



Co-production as a strategy for enhanced equal representation in public service delivery: The case of Rotterdam

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ABSTRACT

Co-production, in its various forms, may add to urban vitality by giving shape to relationships between governmental institutions and local communities, providing spaces for citizens and active groups of residents to co-produce public services. Although various authors have argued that co-production may empower citizens and lead to enhanced equality in public service delivery (Jo & Nabatchi, 2018; Meijer, 2016; Needham, 2008), empirical evidence to support such claims remains relatively slim. This article aims to evaluate to what extent co-production enables local government to include a representative part of the population, and if this leads to enhanced inclusiveness. We build on both quantitative and qualitative data of citizens participating in co-production instruments implemented by the Municipality of Rotterdam. Whether or not co-production by default leads to urban vitality should be questioned, as the inclusiveness of various groups of citizens participating within co-production instruments is limited. Our findings show that citizens with a higher socioeconomic status (SES), especially in terms of education, take up a much larger part of the participants in the different instrument than citizens with a lower SES. Our qualitative data analysis goes deeper into social and cultural capital, institutional knowledge, skills and personal resources as explanatory conditions for who is included in participation. More research is needed on non-participants, and their reasons for not participating in co-production.

1. Introduction

Co-production has gained tremendous popularity as both a field of study in public management and policy research, and as a public sector innovation strategy. Since the initial work on co-production by Ostrom (1976) and Parks et al. (1981), a wide range of collaborative forms between a variety of actors have been studied under the flag of co-production. The idea is relatively simple: when service users are involved in the design and provision of public services, these services become better equipped to address service user needs. In doing so, co-production has been heralded as a concept to make public services more effective, efficient and legitimate (Brandesen & Honingh, 2015; Needham, 2008; Verschuere et al., 2012). However, referring to this last element, the question is *whose* needs are being addressed by co-production.

Although various authors have argued that co-production may empower citizens and lead to enhanced equality in public service delivery

(Jo & Nabatchi, 2018; Meijer, 2016; Needham, 2008), empirical evidence to support such claims remains relatively slim. Additionally, if citizens are generally empowered to engage in co-production, and if all have an equal chance to do so, the question ‘who ends up participating?’ remains. Are participating citizens a proper representation of the society they aim to serve, or is there a selection effect? Are some citizens more empowered than others are, and does focus on equality perhaps neglect a need for more equity? In this paper, we therefore take a different turn and aim to add to the understanding on how and to what extent co-production indeed leads to enhanced *inclusiveness*. This brings us to the following research question: *To what extent does co-production provide inclusive access for citizens to participate in the public realm?* We understand *inclusiveness* as “the openness of the political system and the degree of members’ participation (...) a key element in achieving equality in participation and direct democracy” (Hong, 2015, p. 573). We hereby view social inclusion as a process of interest and inclusiveness as an outcome of interest (Talmage & Knopf, 2017). To be socially inclusive

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thus involves and equally addresses all stakeholders that are relevant to the societal context (Šuklje & Ruchinskaya, 2019). Hong describes that inclusiveness is reached through a “proper representation of different groups within a society” (2015, p. 576). This definition implies that inclusiveness means *everyone* is represented, regardless of age, gender, level of education, income, or household composition. In contrast to Hong (2015), who uses the amount of citizens that participate as a proxy for inclusiveness, we focus on the five aforementioned demographic characteristics of co-producing citizens. According to Stren (2001, p. 6) inclusive cities are “cities in which all citizens are incorporated in decisions and policies; none, but in particular not the poorest and most vulnerable, are left out”. He explains that this is hard to accomplish, even for cities with sufficient resources. In turn, the difficulty of achieving inclusiveness, presents a challenge to the urban vitality of cities and their democratic systems.

Vitality refers to the relational, adaptive and transformative capacities of cities, and “the vital city is a city of relations and (inter)action between (...) communities and across multiple levels” as argued in the introduction to this special issue (Nathanson & Lahat, 2022; Nederhand et al., 2022). From a social science perspective on vitality, in particular the relational capacities and dynamics are stressed. Edelenbos et al. (2015, p. 239) define a vital system as “a social system of actors with different backgrounds and from different scales and levels with lively, energetic and productive relationships that are constantly seeking to explore, develop, and consolidate common ground” in dealing with complex public issues. In line with this definition and the introduction article to this special issue, we approach urban vitality by focusing on the scope and quality of the networks that develop and unfold between urban residents, communities and government institutions. Nathanson and Lahat (2022) describe urban vitalization as “a process that reflects ongoing interactions between residents, communities and urban government”. Inclusiveness is an important ingredient of urban vitalization, as it emphasizes the diverse and broad engagement of different groups within society and the way in which these different groups are enabled to influence joint problem definitions, solutions, and service delivery in urban areas. This diverse and broad engagement could contribute to various forms of bonding, bridging and linking of social capital, which is important for the adaptive and transformative capacities of cities (Adler & Kwon, 2002; Woolcock, 2001).

Urban vitality means a system in which citizens and institutional actors communicate and collaborate in decision-making and democratically work together to maintain or improve the livability of a city (Nathanson & Lahat, 2022). The effectiveness of this process is highly dependent on whether citizens have equal access to being included. Although urban vitalism underscores the need for inclusion, enhancing inclusiveness is far from simple; it refers to the involvement of groups of people who often lack the capacities, feelings of entitlement or interest to do so (Nederhand et al., 2022; Stren, 2001; Visser et al., 2021). Governments seem to increasingly embrace co-production as a strategy to include a representative variety of citizens in public service delivery with the aim of making these services more legitimate and effective (Osborne, 2006). It is important to examine whether co-production effectively enables them to do so, and if therefore it adds to improving urban vitality. We explore this question within the context of the city of Rotterdam (the second largest city in the Netherlands). Rotterdam is a particularly interesting case, as its strong ambition for increasing citizen participation and accessible participation has led it to install 16 diverse co-production instruments.

The remainder of this paper is structured as follows. In the next section we elaborate on the concept of co-production. As co-production is not a unilateral ‘thing’, we define how we understand co-production and show how it is a continuous concept, rather than a fixed one. We also elaborate on the relationship between co-production and inclusiveness. Subsequently, we present the research methods used to fulfill our ambition. In Section 4, we present to what extent these co-production instruments are indeed able to attract a diverse range of

Rotterdam’s inhabitants and we offer several explanations for these results. In Section 5, we conclude our paper and reflect on the theoretical implications of our study and its limitations.

