositions (Israel, 2021). It produces the members' agency (e.g., compliance), echoed in shared outcomes, such as local health conditions (e.g., Eriksson & Emmelin, 2013; Rosenbaum et al., 2022).

The urban habitus is sensitive to the division of power among social classes in the city's communities (Israel, 2021). The division results from cumulative forms of capital and creates a continuum of varying stocks of capital that are greater in wealthier communities and more limited in poorer communities (Israel & Frenkel, 2018, 2020). Different combinations of stocks of capital and urban habitus are thus possible. The latter is a generative scheme that expresses people's class preferences and tastes. We anticipate that it will create patterns of compliance that support a healthy way of life (Gatrell et al., 2004; Muckenhuber et al., 2015). A given habitus thus creates communal outcomes, which are "relatively enduring (pre)dispositions to respond to current social, economic, political or even physical circumstances in very particular ways, ways in which other [places], with different habitus formations, may respond to very differently" (Lee, 1997, p. 127).

Class homogeneity increases people's sense of belonging (Savage et al., 2005), creating an urban habitus that confirms the majority's normativity. This homogeneity improves the fit with the residents' interests (for example, a healthy lifestyle), strengthens social control (Rosenbaum et al., 2022), and promotes compliance with lifestyles that lead to better health (Madden, 2015; Muckenhuber et al., 2015;

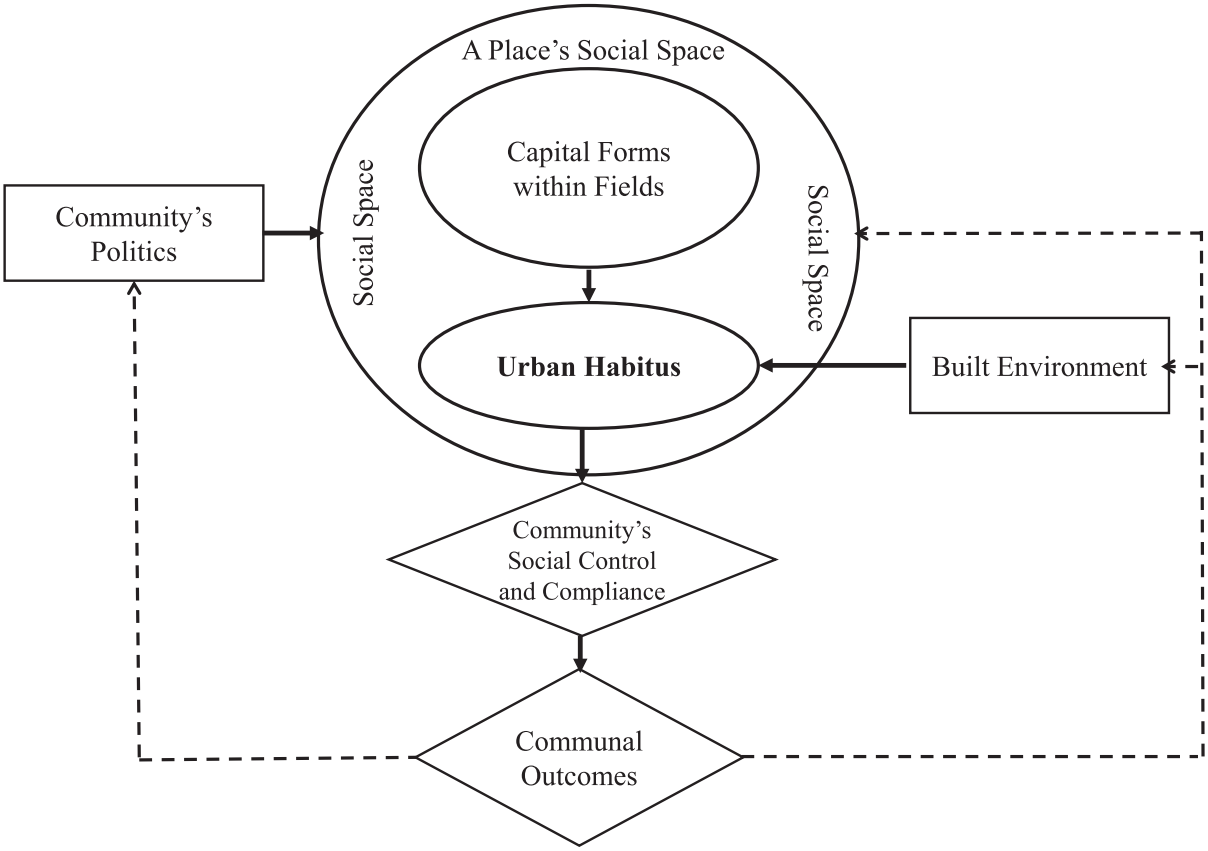

Fig. 1. Conceptual model.

Veenstra, 2007). It increases the likelihood of community members affecting and amending local policies (Hastings et al., 2014; Israel, 2021) related to health, education, and the built environment (John, 2009). Such politics impact people's health and their likelihood of complying with guidelines and rules on the issue.

3.2. Research goals and hypotheses

In this research, we study the impact of cities' stocks of capital on the level of compliance with state-imposed Covid-19 restrictions. Collectively, these forms of capital represent a social space of location and community. Put differently, the community's urban habitus evokes mechanisms of social control that impact people's reactions to the restrictions and social beliefs about the pandemic. Accordingly, we hypothesize that communities with more economic, social, and cultural capital will be more likely to comply with the state's Covid-19 regulations.

