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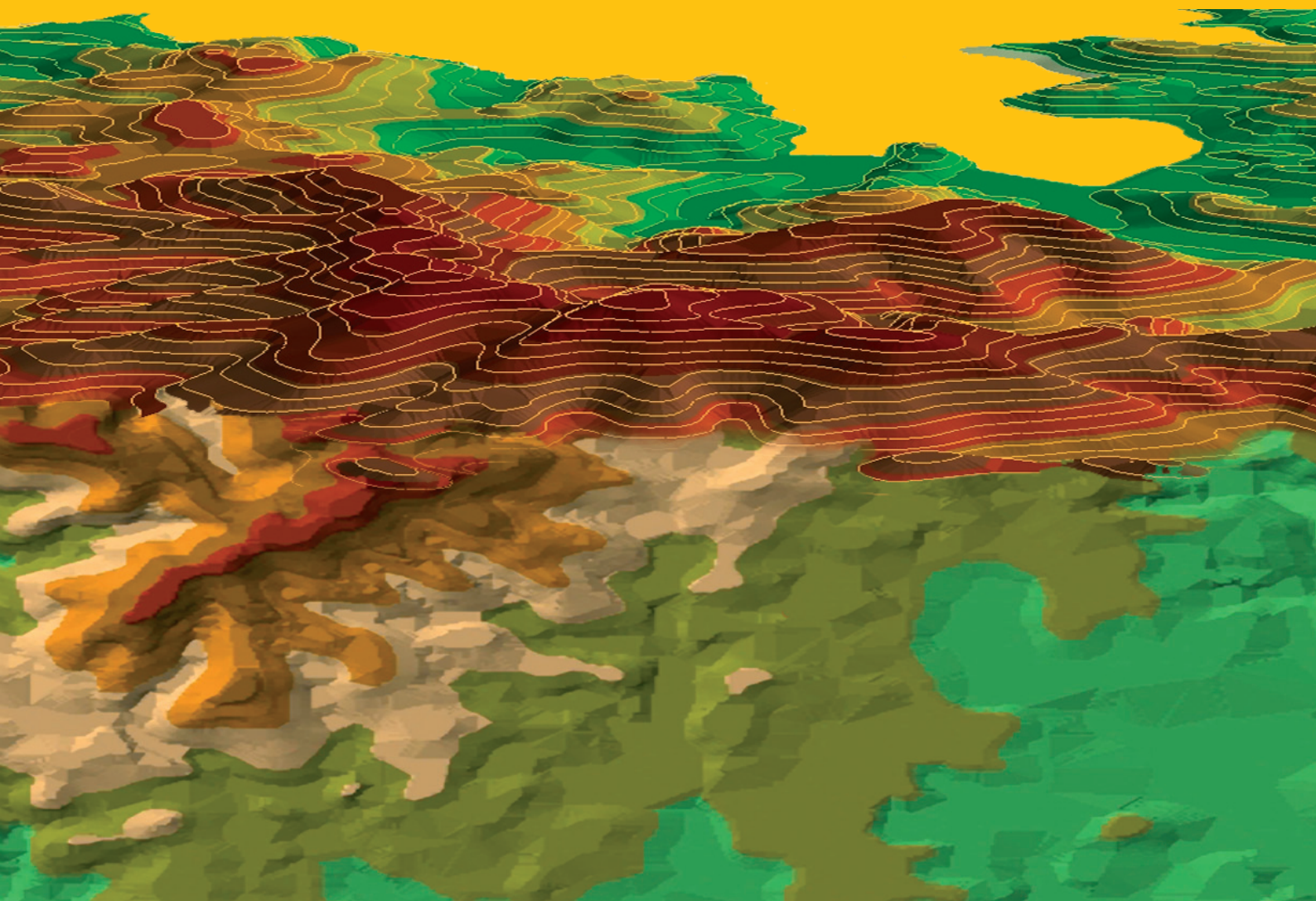

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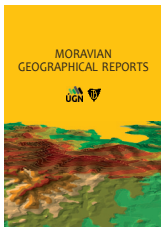

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Movement refrains of people with visual impairments: A post-phenomenological geography beyond space and place

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Abstract

The paper intervenes in current discussions within post-phenomenological geography. It analyzes the movement of people with visual impairments in order to develop an approach to post-phenomenology that emphasizes the in-betweenness of bodies in motion. Our perspective differs from phenomenological (and humanistic) geographies and from post-phenomenological geographies that are rooted in object-oriented ontology. They both rely on the differentiation between space and place, accept pointillism, treat places as points in space, time as exclusively chronological, and bodies as beings, not becomings. We analyze data from interviews with people with visual impairments. We first consider their movement through the perspective of humanistic (particularly phenomenological) geography. After acknowledging the limits of this approach, we turn to our actualized conception of post-phenomenological geography, which draws on Deleuze's concepts of movement, path, refrain, and involuntary memory. With this conceptual repertoire, we go beyond the space-place dichotomy and highlight the in-betweenness and virtuality of movement. We explore difference-producing repetitions, which are constituted through refraining into paths. Our approach conceptualizing movement as "refraining into paths" is instrumental to studying the movement of people with visual impairment: It helps to dispute ableism, and it enriches the current discussion about post-phenomenological geography in its insistence on relations and becoming.

Keywords: *Refrain, space, place, post-phenomenology, visual impairment, Czech Republic*

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1. Introduction

This paper is about movement. We conceive theoretically and conceptually the occurrence of movement, highlight the in-betweenness and virtuality of movement, and simultaneously we strive to overcome one of the most deeply rooted dichotomies in geography – the dichotomy between space and place. We build our knowledge from: a) a Deleuzean critique of the object-oriented ontology (hereinafter OOO) in post-phenomenology; b) theoretical uses of the Deleuzean concepts of movement, path, affect, refrain, and involuntary memory; and c) geographies of disability that focus on the movement of people with visual impairment.

The most recent and most popular form of post-phenomenological geography tries to go beyond humanistic and phenomenological geographies by anchoring itself in OOO (Ash, 2020; Ash & Simpson, 2016, 2019; Ash et al., 2018). Our approach tries to show that this is not enough because a proper advance beyond humanistic and phenomenological geographies needs to overcome the basic ontological dichotomy that is inherent to them: the dichotomy of space and place. Our approach shows that object-oriented ontology is not sufficient for our specific understanding of post-phenomenology, because its exclusive focus on the primary ontologizing of objects makes disappear the ontologies of movement, relations, and bodies, and thus any ontologies that could revolve around the human. This relates to the problem of pointillism in geography, introduced by Marcus Doel (1999, 2000, 2001) upon inspiration from Gilles Deleuze. It is the critique of pointillism that disturbs the ontological primacy of objects (objects as pointillist entities) and highlights the ontological primacy of relations, processuality, and in-betweenness. It does so inside time as well as inside space.

Based on this knowledge we neither explore movement whose main pilot is the human body-subject (as in humanistic and phenomenological geography) nor explore movement that is only subordinated to the physical environment and its objects (as in object-oriented ontology in post-phenomenological geography). We are concerned with movement in-between, movement between subjectivity and object, between people and the environment, between space and place, between places, between past and future, between time and space, and between milieu and rhythm. We acknowledge the ontological primacy of what is between temporal moments and between spatial points – intervals, relationships, processuality, and in-betweenness. To be dodging in-between, and to emphasize the betweenity is a necessary principle of our study. The inter-relations that arise in our study are important: "the middle" is crucial (Deleuze, 1988b, 1994; Deleuze & Guattari, 1987).

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The difference between space and place as it was defined and conceived in humanistic geography has had a huge influence on the geographical imagination about these concepts until the present day – space as impersonal, meaningless, open and detached, out of which places can be made as subjectified segments in space, full of meanings, created by intentional subjects (Relph, 1976; Tuan, 1977). This distinction later found its way into new cultural geography, where places became texts to be read and interpreted, full not only of lone subjects' meanings, but also of cultural patterns, identities, and ways of life. As Anderson (2010, p. 38) puts it: "Place then is the counterpoint of space: places are politicised and cultured; they are humanized versions of space. It is from the empty abstraction of space that different cultures take and make place." Hence, places can be thought of as "carved out" of space by peoples and cultures that leave their traces in space and it is usually thought that "[p]laces have space between them" (Cresswell, 2004, p. 8).

Places are made and remade as, in a way, particular intimate points in a vast space because places are located. While in representational cultural geography places are conceived as made and remade by discursive activity, filled with symbolic and representational meanings, in non-representational cultural geography they are made and remade through sensuous and bodily living, filled with corporeal affects, practices and performances (for overview, see Adams, 2009; Anderson, 2010; Simpson, 2020). "To be in place [through affects, practices and performances] […] is to share some form of emotion with others at a visceral, embodied level" (Adams, 2009, p. 204). Our approach is intended to be non-representational, but we would like to break loose from the boundedness of affects, practices, and performances in places. We do this by presenting them to be lived in the in-betweenness beyond particular pointillist places and vast space, to be lived in paths and the movement itself.

To study movement, we examined the experiences of people with visual impairments. When studying the movement of visually impaired people in urban space, it becomes evident that data contains something that cannot be captured by humanistic (or phenomenological) geography, nor is the object-oriented ontology of post-phenomenological geography of much help either. Something that makes the in-betweenness of the body in movement more evident in their case than in the case of sighted people. The automatic movement in urban space, which we use to demonstrate in-betweenity, is constantly subject to change for people with visual impairment. If there is a change in the learned path (such as a car parked on the sidewalk that wasn't there yesterday), the visually impaired people do not foresee this change in advance, they have no time to prepare for it. Instead, they deal with it when they encounter it. The change is happening with each movement, and each time differently (they touch the wheels with their canes, then reach into the open space, then reach for the hood …).

Moreover, because both automatic movement and changes in space are less obvious for visually impaired people, they are able to talk about them more. By examining the experience of people with visual impairment, we do not intend to emphasize the abnormality of their experience, nor do we postulate distinctions between the movements of people with and without disabilities. We just believe that the visually impaired experience can better help us articulate what concerns all bodies, but for sighted ones, it is less accessible because we all live in cities built for sighted people.

Similarly to authors who have been addressing visual impairment in recent years in geography and sociology (Macpherson, 2009, 2017; Paterson, 2016; Porkertová, 2021), we also aim to contribute to a non-ableist understanding of the movement of visually impaired people. In addition to ableist design (Hamraie, 2017), which refers to design that accommodates only able-bodies, there is also ableist methodology (Castrodale, 2018; Bitman, 2022; Porkertová et al., 2024), which describes methods that automatically account for only able-bodied participants or even infer discriminative knowledge from ableist methods. And similarly, we can consider the ableist theory. We can speak, for example, of a theory that understands disability primarily as a disadvantage, a deficit, a limitation, and fails to grasp it as enriching, enabling, inspiring (McRuer, 2006; Kafer, 2013). Ableist language, ableist discourse, ableist analogies or ableist metaphors reduce complexity, stifle nuance, and prevent understanding of the phenomenon (May & Ferri, 2005). Alternatively, theories that are too abstract, removed from concrete contexts, ideal or even idealized are also considered ableist (Knight, 2020).

In the case of geographic research on the movement of visually impaired people, we have already experienced both ableist methodology when Reginald Golledge in the 1990s from drawings of mental maps with visually impaired respondents, inferred their "transformed and disordered space" and "restricted and less complex" mobility patterns (Golledge, 1993), as well as ableist theory, when Laura Šakaja (2020) describes the movement of visually impaired people in urban environments using the visually derived concepts of urban planner Kevin Lynch (1960). The theoretical grasp of movement and disability is thus often constructed in opposition to each other, which nevertheless says more about the ableist production of theory than about the movement of people with disabilities themselves. Seen from this position, we can thus also speak of an ableist conception of mobility or movement (May & Ferri, 2005, p. 122). Our aim, then, is not to continue to reproduce an ableist theory of movement of visually impaired people but to offer a way to grasp their movement in a non-ableist way.