2. Theoretical framework: co-production as empowerment strategy

2.1. Defining co-production

As New Public Governance has become the dominant paradigm in public service delivery in Western governing, citizens are no longer considered to be just service users or consumers (Branden & Honingh, 2015; Osborne, 2006). Instead, they are considered partners in the formulation, design and implementation of public policy and public service delivery. Many concepts that are addressing a part of that partnership have come to the fore. The broadest of them all – citizen participation – refers to any kind of involvement of citizens in the public domain (Arnstein, 1969). Concepts like collaborative governance, interactive governance and co-production have been introduced and reformulated to address the constructive relationship between governments and citizens (Ansell & Gash, 2008; Parks et al., 1981; Torfing et al., 2012). Other concepts like co-creation and co-design have aimed to address specific qualities of that relationship, i.e. focusing on the aspect of value or the way such a relationship can or should be organized (Blomkamp, 2018; Osborne, 2018).

In this paper, we focus on the term co-production. There are three reasons to do so. 1) Co-production is often considered as a strategy to enhance inclusiveness in public service delivery. Therefore, the literature offers some useful starting points to explain the underlying mechanisms for such inclusiveness; 2) Co-production covers a many types of citizen involvement, making it an applicable concept to understand the wide range of collaborative instruments as introduced by the Municipality of Rotterdam; and 3) Co-production is more specific than for instance collaboration or citizen participation, as it refers to a constructive relationship, in which both government and citizens join and in which citizens are asked for a direct and active contribution (Branden & Honingh, 2015).

Numerous authors have attempted to offer a definition that does justice to the vast empirical phenomena that are studied using the term co-production. As a consequence, various definitions and taxonomies have been introduced, for instance: distinguishing among individual, group, or collective co-production (Jo & Nabatchi, 2018); defining co-production as an umbrella term, encapsulating sub-forms co-commissioning, co-design, co-delivery, and co-assessment (Nabatchi et al., 2017); indicating that co-production is a specific *mode*, belonging to a certain dominant governance paradigm (Osborne & Stokosch, 2013); or defining it among the axes of professional-user relationships (Bovaird, 2007). In this research we define co-production in line with Branden and Honingh (2015) as: “a relationship between a paid employee of an organization and (groups of) individual citizens that requires a direct and active contribution from these citizens to the work of the organization” (p. 431).

Defining it as such has several important implications. First, the contribution of citizens is to the work of the organization. Translated specifically to a public sector context, this means that citizens contribute to public service delivery or public policy making. Therefore, the involvement of citizens is to contribute to a larger cause. Second, collaboration is between citizens on the one hand and representatives from the public organization on the other hand. This collaboration can be either direct or indirect. For instance, in digital co-production, citizens often do not correspond directly with the representative in charge of the instrument. This definition excludes phenomena such as protests or riots, which also adhere to a general cause, but are usually against governmental actors and not in collaboration with them. It is important to note that there are various conceptualizations of co-production that aim to do justice to the various forms of empirical phenomena that have

been studied as a form of co-production. For instance, [Brudney and England \(1983\)](#) were among the first to make a distinction between individual and group co-production. [Pestoff \(2015\)](#) adds a distinction between planning and production. [Osborne and Strokosch \(2013\)](#) offer a distinction between three different levels of citizen involvement, i.e., consumer co-production, participative co-production and enhanced co-production. And [Nabatchi et al. \(2017\)](#) presented a distinction between *co-commissioning*, *co-design*, *co-delivery* and *co-assessment*. However, as our interest lie with whether co-production enhances inclusiveness (as a characteristic of vitality) and not so much in the different forms of co-production, we stick to the definition as provided by [Branden and Honingh \(2015\)](#).

2.2. Co-production as an inclusion strategy

The literature on co-production shows a very diverging image when it comes to what extent co-production can be considered as a strategy to enhance inclusiveness. Inclusiveness is an important ingredient for urban vitality, as it promotes the recognition of differences in policy- and decision-making in the different neighborhoods of a city ([Nederhand et al., 2022](#)). It stresses the broad engagement of different groups within a society to foster democratic decision-making and problem-solving in urban areas. Additionally, inclusiveness in co-production can foster bonding, bridging, and linking of social capital which in turn enhances the adaptive and transformative capacity of urban areas ([Adler & Kwon, 2002](#); [Woolcock, 2001](#)). Concerning co-production as an inclusion strategy, some authors have argued that co-production may empower underrepresented groups of citizens ([Jo & Nabatchi, 2018](#)). Co-production may lower the bar for these citizens to participate ([Bovaird et al., 2015](#); [Clark et al., 2013](#)). To illustrate, [Schafft and Brown \(2000\)](#) showed how co-production helped improve the lives of Hungarian Romas, a group of people that generally has a lower socioeconomic status (SES) than other Hungarians. Based on this, one might argue that co-production redistributes power among new kinds of stakeholders ([Bovaird, 2007](#)). Although this might be good news for these particular stakeholders, in terms of representative democracy it raises the question who these new stakeholders represent, and if that group is in need of enhanced representation. While there is little research on the inclusiveness of co-production instruments, the literature on political participation in general and citizen participation more particular could inform us about some relevant factors which might explain why certain groups participate. As is the case in classical forms of participation, wealthy and highly educated citizens may dominate these processes, because of their enhanced social and cultural capital ([Steen et al., 2018](#)). In addition, ‘professionalization’ of co-production may prevent people with a lower SES to participate, as they have the feeling to fall short in terms of capacity and resources. This can be the consequence of public organizations – not necessarily deliberately – raising the participation bar, requiring specific expertise and technical knowledge of participating citizens ([van Eijk et al., 2017](#)). On the individual level, socioeconomic characteristics (age, gender, education, income and household composition) and the networks that could mobilize people (social capital) are two recurring factors explaining motivations or ability for participation ([La Due Lake & Huckfeldt, 1998](#); [Lowndes et al., 2006](#); [Verba et al., 1995](#)). Socioeconomic characteristics could explain differences in participation as skills, time and resources enable people to participate more actively. Moreover, it relates to feelings of self-efficacy, which is also found to be important for people’s motivation to participate in co-production ([van Eijk et al., 2017](#)). Education and income have been found to correlate with political participation as voting (e.g., [Verba et al., 1995](#)) but also with public engagement in policy processes ([Troussset et al., 2015](#)). That is, people with a higher income and a higher level of education are more likely to participate.