3.2.1. Economic capital

Wealthier communities that possess more economic capital will be more concerned about the disruption of markets and economic activity caused by the pandemic. Therefore, they will be more likely to comply with official regulations whose goal is to return to normal economic activity as soon as possible. In contexts other than pandemics, those of lower socioeconomic status are more likely to be less compliant with medical advice (Ligthart et al., 2017; Philbin et al., 2001). Similarly, Wright et al. (2020) showed that individuals living in low-income areas in the US are less likely to obey shelter-at-home protocols.

3.2.2. Social capital

Communities rich in social capital and with more social cohesion will demonstrate higher levels of mutual responsibility and altruistic behavior. Individuals who belong to strong communities and are integrated into their social structures will be more likely to engage in conformist behavior and socially responsible activities. Therefore, we expect social capital to have a positive effect on compliance with governmental restrictions during the pandemic. Israel, for example, has many communities with large proportions of immigrants. Studies have shown that migration status has almost no independent effect on obeying the law and that the level of criminal behavior among immigrants is mediated by economic status (Aoki & Todo, 2009; Bianchi et al., 2012). However, negative attitudes toward immigrants are linked to less social solidarity (Bay & Pedersen, 2006). Therefore, since compliance with pandemic mitigation measures can be regarded as a form of social solidarity (Barry, 2022), we expect that immigration levels will have an overall negative effect on compliance with Covid-19 regulations, both in immigrant and non-immigrant populations. Recent evidence concerning compliance with Covid-19 restrictions supports this hypothesis. Van Rooij et al. (2020) found that people tend to obey restrictions more when people they know do so too. Bargain and Aminjonov (2020) reported that residents of regions with more trust in the political system were more likely to reduce their mobility during the pandemic.

3.2.3. Cultural capital

Communities rich in cultural capital are more educated and, therefore, will be more likely to accept scientific authority and follow its guidance with regard to the pandemic. Previous studies have shown that a higher educational level is correlated with trust in the scientific method and in scientific institutions (Achterberg et al., 2017). Educational level is also positively correlated with general trust in government (Foster & Frieden, 2017). However, other studies found equivocal results regarding the link between educational level and trust in government (Van Elsas, 2015). Compliance with health restrictions might also be a form of virtue signaling or conspicuous compliance (Kolstoe, 2020).

3.3. The Israeli case study

To explore these hypotheses, we used Israel as a test case. Like most countries in the global north, Israel is very urbanized.[1] Similar to the nations there, Israel is socially diverse, as the division between Jews and Arabs exemplifies (Horowitz & Lissak, 1989). The Jewish group is the majority group comprising roughly 75 % of the population. Most of the Jewish population is first to third-generation immigrants who came to Israel from the Jewish diaspora (Lewin-Epstein & Cohen, 2019). Most immigrants arrived in Israel after the Second World War and in the first years after the state's inception in 1948. Another major wave of immigrants from the former Soviet Union regions arrived after the fall of the Eastern Bloc in the 1990s (Smooha, 2008). Today, Israel's Jewish society is multi-ethnic and composed mostly of Jews originating in North Africa, Europe, and the Middle East (Smooha, 2004).

The Arab-Palestinian population constitutes about 21 % of the population. Within Israel, there is general segregation between Jewish and Arab residents. Most Arabs and most Jews live in Arab-only or Jewish-only cities. There are a small number of mixed cities (e.g., Tel Aviv-Jaffa, Jerusalem, Haifa, Acre) that have both Arab and Jewish residents. Still, even in such cities, Jews and Arabs tend to live in segregated neighborhoods (Falah, 1996).

During the 1967 Six-Day War, Israel conquered areas in the West Bank and East Jerusalem that are often referred to as the "occupied territories." Since the 1970s, Jewish communities have been created in the occupied territories. These communities offer real estate opportunities to middle-class residents looking to improve their standard of living (Gonen, 1995), thereby transforming them into suburban commuter towns encircling the Jerusalem and Tel Aviv metropolitan areas (Hughes, 2017; Yiftachel, 1997). The use of social screening processes there for prospective homeowners and requiring those accepted to adhere to certain local laws and codes of conduct have created this social cohesion (Rosen & Razin, 2008).

Another division that pertains specifically to the Jewish population is that between the Haredi (ultra-Orthodox) population and the rest of the Jewish population. While Israeli society is composed of several religious sub-groups, most tend to assimilate into the broader society. However, the Haredi group sets itself apart. It has its own distinct education system, political parties, media outlets, and neighborhoods. Haredi society seeks autonomy in many aspects of life. It tends to distrust the state and obeys its religious leaders in case of any conflict between the two (Halbertal, 2016). Haredim want their community members to have minimal exposure to the secular lifestyle of the majority of the Israeli population in order to preserve their distinct lifestyle. They tend to cluster in their own segregated neighborhoods. During the last decades, some cities in Israel have become majority Haredi, and neighborhoods and new cities have been built especially to accommodate their residential needs.

The first lockdown in Israel in response to Covid-19 occurred on March 17, 2020, with additional restrictions, such as mask-wearing mandates, imposed in the following weeks. During the following waves of the pandemic, the level of compliance with the restrictions varied based on time, social group, and location (Barak et al., 2021). The Arab and Haredi populations were portrayed in the media as more likely to disobey the state's regulations. For example, both groups were allegedly more reluctant to cancel or limit events such as weddings and funerals.[2]

[1] See: https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS.

[2] https://www.haaretz.com/israel-news/2020-07-19/ty-article/premium/large-weddings-blamed-for-sharp-rise-in-coronavirus-rate-among-israeli-arabs/0000017f-f4e6-d47e-a37f-fdfee07d0000.https://www.timesofisrael.com/as-infections-surge-mass-ultra-orthodox-weddings-held-despite-lockdown-rules/.https://www.jpost.com/health-science/13-people-in-haredi-bnei-brak-tested-positive-for-coronavirus-623021.https://www.jpost.com/health-and-wellness/coronavirus/covid-families-from-low-socio-economic-status-less-likely-to-jab-kids-687681.