The paper starts with a discussion of different understandings of movement in geography. We begin with humanistic-geographical conceptions of movement that assume the ontological primacy of the human body-subject (Seamon, 1979, 1980; Seamon & Nordin, 1980). We then consider the post-phenomenological critique that is influenced by the object-oriented ontology, which assumes the ontological primacy of objects and thus avoids humanism (Ash, 2020; Ash & Simpson, 2016, 2019; Ash et al., 2018). Then we present a different (but also post-phenomenological) approach to study movement that assumes the ontological primacy of relations. Through the insight of Deleuzean philosophy, the refusal of pointillism, and the extensive application of diverse Deleuzean concepts, such as movement, path, refrain, or involuntary memory, we grasp what is post-phenomenological in our empirical data and what unsettles the place–space dichotomy. This approach is close to a little older geographical interest in post-phenomenology (older than the most recent post-phenomenological interest in OOO) that derives from non-representational theory (Harrison, 2007; McCormack, 2002, 2010, 2013; Rose, 2006, 2010; Simpson, 2015; Wylie, 2005, 2009, 2010). Unlike studies inspired by this kind of post-phenomenological geography which often engage movement as a methodological tool or perspective serving other goals and often consider the human body and movement only in its temporal becoming, we treat movement as the subject of research, draw attention to its intricacy and consider spatiotemporal becoming of the movement.

2. Post-phenomenological geography: Away from the human and back again

Post-phenomenological geography follows the development of humanistic geography during the 1970s and 1980s, reflects its critique from various paradigmatic positions, and tries to overcome these criticisms. The effort to reach beyond humanistic geography derives mainly from its confrontation with poststructuralism,

non-representational theory, or speculative realism, including its object-oriented ontology. In the following discussion, we explore the inspiration of post-phenomenological geography in object-oriented ontology as this form of post-phenomenology has recently asserted itself in the discipline most profoundly. We show how this form of post-phenomenology responds to the phenomenological geography created by David Seamon, who himself draws on the works of French phenomenologist Maurice Merleau-Ponty. We then intend to show the theoretical contribution of such a form of post-phenomenology, which transcends the pitfalls of object-oriented ontology and tries to focus on the relationality and processuality of movement, instead of focusing on objects only as the OOO does.

The geographer David Seamon (1979, 1980; Seamon & Nordin, 1980) further developed the phenomenological tradition within humanistic geography (Relph, 1976; Tuan, 1977), his most essential contribution being interest in everyday movement as an experience of the body. His understanding of the bodily experience of movement was inspired by Merleau-Ponty. Seamon took over his concept of body-subject to express "bodily intentionality – inherent capacity of the body to direct behaviours of the person intelligently, and thus function as a special kind of subject" (Seamon, 1980, p. 155). In his work Phenomenology of Perception, Merleau-Ponty diverged from Husserl and his followers and accepted the body as part of every knowledge, even as an instrument of our primary "comprehension" (Merleau-Ponty, 2002, p. 273). He refused to see the body as an object (Merleau-Ponty, 2002, p. 64), a mere passive receptor of external stimuli. On the contrary, the world is comprehended through the body. Everything is lived from a certain point of view (Merleau-Ponty, 2002, p. 354). Thus, for him, perception of such experience is not an act of some internal ego or reason, but of body. The "subject" of perception is not "mind", "ego", or "consciousness", it is the body.

According to Seamon (1980, p. 156), movement "indicates that the body is intelligently active and through this activity efficiently transforms a person's needs into behaviours." Thanks to the structure of the body-subject, we do not need to plan and decide on every single move. He distinguishes between body ballet, time-space routine, and habitual movements in larger-scale environments. These composed choreographies create places, which Seamon calls "place-ballet" or "sidewalk ballet" (Seamon, 1980, p. 160). Place is thus connected with movement, but it is understood as a part of space that humans create or relate to (the same as in the case of previous works of humanistic geography). For Seamon, the space-place dichotomy is apparent, and the body-subject has ontological priority over objects, thus "the 'dynamism of place' in Seamon's discussion comes primarily from the actions of its human inhabitants" (Ash & Simpson, 2016, p. 55).

In contrast, post-phenomenological geography stresses the role of non-human components and material contexts and thus calls for "an emphasis on the ways in which the body-subject undergoes constant processes of 'affectual composition' in and through its relationships with a material-agential world" (Ash & Simpson, 2016, p. 55). According to post-phenomenological geographers, the subject originates together with experience and the world, which further shapes the experience. Material objects emerge in the same way and the subject has no ontological priority over objects. Ash et al. (2018, p. 169) stress that "post-phenomenological approaches understand that objects both proceed and exceed human experience of them while also providing the grounds and means for human thought and cognition." The body-subject and the surrounding world are not defined in terms of the metaphysics of presence: body-subject = body-subject and body-subject ≠ background world. Instead, both become processual, and their situation is better characterized by the concept "circumstability" (McCormack, 2017). McCormack (2017, p. 7) asserts that the circumstantial qualities of post-phenomenological life worlds refer to circumstances as "not only conditions lying outside and impinging on human life but [as] ongoing, loosely consistent structurings of influence on the capacities of diverse agencies to affect and be affected by other agencies."

However, not all post-phenomenology grants affects, agencies, and relations ontological primacy before subjects and objects. Even if rejecting the primacy of the body-subject, Ash and Simpson (2016, p. 59) claim that "post-phenomenological geography argues for a reinvigorated account of objects and suggests that objects present a starting point." Drawing on object-oriented ontology, they postulate that objects are of primary ontological value before unstructured matter or relations. Their proposition is that by "taking the autonomy of objects seriously, post-phenomenology can begin to investigate relations between non-human objects without reducing these relations to how they appear to human beings" (Ash & Simpson, 2016, p. 60).

This approach to post-phenomenology is criticized by Tom Roberts (2019a, 2019b), who notes that even if the primary position is not occupied by an undifferentiated body-subject who lives through intentional experience, it is occupied by the object, which is presupposed to exist abstractly before affects and relations, and thus the phenomenological passion for a stable, individuated entity remains here. This post-phenomenological conceptualization of objects echoes the division of space and place typical of humanistic geography, even if it aims to uproot the division. Although such versions of post-phenomenology deny that, for the existence of space, we need the body-subject–object relation, they replace the body-subject with another (second) object to surpass the body-subject.

Ash (2020, p. 185) characterizes such objects as individuated entities, and this post-phenomenological geography wants to explore "how entities comprehend one another, rather than being predicated on a cognitive human subject." Individuated entities subsequently create space. When constituting space, the object–object (or entity–entity) relation remains as stable as the body-subject–object relation. Such space is always secondary to entities, which exist a priori and are self-contained in the metaphysics of presence: entity A = entity A, entity A ≠ entity B. The space–place dichotomy remains; in a similar way as body-subjects were able to create places from space, now objects can create places. Yet, we believe that, to overcome the space–place dichotomy, we need to "free relations from the individuated actuality of things" (Roberts, 2019b, p. 548). This is something that earlier geographers who were inspired by non-representational theory and sometimes also called their work to be post-phenomenological try to do (Harrison, 2007; McCormack, 2002, 2010, 2013; Romanillos, 2008; Rose, 2006, 2010; Wylie, 2005, 2009, 2010). They try to give ontological primacy to relations.

What does the freedom of relations make possible? First, it facilitates the return of the human subject, though in a form different from that seen in humanistic or phenomenological geography. In this conception, the subject "is always a provisional relation that takes hold—or actualizes—within matter's intensive flux of impression and ideas. The subject is nothing more than this immanence of relation" (Roberts, 2019b, 551). The human subject becomes subjectification which is about the actualization of the relation from a virtual potential (Deleuze, 1988a, 1993; Simpson, 2017; Woodward et al., 2012). "Subjectification isn't even anything to do with a 'person': it is a specific or collective individuation relating to an event" (Deleuze, 1995, pp. 98–99). An event of subjectification always includes an encounter of bodies. "In the humdrum of our everyday lives we are always already enrolled in a range of affective, subjectifying relations with the

world. Bodies of varying shape, size, materiality, and vibrancy co-appear with us" (Simpson, 2015, p. 72). Thus, we are "in search of a subjectivity without subjectivism" (Wylie, 2010, p. 110), thus doing something that OOO, in our opinion, avoids.

Second, the "event" is important. The event is always virtual and extra-temporal; it exists outside chronological time in which points of time cannot be otherwise than actual (Deleuze, 1990, 1991). Unless relations are exterior to actualized entities and working virtually, processuality is not captured. It cannot be reduced to actual relations between entities at different times. In our theory, movement is not reducible to states of entities at different points of chronological time. Our conception of movement is of an unstructured body that constantly undergoes subjectification. On the way from phenomenology to post-phenomenology, not only does phenomenological space, composed of a priori body-subjects and objects, remain unbecoming, but so does post-phenomenological space, composed of a priori objects and objects (or entities and entities).

Events bring encounters, and "we cannot know a body's affective capacities independently of its encounters. Indeed, to begin with the encounters of bodies requires an ontological commitment to the primacy of relation itself" (Roberts, 2019a, p. 125). In questioning the unbecoming primacy of actual entities (or objects) in actual points of time, we are inspired by Marcus Doel's critique of pointillism in geography (i.e. the critique of comprehending things, phenomena, and time periods in their individuality or pointillity). Doel (2001, p. 566) believes that "all forms of pointillism are unbecoming and ill-mannered. Only relations, meantimes, and durations can have consistency." First, we believe that, by disavowing pointillism, we can work with real process, happening, movement, and duration (Deleuze, 1986, 1991), while distinguishing between pointillistic chronological time "and the real time of duration and becoming (what is still in the process of unfolding and being made)" (Doel, 2003, pp. 161–162). Bissell (2014, p. 1948) asserts: "Attending to the complex temporalities of practice that nonrepresentational theories spotlight offers an alternative way of considering mobility transformations that are unaccounted for by the chronological modes of evaluation." For example, the non-pointillistic "loop circumvents points of departure and origin and instead prioritises the passage, […] a much more embedded 'haptic' kind of navigation in movement" (Bissell, 2013, pp. 358–359). Second, by denying pointillism, we would like to grasp the moving body not as the body-subject, but as an unstructured body, fully open to affects, relations, and becoming (i.e. as the body-without-organs; Deleuze & Guattari, 1987; Doel, 1995).

> "The subject is the subject. Alone it stands. And in no need of skin, flesh, face or fluid. Body it never is. Bodies are the enemies of the subject. The subject is what remains when the body is taken away; it is literally in human (I am–dead). […] [T]he material fabric of the body may [in fact] frustrate the passage towards the place of the universal and abstract subject". (Doel, 1995, pp. 211–212)

Thirdly, we are convinced that by disavowing pointillism, it is possible to cast off the residual humanistic-geographical dichotomy of space and place, and appeal to more mobile, processual, expressive, and post-phenomenological concepts.[1] According to Doel (1999, p. 9), geographers should be wary of "the polarization of place and space, which hinges on the glaciation of events in perpetual process" and does not enable us to grasp truly becoming events of "spacing". Moreover, he maintains that "in the passage [...] from the logic of identity to the rhythm of difference-producing repetition, space and spacing are (s)played out" (Doel, 2000, p. 120). This is the part where we try to deepen post-phenomenological geographies that are inspired by non-representational styles of thought. Although the movement itself is often an important part of these geographies, it is not usually the subject of research itself.