Next to socioeconomic characteristics, research has shown the relevance of civic networks for facilitating and enhancing participation. As

[Lowndes et al. \(2006, p. 288\)](#) put it: “Political participation in isolation is more difficult and less sustainable (unless an individual is highly motivated) than the mutually reinforcing engagement of contact through groups and networks. Collective participation provides continuous reassurance and feedback that the cause of engagement is relevant, and that participation is having some value”. These networks might be relevant for how people are mobilized to participate and for their motivation to continue to participate in co-production ([Voorberg et al., 2015](#)).

In our study, we take a closer look at how socioeconomic characteristics and the networks of participants might explain inclusiveness of various co-production instruments. In the next section, we present the research methods that we employ to do so.

3. Research methods

3.1. Case study

The focus of our analysis is on the Municipality of Rotterdam and its instruments for co-production. This municipality provides an interesting case for several reasons. For starters, the city is increasingly popular for national migration. This means that people from all regions of the Netherlands move to Rotterdam, thereby enhancing its diversity ([ABF Research, 2014](#)). Second, in terms of demographics, more than 50 % of citizens have an international migration background ([Onderzoek010, 2021](#)) and “of the children under the age of fifteen (...) only one third is still of Dutch descent” ([Crul, 2016](#); [Scholten et al., 2019](#): 1).

Rotterdam’s increasing diversity creates an enhanced need for the Municipality to (re-)connect with all of its inhabitants – old and new. It also emphasizes a need to provide equal access to co-production instruments for all citizens ([Onderzoek010, 2021](#)). Thirdly, in comparison with its 60-km-removed counterpart Amsterdam, which knows an even longer history of immigration and shows about the same percentage of residents with immigrant background, we see important differences in the composition of migrant influxes. One of these differences is the level of education among citizens with migrant background: the percentage of highly educated citizens with migrant background is notably lower in Rotterdam than in Amsterdam. Another thing that sets Rotterdam apart from the Dutch capital city is its population scoring lower on identification with its neighborhood and city, and citizens’ lower levels of social and political involvement ([Entzinger, 2019](#)). Citizens in Rotterdam tend to vote less, compared to citizens in other municipalities. During the last municipal elections, just 39 % of Rotterdam’s eligible voters made use of their voting rights, while the overall average percentage across all municipalities was 50.99 % ([Kiesraad, 2022](#)). All of this motivates the Municipality of Rotterdam’s efforts to reach out to its citizens. Within the Municipality’s ambitions, this strive for inclusiveness in its co-production activities is apparent: “in Rotterdam we are open to all people. Our shared identity as ‘Rotterdamers’ is what we focus on, while respecting our differences” ([Gemeente Rotterdam, 2022a](#)). One of its key targets – as formulated in the coalition agreement 2018–2022 – concerns the increased involvement of citizens in co-deciding, co-delivering and brainstorming about policies. The Municipality’s goal is to reduce barriers to societal and participatory processes through the empowerment of citizens ([Gemeente Rotterdam, 2022b](#)). To achieve the latter, the Municipality of Rotterdam has installed a broad spectrum of co-production instruments. By using a variety of instruments, the Municipality aims to mobilize citizens from all parts of its society. These observations point out the relevance of studying the Municipality’s instruments for fostering citizen engagement more in-depth.

Considering the Municipality’s strong ambition for inclusiveness in co-production as a starting point, we evaluate to what extent these instruments indeed foster inclusiveness. We investigate the complete set of co-production instruments for citizens that the Municipality of Rotterdam has implemented. Important to note is that these instruments are accessible to all inhabitants of the city of Rotterdam – they are not

confined to specific neighborhoods – and that citizen participation is always on voluntary basis. The Municipality currently has 16 co-production instruments in use (Table 1). Instruments can refer to co-production for either public policy making (e.g. the polls and panels, Client Council W&I and the Bench visits the Neighborhood) as to public service delivery (e.g. Residents Initiative, Neighborhood Self-management and Whatsapp Neighborhood Watch).

3.2. Methods and measurement

We employed a multiple method design, consisting of qualitative interviews and quantitative surveys conducted among the co-producing citizens of Rotterdam. Data collection of 7 instruments was done through semi-structured interviews. These 7 instruments in particular have a relatively small pool of participants, which enables us to get a more in-depth overview of citizens' perceptions on the level of inclusiveness within these instruments. For the semi-structured interviews, we designed an interview protocol with questions covering the following 3 themes: 1) knowledge, skills and capacities needed for citizens to participate in co-production; 2) the extent to which the Municipality of Rotterdam enables co-production; and 3) how citizens are invited to participate in co-production. Due to the specific nature of the various instruments, the interview protocol has been tailored to properly suit each instrument. To guarantee comparability, we ensured that the questions for each theme were similar among the instruments. Data on the remaining 9 instruments was collected through survey research. The larger pool of participants in these 9 instruments allowed us to look for patterns in the demographic aspects of co-producing citizens. This will facilitate drawing conclusions on how well all groups in Rotterdam's society are represented through co-production, and thus, how inclusive these instruments are in practice. The survey questionnaires follow the same classification of questions alongside the 3 themes, though with the aim of collecting numerical data rather than qualitative perceptions.

We must note that these methods allow us to conclude to what extent the municipality of Rotterdam effectively enhanced inclusiveness by the co-production instruments. However, our data does not generate hard evidence as to *why* certain levels of inclusiveness (or a lack of it) were observed. This was partially due to our sample of interview respondents consisting of co-production participants, and not of citizens that did not or failed to participate in co-production. Additionally, our results are based on perceptions and experiences from our respondents, rather than direct observations within co-production instruments. This on the one hand allows us to get an insight in how co-producers themselves view inclusion and what they see as underlying explanations for exclusion. On the other hand, it limits us to learn directly about formal and informal practices of in- and exclusion. Hence, in our identification of underlying explanatory mechanism we are reluctant in providing bold statements about our results.

3.3. Measurement of demographic aspects, education and level of income

The survey research includes the following socioeconomic characteristics: 1) age; 2) gender; 3) level of education; 4) income; and 5) household composition (see Table 2). We use these items in the discussion of the quantitatively examined instruments, as the sample of respondents in the qualitatively examined instruments is too small to draw meaningful conclusions on demographic patterns in relation to co-production. Unfortunately, questions on ethnicity and cultural background have not been included in the survey. The reason for this is that our research is conducted in close collaboration with the Municipality of Rotterdam. This meant we were unable to ask about politically sensitive issues, such as political preference, sexual orientation, and ethnic/cultural background, due to the Municipality's compliance with the General Data Protection Regulation (in Dutch: Algemene Verordening Gegevensbescherming). Still, meaningful insights on the role of citizens' migration background that indirectly emerged from the interview data

Table 1
Overview of Rotterdam's co-production instruments.

