Towards community-health planning: Compliance and the social space of cities under Covid-19 regulations

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Abstract

Cities' 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 capitals explains the likelihood of communities' level of compliance. 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.

Keywords: *Compliance; Public health; Covid-19; Spatial capital; Social space; Habitus*

1. **Introduction**

The global Covid-19 pandemic prompted governments worldwide to impose restrictions on civilians including lockdowns (Deb et al., 2022). These restrictions prompted various reactions, ranging from compliance to backlashes and defiance (Bargain & Aminjonov, 2020; Nivette et al., 2021). 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;). However, despite the numerous studies about the association between communities' characteristics and Covid-19 (e.g., Barak et al., 2021), less attention has been paid to the determinants of compliance at the city and community levels.

Thus, our goal is to expand our understanding of the relationship between various community characteristics and the level of compliance with Covid-19 regulations. 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). The Bourdieusian approach is 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).

We explore Bourdieu's three forms of capital at the local level and their associations with compliance with Covid-19 state regulations in Israel. We 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 then run a series of regression analyses to estimate the influence of the three forms of communal-municipal level capital on the level of compliance with state-imposed Covid-19 regulations.

2. **Theoretical background**

2.1 ***Cities, health and compliance***

Most of the world's population today--more than 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. In general, 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 such as lower infant mortality rates and higher height-for-age ratios (Vlahov et al., 2005).

The Covid-19 pandemic highlighted the importance of behavioral factors in explaining health outcomes. Traditional health behavior theories have focused on the motivations for the behavior, on the action strategies deployed, or on both (Armitage & Conner, 2000). However, these theories have not paid enough attention to the role of compliance with health regulations. The Covid-19 pandemic imposed a set of global

health regulations that brought the issue of compliance with these containment measures to the everyday level in an unprecedented way (Van Rooij et al., 2020). Following the pandemic's outbreak, many governments imposed behavior and travel restrictions, including lockdowns, shelter-in-place orders, mask-wearing mandates, prohibitions on social gatherings, a ban on outdoor activities, and mandatory vaccinations (Deb et al., 2022; Barak et al. 2021).

2.2 *Compliance and Covid-19 – Measurement and determinants*

The research on compliance during Covid-19 has produced equivocal results as to the individual and contextual factors that influence it. 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 (e.g., Sheikh et al. 2020; Painter & Qiu, 2020).

Variations in the methodologies and the factors investigated 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; Musil, 2021; Nivette et al 2021). Wright et al. (2020) demonstrated that those with more income and more economic security were more likely to comply, while Van rooij et al. (2020) found that compliance was linked to lack of fear of the authorities, and the behavior of the social surrounding. Given the equivocal results, we speculated that community-level contextual variables might provide more insights into compliance patterns.

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). 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).

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). The concept of a healthy lifestyle is based on the interaction between a social structure (membership in a social group) and human agency (enactments of health behaviors and their connections to individual identities: Cockerham, 2005).

Not only do health 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). Social belonging, networks, and a sense of pride in the community promote health and wellbeing (Smith & Anderson, 2018).

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).

The analysis of communities' forms of capital is evolving, though relatively scarce. For example, 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 (2018; 2015) measured the three forms of capital in Israeli cities, 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 ***Research goals and hypotheses***

In this research, we study the impact of cities' economic, cultural, and social capital on the level of compliance with state-imposed Covid-19 restrictions. Put differently, the community's habitus (Israel, 2021) 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.

3.1.1 *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.

3.1.2 *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 towards 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 can expect that immigration level 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.

3.1.3 *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).

3.2 *The Israeli case study*

To explore these hypotheses, we used Israel as a test case. Israel is a society divided in many ways, the leading one being the division between Jews and Arabs (Horowitz & Lissak, 1989). Today, Israel's Jewish society is multi-ethnic and composed mostly of Jews originating in North African, Europe, and the Middle Eastern (Smooha, 2004). The Arab-Palestinian population constitutes about 21% of the population. Most Arabs and most Jews live in Arab-only or Jewish-only cities. There is a small number of mixed cities (e.g., Tel Aviv-Jaffa, Jerusalem, Haifa, Acre) that have both Arab and Jewish residents (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. Their residents are Israeli citizens, that benefit from real estate opportunities to improve their standard of living (Gonen, 1995).

