Organisational Conditions for Boundary Spanning in Public Health

Charlotte Kiland[1], Tor-Ivar Karlsen[2], Gro Kvåle[3]

Abstract

In this study, we examine how organisational conditions impact boundary spanning in public health to handle complex tasks. This policy field is characterised by extensive pressure for collaborative governance and boundary-spanning activities. Data from a 2019 web-based survey of all Norwegian public health coordinators ($n = 428$; response rate 60%) demonstrated the importance of boundary spanning "by architecture" for completing complex transboundary tasks, such as local government health overviews. Combinations of organisational conditions; organisational size, position size, position in the organisational hierarchy and formalised network arrangements, affected degrees of boundary-spanning and the ability to complete health overviews. The most important indirect organisational condition seemed to be position size. Organisational size is an important organisational predictor for position size, position in the organisational hierarchy and collaborative partners' contact pattern. Large municipalities had higher coordination capacity, higher degrees of boundary spanning and more formalised structures for intersectoral collaboration. Organisational size correlated significantly with contact frequency between boundary spanners and internal and external professional expertise. Overall, boundary spanning is not influential per se, but different degrees of boundary spanning affected the completion of complicated transboundary task in public health.

Practical Relevance

➢ Structural conditions affect the degree of boundary spanning in local public health governance.

➢ The degree of boundary spanning is positively associated with achieving important intersectoral planning activities.

➢ Close cooperation between the public health coordinator and the chief medical officer is paramount in accomplishing transboundary tasks in local public health governance.

➢ Small municipalities seem to have more challenges in accomplishing intersectoral public health activities than larger municipalities.

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Introduction

Within the public health field, cross-sectoral collaboration is considered an important tool in public health policy and is defined as a shift in the approach to improve health and well-being (Kickbusch and Gleicher 2012). The idea of collaborative governance is particularly prominent in the public health policy field. Moreover, public health is described as a typical contested policy field concerned with handling untamed and complex problems, often referred to as the much-debated notion of "wicked" problems (Rittel and Webber 1973; Termeer, Dewulf and Biesbroek 2019). One such problem is inequality in health, where

knowledge about causes and effects is ambiguous and uncertain (Head and Alford 2015). If this diagnosis holds true, governments are faced with public health problems that cannot be effectively dealt with within single organisational units.

The World Health Organization (WHO) has developed and promoted Health in All Policies (HiAP) as an approach to managing complex and wicked public health challenges (WHO 2014). The HiAP approach has become central to the current understanding of global population health, acknowledging that health impacts are a broad governmental responsibility and should be taken into account in all areas of policy-making (Leppo et al. 2013). HiAP encourages coordination and collaboration among multiple stakeholders across various sectors and authority levels (Leppo et al. 2013; Hagen et al. 2018). Being able to deal with interconnected administrative responses increases the demand for the capacity to coordinate and collaborate more and better between different sectors, organisations and multiple levels of governance (Lodge and Wegrich 2014). In turn, this led us to focus on "boundary spanning" as an important part of developing such coordination capacity to achieve a shared understanding of both the challenges and the means of addressing complex public health issues. Boundary spanning is basically about individuals' capacities and ability to access different social systems and bring together and align these diverse forms of expertise and experience to engage in joint action.

A criticism of the literature on boundary spanning is its somewhat narrow focus on agency and the importance of the competencies and roles of boundary spanners (Sullivan and Skelcher 2002). Several scholars define boundary spanning as an activity that is not connected to a defined organisational position (Williams 2002; Levina and Vaast 2005; Quick and Feldman 2014). Instead, boundary spanners' ability to shape perceptions by controlling information and access to various networks is highlighted (Williams 2002, 2012). Knowledge of how organisational conditions impact boundary-spanning capacities is scarce (van Meerkerk and Edelenbos 2018). This is especially relevant for studying boundary spanning in government contexts. To highlight the "embedded agency" and limits of the agency-oriented boundary spanner, we focused on people whose official organisational function is that of a boundary spanner, so-called officially nominated boundary spanners (Nederhand et al. 2019; Karlsen et al. 2022). Our theoretical ambition with this study was to contribute to the knowledge of how organisational conditions impact boundary spanning within a policy area dealing with complex problems. The main research question posed in this study was how organisational conditions impact boundary spanning in the public health field.

The Nordic countries committed to the Helsinki Statement on Health in All Policies in 2014 (WHO 2014), acknowledging the cross-sectoral approach to public health. Norway was the first country to integrate the HiAP approach into its national laws and regulations and has been recognised as a front-runner in implementing WHO ideas and policies on public health as a boundary-crossing public issue (Raphael 2012). In Norway, the Public Health Act (Ministry of Health and Care Services 2011) represented a shift in public health policy. The responsibility for handling public health challenges was delegated to the local government level, highlighting public health as a boundary-crossing public issue. It was a recognition that the most important social determinants of health are found in sectors other than health. Linking public health considerations to municipal planning processes and management systems is consistent with the HiAP approach and presupposes a diversity of actors in planning processes (Kvåle et al. 2020). Public health is thus a policy field characterised by extensive expectations of more collaborative governance efforts.

Empirically, we were interested in public servants with defined structural positions having coordination as a main task. The study is based on a survey of public health coordinators (PHCs) in Norwegian municipalities conducted in 2019. According to national regulations and guidelines, PHCs are considered important stakeholders in local policy-making processes (Norwegian Directorate of Health 2016, 2020). They have a defined responsibility for public health at the local level and are expected to be embedded in networks in which different governmental agencies, commercial actors, non-profit organisations and citizens depend on each other.