Instrument	Description
Speaking at the District Committee (Inspreken bij de Gebiedscommissie)	Citizens can individually have their say at a meeting of the area committee to indicate their priorities regarding the committee's agenda and to mention problems or possible improvements in the area.
WhatsApp Neighborhood Watch (WhatsApp Buurtpreventie)	This instrument is implemented and carried out by residents in collaboration with the local police officer to keep the neighborhood safe.
Municipality Poll (Gemeentepeiler)	Citizens can indicate their needs and priorities by filling out the survey while simultaneously evaluating the system of current public service delivery.
Resident's Initiative (Bewonersinitiatief)	Residents in Rotterdam can apply for this instrument to receive a subsidy for setting up an initiative for implementation or improvement of a public good/service in their neighborhood.
Neighborhood Self-Management (Zelfbeheer)	Public green areas are managed and maintained by residents of the respective neighborhoods.
Neighborhood Governs (Buurt Bestuurt)	Citizens collaborate with the Municipality to decentralize governance of public services to the neighborhood level.
Citylab010	Citylab010's projects are designs for innovative, creative ideas from citizens to improve Rotterdam for its community, executed by the Municipality.
The Bench visits the Neighborhood (College in de Wijk)	People in the neighborhood individually give their opinion on the quality of public services to the designated public servant or mayor to shape the local policy agenda.
Outdoor Area Notifications (Buitenruimte Meldingen)	With the Outdoor Area Notifications app, individuals can assess the quality of public goods in the outdoor area to indicate defects and problems for the Municipality to solve.
Client Council Work & Income (Cliëntenraad W&I)	Clients (all Rotterdam residents) who have direct experience with the Work and Income policy support the W&I cluster by advising and assessing the service, giving an expert-through-experience perspective and in collaboration with the civil servants work on better provision of the services of W&I.
Citizen Panel (Burgerpanel)	This group of citizens evaluates public services, identifies points that the Municipality could improve upon and formulates advice accordingly.
General Council 010 (Brede Raad 010)	This instrument allows a group of residents to monitor and evaluate the Municipality's compliance with the social policies and to advise how improvements can be made. Members of the General Council 010 are recruited by pre-existing members.
Residents' Evenings (Bewonersavonden)	Residents of neighborhoods can attend Residents' Evenings to evaluate the Municipality's governance of their neighborhood.
Right2Challenge	Right2Challenge enables citizens to take over a task from the Municipality, design an improved plan to govern a public good and implement it as a citizen initiative.
Neighborhood Watch (Buurtpreventie)	Different from the WhatsApp Neighborhood Watch, the Neighborhood Watch is carried out by a group of residents and has a direct influence on the entire neighborhood instead of just the individuals participating.
Citizen's Initiative (Burgerinitiatief)	Citizen's Initiative contains a design for a public service backed by signatures of citizens from the areas that initiative is focused on.

Table 2
Measurement of participants' characteristics in the surveys.

Variable	Measurement values/ categories	Values used in analysis
Age	Absolute number	Mean scores and SD of participants for each instrument
Sex	- Man - Women - Other	Percentage of each gender category for each instrument
Education (highest level of education finished)	A) primary education (elementary school) B) preparatory/lower secondary vocational education C) higher general secondary education/pre-university education D) Intermediate vocational education. E) Higher Vocational Education F) University education G) Other H) No education finished	Recoded in three dummies for which percentages for each instrument are used: - Lower level of education (categories A & B) - Intermediate level of education (categories C & D) - Higher level of education (categories E & F)
Income (gross income per month) ^a	1) Less than 1500 Euro 2) Between 1500 and 3000 Euro 3) Between 3001 and 5000 Euro 4) More than 5000 Euro 5) Do not know 6) I cannot or do not want to note	Percentage of each category (1–4) for each instrument
Household composition	- Living alone - Living together (un) married without child (ren) - Living together (un) married with child(ren) - Living alone with child (ren) - Other	Percentage of each category

^a These categories are standard categories as used by the Dutch Central Bureau for Statistics (CBS, 2021).

have been incorporated in our results. The benefit of this collaboration is that it allows us to reach a large sample of Rotterdam's inhabitants, by using the networks of the municipality.

3.4. Sample of participants in the various co-production instruments

Table 3 shows the number of participants in the various co-production instruments as known by the Municipality, the number of respondents approached and the response rate. In approaching the respondents, we have collaborated with the Municipality. For some instruments, it was challenging to get sufficient response. By sending out up to three reminders, we have tried to get a response rate as high as possible. The difficulty of collecting contact details, the stepwise system, and the data collection in the context of the COVID19 crisis made it extra challenging. The response percentage to the survey questionnaires falls between 15 % and 58 %. The response to the instruments Citylab010, WhatsApp Neighborhood Watch and Resident's Initiative is somewhat marginal in this respect. Nevertheless, this is not problematic for Citylab010 and Resident's Initiative, because a considerable absolute number has been reached there. The instruments General Council 010, Residents' Evenings and Right2Challenge fall slightly short in respondents.

For half of the surveys, we have reached reasonable representativeness of the samples, as for Resident's Initiative, The Bench Visits the Neighborhood, Municipality Poll and Citylab010 the margin of error is below or around the 7 % with a 95 % confidence level. The

Table 3
Response rate and number of co-producers.

Instrument	Number of respondents (N)	Number of participants approached	Response rate in %	Number of users
Interviews				
Citizen's Initiative	2	7	29	7
Citizen Panel	8	8	100	30
General Council 010	4	30	13	30
Neighborhood Watch	6	21	29	35
Residents' Evenings	4	24	17	Unknown
Client Council W&I	4	14	29	14
Right2Challenge	6	42	14	42
Survey				
Resident's Initiative	213	1291	16	1291
Outdoor Area Notifications	56	96	56	Unknown
Neighborhood Governs	61	300	20	300
The Bench visits the Neighborhood	163	626	26	626
CityLab010	103	670	15	300 (yearly)
Municipality Poll	928	4424	21	4424
Speaking at the District Committee	29	100	29	100
WhatsApp Neighborhood Watch	52	325	16	325
Neighborhood Self-Management	68	208	33	529

representativeness of the instruments Neighborhood Governs, Neighborhood Self-management, WhatsApp Neighborhood Watch and especially Speaking at the District Committee is less strong, given margins of error between 11 % and 15 %. For the instrument Outdoor Area Notifications, the total number of users is unknown (and thus the representativeness cannot be assessed). However, the response rate is high for this instrument. For the qualitative sample, we strived to interview at least 4 participants per instrument in order to get different experiences and a broader picture. Only for Citizen's Initiative we were not able to get 4 respondents (two respondents were interviewed here, but this is in line with its generally low total number of participants).