Research found that Arab residents had less trust in the government's restrictions and reported less compliance with physical distancing regulations (Shibli et al., 2022). Arabs were also more likely than Jews to refuse to be vaccinated (Green et al., 2021). However, other studies indicated that Arabs reported higher levels of intentions to comply than Jews (Goren et al., 2021; Mevorach et al., 2021). The ultra-Orthodox communities had some of the highest levels of Covid-19 morbidity rates (Shomron & David, 2022). Some ultra-Orthodox school principals deliberately defied the regulations, seeing them as an attack on their lifestyle (Corren & Perry-Hazan, 2021).

3.4. Data sources and method of analysis

3.4.1. Municipalities and forms of capital

Our study used a quantitative correlational research design. To explore places' social spaces, we compiled data about 140 cities in Israel from official sources such as The Central Bureau of Statistics, Social Security Agency, Ministry of Culture, Ministry of the Interior, and the Israeli Police. Most of the data came from publicly available sources. We obtained other information through direct requests to the relevant agency.

The research unit for the empirical examination is Israeli cities.[3] We refer to a city or an urban municipality as a well-defined geographic area that encompasses a specific community that lives within its confines and conducts most of its daily affairs within this area. We use this concept of place to express a communal spirit, or the residents' shared dispositions and social practices, which are the result of their shared resources (Easthope, 2004; Pain, 2008; Simpson, 2016). As Table A1 in the appendix indicates, the cities cover a fairly broad spectrum of Israel's urban population in terms of size, ethnicity, political divides, and cultural lifestyles.

Municipalities in Israel are administrative units that enjoy a certain degree of self-management and independent resource allocation (Razin, 2004). At the municipal level, the three forms of capital can be conceived in two complementary manners. The first is the aggregated or average value of people's individual capital. For example, the economic capital of a municipality can be associated with the average income of the municipality's population or the share of wealthy individuals in the population. Second, capital at the municipal level can also be conceived as related to the characteristics of the municipality such as the city's investment in local services that improve the social welfare and support cultural activities (Israel, 2021). For example, economic capital can be related to the size of the municipal budget, or more accurately, as the per-capita expenditure of the city in various domains. Hence, economic capital can be measured as a latent variable manifested both in aggregated individual-level economic and municipal-level indicators.

Cultural capital can also be measured at the municipal level. According to Bourdieu (2018), cultural capital is also manifested in academic achievement. Therefore, aggregated measures of educational achievement in the population can be appropriate measures of cultural capital at the city level. Similarly, the city's educational investments and expenditures can also serve as an indicator of municipal cultural capital. Since cultural capital is also related to competency in culture and participation in cultural activities, another set of indicators could be levels of participation in various cultural activities and the level of investment in culture by the municipality. In that respect, the level of municipal expenditure is related to the residents' demands for such activities, indicating the importance they ascribe to them. Aggregated levels of individual social capital indicators can also proxy for social capital at the city level. It can also be measured with indicators of group-level social cohesion such as ethnic homogeneity.

3.4.2. Construction of capital indices

We used various official data sources to measure the levels of economic, social, and cultural capital for the cities. We then ran factor analyses to identify various dimensions of these forms of capital and constructed an index for each of them. The databases included data from the local authorities, reports from various Israeli government ministries, and the national police. Table A2 in the appendix provides a complete list of the variables we used to construct our indices. Variables 1–7 represent economic capital, variables 8–12 refer to social capital, variables 13–25 indicate cultural capital, and variables 26–28 deal with compliance.

Following Frenkel and Ashkenazi (2008), we ran an exploratory factor analysis (EFA) with Varimax rotation for each group of variables belonging to a specific form of capital. We determined the number of factors relevant for each form of capital using the criterion of eigenvalues larger than one and ran the factor analysis again with the determined number of factors. The dominant variables in each factor allowed us to classify and label the "identity" of each factor in relation to the theoretical definitions of the three Bourdieusian forms of capital.

We used the loadings produced by the analyses to compute factor scores for each observation (i.e., city or municipality). In addition, we normalized each factor by z-score transformations and fixed the lowest value to 0 (subtracting the minimal value from each score). The resulting scores were used as indicators measuring the levels of the different dimensions of the forms of capital. We also computed a combined index for each form of capital following Frenkel and Ashkenazi (2008) and Israel and Frenkel (2015). We constructed a combined measure by computing a weighted mean of the original factor scores. The weights are the proportion of the variance explained by the factor out of the total variance explained by all factors belonging to the same form of capital. The resulting variables were also normalized as described above.

3.4.3. Compliance

We measured compliance using three different proxy variables:

1) Vaccination rate – Number of residents per capita vaccinated in two doses (on the date of the approval of the third dose) as reported in the Ministry of Health's data repository. Israel was the country with the fastest rollout of Covid-19 vaccinations (Rosen et al., 2021b). The Israeli government strongly recommended vaccinations, restrictions were put on unvaccinated individuals, and a vaccination mandate was considered but ultimately not implemented. However, a considerable number of Israeli citizens were hesitant or reluctant to get vaccinated (Rosen et al., 2021a; Shacham et al., 2021).
2) Police fines – The number of Covid-19 related police fines per capita during the third wave as reported in the registry of the Israeli police. During the lockdowns, the Israeli police were deployed to enforce the regulations and gave fines to those who disobeyed them (Perry & Jonathan-Zamir, 2020; Yogev, 2021).
3) Morbidity – Highest daily number of new confirmed Covid-19 cases per capita during the third wave as reported in the Ministry of Health's data repository. Since morbidity is linked to public Covid-19 regulations, among other factors, we used it as another indicator of compliance (Talic et al., 2021).