Instead, it is conceived as movement between places or between points in space, even though it moves through non-representational landscapes (Wylie, 2005, 2009). The vibrating in-betweenness of moving is stabilized into bodies moving in actual places. We aim to grasp more fully the always-becoming spirit of the virtuality of movement. In our post-phenomenological perspective, "[t]here is only a becoming, and not a being to which the becoming (be) comes. There is nothing beyond betweenity" (Doel, 1999, p. 171). For these reasons, we draw primarily on Bergson (1911) and his interpretation by Deleuze (1991), in which exactly this spirit of movement is implied and which are commonly used for similar purposes in geographical research on other topics (Massey, 1999; Bissell, 2014; Williams, 2016, 2022).

Through our focus on bodies with visual impairments we realize that movement relations of betweenity caused by non-seeing and the accentuation of haptics must be in a way different from relations where the sense of sight prevails. This makes our post-phenomenological perspective to get in touch with current debates in critical phenomenology where the problem of different bodies (than, for example, abled bodies) is highlighted. Among these debates, Eden Kinkaid (2021, p. 308) is critical of post-phenomenological geography (however, mainly its variant that is rooted in the OOO) and claims that "advocates of post-phenomenology are quick to critique a 'transcendental subject' [...] and in its place do not advocate for an attention to historically concrete individuals. Instead, they forgo the question of the subject altogether" even when this question is shaped by political issues of gender, race, sexuality, or disability. We are aware of this important notice and agree with critical phenomenologists Simonsen and Koefoed (2020, p. 17) who seek "an approach that anticipates elements now associated with poststructuralism and post-humanism but which maintains a more robust sense of politics, experience and agency."

Although we do elude the idea of intentionality and the individual as starting points for analysis, we emphasize that relations to be made through the difference in the sense of sight are influenced by the politics of ableism, as our cities are usually systematically conceived for seeing bodies. We agree that "sidestepping subjectivity as an issue or matter of concern [in post-phenomenology] does not mean that we can escape the power these processes exert on social and material orders" (Kinkaid, 2021, p. 312). Politically, for critical phenomenologists, "a differential activation of perception, including vision, makes new spaces and social relations possible" (Kinkaid, 2020, p. 179). From the perspective of queer phenomenology, there is a need for disrupting spatial norms that tame differential embodiments and relationalities so that the accentuation of new spatial possibilities of perception is possible (Ahmed, 2006). "This search for a different way of seeing cannot be separated from practices of inhabiting space otherwise, experiments in queering space" (Kinkaid, 2018, p. 438). This is why we would like our post-phenomenology to also be a critical geography.

3. Phenomenologically conceived movement of visually impaired bodies

We are interested in processually conceived movement, which is always becoming. As we stated in the introduction, for this study, we chose the movement of people with visual impairments. Using semi-structured interviews, we interviewed 14 men and women

[1] From a post-phenomenological position, Gibas (2019) explicitly strives to overcome the humanistic-geography dichotomy of space and place. We offer a different perspective that is, in our opinion, more thorough.

with visual impairments who lived in the Czech Republic's urban milieus. They were sought and approached through personal contacts and further by using the snowball method. When selecting them, the only condition was the declaration of one's own visual impairment. Among the communication partners, there are people of various ages, educational backgrounds, and professions, both visually impaired from birth and later in life. Before we explain how Deleuzean post-phenomenological geography gives us a better understanding of the movement of people with visual impairments, we focus on what we can (and cannot) say about this movement through phenomenological concepts of the body-schema and "dynamic" measures of space. The phenomenological body-schema presents a holistic conception of the body and knowledge about the mutual relationship of its individual parts. Principally, the body-schema is the body-subject. It includes parts of which we can be aware in a moment (Merleau-Ponty, 2002). Merleau-Ponty (2002, pp. 165–166) speaks explicitly about the incorporation of a white cane into the body-schema of people with visual impairments. The body incorporates tools and, when learning new habits, it "perceives" and "understands" them as an enhanced body-schema, an enhanced phenomenological body-subject.

> Interviewer: "Do you feel that you orient yourself according to what the cane transfers to your hand in the spot where you are holding it or where it touches the ground?"
>
> Communication partner: "The part that touches the ground, the end, this is somehow transferred to my brain..." (F, 34, 09.07.2014)

Use of the body-schema at the level of manipulated objects enables us to understand the adaptation of a body with visual impairments as it moves in space. To learn more about movement, we studied body-schema extensions that reach further into space than the level of manipulated objects. We then encountered something interesting. Until a certain scale, the literature talks about incorporating whole places into a body-schema (e.g. a table, a room, a building). However, when this scale is transgressed, we discover only examples of incorporating routes: walking to the garage, to a mailbox, from lunch, and so on (Seamon, 1980, p. 148). It seems that we can experience movement within a place only up to a certain scale.

Edward Casey (2009, pp. 326–327) created a "dynamic" topology of scale for this purpose. The first scale corresponds to a body that remains in place (e.g. writing on a desk in a study), the second corresponds to the scope of movement within one place (e.g. walking around the study), and the third corresponds to movement between places (e.g. going from the study to the kitchen). The body may either be static or move within a place or move between places, but what about this movement "between" places? The routes may be incorporated into the body-schema but not through a place. In phenomenology, place is created from space through a body-subject into static points. These static points mean that the concept of place describes the relation to space through rootedness or dwelling but not through movement (i.e. movement between places) where the "between" could be more important than the places. The space–place dichotomy is apparent here. For overcoming this dichotomy, the movement "between" is crucial.

> "What does it mean to learn a path? Well, I know that when walking from my flat, from the building, I need to go straight. I tap my cane, everything is simply by heart; one learns to do it from memory... that after some time there will be a recess, and then what? A sign, for example? You learn everything by heart. It's not a matter of imagining space or anything, it's all memory." (F, 35, 28.01.2014)

Our communication partner mentions specific elements that they remember (e.g. a recess and a sign), and what is in-between, played down, and not expressed, as if these elements are not part of the movement. They appeal to a scale of moving between places, and we learn about the places but not what is in-between. They use different language to describe movement between places through action (e.g. go, walk, and tap). The description thus falls apart into places and bodily action in between places. While the former are time constants, the latter concerns unspecified durations. Parts of movement are expressed by actions that do not have any spatial representations; they cannot be represented temporally apart from their doing. They are outside places, in-between places, and so outside language, in-between words. We can only mention their order, a certain time schedule – what (moment 1) comes sooner and what (moment 2) comes later – a linear structure of memorable sequences. In other words, we remain with the space-place dichotomy and this perspective requires us to observe movement through places where something happens or changes; it omits the space where movement continues. To move beyond the dichotomy, we need to move from the analytical perspective of this pseudo-dynamic phenomenological geography to a real dynamic of post-phenomenological geography.

4. Post-phenomenological perspective: Movement, path, and refrain

The phenomenological perspective conceives of space as impersonal, meaningless, and homogeneous, and the intentional experience of the body-subject as creating subjectified and meaningful places within this space. Because of the chronological conception of time, the perspective conceives of movement through the body-subject–object relation, which changes at individual time points. In this temporal chronology, body-subjects internalize certain objects at certain time points and create places through this internalization. In this section, we would like to offer an alternative perspective.

4.1 Movement

Our post-phenomenological perspective emphasizes relations, which are necessary to actualize becoming into embodiment and the materiality of moving things and bodies. First, we explain Deleuze's Bergson-inspired understanding of movement. Rather than understanding movement as involving just moments, as when a chronological point 1 suddenly switches to chronological points 2, 3, 4, and so forth, movement has its own quality that does not belong to actual chronological time and its moments because "not only is the instant an immobile section of movement, but movement is a mobile section of duration" (Deleuze, 1986, p. 8). Importantly, movement expresses change through the whole constellation of events, yet movement itself does not belong to chronological time but to Aeon in which various durations exist that connect the past and future and cannot be reduced to another, given their different qualities. Movement is pure action, an event. Time is always, on the one hand, pointillistic and chronological and is filled by moments, states, and "now-points".

On the other hand, "it must be grasped entirely as an entity infinitely divisible into past and future, and into the incorporeal effects which result from bodies, their actions and their passions" (Deleuze, 1990, p. 5). The other time, Aeon, "is the time of the pure event or of becoming, which articulates relative speeds and slowness independently of the chronometric or chronological values" (Deleuze and Guattari, 1987, p. 263). Hence, movement may be understood not only as the actualization of subjects and objects at time points but also as virtual betweenity. If the happening of moving "is extended to infinity in the past and the future, it is because it concerns first of all the living present that in each instance presides over their division" (Deleuze, 1993, p. 70).

Movement is a change that is virtual but necessary for material and bodily actualizations – it precedes the actualizations in a nonchronological way. Movement does not change one thing

into another; it transforms the wholes of things and phenomena by transforming the relations between diverse phenomena and things: "As long as movement is defined as 'the successive existence of a moving body in different places,' we apprehend only an accomplished movement, and not the inner unity to which it refers when it is in the act of moving" (Deleuze, 1993, p. 55). Relations overcome individualities and create wholes. Hence, the whole is not given beforehand, and "if the whole is not giveable, it is because it is the Open, and because its nature is to change constantly" (Deleuze, 1986, p. 9).

To the extent that our post-phenomenological perspective understands relations as exterior to objects (Roberts, 2019b), we distinguish movement as the qualitative change of the whole through changes in relations. This conception of movement enables us to fully grasp subjectification as the actualization of virtual potential. Constitutive virtuality as movement is the locus where encounters happen. Encounters are connected to affects, and a body undergoes affection: "[I]t is these virtual tendencies that ensure that bodily movements become increasingly removed from the realm of cognitive effort" (Bissell, 2015, p. 131). This body is not the body-subject because affections have nothing to do with intentional experience. Instead, this body is an unstructured body that really moves – a body in the very act of movement that escapes the present – but always actualizes some affections in the present (of chronological time). Understanding a body in this way implies "a devaluation of consciousness in relation to thought: a discovery of the unconscious, of an unconscious of thought just as profound as the unknown of the body" (Deleuze, 1988b, pp. 18–19). Movement expresses mainly an unconscious change that cannot be fully expressed by words, and when it is expressed by words it vibrates between what is said and what is not.

> "Because even if I have mastered it, and I know the way, but suddenly...how to describe it?" (F, 34, 09.07.2014)

> "As if it was imprinted, I don't know which type of memory it is. [...] I tell myself it's best not to think about it, and my legs just do it for me. The body, simply, or the memory of the movement is much more precise than I would be if I tried to define it in my mind." (M, 29, 28.02.2015).

Our communication partners do not knowingly describe how their bodies move. Their body in movement is there but only unconsciously and without interpretation. "How shall I say it…? This falling short is not something which befalls representation rather [...] representation which has fallen short bears witness to that which it cannot contain" (Harrison, 2007, p. 603). Their perspectives about what happens when their bodies move show that something is elusive – something that should be the movement itself escapes the present. Such "viewpoints do not resolve themselves in presence or manifestation, but rather hold presence–absence in an ongoing suspension" (Woodward, 2013, p. 239; *cf.* Wylie, 2009). Movement as a continuous becoming is not actualized through its affirmation or through its negation; it remains unconscious and virtual. Movement is not someone's something. It is neither a matter of the subject or object nor composed of subjectified places. Movement in this sense is neither present nor anything that is but is rather a change that is happening constantly. In movement, the past meets the future. The body has mastered the movement, yet it does not have actual, present knowledge. The body has performed the movement and has absorbed its relevant affects in the past so to actualize corresponding affections in the future. The movement "will have been". The past, wrapped in memory or imprint, makes it possible to actualize this step and no other. This movement is absent not only in words but also in actual attention, mind, intentionality. Former passages present virtualities saved in involuntary memory (Deleuze, 2000, pp. 52–66), actualizing steps that direct the movement. Legs do it for us. Movement becomes. The virtual possibility of movement in space is thus actualized in steps that connect past passages, which the body has performed before, with future passages that are yet to be actualized.