Another division that pertains specifically to the Jewish population is that between the Haredi (ultra-Orthodox) population and the rest of the Jewish population. Haredi society seeks autonomy in many aspects of life. It tends to distrust the state and obeys its religious leader in case of any conflict between the two (Halbertal, 2016).

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). 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).

3.3 *Data sources and method of analysis*

3.3.1 *Municipalities and capital forms and construction of capital indices*

To explore places' social spaces, we compiled data from 140 cities in Israel. The city was the research unit for the empirical examination. 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).

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.

Following Frenkel and Ashkenazi (2008), we ran an exploratory factor analysis (EFA) for each group of variables belonging to a specific form of capital. We determined the number of factors relevant for each form of capital. 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.

3.3.3 *Compliance*

We measured compliance using three different proxy variables:

1) 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).

2) 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, 2021a). 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., 2021b; Shacham et al., 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).

We also ran a factor analysis of these three variables to construct a combined compliance index.

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.

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. 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 economic status characterizing local inhabitants. 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, separable from the economic status. "Economic Security" is dependent on the state's welfare policy rather than on personal wealth.

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

	Factors	
	1 - Wealth	2 – Economic Security
% of employees who earn more than 3 times the average wage	**0.967**	-0.246
% of self-employed who earn more than 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 greater than 0.45.
In order to facilitate labeling the factors, the dominant items are marked in bold.

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 academic 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).

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 greater than 0.45.
In order to facilitate labeling the factors, the dominant items are marked in bold.

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 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).

Table 3. Factor analysis of social capital: major factors and factor loadings[1]

	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 greater than 0.45.
In order to facilitate labeling the factors, the dominant items are marked in bold.

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 it is possible that other urgencies need to be treated too.

4.1.4 *Compliance*

We analyzed the three compliance indicators separately, but we also constructed a combined compliance variable using the same factor analysis procedure described

[1] 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.

above. As expected, the compliance factor analysis yielded a single compliance factor (see Table 4). The vaccination rate played the most significant role in constructing this factor, but police fines and morbidity contributed to it as well.

Table 4. Factor analysis of the combined compliance indicator

	Compliance
Police fines	-0.308
Covid-19 morbidity	-0.224
Vaccination rate	0.997

Major factors were defined by eigenvalues >1.
In order to facilitate labeling the factors, the dominant items are marked in bold.

4.2 ***Analysis of 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. 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 as described above. We also estimated additional models controlling for special characteristics of the cities (Equation 1) – 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).

The results (Table 5) confirm the research hypothesis regarding the relationship between the characteristics of the communities' social space (i.e., the local habitus) and compliance. Model 1a in Table 5 shows the association between compliance, measured by the combined compliance index described above. The results indicate that all three forms of capital have a positive influence on compliance. Residents of cities with higher levels of economic, social, and cultural capital complied more with Covid-19 restrictions, 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, Haredi cities showed less compliance. Municipalities on the West Bank complied more than non-Haredi Israeli Jewish cities. The coefficient of the Arab cities was not statistically significant.

We also estimated separate models for each component of the compliance index separately. We found similar results for the vaccination rate model (Model 2a) with economic, cultural, and social capital having a positive effect on this rate. There was an additional positive association between vaccinations and municipalities on the West Bank, and a negative association with Haredi populations (Model 2b).

Model 3a revealed a negative effect of economic capital on morbidity, without significant effects of social and cultural capital. However, when we introduced the special populations' control variables, economic capital became insignificant and social capital had a positive effect on morbidity. Additionally, both Haredi communities and municipalities on the West Bank had higher morbidity rates. Finally, police fines indicated the negative impact of cultural capital, meaning that residents of cities with higher levels of cultural capital received fewer fines (Models 4a and 4b).