Finally, we developed multiple linear regression (OLS) models to examine the impact of different forms of capital on the community's compliance. The major factors that emerged from the factor analysis scores of each form of capital served as explanatory variables, indicating their contribution to the weighted index of the local compliance measure, our dependent variable.

[3] These cities represent most of the urban municipalities of the country, as defined by Israel's Central Bureau of Statistics. The studied municipalities include 91 % of the total population of the country.More details appear in the appendix's Table A1 and in Hebrew at:https://www.cbs.gov.il/he/publications/Pages/2019/%D7%99%D7%99%D7%A9%D7%95%D7%91%D7%99%D7%9D-%D7%91%D7%99%D7%A9%D7%A8%D7%90%D7%9C.aspx.

Table 1
Factor analysis of economic capital: major factors and factor loadings.

	Factors	
	1 - Wealth	2 – Economic Security
% of employees who earn >3 times the average wage	0.967	−0.246
% of self-employed who earn >3 times the average wage	0.875	−0.203
Household water consumption per capita (m^3)	0.616	−0.060
% of supplementary income allowances recipients	−0.514	−0.114
% of welfare nursing allowances recipients	0.035	0.756
% of unemployment benefits recipients	−0.009	0.633
Municipal expenditure on welfare per capita (ILS)	−0.275	0.509
% of variance explained by the factor	35 %	19 %

Major factors were defined by eigenvalues >1.
Dominant measures were defined as those with an absolute value of the component coefficient >0.45.
In order to facilitate labeling the factors, the dominant items are marked in bold.

In addition, we estimated six spatial control variables to test the robustness of the study's models and investigate their contribution to compliance given the city's social space:

1. A municipality's open and green spaces – The percentage of a community's total area devoted to green public spaces for culture, leisure, recreation and sports, gardens, and parks.
2. Population density – Population size divided by the municipality's-built area size.
3. Hospital proximity – A binary variable indicating whether there is a hospital within 15 min' drive from the municipality.
4. Household size – The mean number of individuals residing in households within the municipality.
5. Mean age – The mean age of the residents in the municipality.
6. Peripherality index – A measure of the remoteness of the municipality from other population centers (see appendix for details).

Eq. (1) specifies the proposed models:

$$\begin{aligned} CPLC_i = {} & \beta_0 + \sum_{j=1}^{q} \beta_j ECF_{ij} + \sum_{h=1}^{r} \beta_{h+q} CCF_{ih} + \sum_{m=1}^{t} \beta_{m+r} SCF_{im} \\ & + \beta_{t+1} IPS_i + \beta_{t+2} UO_i + \beta_{t+3} STL_i + \beta_{t+4} OPA_i + \beta_{t+5} POP_i \\ & + \beta_{t+6} HOS_i + \beta_{t+4} HHS_i + \beta_{t+5} AGE_i + \beta_{t+6} PER_i + \varepsilon_i \end{aligned} \quad (1)$$

where:

$CPLC_i$ represents community compliance in locality i.

ECF_{ij} is the score of the economic capital factor j ($j = 1 \ldots q$) in locality i.

CCF_{ij} is the score of the cultural capital factor h ($h = 1 \ldots r$) in locality i.

SCF_{im} is the score of the social capital factor m ($m = 1 \ldots t$) in locality i.

IPS_i is a dummy variable that distinguishes between Israeli-Palestinian communities and communities that are not Israeli-Palestinian[4] in nature (in locality i).

UO_i is a dummy variable that distinguishes between ultra-Orthodox Jewish (Haredi) communities, and communities that are not Haredi in nature (in locality i).

STL_i is a dummy variable that distinguishes between communities located on the West Bank and those within the 1948 ceasefire lines of the State of Israel (in locality i).

OPA_i, POP_i, HOS_i, HHS_i, AGE_i, and PER_i are a set of control variables as described above in locality i.

β are the parameters to be estimated, and ε_i is the error term so that $E(\varepsilon) = 0$.

[4] These people are Israeli nationals. On the other hand, we excluded Palestinian Arabs in the occupied territories, because they are not citizens of the State of Israel. Therefore, we had no information about them with regard to the issues we considered.

4. Results

4.1. The social space - measuring forms of capital

This section presents the results of the exploratory factor analysis we ran to identify the dimensions of the forms of economic, cultural, and social capital and construct the index variables. Overall, the EFA included seven observed variables creating a two-factorial structure that represents the economic capital of the tested cities, along with three cultural forms of capital and two of the social type. Conceptually, these factors underlie the social space of the cities in the study. We named each factor in accordance with the most influential variables that comprise it (highlighted in the table).

4.1.1. Economic capital

The first factor, "Wealth," explained 35 % of the total variance (Table 1). As Table 1 indicates, this factor represents the local inhabitants' economic status. It consists of variables that measure material wealth in terms of both earnings and housing. The second economic capital factor, "Economic Security," explained 19 % of the total variance. It represents economic stability and low levels of economic risk separate from economic status. "Economic Security" depends on the state's welfare policy rather than on personal wealth.

4.1.2. Cultural capital

The first factor, "School Achievement," explained 27 % of the variance (Table 2). It refers to educational achievement, achievement in leading professions, forerunners of attainments in tangent (academic) and non-tangent fields (employment, residence). It also represents a location's student elite, reflected in acceptance to elite universities rather than public colleges with less strict admission criteria. Israelis regard the latter as less selective (Ayalon & Mcdossi, 2019). School achievement has a symbolic value that provides people with benefits in various areas of life, certainly if they are compared to the rest of the population in the community, which has an academic education, or a college (not a university) degree (Shwed & Shavit, 2006). The second component, "Professional Academic Attainment," explained 23 % of the overall variance. It is made up of institutional credentials that can be converted into benefits and better labor market prospects (Bourdieu, 2018; Toft, 2018).