4. Results

In this section, we present the level of inclusiveness generated by the co-production instruments in Rotterdam. We start by looking into how well different groups within society are represented in the participating group per instrument. Subsequently, we offer possible explanations for our findings that we have derived from our data.

4.1. Inclusive co-production?

4.1.1. Age

The qualitative as well as the quantitative results show that the age of co-producing citizens in Rotterdam is higher than the average age of Rotterdam's inhabitants. On average, the co-producing participants are 54 years old (Table 4). This implies that the younger inhabitants of Rotterdam are less active in government-induced co-production. As the standard deviation shows, almost no instrument has participants under the age of 30. Respondents explain that "[they] sometimes have younger

Table 4

Overview participants' average age in years.

Instrument	Average age	SD
Resident's Initiative	57	14,6
Outdoor Area Notifications	62,2	10
Neighborhood Governs	58,3	14
The Bench visits the Neighborhood	NA	NA
CityLab010	45	12
Municipality Poll	52,5 ^a	NA ^b
Speaking at the District Committee	57,4	11,5
WhatsApp Neighborhood Watch	48,4	12,9
Neighborhood Self-Management	58,5	11,4
Average score ^a	54,2	

^a Based on the average age of participants for each instrument.^b In the survey used for this instrument age was asked using categories. The mean score was calculated based on the frequencies and median for each category.

people but these never stay long, presumably because it offers too little stability [for this age group] (...) there is a strange separation between young and old nowadays, it polarizes (Citizen Panel)".

4.1.2. Gender

The extent to which genders are equally represented varies per instrument. In the instruments Outdoor Area Notifications, CityLab010 and Speaking at the District Committee, most of the respondents are male; 62,3 %, 60,4 % and 76,7 % respectively. The instruments Resident's Initiative, Neighborhood Self-Management, and Neighborhood Governs show a near equal representation of men and women. Differences in representation of genders have not been illustrated by the interview data.

4.1.3. Education

On average, co-producing participants have a relatively high level of education. This variable is categorized in 'higher education', 'secondary education', and 'lower education'. The quantitative results show that 60 % of respondents belong to the first category, followed by 26 % of respondents that have completed secondary education, and 10 % of co-producing citizens belong to the third category (Table 6). To compare with the population in Rotterdam: 30 % of the citizens in Rotterdam have finished a higher level of education in 2019 (Gemeente Rotterdam, 2020). The qualitative interviews illustrate these findings. Respondents point out that "most of [them] are well-educated (Citizen Panel, Residents' Evenings)", and emphasize that "you need common sense and a [secondary level of education]" (Citizen Panel). One respondent explains that "participation is meant for people who studied and know how the world works, not for simple people who also want to have an impact (Right2Challenge)" and that participation is an "elite sport (Right2Challenge)".

4.1.4. Income

The highest proportion (28.6 %) of co-producing citizens receives a medium-level income¹ between 1501 and 3000 Euro gross on a monthly basis. The second largest category receives between 3001 and 5000 Euro gross. The categories with the lowest and the highest income levels (less than 1500 or higher than 5000 gross) are almost equally represented with 10 % and 9 % respectively (Table 7). We thus see that the results are somewhat skewed towards the higher income levels relative to Rotterdam's population. Respondents explain: "people who lack the means to invest time and energy are excluded from the participation process (...) then you see that only the wealthy are able to successfully take part [in co-production] (Right2Challenge)" and "[having less money] means that you have to do other things next to [co-production] to make money, which defocuses your attention (...) when you have stability and continuity, you are more able

to develop yourself, financial security plays an important role in that (Right2Challenge)". This critical note on financial security and its effect on inclusive co-production is repeatedly brought up by respondents who have taken part in Right2Challenge. A major reason for this is that Right2Challenge is a project-based instrument for which participants need to pre-finance the project costs themselves. Without financial security provided by the Municipality, people without own substantial financial means are thereby excluded from participating. Additionally, as the Right2Challenge usually involves time-consuming projects, this specific instrument could be more inviting for people who are less dependent on their day-to-day activities to generate economic benefits (i.e., Rotterdam's retired citizens).

4.1.5. Household composition

The importance of 'having the time and energy to participate' can also be seen in the analysis of another demographic factor: household composition. More specifically, a group that is largely underrepresented in this category are people (living) with children. Especially single parents are underrepresented in Rotterdam's co-production activities. Respondents living alone or together without children make up 63 % of the co-producers on average, whereas respondents living together with children and single parents form on average 31 % of the participants for each instrument (Table 8). Several respondents stress this, arguing: "the age group with young children are harder to find, because they have their jobs, have to raise their kids, and work on their career, and then you just have less time (General Council 010)" and "the younger generations are less involved. They are more focused on their families, other things..." (Neighborhood Watch).

4.1.6. Migration background

Due to ethical considerations, we have not directly asked about people's ethnic or cultural background in our surveys and interviews. Therefore, we are unable to conclude what percentage of Rotterdam co-producing citizens have a non-Dutch or mixed ethnic background. However, this aspect was addressed in various ways in our interviews. Respondents pointed out that the co-production instruments are not inviting for citizens with a non-Dutch/migration background. One respondent explains that "we barely have people [with migration background], and if we managed to find them, they never stay long... Maybe because there are so many white people, that could be the reason (Citizen Panel)". Another respondent says, "we are not a representation of the social composition of Rotterdam (Citizen Panel)", referring to the lack of diversity and inclusiveness within the group. The fact that most communication concerning co-production in Rotterdam is in proficient Dutch language could form a barrier for citizens with a limited proficiency in this language: "I mainly see people that have a good command of the language, I do not see 'the other group' (...) and I wonder if they would perhaps attend if there would be an Arabic or Turkish interpreter present (Residents' Evenings)". This can also be observed in the Citizen Panel: "I understand everything, because I have worked as a civil servant, but somebody that lives in a disadvantaged neighborhood, and barely speaks the language, has absolutely no clue what we are talking about (Citizen Panel)". A Neighborhood Watch participant similarly points out: "the threshold is much higher for those people to join, because they have no allies. I mean, they are suddenly surrounded by non-Moroccans, non-Turks, and non-Islamic people and for many that is a barrier for joining (Neighborhood Watch)".