In Norway, the development of health overviews in local governments is seen as a fundamental policy instrument in public health to handle increased inequality in health. Health

overviews are mandatory requirements according to the Public Health Act (Ministry of Health and Care Services 2011). They are required to identify local health challenges, with a special focus on health inequalities and factors determining the health of the local populations (e.g. health behaviours, environmental and demographic circumstances and living conditions). Despite the mandatory requirement to develop health overviews, studies have shown considerable variation in how well the municipalities succeed in this task (Hagen et al 2018; Karlsen et al 2022). The process of crafting health overviews is supposed to foster institutional awareness and will to address health inequalities and prioritize fair distribution among social groups in municipal planning and political decision-making (Norwegian Directorate of Health 2020). The health overview is a measure to seek more equitable public health outcomes and forms the basis for formulation of goals and priorities in municipal planning. The task is a complex procedure. It requires extensive methodological and analytical skills to gather evidence-based knowledge and descriptive statistics on a wide range of variables. The data and knowledge is produced by the Norwegian National Institute of Public Health, the county municipal government (fylkeskommunene) as well as contributions from a wide range of experts, agencies and sources inside and outside the local bureaucracy (Kvåle et al 2020; Karlsen et al. 2022).

The chief medical officer (CMO) is in charge of the medical expertise regarding public health matters. Consequently, the CMO plays a major role in developing the health overview, contributing with professional expertise to public health matters in municipal planning processes. Crafting a health overview involves considerable boundary-spanning activities, and anticipates PHCs with political awareness and the ability to interact and communicate with politicians, professional experts and external actors throughout the procedure. Studies have problematised how the development of the health overviews are dominated by ambitious national policies and guidelines, as well as centrally produced strategies and analysis which not necessarily represents what the municipalities regards the most profound problems and challenges (Amdam 2023; Synnevåg et al. 2018). Thereby, it is a complicated and challenging transboundary task to develop and complete the health overview.

In the following article, we start by clarifying our theoretical approach before giving a brief outline of the Norwegian public health context. We describe our methods and data sources and present our empirical findings. We discuss the findings in relation to the theoretically derived expectations, sum up the main findings and finally draw some conclusions and suggest avenues for further research.

Theory and Expectations

The variable under study - boundary spanning

Boundary spanning is the variable under study. We define "boundary spanners" as follows:

> […] people who proactively scan the organisational environment, employ activities to collect information and to gain support across organisational and institutional boundaries, disseminate information and coordinate activities between their 'home' organization or organizational unit and its environment, and connect processes and actors across these boundaries (van Meerkerk and Edelenbos 2019, p. 3).

Boundary spanners have to reconcile diverse and often opposing internal and external interests, attitudes and preferences. They perform both representational and informational activities (Aldrich and Herker 1977). This implies both the representation of internal interests to external agents as well as the representation of external interests to their "home" organisation (e.g. other public agencies, civil society and the private sector). The competencies of boundary spanners are also related to the ability to bring diverse forms of expertise and experience together (Christensen and Lægreid 2011). They exert influence through their functions as "inter-agency ambassadors" or "gatekeepers", who actively link and facilitate knowledge exchange between different organisational units and from external actors outside their "home" organisation (Lodge and Wegrich 2014; van Meerkerk and Edelenbos 2019). Especially within the public health field, when dealing with complex tasks, boundary spanners have to digest and process diverse information to conduct cognitive activities such as complex analysis and analytical thinking

(Getha-Taylor and Morse 2013). Thus, information processing is seen as a vital boundary-spanning competence (van Meerkerk and Edelenbos 2019). Developing health overviews in local governments is important to identify local public health challenges and thereby an important prerequisite for political actions to handle and "tame" wicked problems. This is a complex task, dependent on composite expertise and coordination and collaboration across sectors (Kiland et al. 2015; Fosse et al. 2018).

Within the boundary-spanning literature, there has been an extensive focus on different forms and types of boundary spanning (see interesting contributions from Williams 2012; van Meerkerk and Edelenbos 2018; Nederhand et al. 2019; Sørensen et al. 2020). These contributions seem to take for granted that boundary spanning is influential per se. In this study, we aimed to add to this literature by taking a somewhat different point of departure by studying the degree of boundary spanning, which relates to being able to develop health overviews. We interpreted boundary spanning as a scaled variable and the health overview as an outcome of variations in the degree of boundary spanning. In this study, the degree of boundary spanning was related to PHCs' scores on how they perceived their role as being a cross-sectoral planner and their scores on how they perceived their influence in local public health work. PHCs have been identified as an "inter-sectoral facilitator" linking and orchestrating collaborative arenas between different municipal sectors related to the development of these health overviews (Karlsen et al. 2022). As such, PHCs have an important organisational function as boundary spanners in developing and completing these health overviews.

In boundary spanning, the contact pattern and frequency with collaborative partners are expected to be of importance. This presumes PHCs' ability to interact in a close dialogue and relationship to strategically filter, summarise and facilitate the flow of information from diverse stakeholders, both inside and outside their "home" organisation (Nederhand et al. 2019; van Meerkerk and Edelenbos 2019). In other words, contact frequency is relevant to boundary spanning. We expected that the degree of boundary spanning would be positively correlated with contact frequency with internal and external actors and that it would be associated with the completion of health overviews.