The third component, "Urban Cultural Fostering," which explained 14 % of the overall variance, represents the desire and ability of local authorities to make investments that promote culture (Israel, 2021). These inputs are aimed at nurturing and enhancing elements of cultural capital (e.g., institutional, knowledge, and tastes).

4.1.3. Social capital

The first factor, "Social Integration," explained 36 % of the variance. It combines expenditures to promote social bonding and those allocated to integrate people into the community (see Table 3). The willingness to

Table 2
Factor analysis of cultural capital: major factors and factor loadings.

	Factors		
	1 – School Achievement	2 – Professional-Academic Attainment	3 - Urban Cultural Fostering
Average city score in English (8th grade)	**0.825**	0.318	0.331
Average city score in mathematics (8th grade)	**0.817**	0.250	0.195
Average city score in science (8th grade)	**0.782**	0.129	0.011
% of B.A. (or equivalent) students who study at a university (and not in a public college)	**0.619**	0.435	−0.026
% of B.A. (or equivalent) students who study at one of Israel's elite academic institutions	**0.597**	0.202	0.003
% of baccalaureate recipients that are eligible to enter a university	**0.501**	0.323	0.229
% of workers in academic occupations	0.345	**0.882**	0.144
% of residents with M.A. (or equivalent) or higher degree	0.305	**0.803**	0.343
% of residents with B.A. (or equivalent) degree	0.385	**0.752**	0.350
% of workers in managerial occupations	0.329	**0.675**	0.411
Municipality's additional expenditure on education (ILS)	0.141	0.139	**0.818**
Municipal expenditure on culture per capita (ILS)	0.111	0.177	**0.577**
Municipal expenditure on celebration per capita (ILS)	−0.015	0.125	**0.471**
% of variance explained by the factor	27 %	23 %	14 %

Major factors were defined by eigenvalues >1.
Dominant measures were defined as those with an absolute value of the component coefficient >0.45.
In order to facilitate labeling the factors, the dominant items are marked in bold.

Table 3
Factor analysis of social capital: major factors and factor loadings.[a]

	Factors	
	1 - Social Integration	2 –Mutual Responsibility
Gini index of employee's wages	−0.088	**−0.847**
Voting percentage in 2018 municipal elections	−0.587	**0.603**
Mean score of municipality's school efforts to encourage social and civil involvement	−0.180	**0.579**
% of post-1990 immigrants in population	**0.966**	−0.249
Municipal expenditure on immigrant absorption per capita (ILS)	**0.695**	0.041
% of variance explained by the factor	36 %	30 %

Major factors were defined by eigenvalues >1.
Dominant measures were defined as those with an absolute value of the component coefficient >0.45.
In order to facilitate labeling the factors, the dominant items are marked in bold.
[a] We reversed the values of the social capital factors so that positive values represent higher levels of capital in congruence with the two other capital indices.

make such expenditures indicates the desire to take care of the community and be involved in it. The component demonstrates how the ethnic composition impacts social bonds and communal sentiment (Forrest & Kearns, 2001, p. 2131). It suggests that communities with numerous immigrants have less social cohesion (Putnam, 2007), which may weaken the bonds with the community and involvement in its affairs. In such communities, it is even more important for the city to invest in bringing its people together. We reversed the scores for this variable when conducting the analysis so that higher values indicated more social capital.

The second social factor, "Mutual Responsibility," explained 30 % of the variance. This factor combines variables that indicate the political leadership's desire to bridge economic inequalities and the educational motivation to do so. The negative sign of the first variable points to the negative role of inequality in producing and accumulating social capital. From the perspective of the local government, for instance, the need for social involvement becomes less urgent as inequality rises, and other issues become more pressing.[5]

[5] Our social capital measure is rather indirect and therefore could be imprecise. We acknowledge that its measurement is weaker than the economic and cultural capital variables. Social capital can be measured directly at the individual level using surveys that explore elements such as social support, social trust, or the strength and size of social networks (e.g., Mouratidis, 2018; Poortinga, 2006). Nonetheless, we lacked access to such data at the municipal level. Therefore, we had to rely on indicators that are only tangentially related to these factors.

4.2. Analysis of the OLS regressions

We ran a series of OLS regressions to test the association between compliance and the three types of community-level forms of capital. We estimated models for each individual indicator of compliance – vaccination rates, Covid-19 related fines from the police, and the peak number of confirmed cases.

The independent variables included in these models are the three forms of community-level capital – economic, cultural, and social. We estimated models with the three forms of capital measured by the single combined index and by the individual factors described above. We also estimated additional models controlling for special characteristics of the Arab cities with a majority Arab population, cities with a majority Haredi (ultra-Orthodox) population, and Jewish communities in the occupied territories (The West Bank). Lastly, models were estimated to account for a municipality's open and green areas, population density, healthcare (hospital) accessibility, household size, age of population, and peripherality (Eq. (1)).

The results depicted in Table 4 generally confirm the research hypothesis regarding the relationship between the characteristics of the communities' social space (i.e., the local habitus) and compliance. The results of Model 1a in Table 4 indicate that all three forms of capital have a positive influence on vaccination rates. Residents of cities with higher levels of economic, social, and cultural capital complied more with Covid-19 vaccination recommendations, with each form of capital having its own independent effect. Model 1b includes controls for special population groups. Controlling for all other variables in the model,

Table 4
OLS Regression results of the determinants of community compliance - combined indices.