4.2. Explanatory factors

The previous section indicates that Rotterdam's co-production repertoire only marginally succeeds in attracting a representative variety of Rotterdam's inhabitants. Co-producing citizens do not reflect the diverse composition of the population in Rotterdam. We found and deepened several explanatory factors that help to understand this lack of inclusiveness - in line with existing literature on participation in co-production - stressing socioeconomic factors and networks of

¹ Relative to the average yearly income per inhabitant in Rotterdam of €25.100 in 2019 (Allecijfers.nl, 2021)

participants. First, social capital seems to affect who in the end makes use of the instrument. A second explanatory factor can be found in the manner in which citizens are invited to participate in co-production. Third, the institutional knowledge of citizens, skills needed to participate, and accessibility of the instruments are of relevance.

4.2.1. Social capital

The results show that co-production is mainly for those who are already in the ‘inner circle’ of civic participation in Rotterdam. Pre-existing bonds with the Municipality and its civil servants seem to determine whether one decides to join a co-production activity. On average, more than a third of the respondents have become familiar with one of the co-production instruments included in the survey through the Municipality (see Table 9). As understood from the interviews, a large share of respondents has a years-long precedent with co-production in Rotterdam and is in close contact with the civil servants who oversee these mechanisms: *“In any case, there was already an established contact between [us] and the municipality about the development of that area”* (Right2Challenge). The latter often actively draws participants’ attention to new opportunities for co-production: *“I was asked by the coordinator back then, if I would be motivated to do that, he thought I would be suited for the position”* (Citizen Panel).

Additionally, respondents have frequently been invited by their own social network of people who were previously involved in co-production. These observations partly explain the inequality in societal representation within the instruments. We see that people who already have their place within the inner circle of co-production are often responsible for recruiting new participants. This could lead to the exclusion of citizens who are not part of these particular informal networks: *“I was asked by a friend of mine, and I had also already worked at the Municipality, so I was already aware of the Citizen Panel”* (Citizen Panel). This phenomenon forms an entry barrier for citizens in alternative social networks that differ in terms of cultural grounds: *“those people have a totally different culture and religion, and because there are such few people from those circles in [Neighborhood Watch], there is a threshold for them to join. They do not have allies”* (Neighborhood Watch). Additionally, as our respondents indicate, even when people from underrepresented groups do find their way to co-production activities, they leave very quickly. As such, co-production is considered suitable for a specific group of citizens embedded in certain social networks, creating a discouraging effect for other groups within society and presenting a threshold to partake.

4.2.2. Invitation to co-produce

Another route towards co-production is the advertising of co-production instruments in databanks for volunteering and newspapers’ sections with volunteering opportunities. The use of these particular media in search of co-producing citizens can give rise to a selection effect. Our data shows that consulting databanks and newspapers seem to be particularly popular among pensioners. It is likely that the younger generations, who we expect to be more active on social media platforms, are not being addressed through these traditional channels. This use of channels can partially explain why the elderly population of Rotterdam is overrepresented, as invitations for co-production potentially do not reach the younger generations. Additionally, the language of advertising is predominantly Dutch, which limits access to a large group of Rotterdam’s citizens who do not master this language. This could have negative implications for the overall inclusiveness of co-production in Rotterdam: *“We want to represent the people that cannot represent themselves, and that is a big group. There are a lot of nationalities in Rotterdam, and it is impossible to translate everything into their native languages”* (Citizen Panel).

4.2.3. Institutional knowledge, skills and accessibility

For some instruments, participants indicate that co-production is something that requires particular skills, thus creating a threshold for successful participation. This is especially true for instruments that rely

on initiatives and projects developed by citizens (like Citylab010, Right2Challenge and Citizen’s Initiative) or require deliberative analytic skills (like Citizen Panel and General Council). Respondents involved in these instruments indicate that a certain level of intelligence and public-institutional understanding is essential for successful co-production: *“A certain level of intelligence is needed”* (Client Council W&I), *“participation is only meant for people who can read well and are intelligent”* (Right2Challenge), *“you have to know your way around the municipality organization”* (Citizen Panel, Right2Challenge). This becomes more visible when looking at the application procedures, in which citizens are often required to submit substantiated proposals with detailed financial plans (in Right2Challenge and Citizen’s Initiative), undergo an official ‘job-application-like’ procedure (in Citizen Panel, Client Council W&I and General Council) or provide a formal project pitch to a committee of Heads of Departments (Citizen’s Initiative). Citizens aiming to participate in these instruments are expected to perform on the same level as the public institution itself and enjoy little support and feedback during the application process: *“The documents, the forms, the language and the attitude... They could really make the process less complicated, but that is not what they are doing”* (Right2Challenge). When approved, participants bear full responsibility for all the planning, organization and financial matters within the project. Due to these instrumental complexities, the co-production process requires effort, patience and administrative insight: *“I think that the [municipality] organization is quite complicated for outsiders, so it helps if you know your way around it and speak the [institutional] language, how to approach people for example”* (Citizen Panel). This insight is not gained from (higher) education, but rather from direct experience with public organizations. In other words, many of the instruments seem to be tailored to groups of people with a certain level of administrative experience and capacity to navigate within the public-institutional realm: *“you have to know your way around the Municipality organization. You need to have all these conversations, at some point you also need to give a presentation for all these Heads of Departments, which can be quite intimidating”* (Right2Challenge). Understanding public documents seems to be part of the essential skillset as well: *“we deal with official public documents, so you have to be able to understand what is meant in a law or policy document”* (Client Council W&I), *“of course you need some understanding of the institutional environment”* (Citizen Panel). A Right2Challenge participant explains: *“it is participation for the advanced, it requires a lot of effort”* (Right2Challenge). These complex processes are insufficiently accessible for the remaining part of Rotterdam’s citizens. This has implications for the overall inclusiveness of the instruments, and for the extent to which these fairly represent Rotterdam’s society.