Organisational conditions for boundary spanning

A classical assumption in political science is that the size of political systems influences system capacity (Dahl and Tufte 1973). System capacity can be understood as a more commonly used concept, that of governance capacity. Lodge and Wegrich (2014), differentiate between four types of governance capacity; coordination capacity, regulatory capacity, analytical capacity and delivery capacity.). In this study, we focused on the concept of "coordination capacity". This applies to those areas where collaborative governance is expected to take place and is considered a key precondition for governments to address complex governance challenges (Wegrich and Štimac 2014; Christensen et al. 2019). Coordination capacity relates to resources, activities and instruments that bring together and align diverse organisations under tricky conditions. It also refers to the competencies of individuals who are able to bring dispersed expertise and experience together (Wegrich and Štimac 2014). Studies have shown how civil servants report lower levels of perceived coordination capacity in wicked policy areas (Christensen et al 2019). Within public health, boundary spanning related to the development of health overviews typically requires coordination capacity in line with national expectations and regulations regarding the scope of the work and the professional level of this procedure. Following this argument, large municipalities would be expected to have better conditions than small municipalities for dealing with complex and resource-intensive tasks. Larger municipalities would be less dependent on external expertise and collaboration with other stakeholders outside their organisations.

At the same time, organisational size is often related to the level of organisational (vertical and horizontal) complexity and distance (Andrews and Boyne 2014). Based on classical organisational theory, professional bureaucracy (Mintzberg 1979) is represented by larger and more professional and complex organisations characterised by bureaucratic, formalised structures with a high degree of specialisation and fragmented structures or "silos". This may

increase the organisational distance between units internally and potentially demand substantial in-house coordination capacity.

Conversely, smaller organisations are typically characterised by more informal and flexible organisational structures and procedures with a larger degree of adhocracy (Mintzberg 1979). Small municipalities are expected to have better conditions for exploiting resources more effectively (better resource allocation) and closer organisational proximity between units. However, smaller organisations are expected to have access to few resources (e.g. time and competence), activities and instruments to bring dispersed expertise and experience together under tricky conditions. Collaboration with external counterparts becomes important. A common feature of small municipalities is the rationale to pool resources through cooperation and thus enhance performance (Bel and Warner 2015; Hulst and Van Montfort 2007). Coordination capacity in small municipalities has been found to be insufficient for conducting intersectoral activities because they tend to have weak knowledge bases and inadequate systems for monitoring social inequalities, which is a prerequisite for developing health overviews (Bekken et al. 2018). This allows for closer cross-boundary collaboration with external actors.

Organisational design to promote cooperation and collaboration implies specific structural and formalised network arrangements (Mintzberg 1979). Such formalised coordination structures might be matrixes or intersectoral work groups. The study by Van Vliet-Brown, Sharham and Oelke (2018) raised a specific concern about how siloed organisational structures hamper the implementation of the HiAP approach in local governments. They underlined the importance of "supportive government structures". We thereby expected that larger municipalities would be more prone to establish formalised network arrangements (e.g. inter-organisational work groups) to enhance coordination capacity compared with small municipalities.

In addition, we examined boundary spanning in relation to position size and position in the organisational hierarchy. Hagen et al. (2018) found that position size is an important enabling mechanism for accomplishing development of a health overview. Karlsen et al. (2022) discovered that perceived intersectoral agency was significantly associated with position size and position in the organisational hierarchy. The same study found that a larger position size located at the highest organisational level was a crucial factor in integrating fair distribution and the HiAP approach into municipal planning. Civil servants with a defined boundary-spanning position with boundary spanning as their main task are potentially in a better position to accomplish development of health overviews. They have access to more resources (time and competence) and are in a better position to engage in coordination activities with other stakeholders inside and outside their "home" organisation. We thereby expected a larger position size and placement higher in the organisational hierarchy to increase the degree of boundary spanning and the completion of the health overview.

Material and Method

We conducted a cross-sectional web-based survey targeting PHCs, who are public servants with a defined coordination position and a specific responsibility to coordinate and facilitate collaboration in public health work in all Norwegian municipalities. The questionnaire consisted of 60 questions measuring different aspects of the work and the organisational constitution of municipal public health work: personal and professional background, political and administrative organisation and prioritising, roles and influence and the incorporation of public health into municipal planning.

From January to February 2019, we collected email addresses from municipalities' webpages or through direct telephone contact with the municipalities' service desks. Through this process, we found 388 unique email addresses in a total of 428 municipalities (before the amalgamation reform). For the 40 remaining municipalities, we sent a request to the municipality's official email address to forward our message to the responsible public health official. The questionnaire was handled using the survey instrument SurveyXact™, and the survey was sent to all respondents (n = 428) on 27 May 2019, with two email-based reminders on 4 and 20 June 2019.

The survey was open during the summer holidays, and we sent telephone-based reminders to non-responders by August 2019. The survey was closed on 4 September 2019.

The response rate based on all Norwegian municipalities (n = 428) was 60% (n = 256). The amalgamation reform, in which 119 Norwegian municipalities were merged into 47 larger units, was conducted through 2019. The merger was planned to be finished by the end of 2019, and most of the 119 municipalities had established collaborations in many fields, including public health work. We received responses from 41 of 47 collaborative municipal groups, and as such, the response rate may have been as high as 72%. The response rate varied by municipal size and was 47 of 95 (49.5%) in the municipalities with < 2,000 inhabitants and 69 of 125 (55.2%) in the municipalities with 2,000–5,000 inhabitants. The same pattern was seen for centrality, as we received responses from 51 of 125 (40.8%) of the least central municipalities.