	Vaccination			Police fines			Morbidity		
	Model 1a	Model 1b	Model 1c	Model 2a	Model 2b	Model 2c	Model 3a	Model 3b	Model 3c
Economic capital	0.108***	0.109***	0.075***	−0.002	−0.002	0.006	−0.449**	−0.047	0.068
	(0.018)	(0.020)	(0.024)	(0.005)	(0.005)	(0.006)	(0.221)	(0.245)	(0.303)
Social capital	0.072***	0.101***	0.077***	0.018***	0.0002	−0.001	0.308*	0.479**	0.482*
	(0.014)	(0.019)	(0.022)	(0.004)	(0.004)	(0.006)	(0.176)	(0.226)	(0.276)
Cultural capital	0.067***	0.051***	0.031*	−0.016***	−0.012***	−0.012***	−0.098	−0.209	−0.003
	(0.016)	(0.016)	(0.017)	(0.004)	(0.004)	(0.004)	(0.198)	(0.192)	(0.213)
Arab		−0.053*	−0.074**		0.034***	0.041***		0.148	0.193
		(0.031)	(0.033)		(0.007)	(0.008)		(0.373)	(0.421)
Haredi		−0.149***	−0.106***		−0.007	−0.018*		2.068***	1.542***
		(0.039)	(0.040)		(0.009)	(0.010)		(0.473)	(0.507)
Settlement		0.082***	0.060**		−0.010	−0.008		0.671*	0.382
		(0.030)	(0.030)		(0.007)	(0.008)		(0.366)	(0.377)
Open areas			−0.544			0.236*			−1.242
			(0.543)			(0.138)			(6.859)
Population density			−0.484***			0.066*			2.429
			(0.146)			(0.037)			(1.851)
Medical access			0.014			0.003			−0.092
			(0.015)			(0.004)			(0.194)
Household size			0.017			0.003			−0.348
			(0.022)			(0.006)			(0.281)
Mean age			0.004			−0.001			−0.086*
			(0.004)			(0.001)			(0.051)
Peripherality index			0.011			−0.002			−0.241**
			(0.008)			(0.002)			(0.106)
Constant	0.321***	0.312***	0.323*	0.031***	0.044***	0.047	2.255***	1.289**	4.826**
	(0.046)	(0.047)	(0.179)	(0.012)	(0.011)	(0.046)	(0.564)	(0.574)	(2.267)
N	140	140	136	140	140	136	140	140	136
R^2	0.474	0.559	0.568	0.502	0.619	0.644	0.234	0.358	0.452

Note: Standard errors in parentheses.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

Arab and Haredi cities showed less compliance. Municipalities on the West Bank complied more than non-Haredi Israeli Jewish cities. Model 1c adds six additional control variables that tap the municipality's spatial conditions, availability of healthcare services, and general population characteristics. Adding these variables does not change the findings pertaining to the three forms of capital and the cultural subgroups in any essential way. Of the control variables, only population density had a negative effect on compliance.

The models pertaining to police fines showed a negative impact of cultural capital, meaning that residents of cities with higher levels of cultural capital received fewer fines (Models 2a, 2b, and 2c). Social capital had a positive effect on the number of fines, but this effect disappeared when we introduced the controls for cultural subgroups (Model 2b). Residents of Arab cities received more fines than residents of other cities. Interestingly, Haredi residents received fewer fines. Adding spatial control variables (Model 2c) indicated that the availability of open spaces and population density were positively correlated with the number of police fines.

Finally, Model 3a revealed a negative effect of economic capital and a positive effect of social capital on morbidity. Nevertheless, when we introduced the cultural subgroups' control variables (Model 3b), economic capital became insignificant. Cultural capital had no significant impact on this outcome. Additionally, Haredi communities had significantly higher morbidity rates. Adding additional control variables did not affect these findings. However, municipalities with younger populations had lower morbidity rates.

Table 5 shows the results of the OLS regressions of the different Covid-19 compliance indicators on the various dimensions of local economic, cultural, and social capital. The results again indicate that all three types of capital have an influence on compliance with Covid-19 restrictions.

Both dimensions of economic capital, Wealth (EC_1) and Economic Security (EC_2), were positively associated with vaccination rates (Models 1d and 1e). However, in the full model (Model 1f) only the wealth dimension had a positive correlation. Cities with wealthy residents complied more with vaccination recommendations. The wealth dimension of economic capital was also associated with lower Covid-19 morbidity rates. However, Economic Security was associated with higher rates of Covid-19 morbidity (Models 3d, 3e, and 3f). Economic capital was not significantly associated with Covid-19 related police fines.

Both dimensions of social capital had a positive effect on vaccination rates (Model 1d). These results held even after introducing the controls for the cultural subgroups and the set of control variables (Models 1e and 1f). However, Social Integration (SOC_1) was also positively associated with morbidity, both with and without the cultural subgroups and the other control variables (Models 3e and 3f). Thus, communities with higher levels of social capital had more deaths from Covid-19. A partial explanation for these findings is that high levels of social capital are linked to frequent social interactions that occur face-to-face. Frequent physical interactions can increase the spread of infection during a pandemic, explaining the positive effect of social capital on morbidity in Haredi communities. Mutual Responsibility had a positive association with police fines, but this effect vanished when introducing the various control variables (Models 2d, 2e, and 2f).

All three dimensions of cultural capital had a positive effect on vaccination rates in the basic model (Model 1d). When introducing the controls for the cultural subgroups, School Achievement (CUL_1) became statistically insignificant (Model 1e). Furthermore when introducing additional control variables to the model, all cultural capital dimensions became statistically insignificant (Model 1f).