4.2 Path

The movement of people (and not only those with visual impairments) happens in paths. Paths are not point-to-point transitions: space-point 1 to space-point 2 to space-point 3 and so forth. If they were, it would be easy to make impersonal, meaningless, homogeneous space into personal and meaningful places: place 1 to place 2 to place 3, and so on. Paths are created through the interconnection of the virtual and the actual. They are dependent on movement and are open to continuous change just as relations during movement change. Paths belong to haptic space, which differs from phenomenological space, out of which the body-subject creates places. Haptic space is "filled by events or heacceities, far more than by formed and perceived things. It is a space of affects, more than one of properties. It is haptic rather than optical perception" (Deleuze & Guattari, 1987, p. 479).

In our usage, the term "haptic" is not only about the necessity of non-visual perception or only about the inability to see, although non-seeing bodies are able to live through haptic space more expressively. We distinguish the haptic from the optical because it "is a better word than 'tactile' since it does not establish an opposition between two sense organs but rather invites the assumption that the eye itself may fulfill this nonoptical function" (Deleuze & Guattari, 1987, p. 492; *cf.* Doel & Clarke, 2002). Haptic space enables and, simultaneously, is enabled and constructed by paths. "It is the construction of space, fragment by fragment" (Deleuze, 1986, p. 108). "Its orientations, landmarks, and linkages are in continuous variation; it operates step by step" (Deleuze & Guattari, 1987, p. 493). It is a nomadic space, a space of continuous change and reconfiguration, a space in which affect constantly induces affection.

> "The nomad has a territory; he follows customary paths; he goes from one point to another; he is not ignorant of points (water points, dwelling points, assembly points, etc.). But the question is what in nomad life is a principle and what is only a consequence. To begin with, although the points determine paths, they are strictly subordinated to the paths. [...] A path is always between two points, but the in-between has taken on all the consistency and enjoys both an autonomy and a direction of its own. The life of the nomad is the intermezzo." (Deleuze & Guattari, 1987, p. 380)

Haptic space is a space of paths. It is neither a pointillist space because paths have ontological primacy over points, nor a space where the body-subject creates places as points that receive primarily experiential and epistemological value. Paths bring affects and are manifested in the body as affections that move the body along a path. Haptic space as a space of paths is also the space where the (visually impaired) body moves. Step by step, the body is affected through diverse events that happen along a path, which step-by-step transform affections that the body experiences. "It is a tracing out of a spatiality that, on account of a radical incompletion and *glissement* in spatial experience, negates the sense of a grasped, mastered, and named space" (Romanillos, 2008, p. 805). Some affects are more expected than others, thus the body must be open to things it has never experienced.

[2] Readers are likely familiar with the concept of "path" from time geography, where it is primarily used for graphical representation of an individual's movement through time and space (Hägerstrand, 1970). The Deleuzean concept of 'path', which we explain in this article, does not directly relate to time geography and uses the concept in a different sense.

> "People often imagine that if we have learned a certain path that we can ease off, be simply walking, relaxing, thinking about totally different things. Well, sometimes I can, and sometimes I do it, but it is far from ideal. It is good to focus on the route as much as possible, because it really can happen that something that wasn't there yesterday can suddenly appear. For instance, it can be a ditch, there could be a sign in the way, anything, that's why I really try to maximally focus on the path." (F, 35, 13.02.2015)

> "Sometimes and I often do that and I call it autopilot, that you walk basically assured in places you know, and you think about something else. And the more you can be surprised if there is some unexpected thing, because you actually are not focusing on the way so much. But for a visually impaired person this is a matter of rather strong concentration, and many visually impaired people say that their journey to work is more exhausting than the work itself." (M, 29, 28.02.2015)

Haptic and nomadic space emphasize not only the spatial in-between but also the temporal meantime. The openness of in-between enables the unpredictability of movement through time and space. Despite its former passages and remembered paths, both of which facilitate an almost automatic movement in which the body can "ease off", anything can happen. There are numerous possibilities, each with unpredictable actualizations. Our communication partners responded to this unpredictability with focus, openness to change, and readiness for the appearance of certain affects. Movement along paths presents an interesting encounter of actualizations of former passages and actualizations of moving bodies. While the former appears in the autopilot form, which is actualization of movement without any points or moments, the latter is mentioned as an "unexpected thing", "ditch", "sign". Their description indicates that affects arise from changes in the urban milieu to which movement opens in its becoming.

4.3 Ritornello/refrain

Recalling Bergson's theory of memory, Deleuze (1991, p. 55) claims that "[w]e have great difficulty in understanding a survival of the past in itself because we believe that the past is no longer, that it has ceased to be. We have thus confused Being with being-present". This means that the past has not ceased to exist but that it has always existed because it has existed in memory, as virtual. The entire past is part of "involuntary memory" (Deleuze, 2000, pp. 52–66).[3] Memory may not be actual in a human mind and consciousness. When it is not actual, being part of involuntary memory, it "has no psychological existence. This is why it is called virtual, inactive, and unconscious" (Deleuze, 1991, p. 55). Its existence as virtual is not individual and psychological, but ontological: "There are no fewer things in the mind that exceed our consciousness than there are things in the body that exceed our knowledge" (Deleuze, 1988b, p. 18). Yet it takes effect, even if non-actual, in its virtuality.

Virtuality of movement and memory connects a particular affect with particular affections: "The practical competencies normally understood to be know-how possessed by a body [...] can instead be understood as the incipient movement tendencies that possess bodies" (Bissell, 2015, p. 131). Thus, the body moves by itself, led by affects, and experiences the affections of movement. Movement creates the refrain (ritornello) of affects and movement affections, which constantly arise along passing respective paths.

McCormack (2010, p. 202) asserts that "the processuality of world […] is always affirming its own becoming through the refrain of something which can be sensed in experience while always exceeding the actuality of this sensing." Deleuze and Guattari (1987, p. 312) explain "[t]he role of the refrain has often been emphasized: it is territorial, a territorial assemblage." The refrain marks out territories during becoming and tends to bring small, productive repetitions. These repetitions are rhythms that define a territory out of milieus, but they never fully determine what can happen in a territory in which specific affects would appear. The refrain is composed of milieus and rhythms. A rhythm "is that component of the concept of the refrain which gives consistency to the relations between heterogeneous milieus" (McCormack, 2002, p. 476). Rhythms are virtual elements that carry the possibility of actualization and always draw on (virtual) involuntary memory. A milieu is undifferentiated matter – the various unstructured bodies and materialities – that await for subjectification and structuration as movement happens. In milieus, action and affection actualize. Only when rhythm connects with a milieu is a territory actualized. In this established processual play of virtualization and actualization, rhythm and milieu give rise to territories that are maintained for some time. The interplay of these components is called "refrain". Hence, we "get ritornellos [refrains] in any territory, marking it out; and then others when you're trying to find your way back to it" (Deleuze, 1995, p. 146).

Territories are diverse. They can be rigidly territorialized, as might be places of humanistic geography, but they can be less rigidly territorialized. "Territories, in this sense, populated as they are by refrains, are always generative of incipient tendencies toward deterritorialization" (McCormack, 2013, p. 133). Some territories are closer to vectors of deterritorialization than others. Paths as nomadic territories are like this (Deleuze & Guattari, 1987, pp. 380–387). Territories and paths are linked with certain refrains, which draw on movement rhythms, respective affects, and scenes (McCormack, 2002, 2013). Therefore, refrains may be understood through the "rhythmanalysis" of affects, affections, and actions (Doel, 1999, pp. 193–196). Refrains do not imply a return of the same, they rather express a "difference-producing repetition" (Deleuze, 1994; Doel, 1999, 2010). "Refrains hold bodies in certain worldly arrangements at the same time as they open up other ways in which bodies can generate worlds" (McCormack, 2013, p. 204). McCormack (2010, p. 213) insists that refrain "is a pragmatic concept for thinking through relational processuality of experience, for thinking through transition".

The concept of the refrain captures the movement of bodies with visual impairments, which move along paths in virtue of their (virtual) involuntary memory. This path movement is created by particular affects that actualize particular affections, which in turn are followed by particular actions. Paths are open to actualizations of new, different, and diverse affections and actions, and as such are open to deterritorialization. Paths are tied to relations and affects, which are lived by bodies in movement. Our perspective thus goes beyond the stability of phenomenological dichotomy of space–place. Paths are neither tied to chronological time, insofar as refrained affects and relations are continuously becoming, nor subjected to a chronological repetition of "now-points": "Here, Time is not an a priori form; rather, the refrain is the a priori form of time, which in each case fabricates different times" (Deleuze & Guattari, 1987, p. 349). The becoming of the refrain along a path may create new time because a new passing of the refrain is not the return of the same. A different passing of the refrain may actualize different happenings.

> "For instance, last year it happened to me – an obstacle. We have lived here for 30 years, or 35, and I walked from the tram past the building. And I had never realised at all that there is a staircase there leading to the basement of the building. And in those 30 years, I'd never brushed against it, right? So, I'm walking

[3] Bissell (2014), inspired by Bergson and Deleuze, calls a very similar phenomenon 'habit memory'.

> along the wall, and suddenly I'm flying down the stairs. […] Not paying attention, I was not checking whether the stairs were there. I didn't count on them at all." (M, 68, 30.04.2014)

A path enabled our communication partner to capture the everyday repetition for 30 years. Yet, one day he fell down the stairs. A possibility was actualized that had never happened before, but it had always been real in the virtual. The staircase had been there all along. Our communication partner said that, although he had been passing it, he had just never noticed the stairs before. We do not learn what exactly happened – whether it was raining or something else – so that another step was actualized, a new affection that resulted in the fall. The rhythm connecting the affect of a straight sidewalk, the affection of a following step, and the action of passing the staircase was replaced by the affect of the stair, the affection of stepping into a void, and the action of falling down the stairs. Even a path of 30 years, which is seemingly well known and accessible through involuntary memory, is constantly becoming. This actualization of milieu and rhythm possibilities gives rise to the refrain, which is and is not the same. On the one hand, it is a repetition that actualizes the same possibilities; on the other hand, it is not just the return of the same. The repetition that makes it possible to go through the same path is at the same time a change, one that makes falling down stairs possible. The refrain facilitates meetings: of repetition with change, of memory with milieu, of autopilot with the fall, and of our communication partner with the stairs.

> "Well, I have it automatized, which means I don't need to sit down, look it up on the internet or somewhere, and imagine the path, I have it engraved in my memory. So, it is partly automatic. When I'm walking, I am not imagining what will happen in a while...I am more sensitive to what's around me, people flashing by…" (M, 21, 04.03.2015).