In the empirical analysis, the variable under study was measured as the degree of boundary spanning, operationalised as a combination of the PHCs' scores on two different indicators: a) the self-reported importance of being a strategic and cross-sectoral planner and b) perceived influence on the municipality's public health work.

Results

Boundary spanning and contact pattern

The PHCs were asked to report the frequency of contact with 13 different actors or groups of actors (Table 1). The response categories were as follows: no contact at all = 0, less than monthly = 25, monthly = 50, weekly = 75 and daily = 100.

Table 1. PHCs' frequency of contact with internal and external actors[1]

	Total		< 2000		2000–4999		5000–19999		> 20000		
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)	p-value
Mayor	32.0	(21.3)	34.7	(25.6)	33.9	(18.9)	32.7	(21.9)	26.7	(19.2)	0.315
Leading politicians	25.6	(16.9)	30.0	(17.9)	23.4	(13.1)	25.0	(17.8)	26.2	(18.3)	0.398
Other politicians	22.6	(19.5)	26.7	(21.1)	22.3	(21.0)	22.8	(18.9)	19.6	(17.9)	0.519
Municipal CEO	46.4	(22.2)	50.8	(23.2)	51.0	(21.0)	47.3	(21.5)	36.7	(21.7)	0.006
Department head	53.0	(21.3)	49.2	(25.4)	51.6	(22.4)	54.4	(20.6)	54.4	(18.7)	0.634
Unit manager	51.5	(23.3)	51.6	(24.9)	53.7	(25.0)	47.8	(21.7)	55.8	(23.0)	0.275
Closest leader	67.7	(22.6)	68.1	(19.9)	69.0	(24.3)	64.1	(22.8)	72.7	(21.4)	0.219
CMO	44.3	(26.8)	35.5	(25.6)	34.2	(19.6)	46.8	(28.3)	57.4	(26.2)	< .001
County administration	35.7	(16.3)	32.1	(15.0)	32.1	(16.1)	36.0	(16.7)	41.1	(15.2)	0.033
PHCs in other municipalities	38.7	(20.4)	35.3	(17.1)	37.2	(17.8)	41.5	(23.0)	37.5	(19.8)	0.442
Voluntary organisations	45.1	(22.9)	48.3	(23.1)	44.4	(21.8)	41.7	(24.7)	50.0	(20.2)	0.220
Businesses	20.4	(14.8)	20.7	(15.0)	17.9	(14.4)	20.3	(14.9)	23.3	(14.8)	0.385
Media	23.3	(14.7)	19.0	(17.2)	22.4	(12.9)	22.8	(13.9)	27.8	(15.5)	0.071

[1]Scale 0–100 (no contact at all = 0, less than monthly = 25, monthly = 50, weekly = 75 and daily = 100).

The PHCs in smaller municipalities had less contact with CMOs and the county administration, but more often contact with the municipal chief executive officer (CEO) compared with their colleagues in larger municipalities.

To group the contact frequency into manageable categories, we performed a principal component analysis revealing five components: Component 1 contained variables concerning contact with the mayor, leading politicians and other politicians (labelled *politicians*). Component 2 contained variables concerning contact with the municipal CEO, department head, unit manager and closest leader (labelled *administration*). Component 3 contained variables concerning contact with voluntary organisations, businesses and media (labelled *civil society*). Component 4 contained variables concerning contact with the county administration and other municipalities (labelled *other external collaborative partners*). The last component was contact with the CMO, a variable that did not fit into any of the other components (labelled *CMO*). Contact patterns for each component were scored from 0 to 100, where 100 represented very frequent contact and 0 represented no contact at all.

We defined boundary spanning as a combination of a) the self-reported importance of being a strategic and cross-sectoral planner and b) the perceived influence on the municipality's public health work. The two variables were summed to a scale potentially ranging from 0 to 12 (12 = highest). The respondents reported a mean (SD) score of 8.7 (1.6) points and a median (25%–75%) score of 9 (8–10) points, with low–high scores ranging from 4 to 12.

As shown in Table 2, boundary spanning correlated significantly with the contact patterns between the PHCs and politicians, administrative leaders, CMOs and other external collaborators and civil society actors.

Table 2. Correlation between boundary spanning and contact pattern

		1	2	3	4	5	6
1	Boundary spanning[1]	1					
2	Contact politicians[2]	.318**	1				
3	Contact administration[3]	.357**	.453**	1			
4	Contact CMO[4]	.146*	.115	.198**	1		
5	Contact ext collaboration[5]	.262**	.294**	.152*	.092	1	
6	Contact civil society[6]	.317**	.435**	.462**	.101	.387**	1

* $p < .005$; ** $p < .001$. 1 = Scale 0–12 (12 = highest). 2. Mayor, leading politicians, other politicians, scale 0–100 (100 = highest); 3. Municipal CEO, department head, unit manager, closest leader, scale 0–100 (100 = highest); 4. Chief Medical Officer, scale 0–100 (100 = highest); 5. County administration, neighbouring municipalities, scale 0–100 (100 = highest); 6. Businesses, voluntary organisations, media, scale 0–100 (100 = highest).