All cultural capital dimensions had a negative effect on police fines in the basic model (Model 2d). This finding suggests that municipalities

Table 5
OLS Regression results of the determinants of community compliance - separate indices.

	Vaccination			Police fines			Morbidity		
	Model 1d	Model 1e	Model 1f	Model 2d	Model 2e	Model 2f	Model 3d	Model 3e	Model 3f
EC_1	0.071***	0.078***	0.064***	0.005	0.001	0.004	−1.063***	−0.792***	−0.508**
Wealth	(0.019)	(0.020)	(0.020)	(0.004)	(0.005)	(0.005)	(0.218)	(0.229)	(0.241)
EC_2	0.031**	0.030**	0.0001	0.0002	−0.001	−0.002	0.404***	0.478***	0.733***
Economic security	(0.013)	(0.012)	(0.015)	(0.003)	(0.003)	(0.004)	(0.149)	(0.137)	(0.183)
SOC_1	0.039***	0.048***	0.034**	0.005	−0.001	−0.001	0.565***	0.635***	0.484***
Social integration	(0.012)	(0.013)	(0.013)	(0.003)	(0.003)	(0.003)	(0.135)	(0.144)	(0.153)
SOC_2	0.068***	0.063***	0.050***	0.011***	0.005	0.004	0.144	0.392**	0.139
Mutual responsibility	(0.016)	(0.017)	(0.017)	(0.004)	(0.004)	(0.004)	(0.186)	(0.191)	(0.204)
CUL_1	0.050***	0.027	0.007	−0.008*	−0.003	−0.004	0.606***	0.533***	0.586***
School achievement	(0.017)	(0.017)	(0.017)	(0.004)	(0.004)	(0.004)	(0.195)	(0.198)	(0.201)
CUL_2	0.032***	0.024**	0.001	−0.004*	−0.004*	−0.006**	0.220*	0.261**	0.391***
Professional-academic attainment	(0.010)	(0.010)	(0.011)	(0.002)	(0.002)	(0.003)	(0.116)	(0.112)	(0.132)
CUL_3	0.047***	0.031*	0.004	−0.014***	−0.008**	−0.008*	0.352*	0.270	0.537***
Urban cultural fostering	(0.015)	(0.016)	(0.016)	(0.004)	(0.004)	(0.004)	(0.181)	(0.180)	(0.192)
Arab		−0.036	−0.066*		0.026***	0.034***		−0.232	0.292
		(0.035)	(0.038)		(0.008)	(0.010)		(0.401)	(0.456)
Haredi		−0.135***	−0.106**		−0.008	−0.016		1.981***	1.669***
		(0.040)	(0.041)		(0.009)	(0.010)		(0.449)	(0.483)
Settlement		0.078**	0.059*		−0.014*	−0.010		0.372	0.099
		(0.032)	(0.032)		(0.008)	(0.008)		(0.367)	(0.374)
Open areas			−0.382			0.258*			−5.986
			(0.544)			(0.139)			(6.447)
Population density			−0.397**			0.055			0.921
			(0.162)			(0.041)			(1.920)
Medical access			0.011			0.003			−0.062
			(0.015)			(0.004)			(0.181)
Household size			0.008			0.002			−0.056
			(0.023)			(0.006)			(0.268)
Mean age			0.006			−0.0005			−0.143***
			(0.004)			(0.001)			(0.050)
Peripherality index			0.009			−0.001			−0.167
			(0.009)			(0.002)			(0.105)
Constant	0.485***	0.580***	0.599***	0.103***	0.066***	0.066	1.137**	1.302*	3.519*
	(0.049)	(0.066)	(0.179)	(0.012)	(0.016)	(0.046)	(0.575)	(0.745)	(2.118)
N	140	140	136	140	140	136	140	140	136
R^2	0.508	0.570	0.591	0.573	0.639	0.659	0.343	0.462	0.544

Note: Standard errors in parentheses.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

with higher levels of cultural capital were more compliant with Covid-19 restrictions. These results remained consistent when additional control variables were introduced (Models 2e and 2f). The only exception was with regard to School Achievement (CUL_1), which was statistically insignificant in the full model. Interestingly, all cultural capital dimensions had a positive association with morbidity.

We found a positive effect of Arab municipalities on compliance only in the case of the number of police fines. Haredi cities had lower vaccination rates and higher morbidity rates but did not receive more fines than non-Arab communities. This last finding may indicate that Haredi cities are under-policed, while Arab municipalities are over-policed. Israeli municipalities on the West Bank had higher vaccination rates and fewer police fines than communities within Israel proper. Incorporating additional control variables did not significantly alter the conclusion regarding vaccination rates (Model 1f). However, when additional control variables were introduced, this effect disappeared in relation to the frequency of receiving police fines (Model 2f). We believe that another explanation for the partial findings from the full models in Table 5 is the reduced degrees of freedom due to the large number of variables in the model.

5. Discussion and conclusions

Cities are regarded as a sustainable form of settlement (Angelo & Wachsmuth, 2020; Comstock, 2012). Improving their planned and built environments is key to healthier communities (de Leeuw, 2022). The Covid-19 pandemic challenged these ideas (Kotkin, 2020; Krugman, 2021; Rosenthal, 2020), but provided a chance to further enhance cities' resilience as the pandemic waned (e.g., Triguero-Mas et al., 2022). However, to do so, we must identify the communal factors that prompt people to adhere to regimens that promote their health. Our paper contributes new knowledge to this effort by concentrating on social stratification in cities that emphasize varying accumulations of Bourdieusian forms of capital (i.e., social space).