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

	Combined index		Vaccination		Morbidity		Police fines	
	Model 1a	Model 1b	Model 2a	Model 2b	Model 3a	Model 3b	Model 4a	Model 4b
Economic capital	0.866***	0.878***	0.108***	0.109***	-0.449*	-0.047	-0.002	-0.002
	(0.15)	(0.16)	(0.02)	(0.02)	(0.22)	(0.25)	(0.00)	(0.00)
Social capital	0.573***	0.814***	0.072***	0.101***	0.308	0.479*	0.018***	0
	(0.12)	(0.15)	(0.01)	(0.02)	(0.18)	(0.23)	(0.00)	(0.00)
Cultural capital	0.539***	0.412**	0.067***	0.051**	-0.098	-0.209	-0.016***	-0.012**
	(0.13)	(0.13)	(0.02)	(0.02)	(0.20)	(0.19)	(0.00)	(0.00)
Arab		-0.43		-0.053		0.148		0.034***
		(0.25)		(0.03)		(0.37)		(0.01)
Haredi		-1.201***		-0.149***		2.068***		-0.007
		(0.31)		(0.04)		(0.47)		(0.01)
Settlement		0.659**		0.082**		0.671		-0.01
		(0.24)		(0.03)		(0.37)		(0.01)
Constant	-0.092	-0.163	0.321***	0.312***	2.255***	1.289*	0.031**	0.044***
	(0.37)	(0.38)	(0.05)	(0.05)	(0.56)	(0.57)	(0.01)	(0.01)
N	140	140	140	140	140	140	140	140
R^2	0.475	0.56	0.474	0.559	0.234	0.358	0.502	0.619

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

Social capital had a positive effect on the number of fines, but this effect disappeared when we introduced the controls for special populations (Model 4b). The residents of Arab cities received more fines than residents of other cities. Although in the other models Haredi cities had a stronger negative effect on compliance compared to Arab cities, in the police fines model Haredi cities had no effect. However, the fines did have a negative effect on compliance in the Arab cities. Over-policing and the racial profiling of ethnic minorities are a common phenomenon, especially in "deeply divided societies" like Israel (Hasisi & Weitzer, 2007; Perry, 2006). This interesting result might suggest that there was over-policing of Arab citizens during the pandemic or leniency toward the defiance of regulations in the Haredi population (Ben-Porat et al., 2012).[2] Table 6 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), are positively associated with compliance. Cities with wealthy residents and better support for social welfare complied more with the regulations (Model 1c). Looking at each compliance measure separately indicates that these dimensions of economic capital are also associated with higher vaccination rates (Model 2c). However, Wealth (EC_1) is associated with lower Covid-19 morbidity rates, whereas Economic Security (EC_2) is associated with higher rates of Covid-19 morbidity (Model 3c). These effects remain intact, and in some cases become even stronger, after adding the controls for special populations (Models 1d, 2d, 3d). Economic capital is not significantly associated with Covid-19 related police fines.

Both dimensions of social capital have a positive effect on compliance. Social Integration (SOC_1) and Mutual Responsibility (SOC_2) are positively associated with the combined compliance index (Model 1c), and vaccination rates (Model 2c). These results hold even after introducing the controls for the special populations (Models 1d, 2d). However, Social Integration is also positively associated with morbidity, both with and without the special populations' control variables (Models 3c, 3d). In addition, Mutual Responsibility is positively linked with morbidity in Model 3d, which includes these controls. Thus, communities with higher levels of social capital have 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 among Haredi communities. Both aspects of social capital also have a positive effect on police fines. However, this effect diminishes and becomes statistically insignificant when controlling for special populations. Mutual Responsibility has a positive association with police fines but this effect vanishes when introducing the controls for the special populations (Models 4c, 4d).

[2] It should be noted that there are also claims of under-policing in the Arab population in Israel when it comes to crime inside Arab cities (Ben-Porat et al., 2012).