We expected that the PHCs' degree of boundary spanning would be positively correlated with internal and external contact with different collaborative actors. Table 2 supports this expectation, and as shown in Figure 1, the PHCs who did not manage to complete the health overviews had less contact overall with both internal and external actors. The PHCs who finished the health overview had a significantly higher contact frequency with the CMO than the PHCs who were unable to complete the health overviews.

Figure 1. PHCs' Contact frequency with different actors inside and outside the organisation, split on having finished the overview and not
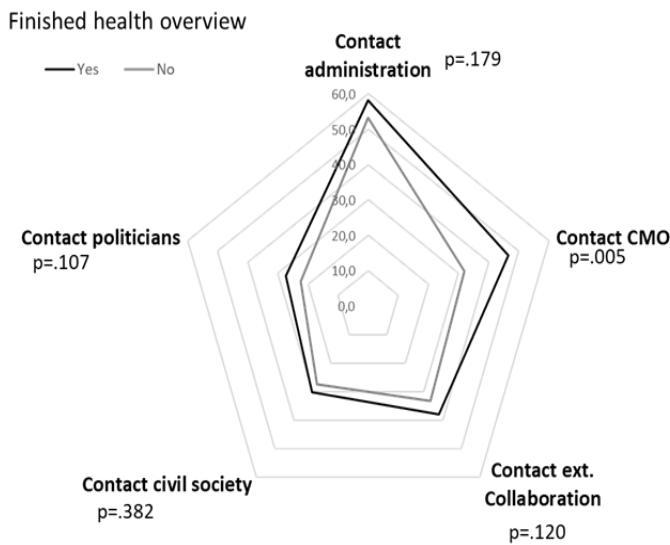

The CMO should play a major role in establishing and completing the health overview. However, 46% of the PHCs reported that they had less than monthly contact with the CMO. In addition, within the 32 municipalities that had not managed to complete a health overview, 22 (69%) PHCs reported less than monthly contact with the CMO (data not shown).

Degree of boundary spanning and completion of the health overview

In total, 83.7% (n = 180) of the municipalities in our survey reported that they had completed a health overview in 2019. As shown in Figure 2, the PHCs with higher degree of boundary spanning were significantly more successful in finishing the health overviews.

Figure 2. Boxplot of degree of boundary spanning in relation to PHCs being able to finish and not finish health overviews
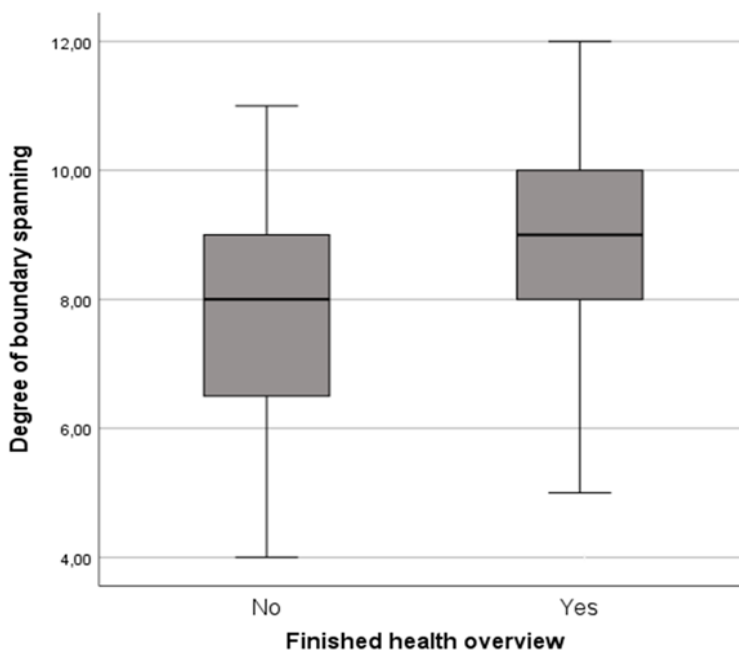
Therefore, to be able to complete the health overview, a high degree of boundary spanning is important. Although the analysis showed a composite number of organisational factors affecting the likelihood of being able to finish the health overview, the degree of boundary spanning seems crucial. The higher the degree of boundary spanning, the greater the likelihood that the health overview had been completed.

Organisational size and formal coordination arrangements as conditions for completing the health overview

As shown in Table 3, few of the smallest municipalities (< 2000 inhabitants) had completed a health overview or reported that they had established an intersectoral work group.

Table 3. Factors related to the fulfilment of local health overviews in Norwegian municipalities by organisational size (population size)

Inhabitants	Total		< 2000		2000-4999		5000-19999		> 20000		p-value
Completed health overview, n (%)	180	(83.7)	13	(46.4)	34	(69.4)	64	(79.0)	35	(81.4)	.004
Established intersectorial work group, n (%)	145	(68.4)	15	(45.5)	36	(69.2)	62	(75.6)	32	(71.1)	.017
Members of work group prioritize to participate to some or large degree, n (%)	130	(92.9)	12	(85.7)	34	(97.1)	56	(91.8)	28	(93.3)	.540
No of meetings per year, median (25-75%)	4	(4-6)	4	(2-4)	4	(4-6)	4	(3-6)	5	(4-10)	.034
Focus in meetings — Planning and oversight, n (%)	97	(37.2)	7	(15.2)	24	(35.3)	40	(40.8)	26	(53.1)	.001
Focus in meetings — Knowledge sharing and information, n (%)	112	(42.9)	12	(26.1)	30	(44.1)	49	(50.0)	21	(42.9)	.061
Focus in meetings — Brainstorming ideas, n (%)	64	(24.5)	10	(21.7)	18	(26.5)	28	(28.6)	8	(16.3)	.395
Focus in meetings — General public health work/actions, n (%)	71	(27.2)	8	(17.4)	22	(32.4)	27	(27.6)	14	(28.6)	.362