The refrain does not just make possible the capture of spatial change in becoming. It also captures the temporal change of becoming – not a change within one conception of (chronological) time but a change in the form or duration of time. Every refrain reterritorializes into different paths and into different times and durations. In movement along a path, the continuously occurring time of automatized leg movement meets the time of being ready for sudden, unexpected encounters. This readiness is expressed by the thought that "I am more sensitive to what's around me" or perceiving that "people are flashing by". As Bissell (2014, p. 1953) writes, "[t]hrough repetition, active movements become increasingly automatic, [...] thereby becoming more passive; whereas passive impressions from the environment are incorporated by the body, [...] thereby becoming more active". Different times, conscious and unconscious, meet in the refrain. The refrain is becoming together with the becoming of new times; the time of repeated steps may encounter an unexpected thing or person. Each refrain brings along other times, other durations, and other refrains and illustrates connections between various passing times.

5. Conclusions: Refraining into paths

This text can be read at three interconnected levels: empirical, theoretical, and ontological. At the empirical level, it concerns the question of capturing the movement experience of people with visual impairment. In our interviews, we noticed a certain disparity between the role movement plays in their lives and how they describe the movement. We were looking for ways to capture this discrepancy. While the description of movement is structured into places, the concept of place is not sufficient to comprehend the movement of visually impaired people. Hence, why we were seeking another tool that would help us capture movement in a non-ableist way. Through humanistic-geography concepts of place, body-ballets, place-ballet or sidewalk ballet, body-schemas, and dynamic scales, we ended up with Deleuzean post-phenomenological geography and its concepts of movement, path, and refrain/ritornello.

Using the refrain, we managed to grasp how the movement of people with visual impairment connects a repeatedly experienced passage with the continuously becoming territorialization of a path. The refrain enabled us to describe the seemingly opposite experience of automatic movement and unpredictable changes that people with visual impairment so often face. Repeated movement brings eternal return, but it is also constantly becoming and thus produces difference. The refrain helps to comprehend the movement of visually impaired people not as something special and contradictory, i.e. ableist, but as something completely normal, obvious, and thus equal.

At the theoretical level, the text asks how to theoretically conceive movement and the happening of movement. Geographers most frequently appeal to the concepts of meaningful place and impersonal, meaningless, homogeneous space. While the former describes the movement through the 'rooting' in place and is thus more about rootedness and dwelling than about movement, the latter is about movement but describes it as a trajectory without any meaning. Neither concept characterizes the in-betweenness of moving or the 'rooting' into routes. How to conceptualize movement in its changeable meaning? How to grasp something that happens between places, the rooting into routes, in-between, in changes? To answer these questions, we conceptually reworked space into spacing and rooting in places into "refraining into paths". We understood "refraining into" as the continuously becoming difference-producing repetition, which repeats as well as changes paths.

Furthermore, "refraining into" enters "into paths" not only in the sense of entering or rhythm but also in the sense of moving a body through space. This solution abandons the space–place dichotomy and conceives space as haptic and nomadic – that which is becoming. In such space, the past meets the future, and their connection always actualizes something. However, the metaphor of "refraining into paths" is not primarily meant to overcome the space–place dichotomy but to problematize its adequacy for the study of movement and moving bodies. "Refraining into paths" is a critique of place and space from the position of post-phenomenological geography, which reveals the conceptual closedness of the former towards (nonpoint) becoming and at the same time a critique from the position of disability geography that reveals the ableist use of this conceptual pair for research on the movement of visually impaired people.

The third, ontological level of the text criticizes the object-oriented ontology prevailing in current post-phenomenological geography. Humanistic geography has imposed ontological primacy of the body-subject over the object, which perceived everything as human intention. The recent and most influential post-phenomenological geography responded to this critique by drawing inspiration from object-oriented ontology. On the one hand, the problem of the body-subject was solved, but a new one was created because the ontological primacy of objects over everything – the subject, the body, the relation – was emphasized. We tried to "return" from the disproportional focus on material objects back to the relationality and processuality of embodiment, i.e. back to the body. Inspired by Deleuzean philosophy, we conceive both subjectivities and objects as continually created through relations and affects. The in-between has ontological primacy. Similar to replacing places with paths and rooting with refraining, we replace body-subjects and stable pointillistic objects with affects, affections, and relations. Affects and relations do not happen to objects; both subjects and objects are constant actualizations of relations – subjectification and objectification.

Thus, movement neither comes from humans, as humanistic geography claims, nor does it come from objects in space, as object-oriented ontology would likely claim. In movement, the body meets milieu, former passages actualize into future ones, and repetition produces difference. Refrains render the subjectification of who passes as well as the territorialization of the path. The body and the path are not something that exist before the passage, but they happen within the event of movement. "Only the event can 'know' what a body can do" (Woodward, 2010, p. 331).

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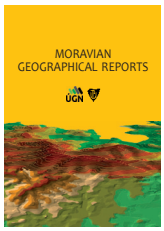

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Mapping perceptions of topophilia and topophobia using a mobile app: A tale of two cities

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Abstract

This study evaluates positive (topophilic) and negative (topophobic) perceptions of places using participatory mapping methods. Current research on mapping perceptions of urban environments relies heavily on retrospective self-reports from citizens. These methods are often susceptible to recall bias and do not capture granular information about urban environments. Places are dynamic, and peoples' perceptions of them vary by time and space. To address these gaps in methods, we collected data from individuals living in two cities, Olomouc, Czech Republic and Brisbane, Australia. GIS was used to analyse a combined total of 634 momentary assessments from Olomouc, and 318 assessments from Brisbane. Our findings suggest that this approach can yield accurate and reliable data about perceptions of topophobia and topophilia in the two cities as well as enable researchers to clearly define hotspots and hot times related to individual activity spaces.

Keywords: *Perception, Participatory Mapping, Mobile Application, EMA, Topophilia, Topophobia, Olomouc (Czech Republic), Brisbane (Australia)*

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1. Introduction

"It was the best of times, it was the worst of times..."
Charles Dickens (A Tale of Two Cities)

Geographical space, encompassing a diverse range of environments and their attributes, is strongly connected with emotion (Mody et al., 2009). Whether we intend to or not, there are always competing emotions, whether positive or negative, that people associate with cities and specific places within them. Behavioural geography focuses not only on the connections between space and emotion but, more precisely, on the way people perceive space. Like the dichotomy in Dickens' The Tale of Two Cities, places can be perceived in opposing ways, which Tuan (1990) classified as topophilia and topophobia. *Topophilia* includes positive and pleasant feelings about places whereas *topophobia* is attached to negative and unpleasant feelings about places.

The methods used to capture peoples' perceptions of place have evolved over time. Traditionally, researchers have used retrospective surveys to gather information on peoples' perceptions of places and their feelings about them, e.g. fear of crime, feelings of safety (Solymosi et al., 2020). More recently, scholars have attempted to capture individuals' perceptions of topophobia and topophilia using a variety of novel methods, such as participatory geographic information systems (PGIS), mental mapping, and sketch mapping (Denwood et al., 2022; Šerý et al., 2023). One consistent theme across most studies is that researchers rely heavily on cross-sectional data and static measurements to understand perceptions of places. Although this work provides useful information about the situational environment and its connection to emotion, scholars have raised concerns about recall bias and the ecological validity of retrospective surveys (Solymosi et al., 2020). Solymosi and colleagues (2020, p. 1014) argue that perceptions are "place-based, context-specific experiences" and, as such, need to be captured when and where they occur. Recent advancements in smartphone technology have enabled researchers to address these methodological limitations, allowing for granular information to be collected from smartphones as individuals navigate and move around places. These approaches are referred to as Ecological Momentary Assessments (EMAs), and typically involve the use of a mobile app[1] to send repeated signals or notifications to a smartphone device, which prompt the user to report their perceptions of their immediate environment at either a fixed or

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[1] A "mobile app" is the accepted and short-hand term for mobile application. A mobile app is "a software application developed specifically for use on small, wireless computing devices" (see e.g. Hussin et al., 2016).

random point in time (see Solymosi et al., 2020). Other forms of ecological momentary assessments seek to capture information relating to specific events (rather than sending notifications to a device at fixed points in time), with the goal to understand immediate experiences, reactions, and responses to a place.

The benefit of EMAs is that they allow for multiple points of data to be collected rapidly *in situ*. This data can then be analysed hierarchically to identify between-and-within groups variation in perceptions of space (i.e. changes in perceptions over time and across different locations). The benefits of this technology in understanding momentary perceptions of topophobia and topophilia, however, are yet to be fully realised. Although understanding resident's perceptions through participatory mapping of places is "viewed as one of the most in demand approaches within urban space planning," (Brisudová et al., 2020, p. 203), much of what we know about topophobia and topophilia comes from European cities and uses retrospective mapping methods. The current study seeks to pilot a bespoke mobile application (Cin City) that uses temporal and spatial triggers built into smartphones to capture momentary perceptions of topophobia and topophilia in two contrasting cities, Olomouc, Czech Republic and Brisbane, Australia. We are guided by the following research questions:

- Are mobile apps an effective tool for collecting real time data about perceptions of topophobia and topophilia in Olomouc and Brisbane?
- What type of places and times are associated with topophobia and topophilia in Olomouc and Brisbane?
- What factors influence subjective perceptions of topophobia and topophilia in Olomouc and Brisbane?

2. Literature review

As Tuan (1975, p. 157) explains, cities are designed "exclusively for human use" in which perceptions of places are influenced by peoples' primary senses (i.e. touch, hearing, sight, smell, and taste), experiences, aesthetics, and the social and economic activities that occur, as well as from secondary information sources (e.g. friends, family, and media), and broader dynamics such as time, seasons, and societies (Anderson, 2009). These processes are multi-directional – places inspire and influence emotions and perceptions, which in turn can directly and indirectly influence peoples' behaviour and what occurs in public spaces (Wanner, 2016). There is a large body of literature that explores perceptions of places, including safety and fear of crime (e.g. Hart et al., 2022), disorder (Ellaway et al., 2001), beauty and aesthetics (Florida et al., 2011), sense of place (Hay, 1998), and the atmosphere of urban places (Sumartojo et al., 2019; Thibaud, 2015).

Within this literature, there is a small but growing field of research which measures perceptions of place through the concepts of topophobia and topophilia. Topophilia has been described as the "human love of place" (Tuan, 1990, p. 92) and encompasses a person's positive affect to an environment, associated with feelings of pleasure and delight, an appreciation of visual aesthetics, and attachment to places through familiarity, memory, and sense of belonging (Hay, 1998; Tuan, 1990; Relph, 1976). Conversely topophobia refers to "fear of place" (Bowring, 2013, p. 109), linked with feelings of hatred, distrust, danger, and places to be actively avoided (Ruan & Hogben, 2007; Šimáček et al., 2020). Importantly, topophobia and topophilia are dynamic and influenced by various temporal, social, and physical factors, and peoples' subjective experiences and memories of a place (Brisudová & Klapka, 2023; Ruan & Hogben, 2007).

Perceptions play a key role in everyday life, providing a powerful and dynamic impact on peoples' emotions and interactions with their environment (Zadra & Clore, 2011). Peoples' perceptions of public and outdoor spaces have important impacts on a variety of measures, including worry about personal victimisation (Chataway et al., 2017), physical and mental health (Ellaway et al., 2001), wellbeing (Burger et al., 2012), quality of life (Muhajarine et al., 2008), and feelings of safety, comfort, and pleasantness, especially for women (Carr, 1992; Heffernan et al., 2014; Navarrete-Hernandez et al., 2021; Šerý et al., 2023). There are also tangible economic and cultural benefits of public space, with several scholars arguing that public spaces provide a sense of community and citizenship (Florida et al., 2011; Pugalis, 2009). Wanner (2016) explored how historical and nostalgic architecture in Ukraine can provide cues to residents about the use of space, shape political and social ideals, and help people "feel at home" (p. 206), while other researchers labelled areas of Melbourne dominated by corporate spaces as "bland" and "oppressive" (Sumartojo et al., 2019). When residents feel unsafe or uncomfortable, they may avoid certain places and withdraw from community participation (Grohe et al., 2012; Šerý et al., 2023).