Table 6. OLS Regression results of the determinants of community compliance - separate indices

	Combined index		Vaccination		Morbidity		Police fines	
	Model 1c	Model 1d	Model 2c	Model 2d	Model 3c	Model 3d	Model 4c	Model 4d
EC_1	0.573***	0.631***	0.071***	0.078***	-1.063***	-0.792***	0.005	0.001
wealth	(0.15)	(0.16)	(0.02)	(0.02)	(0.22)	(0.23)	(0.00)	(0.00)
EC_2	0.252*	0.244*	0.031*	0.030*	0.404**	0.478***	0	-0.001
Economic security	(0.10)	(0.10)	(0.01)	(0.01)	(0.15)	(0.14)	(0.00)	(0.00)
SOC_1	0.314***	0.389***	0.039***	0.048***	0.565***	0.635***	0.005	-0.001
Social integration	(0.09)	(0.10)	(0.01)	(0.01)	(0.13)	(0.14)	(0.00)	(0.00)
SOC_2	0.545***	0.508***	0.068***	0.063***	0.144	0.392*	0.011**	0.005
Mutual responsibility	(0.13)	(0.14)	(0.02)	(0.02)	(0.19)	(0.19)	(0.00)	(0.00)
CUL_1	0.401**	0.217	0.050**	0.027	0.606**	0.533**	-0.008	-0.003
School achievement	(0.13)	(0.14)	(0.02)	(0.02)	(0.19)	(0.20)	(0.00)	(0.00)
CUL_2	0.258**	0.190*	0.032**	0.024*	0.22	0.261*	-0.004	-0.004
Professional-academic attainment	(0.08)	(0.08)	(0.01)	(0.01)	(0.12)	(0.11)	(0.00)	(0.00)
CUL_3	0.380**	0.246	0.047**	0.031	0.352	0.27	-0.014***	-0.008*
Urban cultural fostering	(0.12)	(0.13)	(0.02)	(0.02)	(0.18)	(0.18)	(0.00)	(0.00)
Arab		-0.293		-0.036		-0.232		0.026**
		(0.28)		(0.04)		(0.40)		(0.01)
Haredi		-1.084***		-0.135***		1.981***		-0.008
		(0.32)		(0.04)		(0.45)		(0.01)
Settlement		0.627*		0.078*		0.372		-0.014
		(0.26)		(0.03)		(0.37)		(0.01)
Constant	1.226**	1.985***	0.485***	0.580***	1.137*	1.302	0.103***	0.066***
	(0.40)	(0.53)	(0.05)	(0.07)	(0.57)	(0.75)	(0.01)	(0.02)
N	140	140	140	140	140	140	140	140
R^2	0.508	0.571	0.508	0.57	0.343	0.462	0.573	0.639

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

The cultural capital dimensions have a largely positive effect on compliance. All three dimensions have a positive effect on the combined compliance index and the vaccination rates in the basic models (Models 1c, 2c). When introducing the controls for the special populations, only School Achievement (CUL_2) remains statistically significant (Models 1d, 2d). School Achievement is positively associated with morbidity in the model that does not control for the city's population characteristics. When introducing these controls, both School Achievement and Professional Academic Attainment show positive associations with morbidity. Finally, municipal expenditures on culture (CUL_3) are negatively associated with the number of fines (Models 4c, 4d). When we consider the city's population characteristics, we did not find an additional effect on compliance in Arab municipalities except for a positive effect on the number of police fines. Haredi cities show less overall compliance, lower vaccination rates, and higher morbidity rates but do not receive more fines than non-Arab communities. Israeli municipalities on the West Bank (i.e., settlements) have higher overall compliance and vaccination rates than communities within Israel proper.

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 with the pandemic's predicted decline (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 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).

Our results establish associations between health behavior and various forms of capital. It broadens the methodology of earlier investigations that were of a similar nature.

Nevertheless, additional case studies in other regions are needed to support the theory we posited. Also, 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.

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