Using Israel as a test case, we demonstrate the value of explaining Covid-19-related health behavior at the community level, meaning the extent to which urban communities complied with official regulations regarding preventive health measures as a function of their shared dispositions (i.e., habitus). The research's theoretical rationale and findings broaden our knowledge on health-related compliance and the prospect of building urban resilience. Prior research focused on various aspects, such as the physical components of city planning (e.g., Moran et al., 2016), social class (e.g., Demakakos et al., 2008), and health policy (e.g., Kalagy et al., 2021). The current study adds to theory by indicating how compliance is tied to the broader social context, the accumulation of Bourdieusian forms of capital, and the urban habitus it creates.

Apparently, the accumulation of capital that defines the social space elicits a variety of compliance motivations that are unrelated directly to extensively studied factors, such as ethnicity, cultural lifestyles, socio-demographic factors, and the built environment. Our regressions show that the elements of the social space that defines the urban habitus are robust with regard to such variables in explaining compliance patterns

in the community. Even when controlling for the age of the population, availability of medical assistance, household size, availability of open spaces and other variables, we find that these forms of capital have a generally positive effect on compliance.

Our models reveal how the unequal accumulation of capital resources of urban communities explains some of the variances in vaccination rates, Covid-19 related police fines, and Covid-19 morbidity. Communities with a high level of capital accumulation had an urban habitus that was more predisposed toward compliance, evident in the positive effect of economic and social capital on vaccination rates and the effect of cultural capital on both vaccination rates and police fines. The results in other towns were more nuanced. Material richness, for example, had no bearing on the enforcement of the measures enacted to combat the pandemic. Instead, other characteristics played a role. For example, social capital served a multifaceted function. While high levels of social capital were positively correlated with vaccination rates, reflecting a commitment to the community, strong interpersonal social ties preserved encounter patterns from before the pandemic. The resulting interactions led to an increase in the morbidity rates in communities where such patterns were customary. Specific cultural contexts also played a role. For example, in addition to the effect of capital forms, there was less compliance with Covid-19 restrictions (i.e., lower vaccination rates and more police fines) among Arab populations in Israel. One explanation for this result is their lower social position.

In this regard, our results raise the question of a causal effect. Does possession of various forms of capital promote compliance with public health recommendations and restrictions? Alternatively, does compliance with the authorities' regulations increase the likelihood that community members will amass greater capital? For example, will they make political, budgetary, and planning choices that improve their living environments by encouraging employment and attracting businesses? Lack of compliance might be seen as an expression of distrust in incumbents and decision-makers (Shibli et al., 2022), which can lead to political mistrust of "unruly" communities and the failure to allocate resources to them that might increase the communities' prosperity. We did not investigate this intricate relationship, but it is a fruitful subject for future research.

Nevertheless, our study broadens the methodology of earlier investigations that were of a similar nature. It enables us to think both on a large scale by assessing more significant entities and on a small scale by measuring the very mechanisms that affect an individual's agency. It broadens the geographic scope and scale often used in Bourdieu-inspired urban research, which generally focuses on the small and medium scales (e.g., Bridge, 2006; Wiesel, 2020). Our study also goes beyond the usual quantification of compliance, where group-based components such as identities, norms, and understandings of health are acknowledged by the theory (Krueger et al., 2009), but due to a lack of data, are rarely explored (Mollborn & Modile, 2022). Not surprisingly, public policies intended to promote communities' health neglect the overall contexts in which people live (Braun-Lewensohn et al., 2021). Thus, the use of the study's framework can help decision-makers, planners, and practitioners consider the local social and political conditions when adopting public policy aimed at promoting a place's long-term viability and resilience of city life.

As a recommendation for public policy, steps must be taken to make decision-makers more aware of the critical role that residents' stocks of capital play in compliance during public health emergencies. Identifying the community's social space that motivates individuals to follow health-promoting regimens can help ensure its sustainability and health. Our spatial technique provides a method for measuring complex social spaces. Based on the indices derived from this research, municipalities may be able to identify sets of capital resources that boost their chances of improving the outcomes of their health-promoting activities. As policymakers identify the social spaces in their communities, they can tailor their policies to the existing stocks of capital that relate to health-promoting behavior. Doing so will increase the likelihood that the population will comply with these policies.

Any conclusions, however, must be evaluated with regard to the study's limitations. First, the results should be interpreted in light of our definitions of capital and compliance. Future research built on the combinations of the variables outlined here might present a different depiction of the social spaces we investigated. Specifically, social capital should be measured by using more direct indicators such as social trust, or the strength and size of social networks. Our current measure of social capital may be imprecise. Therefore, our findings related to social capital should be interpreted with caution. Second, Israel might be an appropriate test case for other regions in the global south and Western hemisphere that have pursued the same neoliberal policies, resulting in a similar increase in geographical disparities (see, for example, Krampf, 2018). However, additional case studies in other regions are needed to support the theory we posited. Third, using the approach of studying cities might impose some limitations. Data sets for urban communities are averages that might be based on quite heterogeneous populations. Future research that gathers data on forms of capital and compliance indicators relative to different health concerns at the level of people and their families may mitigate the disadvantages associated with urban-level data.

CRediT authorship contribution statement

Emil Israel: Supervision, Funding acquisition, Conceptualization, Methodology, Formal analysis, Validation, Investigation, Writing – original draft, Writing – review & editing. **Tal Feder:** Methodology, Validation, Formal analysis, Data curation, Writing – original draft, Writing – review & editing, Investigation.

Declaration of competing interest

The authors have no conflict of interest to declare regarding the current manuscript.

Data availability

Data will be made available on request.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.cities.2023.104491.

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