The analysis showed that 68.4% of the PHCs had established intersectoral work groups and that the proportion of such work groups was lowest in the smallest municipalities. The smallest municipalities had fewer meetings than the larger ones. However, when work groups were established, members prioritised participation in these arrangements. The planning and oversight focus in the meetings was also more prominent in the larger municipalities than in the smallest municipalities.

Organisational factors affecting the degree of boundary spanning and the development of health overviews

We expected a larger position size and a higher position in the organisational hierarchy to increase the degree of boundary spanning and affect the development of the health overview.

Both the position of the PHC in the organisational hierarchy and the PHC's position size were significantly correlated to the degree of boundary spanning (r = 0.129 [p = .037] and r = 0.417 [p < .001], respectively). The PHCs who reported having finished the health overview had a mean (SD) position size of 52% (33.3) and those who had not finished the health overview had a mean (SD) position size of 39% (29.5). The difference was statistically significant (p = .039). The PHCs' position in the organisational hierarchy did not reach statistical significance (p = .306) when analysing this against completion of the health overview.

Our findings so far indicated that several factors affect the level of boundary spanning amongst Norwegian PHCs. Their ability to complete health overviews is affected by several and composite factors. Still, the findings did not explain the connection between the different organisational factors. To assess this conundrum, we performed a path analysis based on the following model (Figure 3).

Figure 3. Path model of factors affecting the completion of health overviews
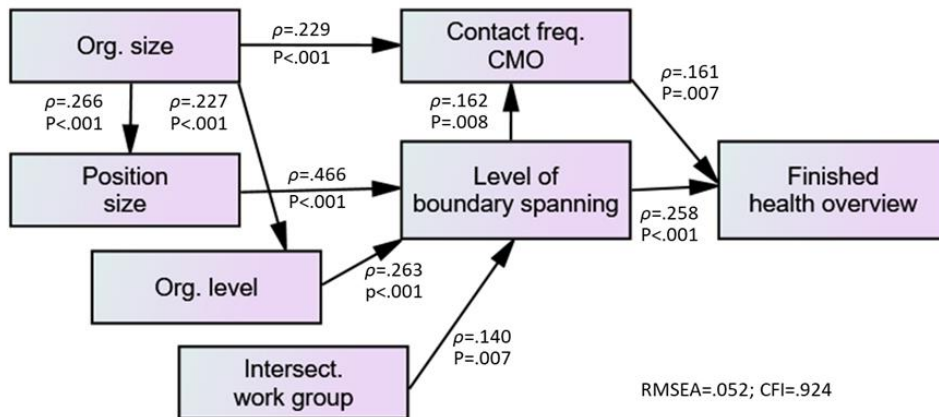
The model indicates that the degree of boundary spanning and cooperation with the CMO was significantly associated with accomplishing the health overview. None of the organisational variables was significantly associated with finishing the health overview, but the organisational variables indirectly affected the PHCs' degrees of boundary spanning.

The standardised regression weights (β) indicated that the most important indirect organisational factor seemed to be position size ($\beta = 0.132$), although position size was not the only factor. Municipal size ($\beta = 0.055$), position in the organisation hierarchy ($\beta = 0.075$) and intersectoral work groups ($\beta = 0.040$) also contributed to the total indirect effects of organisational conditions affecting boundary spanning and completion of the health overview.

Discussion

Boundary spanning "by architecture"

Our survey showed that most Norwegian municipalities finished their health overviews in 2019, indicating that in general, they followed the mandatory health overview procedure imposed by the central government. However, a larger proportion of the smaller municipalities did not finish their health overviews compared to the larger municipalities. This suggests that a substantial proportion of PHCs in large municipalities function as boundary spanners. Intersectoral working groups and CMO participation are important in the process of completing health overviews (Ministry of Health and Care Services 2011; Norwegian Directorate of Health 2016, 2020). The smallest municipalities seem to be at a disadvantage compared to the larger municipalities. Fewer of the smaller municipalities had established formalised structures, such as intersectoral working groups, compared to the larger municipalities. The same picture emerged with regard to the frequency of contact between the PHC and the CMO. The challenges of having regular contact with the CMO and establishing intersectoral working groups seemed to be most apparent in the smallest municipalities. Lack of coordination capacity and access to professional expertise, as well as a lack of formalised structures, are important obstacles to boundary spanning in small municipalities. However, in the regression model, municipal size was omitted as a predictor, showing that frequency of contact with the CMO and politicians and having established an intersectoral working group were the three most important factors, regardless of municipal size.