Studies specific to topohobia and topophilia explored these perceptions qualitatively (Bowring, 2013; Munoz Gonzáles, 2005). Munoz Gonzáles (2005) examined how Spanish women could hold topophobic perceptions of their home as a "prison" (p. 203), as places of stress and monotony, or could be associated with topophilic feelings of comfort and tranquillity. Bowring (2013) examined the perception of topophobia and topophilia after the 2011 Christchurch earthquake with buildings once associated with feelings of comfort and peace were now places of revulsion and fear, while "unkept wastelands" (p. 112) were transformed to places to be protected and admired due to their importance in ecosystem regulation. Using ethnographic methods, Paquet (2023) found that racial segregation, white dominance, and poor levels of maintenance contributed to topophobia in South Africa. Areas design to exclude 'the racial other' became fortresses with high levels of surveillance, access control, and fear, impacting social connectedness.

There are a handful of quantitative studies on perceptions of topophobia and topophilia in public spaces. In the Czech Republic, physical characteristics associated with topophobia included noise, poor lighting (Šimáček et al., 2020), heavy traffic, poorly maintained and unpleasant buildings (Brisudová et al., 2020). Cucu et al. (2011) argued that neighbourhoods in Romania with vacant land, next to cemeteries, and poor accessibility to green spaces are topophobic as they are not desirable places to live. The social dynamics of places can also affect perceptions with places where intoxicated, homeless, or and marginalised populations congregate, often perceived as dangerous (Šerý et al., 2023). The time of day can affect topophobic perceptions, where green spaces, parks, and historical town centres are admired and perceived as pleasant during the day, but places to be feared and avoided during the night (Brisudová et al., 2020; Šimáček et al., 2020).

Collecting feedback from people who use public spaces is integral to design and planning decisions (Pugalis, 2009). For example, Brisudová and Klapka (2023) discovered residents of Šternberk, Czech Republic wanted to see vacant areas turned into places related to civil amenities and quality of life, including sporting and outdoor activities, cultural facilities such as theatres, restaurants, and cinemas, and services such as markets, shops, and public transport stations. Creating spaces where people feel comfortable and safe, are accessible and sociable, is critical in urban design and planning for the creation of sustainable and enjoyable cities (e.g. Heffernan et al., 2014; Sumartojo et al., 2019).

3. Methodology

3.1 Study sites and participants

Participants were recruited from two cities, Olomouc in the Czech Republic and Brisbane in Queensland, Australia, as displayed in Figure 1. These cities provide contrasting examples

between (a) traditional, historic inland cities in Central Europe, and (b) new, modern coastal cities in Eastern Australia. These two sites were selected based on convenience and the University affiliations of the research team.

3.1.1 Site 1: Olomouc

The growth of Olomouc City began in the 13th century, with its central area evolving from the historical centre (Olomouc city neighbourhood). Over time, additional neighbourhoods were gradually incorporated into its core[2]. The historical centre, together with adjacent streets, urban green spaces, and shopping areas, represents a space with a strong concentration of social activity within the urban fabric. The presence of the second oldest university in the Czech Republic, with its largest campus in the central parts of the city, further bolsters this function by attracting a significant population of young people. Parks, gardens, and recreational facilities provide opportunities for relaxation and outdoor activities in the central city neighbourhood as well as along the Morava River. The social function is closely intertwined with a significant transport function, particularly prevalent around the main railway station located in the Hodolany city neighbourhood. The remaining city neighbourhoods, including Neředín, Nová Ulice, Povel, and Nové Sady, are mostly residential, supported by their convenient locations and efficient transportation services.

3.1.2 Site 2: Brisbane

Brisbane is a modern sub-tropical city located in the state of Queensland, Australia. The Brisbane region comprises multiple council areas including Moreton Bay, Ipswich, Logan, Scenic Rim and Someset council areas. We recruited participants within the city centre of Brisbane and 16 surrounding suburbs in the Brisbane Local Government Area (LGA). Brisbane city is more than a business precinct, it is home to several university campuses, hotels, residential buildings, cultural hubs, entertainment venues, restaurants, bars, and retail outlets. The city boasts several green spaces, and outdoor venues including the Botanical Gardens and the Riverstage outdoor concert venue. The surrounding suburbs/neighbourhoods are connected through an advanced transportation and roads network with bus and train services connecting residents and visitors to the city. Brisbane is also set to host the 2032 Olympic and Paralympic Games, with significant infrastructure and development planned for the city ahead of the games. The clear contrasts between the two cities of Olomouc and Brisbane presents an opportunity to explore differences in perceptions of older and younger cities.

3.1.3 Sampling Approach

To ensure that meaningful comparisons in perceptions of topophobia and topophilia could be made between the two cities, we sampled specific geographical boundaries according to population density (refer to Fig. 1 on the next page). In Olomouc, we recruited participants from the entire city in which approximately 100,000 residents live (MVČR, 2023). To obtain a similar geographical spread in Brisbane we targetted our recruitment in Brisbane city and 16 surrounding suburbs, containing approximately 158,000 residents (ABS, 2021). The recruited participants were allowed to report on places within the whole research area regardless of the suburb from which they were recruited.

Several recruitment methods from previous mobile app studies (Chataway et al., 2017) were used in both locations, including digital and paper flyers in key locations (e.g. cafés, university buildings, libraries, public noticeboards) and social media advertisements on Facebook and Twitter. Recruitment occurred between January 2022 to December 2022 in Olomouc and February 2023 to September 2023 in Brisbane. By the end of recruitment, a total of 56 participants were registered and actively engaged in the study. Although the sample is small, it must be acknowledged that the unit of analysis in mobile app studies is not the number of participants, but rather the number of distinct reports collected by the app (Chataway et al., 2017; Solymosi et al., 2020). Across both sites, we received 952 reports from participants. Demographic data are presented in Table 1 below, which demonstrates that the average age of participants in Olomouc was lower and predominately male, when compared to Brisbane. The average age of men and women were similar in their respective cities.

Location	Gender	Age (M, SD)	Participants (n)	Records (n)
Olomouc	Male	27.6 (6.38)	24	252
	Female	27.5 (6.39)	11	382
	N	27.5 (6.39)	35	634
Brisbane	Male	40.7 (10.40)	6	95
	Female	40.0 (10.29)	15	223
	N	40.0 (10.29)	21	318

Tab. 1: Participant Demographics
Source: authors' elaboration

3.2 The Cin City mobile application

The Civic InnovatioN in CommunITY (Cin City) mobile app was designed in collaboration with researchers at the University of Manchester and Palacký University Olomouc (Brisudová et al., 2022). Built using publicly available code from Solymosi et al. (2015), Cin City is currently available on Android devices, and in two languages (English and Czech). The app uses a simple user interface involving a short registration process after downloading it from the Google Play Store. After registration, notifications are sent to a participant's devices five times a day between 7 a.m. and 10 p.m. There was no timeframe imposed on use of the app, meaning that participants could record observations sporadically if they desired. Figure 2 outlines the process for registration and data input in Cin City. Participants in the study were not incentivised for their participation. The app received ethical clearance from the Human Research Ethics Committee at the Queensland University of Technology in Australia and the Ethical Committee of the Faculty of Science of Palacký University Olomouc in the Czech Republic (Ref. No.: 21-01).

3.3 Momentary assessments

Each time a participant was asked to report their perceptions of a place, they were presented with a short 1-minute survey containing four questions. Survey length is an important consideration in Ecological Momentary Assessments (Shiffman et al., 2008). As our goal in this study was to capture immediate perceptions of public places, it was critical that data be collected rapidly before someone exited a specific location. The first question was used to capture the type of feeling being experienced in the immediate environment and asked, "I consider the place where I am right now to be..." The response set included (a) pleasant, (b) unpleasant, or (c) abandoned. The next question measured the intensity of the experience, and asked, "How would you rate the intensity of this feeling?", with the following responses, (a) very low, (b) low, (c) medium, (d) high, or (e) very high. The next question was open-ended and provided the user with an opportunity to elaborate on their feelings within the place, which asked, "What

[2] In this study, we will use the word "neighbourhood" in the Olomouc site to define administrative divisions within the city. In the Brisbane site, we use the word "suburb" to signify residential areas situated outside the Central Business District (CBD). Suburbs are primarily intended for housing and community living. These distinctions may vary to readers in other countries.

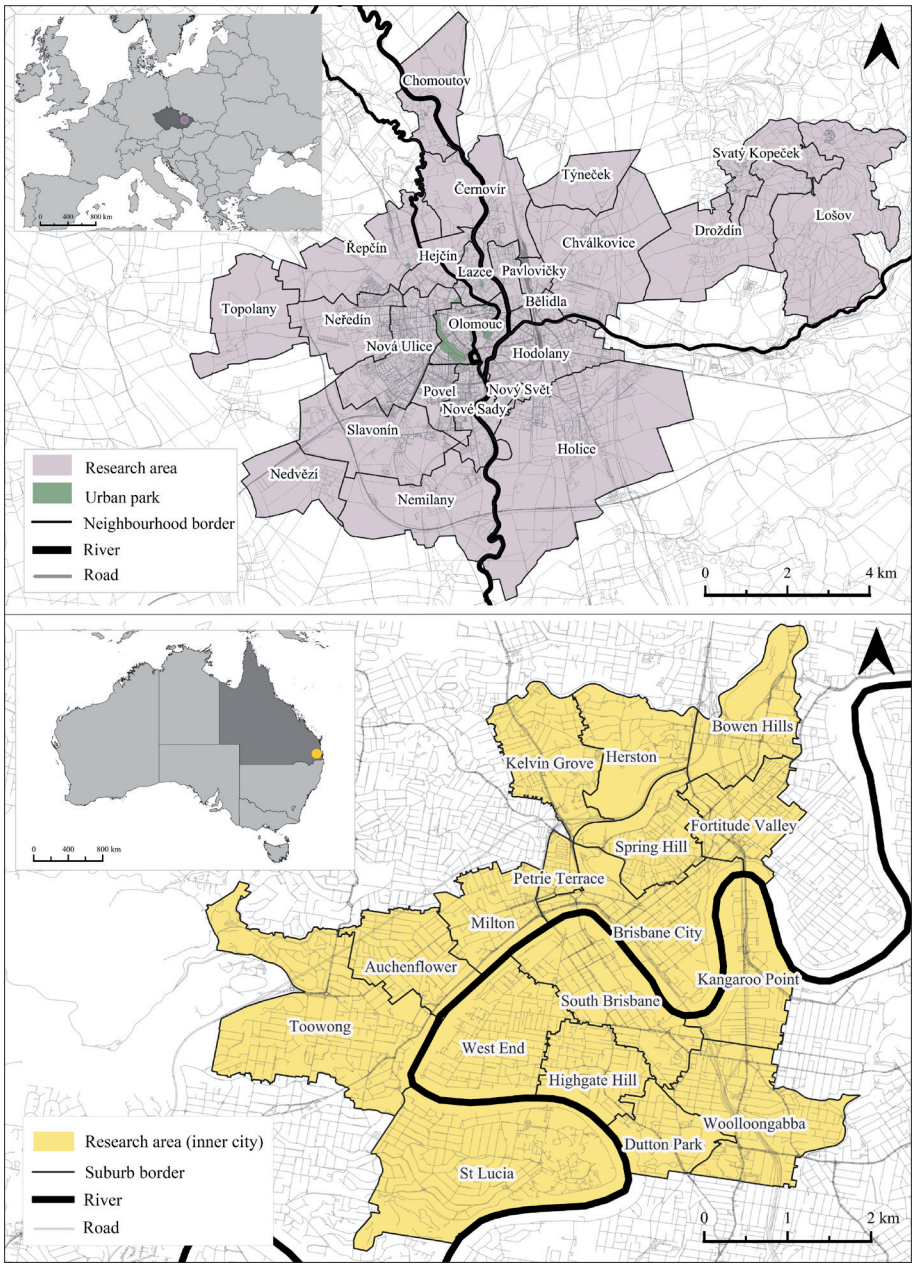

Fig. 1: Overview maps of Olomouc and Brisbane's inner city
Source: authors' elaboration; background map © OpenStreetMap contributors