We have grouped the factors institutional knowledge, skills and accessibility together, because these themes recurrently appeared to be interlinked in the qualitative data, for instance in the following expressions: *“it is not just about giving your opinion and then waiting until it is implemented, you also have to be able to lobby effectively, that is important. And if you manage to do that well, knowledge from the municipality and society is definitely an advantage”* (Citizen Panel), *“you have to know your way around the municipality organization, you need to have all these conversations [with civil servants], you need to do a presentation for all these Heads of Departments – which can be quite intimidating – and besides that you have to be able to write project proposals. That asks a lot from one initiator”* (Right2Challenge).

Respondents that participated in the instruments General Council 010, Client Council W&I, Residents’ Evenings and Citizen Panel pointed out that a major requirement to participate is being able to express yourself eloquently in Dutch, both in speech and in writing. Participants are required to be able to understand formal legislative texts and need to write clear, concise and convincing texts when communicating with the Municipality. Moreover, participants are expected to be able to voice their ideas and opinions in a confident and unambiguous manner: *“you need to be quite eloquent, to voice your opinion in front of experts and people that know what they are talking about”* (Residents’ Evenings). Similar perspectives were expressed by respondents participating in General

Council 010 and Citizen Panel. Other qualities that respondents deem necessary to successfully participate are computer literacy and internet skills: “*you need some capacity to use the internet and look up topics that you are working on*” (Client Council W&I).

The importance of knowledge and skills in most instruments works as an excluding mechanism with regards to attracting citizens. Since many instruments require expert knowledge, predominantly the well-educated citizens feel addressed to join in co-production – as supported by the quantitative data. The focus on language and communication skills fundamentally disregards the large share of Rotterdam’s population who does not master the Dutch language, or whose perceptions on communicative practices differ for cultural reasons. This has considerable consequences for the inclusiveness of Rotterdam’s co-production practices. In addition to the argument that citizens need to be skilled for certain co-production instruments, our analysis showed that the higher educated are also overrepresented in the co-production instruments that do not require any special skills, Instruments like WhatsApp Neighborhood Watch and Municipality Poll (Table 5) - which are instruments that have minimal barriers for expertise or technological knowledge - demonstrate a relatively low representation of participation by citizens with a lower level of education.

5. Discussion and conclusion

This article examined to what extent co-production instruments induce inclusiveness. Our results indicate that co-producing citizens are not necessarily a representative reflection of a city’s population. Although the Municipality of Rotterdam has implemented a variety of co-production instruments, it fails to co-produce with a large variety of Rotterdam inhabitants. Therefore, our results partially confirm earlier scholars’ work stating that citizens with a higher SES dominate the co-production processes (Steen et al., 2018; Trouset et al., 2015; van Eijk et al., 2017; Verba et al., 1995). Our data suggests that this is likely due to their enhanced position with respect to social and cultural capital, as suggested by Lowndes et al. (2006) and Voorberg et al. (2015). Moreover, we see an overrepresentation of more educated people participating in all instruments. The finding is in line with other research on participation noting that educational level is a clear predictor of participation (see Ryfe & Stalsburg, 2012 for an overview).

What our data also show is that pre-existing bonds and contacts with the municipality play an important role in getting involved in co-production instruments. Moreover, our qualitative data indicate that this might create an exclusion mechanism as well. People who differ in their background experience a threshold to become part of co-production groups if these groups are more or less homogeneous (but different from them) and more educated. It should be clear though that this latter point holds for group forms of co-production (e.g. Neighborhood Watch) and not for ‘individual’ forms of co-production (such as

Table 5
Overview participants’ gender in %.

Instrument	Gender – male	Gender – female	Gender - other
Resident’s Initiative	46,5	52,6	0,9
Outdoor Area Notifications	62,3	37,7	0
Neighborhood Governs	49,2	50,8	0
The Bench visits the Neighborhood	NA	NA	NA
CityLab010	60,4	37,6	2,0
Municipality Poll	57,1	42,8	0
Speaking at the District Committee	76,7	23,3	0
WhatsApp Neighborhood Watch	42,9	55,4	1,8
Neighborhood Self-Management	51,9	48,1	0
Average percentage	58,6	40,9	

Table 6
Overview participants’ level of education in %.

Instrument	Higher education	Secondary education	Lower education
Resident’s Initiative	56,3	29,1	12,7
Outdoor Area Notifications	27,9	45,9	21,3
Neighborhood Governs	41	37,7	13,1
The Bench visits the Neighborhood	57,9	30	6,5
CityLab010	89,1	8	2
Municipality Poll	69	22,8	4,7
Speaking at the District Committee	76,7	10	10
WhatsApp Neighborhood Watch	60,7	28,5	7,2
Neighborhood Self-Management	46,8	29,9	13
Average percentage	59,6	25,8	10

Table 7
Overview participants’ gross monthly salary per instrument in %.

Instrument	Less than 1500 Euro	Between 1501 and 3000 Euro	Between 3001 and 5000 Euro	More than 5000 Euro
Resident’s Initiative	18,3	31,9	16,4	6,1
Outdoor Area Notifications	16,4	27,9	9,8	1,6
Neighborhood Governs	8,2	27,9	14,8	9,8
The Bench visits the Neighborhood	12	26,2	24,6	13,1
CityLab010	11,9	40,6	25,7	2
Municipality Poll	5,5	20,6	31,6	17,3
Speaking at the District Committee	6,7	33,3	20	13,3
WhatsApp Neighborhood Watch	12,5	33,9	25	5,4
Neighborhood Self-Management	7,8	33,8	15,6	7,8
Average percentage	10,3	28,6	21,6	9,3

Table 8
Overview participants’ household composition in %.

Instrument	Living alone	Living together (un)married without child (ren)	Living together (un)married with child(ren)	Living alone with child(ren)
Resident’s Initiative	26,8	42,7	22,1	3,3
Outdoor Area Notifications	45,9	34,4	14,8	NA
Neighborhood Governs	26,2	39,3	16,4	6,6
The Bench visits the Neighborhood	20,2	46,4	25,1	1,1
CityLab010	18,8	26,7	41,6	5
Municipality Poll	25,1	37,7	28,7	2,6
Speaking at the District Committee	23,3	33,3	33,3	3,3
WhatsApp Neighborhood Watch	25	32,1	35,7	5,4
Neighborhood Self-Management	22,1	39	26	7,8
Average percentage	26,2	36,7	27	4,3

Table 9

Who introduced you to the co-production instrument?