In a recent study, formalised structures were found to hamper boundary spanning (Nederhand et al. 2019). On the contrary, our findings indicate boundary spanning "by architecture", showing that formalised organisational structures seem to guide interaction patterns (Hood 2005). The establishment of intersectoral work groups stands out as a significant enabling factor for boundary spanning and, indirectly, completion of the health overview. Such structural arrangements can be seen as an effort to handle a mismatch between a problem structure and the organisational structure (Lægreid and Rykkja 2015). Boundary spanning through formalised collaborative arenas and structures can guide contact patterns and might increase information flows and knowledge sharing and anchor the work with the health overviews. This effort might ease the handling of complex problems by improving the understanding of the problem and its underlying causes. The organisational architecture might help routinise collaboration and increase the probability of finding agreed-upon solutions, thus aiding policy implementation (Edelenbos and van Meerkerk 2016).

Organisational size, position size and position in the organisational hierarchy as scope conditions for degree of boundary spanning

Given the diversity of Norwegian municipalities with regard to size, we found that the PHCs in larger municipalities had greater coordination capacity and thus better conditions for fulfilment of local health overviews. Approximately half of the smallest municipalities, compared to over 80% of the largest municipalities, had completed health overviews. The analysis showed that higher degree of boundary spanning is positively correlated with the fulfilment of health overviews. Degree of boundary spanning is also significantly associated with several organisational conditions.

There was a significant association between municipal size and contact frequency between PHCs and medical expertise (i.e. the CMO). This indicates that the CMO is more often in contact with PHCs in larger municipalities than in smaller municipalities. Larger municipalities provide better access to professional expertise due to a more professionalised bureaucracy (Mintzberg 1979) and a larger professional environment. Most CMOs work mainly as general practitioners in the municipality, combined with the part-time CMO position (Berg 2022). CMOs in small municipalities are often forced to prioritise urgent tasks, such as infection prevention and treatment, at the expense of overall planning, statistical mapping and analysis (Kiland et al. 2015). As the Norwegian municipal structure is characterised by small entities, this could help explain why some municipalities have been unable to complete health overviews.

Another interpretation of the association between organisational size and contact frequency between PHCs and CMO relates to the location of positions within the organisational hierarchy. Having access to greater professional expertise assumes a higher contact frequency between PHCs and the CMO. Most CMOs are positioned at a lower level in the organisational hierarchy within the health sector (Mæland 2016; Berg 2022). Larger municipalities have to deal with larger organisational distances and transaction costs related to coordination activities (Andrews and Boyne 2014). Shorter organisational distances could explain the high contact frequency between PHCs and the CMO. The CMO also provides important knowledge and expertise for the health overview procedure.

Our findings show that boundary spanning in local policy-making is mainly characterised by an internal vertical orientation that spans formal organisational and bureaucratic structures. PHCs in large municipalities prioritise boundary spanning, focusing on strategic work and planning, information and knowledge exchange within and across the administrative hierarchy, as well as with the relevant professional experts (i.e. CMOs). Meanwhile, boundary spanning with external actors is limited.

Developing the local health overview is an important means for the HiAP approach in Norwegian municipalities. The procedure is complicated and resource-intensive, requiring an extensive analysis of the factors affecting population health. Our analysis showed that managing the preparations and completing health overviews are dependent on the degree of boundary spanning.

Formal internal contact with administrative leaders and professional expertise following bureaucratic and standardised routines will ultimately lead to less contact frequency with

external actors (Mintzberg 1979). Our analysis showed significant correlations between large municipalities and PHCs more prone to collaborate with the CMO, which increased the degree of boundary spanning.

Despite substantial institutional pressure for both formal and informal collaboration with both internal and external actors within the public health field, this study indicates that PHCs are first and foremost driven by formal boundary-spanning activities aligned with the bureaucratic architecture. In small municipalities, their contact pattern is characterised by high contact frequency with the municipal CEO (the highest administrative leader) and, in large municipalities, by high contact frequency with the medical expertise inside their "home" organisation. They seem to follow the vertical and hierarchical administrative structure. This might limit their ability to anchor the work with health overviews among politicians. Some studies have highlighted the importance of political leadership as a vehicle for local HiAP achievment (Hofstad 2016). Lack of contact with politicians may hamper influence and anchoring at the political level throughout the policy-making process. This might become an obstacle to further policy implementation. On the other hand, ambiguous knowledge of how to handle the transboundary task at hand might increase the boundary spanners' wriggle room. Indeed, the professionalised bureaucracy (Mintzberg 1979) seems to enable them to exploit their room to manoeuvre through a high degree of boundary spanning. A puzzle related to the significance of position size and position in the organisational hierarchy for degree of boundary spanning is how these conditions might challenge the basic idea of equality amongst collaborative partners and thereby challenge trust as a mechanism for collaboration.

In this study, and in line with the national regulations and policy ambitions, the completion of health overviews is considered an important output measure in the municipalities' strive to handle problems as inequality in health. A limitation of the study is the lack of knowledge on how the process of crafting health overviews affect more equitable public health outcomes. This is especially relevant when it comes to investigating organisations of different size and their coordination capacity. It might be the case that smaller municipalities find other outputs more relevant due to local circumstances. Smaller municipalities have shorter organisational distances and might work in different manners than larger municipalities, and still be able to achieve more equitable health outcomes.