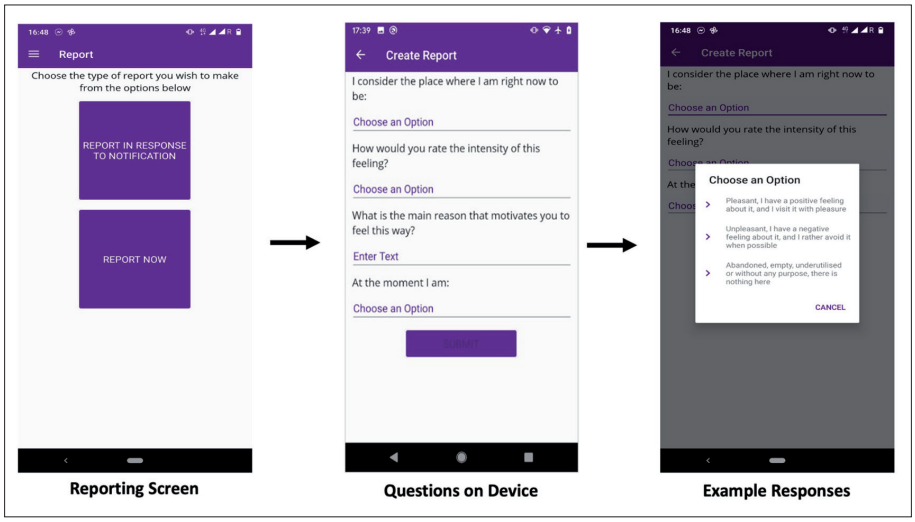

Fig. 2: The Cin City Mobile Application Survey Screen
Source: authors' elaboration

is the main reason that motivates you to feel this way?" The final question captured whether the user was alone in the space or with someone else, and was worded, "At the moment, I am...", with the following responses, (a) alone, or (b) with somebody.

3.4 Analytic approach

Our analysis and results are presented in three sections below. First, we examine the feasibility of data collected using the Cin City app in Olomouc and Brisbane. This involves a descriptive analysis of the response rates for notifications and reports, and survey item responses. Next, we examine temporal patterns in positive and negative perceptions of places in the two cities, using temporal heat maps. Temporal heat maps are a static mapping approach that can be used to identify temporal patterns in momentary experiences in mobile app studies (Shiffman et al., 2008). We conclude our results with an analysis of hot spot locations of topophobia and topophilia among Olomouc and Brisbane residents.

4. Results

4.1 Descriptive analyses of reporting data

Most participants in Brisbane responded to signal notifications sent by the Cin City app (93%), rather than manually reporting information about a public place using the app (7%). In contrast, Olomouc residents were more likely to report information about public places manually using the app (72%), rather than responding to a signal notification (28%). This was an interesting finding and demonstrates that potentially a combination of signal contingent (random or fixed-intervals) and event-based triggers is needed for future work examining perceptions of places. In terms of item completion, a 100% survey completion rate was observed in both samples. This finding was expected, due to the length of the survey (four questions). Prior work has found that item completion is generally higher in smartphone studies due to short survey lengths (see, for example, Chataway et al., 2017). Due to limitations of the app, we were unable to determine notification response rates, as discussed below.

Out of the 952 records reported with the Cin City mobile app, 79.6% were topophilic and 20.4% were identified as topophobic. Both case studies confirmed a strong prevalence of positive perception (Tab. 2). Nevertheless, it is worth noting that the proportion of topophilic records outweighed topophobic records more prominently in Brisbane (86.8% vs. 13.2%) compared to Olomouc (76% vs. 24%). In Brisbane, participants not only identified more locations as topophilic, but also expressed their perception with greater intensity (Tab. 2). The perceptual intensity score, ranging from 1 (very low intensity) to 5 (very high intensity), averaged 3.90 for topophilic places in Brisbane and 3.54 for those places in Olomouc. Moreover, the score in Brisbane was considerably higher within the nighttime records than in daytime reports (3.90 vs. 3.50). Conversely, topophobia, more frequently reported in the Czech sample, had a higher average perceptual intensity score in Olomouc (3.30) compared to Brisbane (2.43).

4.2 Temporal Heat Map Observations

Research exploring topophilia and topophobia in urban spaces predominantly concentrates on analysing the spatial distribution of these phenomena to identify hotspots characterised by positive and negative perceptions (e.g. Cucu et al., 2011; Šimáček et al., 2020). Given the inherent connection between time and space, and the influence of time on peoples' daily movements, it is crucial for studies on perception to also explore the temporal distribution (i.e. hot times) of topophilia and topophobia.

We observed clear temporal patterns of positive and negative perceptions in both sites (see Fig. 3). Participants in Olomouc reported topophilia mainly between 8 and 11 a.m. in the morning and from 1 to 6 p.m. in the afternoon, peaking at 3 p.m. with a maximum of 50 records. The highest occurrence of topophilic records took place on Wednesdays (n = 92) and Thursdays (n = 96). In Brisbane, participants' topophilic records were more prominent from 7 to 11 a.m. in the morning and 3 to 6 p.m. in the afternoon, with Fridays (n = 49) and Wednesdays (n = 45) being the busiest days. While the number of topophilic records decreased in the evening hours in Olomouc, reaching a maximum of 29 records at 8 p.m., this pattern was not observed in Brisbane, where a substantial number of records (n = 29) were submitted at 10 p.m.

The disparities in topophobic temporal heatmaps between Olomouc and Brisbane are even more pronounced. In Olomouc, the highest number of topophobic reports was observed at 7 a.m. in the morning and at 1, 3, and 4 p.m. within the afternoon, with 4 p.m. being the overall peak (n = 17). Participants reported a significantly higher number of reports on Thursdays (n = 32) compared to the other days. Brisbane's topophobic reports, culminating on Tuesdays (n = 13), showed two notable hot times that deviate from the rest of the hours – at 7 a.m. (n = 11) and 3 p.m. (n = 10). In terms of reported topophobia, the evening hours represent a less prominent period of the day in both cities, although respondents often commented on the dangerous nature of places after dark. The lower number of topophobic records in the evening may be attributed to security reasons, as participants may avoid unpleasant places at night or prioritise leaving these areas as fast as possible instead of reporting on the mobile app.

Concerning the temporal distribution of records throughout the week, weekends (Saturdays and Sundays) are characterised by lower numbers of reports for both types of perception in each city. The most significant decrease is observed in Brisbane's topophobic records, with only three reports submitted on Saturday and none on Sunday, which may reflect infrequent use of the app on weekends.

In general, the patterns of reported topophilia and topophobia in Brisbane exhibit a more structured distribution into specific hours compared to Olomouc's records. This difference may be ascribed to the fact that participants in Brisbane regularly responded to notifications on their smartphones, a behaviour less common among participants in Olomouc.

Location	Time period	Topophilia		Topophobia	
		Records (%)	M Perceptual Intensity Score (1–5)	Records (%)	M Perceptual Intensity Score (1–5)
Olomouc	Daytime	80.5	3.53	79.6	3.02
	Nighttime	19.5	3.56	20.4	3.10
	All Olomouc data	76.0	3.54	24.0	3.30
Brisbane	Daytime	64.9	3.50	81.0	2.47
	Nighttime	35.1	3.90	19.0	2.50
	All Brisbane data	86.8	3.90	13.2	2.43

Tab. 2: Temporal distribution of reports and their mean perceptual intensity score
Source: authors' elaboration

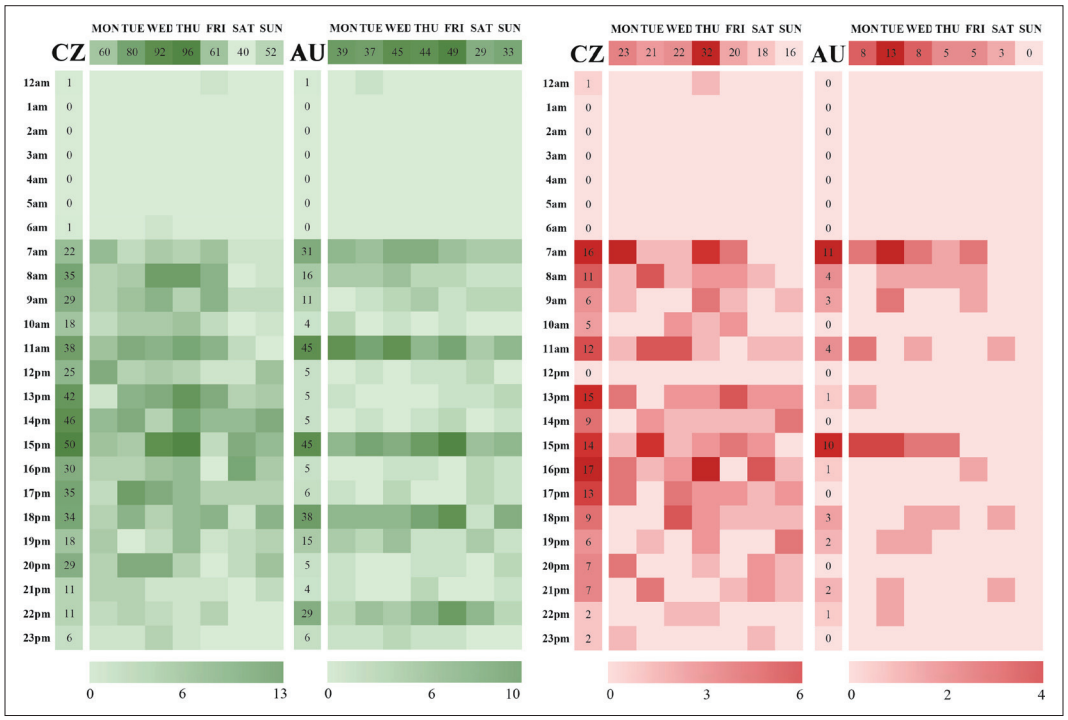

Fig. 3: Hot times of perceived topophilia and topophobia in Olomouc (CZ) and Brisbane (AU)
Source: authors' elaboration

4.3 Hotspots of Topophilia

The Heatmap analysis tool in QGIS (version 3.34.0) was used to display hotspot locations from all records. Appropriate radius for heatmaps was computed via the Distance Matrix tool as twice the average of the closest distances between reported locations for both research areas. Such a parameter was chosen as the most suitable graphic characteristic capturing the essence of the observed phenomenon. The hotspots were displayed and analysed separately across day (6:00 a.m. – 5:59 p.m.) and night (6:00 p.m. – 5:59 a.m.) records.