Instruments	Neighbors	Municipality	Personal network	Friends or family	Other
Resident's Initiative	10,8	27	38,7	4,1	19,4
Outdoor Area Notifications	3,2	38,7	8,1	NA	50
Neighborhood Governs	39,1	15,9	18,8	2,9	23,2
The Bench visits the Neighborhood	9,6	39	11,8	4,3	35,3 ^a
Citylab010	1	20	56,2	3,9	19
Municipality Poll	4,5	40,2	4,5	3,3	47,4 ^b
Speaking at the District Committee	18,2	27,3	21,2	6,1	27,3
Whatsapp Neighborhood Watch	13,1	72,1	NG	1,6	13,1
Neighborhood Self-Management	11,1	48,1	6,2	3,7	30,9
Gemiddeld percentage	12,9	36,5	20,7	3,7	39,5

^a 23 % of the respondents indicated to have found The Bench visits the Neighborhood through their own efforts.

^b 28,2 % of the respondents indicated to have found Municipality Poll through their own efforts.

Municipality Poll) (both forms are included in our analysis). This explanation coming from our qualitative data is in line with a recent study on non-participation of less-educated citizens in citizens' initiatives in the Netherlands, which points to the role of feelings of entitlement: perceiving themselves as less legitimate societal actors because they experience stigmatization or insufficiently master the legitimate style of speech and knowledge (Visser et al., 2021).

Feeling capable and having the resources to participate is an important incentive to co-produce (van Eijk et al., 2017). The flipside of this argument is that people are discouraged from co-producing if they feel that they lack the required skills and resources. Our study underlines this, as many respondents indicated that the co-producing group was rather homogenous, and that if a participant with a different background joins, it is usually for a short period of time. Our qualitative data indicate that there might be an exclusion mechanism at work here. That is, as people who differ in background might experience a threshold to become part of co-production groups if these groups are largely homogeneous (but different from them) and more educated. Although this needs further research, it points towards feelings of entitlement: citizens with lower levels of education perceiving themselves as less legitimate societal actors because they experience stigmatization and/or insufficiently master the legitimate style of speech and knowledge, as is recently argued and empirically substantiated in a study on non-participants in citizens' initiatives (Visser et al., 2021). Hence, we cannot confirm the arguments of Clark et al. (2013) and Bovaird et al. (2015) who argued that co-production might lower the bar for citizens to participate.

We see that co-production may require different skills, qualities and knowledge from citizens. For instance, some instruments ask more from citizens in terms of time, institutional knowledge, skills and institutional understanding. Other instruments are more easily accessible and require little time and effort to participate - although these too provide challenges for certain groups of citizens to participate, due to their required level of computer literacy, language skills and institutional understanding. In other words, different co-production instruments require different skills, which leads to exclusion within co-production a priori.

In terms of the relationship between vitality and co-production, we can conclude that the way the municipality has organized co-production

indeed allows it to collaborate with its citizens in a different way than in classical policymaking and service provision. Urban vitality means a system in which citizens and institutional actors communicate and collaborate in decision-making and democratically work together to maintain or improve the livability of a city. Particularly instruments 'Resident's Initiative' and 'Neighborhood Watch' allow the government to maintain and improve the livability of the city (Nathanson & Lahat, 2022). In that regard, following Edelenbos et al. (2015), the co-production instruments help with developing and consolidating common ground in dealing with urban issues (p. 239). Although these instruments foster new forms of ongoing interactions between residents and communities, our research shows that the groups of citizens who participate in these interactions can hardly be considered representative for the city of Rotterdam. Therefore, we can conclude that the co-production arsenal of the city of Rotterdam is insufficient to generate that "social system of actors with different backgrounds and from different scales and levels with lively, energetic and productive relationships that are constantly seeking to explore, develop, and consolidate common ground" (Edelenbos et al., 2015, p. 239). Hence, we should question to what extent co-production is indeed an instrument to increase urban vitality.

Several shortcomings in our research must be acknowledged. The first concerns the size and representativeness of our pool of respondents. The Municipality of Rotterdam has played an important role in facilitating our access to respondents' contact details. Due to privacy concerns, approaching participants without the Municipality's interference was not an option at hand. It is important to underline that the Municipality's interposition in the recruitment of respondents limits our sample size. Even though the number of respondents is sufficient to formulate basic assumptions on the experience of citizen participation in Rotterdam, it remains fairly limited for drawing general conclusions. Therefore, our aim is not to prescribe a causal law that is applicable to all local government institutions and their co-production instruments, but rather to open a new line of research in this field. Second, our single case study design allows us to draw conclusions on the inclusiveness of co-production within the Municipality of Rotterdam. Due to its uniqueness in terms of co-production instruments in place and its strong ambition for achieving inclusiveness in participation, the potential for generalization to other municipalities is limited. Future research on the inclusiveness of co-production in additional cities could add a comparative element to the literature on the inclusiveness enhanced through co-production. Lastly, our pool of respondents fully consists of citizens who have successfully participated in co-production. This implies that citizens who have consciously chosen not to participate or were prevented from participating are not represented in this research. This limits our ability to make statements regarding the explanatory mechanisms, as we are lacking first-hand input from non-participants concerning why these did not participate. We can therefore not thoroughly explain *why* we found a shortfall of inclusiveness in Rotterdam's co-production. However, based on our data we have found several explanatory conditions for how people got involved in co-production. Future research could focus on this group of non-participants, to shed light on why citizens do not participate and whether this decision has been made deliberately. Additionally, future research could consider more detailed information on individual co-production instruments and to what extent these instruments individually generate inclusiveness.

As inclusiveness is an important ingredient for urban vitality, we argue that inclusiveness of co-production is a topic that needs more attention in future research. By creating a better understanding of the underlying mechanisms that either contribute to or prevent inclusiveness in co-production, instruments could be tailored to invite and include diverse groups of citizens and perspectives more effectively. Equal and inclusive representation of a city's population in local government and public service delivery is important to achieve and maintain urban vitality, as inclusiveness in this respect will lead to broader engagement of different groups within society and contribute to the

building of various forms of bonding, bridging and linking social capital. Enhanced and evolving social capital will in this respect allow for more adaptive and transformative capacities of cities (Adler & Kwon, 2002; Woolcock, 2001).

Author statement

We, the authors mentioned below, declare that this manuscript is original, has not been published before and is not currently being considered for publication elsewhere.

We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We further confirm that the order of authors listed in the manuscript has been approved by all of us.

We understand that the Corresponding Author is the sole contact for the editorial process. She is responsible for communicating with the other authors about progress, submissions of revisions and final approval of proofs.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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