Boundary spanning related to features of the task and access to professional expertise

Our findings highlight the importance of access to and collaboration with professional expertise to be able to complete the health overview as the task at hand. The CMO is supposed to play a major role in completing the health overview, and their competence is mandatory in Norwegian municipalities (Ministry of Health and Care Services 2011). The importance of a systematic and professional approach to be able to develop and complete the health overview is highlighted in the legislative preparations and regulations (Norwegian Directorate of Health 2016, 2020). It is also reflected in the PHCs' perception of the importance of their contact with medical expertise (i.e. the CMO), which they viewed as a crucial condition for the degree of boundary spanning in completing the health overview. For boundary spanners in public health, contact frequency with the CMO is perceived as vital. This is probably related to the features of the specific transboundary task at hand. Developing the health overview is regarded as professionally challenging, complicated and time consuming (Kiland et al. 2015; Fosse et al. 2018). It presumes considerable analytical and medical competence and skills. Nevertheless, approximately half of the PHCs reported that they had less than monthly contact with the CMO.

The PHCs perceived political anchoring as important for prioritisation and allocation of resources to develop health overviews. However, the actors they prioritised to collaborate with were not the politicians, but mainly the professional expertise available internally in their "home" organisation. Our material shows that higher degree of boundary spanning was positively correlated with the fulfilment of the health overviews. Degree of boundary spanning was also significantly associated with contact frequency with the medical expertise. This is a paradox, as national regulations and guidelines strongly emphasise broad collaboration and coordination with a wide range of diverse internal and external actors. The idea that wicked

public health problems can be tamed and handled through scientific knowledge (mandatory health overviews) and strategic planning processes, represents a rather instrumental and top-down rationality, framing policymaking as an instrumental technical exercise, despite the national policy ambitions encouraging coordination and collaboration among multiple stakeholders across various sectors and authority levels. This might raise a dilemma, as other types of relevant expertise and local knowledge represented by civil society actors and other agencies inside and outside the organisation might be perceived as less relevant (Amdam 2023). Prioritising boundary spanning with the medical profession could potentially amplify a silo or even be experienced as "health imperialism" (Synnevåg et al. 2018) and hamper the HiAP approach.

Conclusion, Contributions and Suggestions for Further Research

The main research question posed in this study was how organisational conditions impact boundary spanning in the public health field. This policy field is characterised by wicked societal problems as inequality in health, dealing with particularly challenging and complicated transboundary tasks to handle such problems. According to Norwegian public health policy, developing and completing health overviews is considered the most important task to be able to handle health inequality. This involves boundary spanning under tricky conditions. The study showed how a composite set of organisational factors conditions the degree of boundary spanning dealing with the completion of a complicated task – finishing the health overview. The boundary spanners perceived professional bureaucratic structures as important enabling conditions for a high degree of boundary spanning. Much of the literature seems to take for granted that boundary spanning is influential by studying different types and modes of boundary spanning. This study has shown that boundary spanning can be interpreted according to various degrees of boundary spanning. Organisational size, position size, position in the organisational hierarchy and formalised collaborative structures are significantly associated with degree of boundary spanning. These organisational factors have an indirect effect on the fulfilment of the task at hand. Of these factors, position size has the strongest indirect effect on completion of the health overview.

In conclusion, this study has shown the importance of the degree of boundary spanning for completing the specific task at hand. Being able to deal with interconnected administrative responses and collaboration among multiple stakeholders increases the demand for the capacity to coordinate more and better across various sectors and government levels. A high degree of boundary spanning seems to be crucial for coordination capacity and the completion of health overviews.

Potentially, a wide range of factors affect boundary spanning, from contextual to organisational and individual factors. Still, the degree of boundary spanning is first and foremost determined by organisational architecture. This finding corresponds well with previous studies highlighting organisational factors as important conditions for perceived influence in local policy-making and for the ability to focus on inequality in health in political decision-making processes (Karlsen et al. 2022).

Empirically, this study contributes to the literature on how PHCs in a Norwegian local government context handle the complex transboundary task of producing local health overviews, as well as their policy implementation of the HiAP principle. The policy field of public health seems to be characterised by what Turnball and Hoppe (2018) characterise as a high degree of structuredness. Health overviews have been imposed as a mandatory instrument for local governments to handle complex problems in public health, such as health inequality. A response to this demand for increased coordination capacity is the establishment of positions as PHCs or boundary spanners.

Theoretically, the findings contribute to the literature on boundary spanning by demonstrating how degrees of boundary spanning are determined by specific organisational conditions. Further, and perhaps more importantly, our study has shown how boundary spanning is exercised to improve coordination capacity within a policy field dealing with wicked problems. In addition, based on our findings, we propose that the nature of the particular

transboundary task to deal with such problems is a contextual condition that matters concerning the degree of boundary spanning. Transboundary tasks characterised by a high degree of complexity, as well as uncertain and ambiguous knowledge about cause and effect seem to presume high contact frequency with medical expertise. How this may potentially hinder the HiAP approach is yet to be explored.

Future studies on boundary spanning in local government contexts should further examine the organisational and contextual conditions for boundary spanning, taking into account the limits of this study. The findings in this study call for greater consideration of the "embedded agency" of boundary spanning, underlining the limits of the merely agentic boundary spanner. These findings should be further tested and developed across policy fields or across the Nordic countries. This study focused on the ability of a specific position within the local government context to solve issues that transcend organisational boundaries. Another interesting avenue for further research could be to study whether and how our findings might be transferrable to other civil servants having coordination formalised as a main task within the government context. As municipal size stands out as an important scope condition for how organisational factors affect degrees of boundary spanning, an important practical implication of this study could be to incentivise small municipalities to further prioritise public health and the HiAP approach in municipal planning.

Acknowledgements

Disclosure Statement

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