Figure 4 depicts hotspots of topophilia during both day and night in Olomouc and Brisbane. In Olomouc, the main topophilic hotspots identified by participants during the day cover the main university campus area, various streets in the city centre and urban parks, along with the rose garden. Participants frequently highlighted the pleasant environment in the Olomouc neighbourhood ("Open space, nice architecture, greenery, benches for sitting"), university campus area ("pleasant environment for studying"), and the advantages of urban green spaces ("A pleasant greenery for walks and relaxation"). At night, the topophilic hotspots were more concentrated in the city centre particularly around the two main squares, the city´s town hall, and streets leading to the main railway station. These reports reflect locations with lively nightlife, as evidenced by comments such as "fun with friends" or "beer and friends". Additionally, a few smaller topophilic hotspots were present in adjacent city neighbourhoods (Hodolany, Nová Ulice and Neředín), characterised by residential areas with family houses and apartments blocks. Topophilic places reported in Olomouc at night, in contrast to daytime reports, were in well-lit public areas, with only occasional or non-existent reports in side streets and urban greenspace areas.

In Brisbane, hotspots of positive perceptions reported during the day were prominent in four primary city suburbs – Wolloongabba, Auchenflower, West End and South Brisbane. The strongest hotspot was associated with an area in Wolloongabba full of cafes, restaurants, boutique live music venues, and local shops, and perceived by participants as "familiar," "bright," and "safe." Feelings of safety in this area could be linked to various factors, including the proximity of nearby hospitals. Another cluster of topophilia was identified in Auchenflower, where reports were concentrated along the riverbank, featuring benches, pedestrian walkways, and bikeways. West End, representing the third hotspot of positive perception, emerged as a vibrant urban area where people can meet in numerous cafes, restaurants, and bars or spend time in urban green spaces. Participants frequently highlighted these locations in their comments with topophilic experiences, noting aspects like "lots of people around. Good to see West End busy" or "lovely park, river moody, people enjoying themselves." Brisbane city seamlessly connects to the popular suburb and tourist location South Brisbane, with reports concentrated around the modern South Bank area, proximate to local shopping centres, restaurants, universities, and urban green spaces such as Musgrave Park.

Topophilia reported in Brisbane at night mirrored daytime patterns, although with intensity variations across city suburbs. The most robust nighttime hotspot emerged at the border of South Brisbane and West End, where respondents' positive feelings aligned with the late-hour atmosphere. Examples include statements such as "I went for a walk around the block, and it's a nice night out. It's also cooler outside". Nocturnal topophilic reports were frequently linked with feelings of security ("I felt safe and happy") and personal experiences ("I've seen some scary and uncomfortable things around here, but it has never been really targeted at me"). Unlike in the first case study in Olomouc city, participants in Brisbane continued to express positive perceptions of well-lit and popular urban green spaces like Musgrave Park at night.

Auchenflower exhibited heightened topophilia at night, with reports still concentrated along the riverbank. Positive feelings were diverse, with participants remarking on elements like "sunset light over the river" or "Saturday evening chilled times". In contrast, Wolloongabba, a suburb perceived pleasantly during the day, received fewer reports of nighttime topophilia.

Overall, perceived topophilia was shaped by diverse factors in both cities, encompassing the physical attributes of the locations, feelings of safety, and broader patterns like weather conditions, which contribute to overall judgments about these places.

4.4 Hotspots of Topophobia

Figure 5 illustrates hotspots of topophobia, representing unpleasant perception, during the day and night in Olomouc and Brisbane. Topophobia in Olomouc was reported during the day in three main hotspots. The most significant one was situated around the main railway station (in the city neighbourhood of Hodolany), generally described as a very unpleasant and dangerous space with the presence of homeless and intoxicated individuals. Another hotspot emerged in an old, neglected city market space (city neighbourhood Olomouc), adjacent to a public transport node ("There are often many homeless people around stops of public transport. Overall, it' s a busy place") and the Šantovka shopping mall reported as "overcrowded". The third high-intensity concentration of topophobic records was reported within the area of busy central roads 1. máje and Komenského, where the centre of charity for homeless and socially disadvantaged people is located.

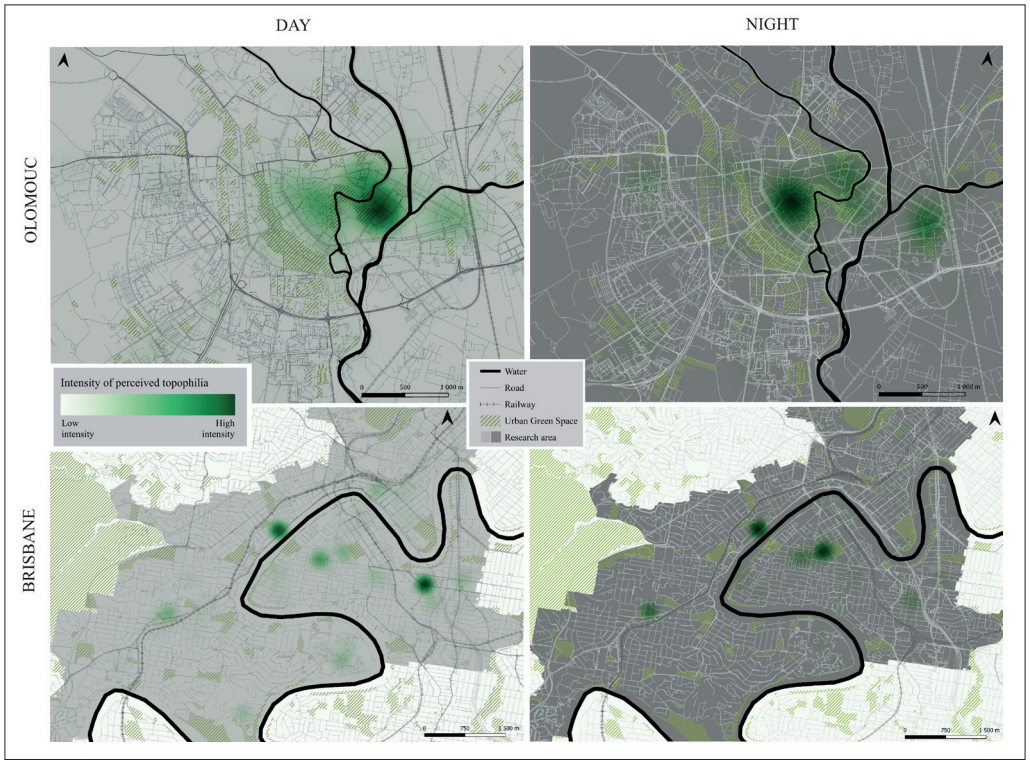

Fig. 4: Hotspots of recorded topophilic locations in Olomouc (n = 482) and Brisbane (n = 276) during the day and night
Source: authors' elaboration; background map © OpenStreetMap contributors

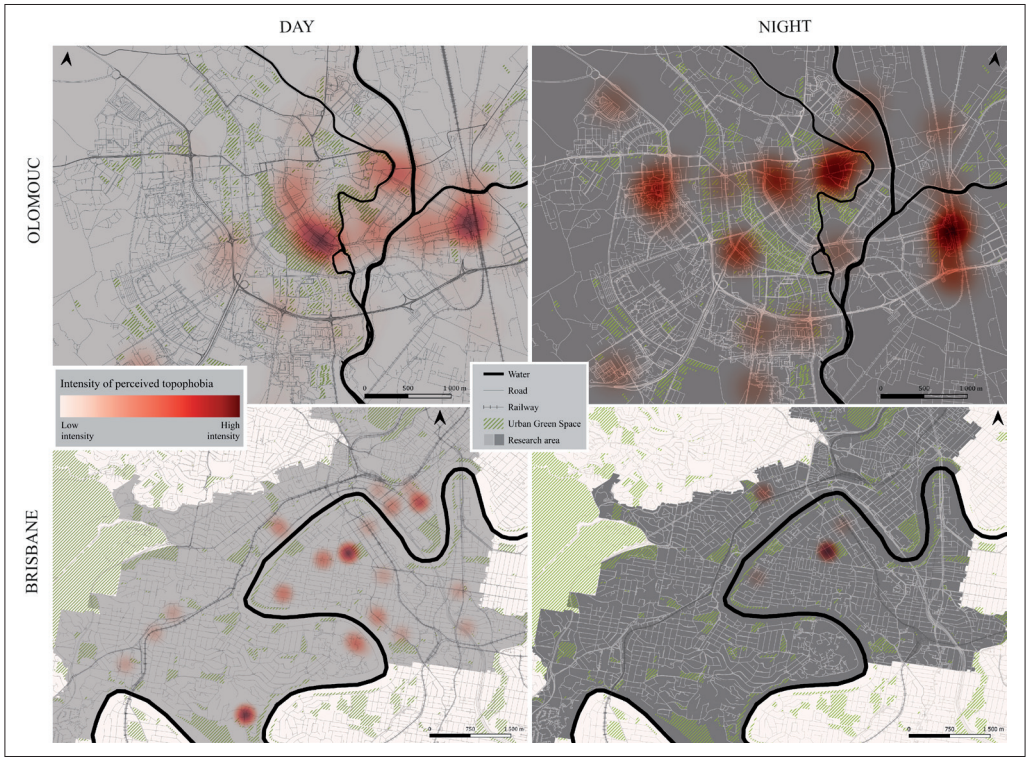

Fig. 5: Hotspots of recorded topophobic locations in Olomouc (n = 152) and Brisbane (n = 42) during the day and night
Source: authors' elaboration; background map © OpenStreetMap contributors

Additionally, this area was associated with challenging traffic situation, poor air quality, dirt and noise ("Lots of slow-moving and parked cars, bad quality air, no trees. You cannot cross to the other side of the street"). Other low-intensity hotspots in the city also reported a negative perception due to traffic and bad smells.

Unlike daytime reports, topophobia reported at night is concentrated in a higher number of hotspots spread across the city. The unpleasant perception around the main railway station was more intense at night, with comments associated in these locations including "homeless people", "abandoned place, neglected" and "not many familiar people". Lack of lighting, a busy road without crosswalks, and the presence of homeless people contributed to one of the reported hotspots in the centre. Another central hotspot was located near bustling bars and tram stops. Less-intense hotspots include reports in other busy roads and underpasses, which can be challenging for pedestrians and evoke fear.

Hotspots of daytime topophobia in Brisbane were scattered across parts of the city in varying degrees of intensity. In some cases, participants perceived the same location both positively and negatively, termed topo-ambivalence. For example, in Brisbane, an inner-city park called Musgrave Park received both positive and negative reports (see Figs. 3 and 4). The most pronounced topophobic hotspot in the South Brisbane suburb, for instance, derived from concerns about the physical state of places, including complaints about litter and neglected environment (e.g. "The bins were emptied this morning and they're strewn across the sidewalk and rubbish is on the ground"). Another hotspot in the south part of the research area (Indooroopilly) reflected a combination of participant frustration with the work environment in this part of the city and personal issues. The central part of the city (Brisbane City) faced criticism for an abundance of office buildings, a lack of greenery and lighting, an unpleasant smell on the streets, and heavy car traffic. Respondents repeatedly expressed discomfort with various locations in the city, describing them as, "Not very pedestrian friendly, traffic is loud, no footpath".

Nighttime topophobia contained fewer reports, with only two concentration hotspots. The first one is located in South Brisbane where concerns about safety after dark ("I need to walk my dog, but I don't feel safe going out this late at night") together with an unpleasant real time experience ("There is a woman screaming on Musgrave Park and I don't know what to do") contributed to the negative perception of these places. The second hotspot occurred in Milton and was associated with the concrete environment and noisy, congested traffic.

5. Discussion

This study sought to investigate the use of a novel smartphone app for collecting spatiotemporal information about perceptions of topophobia and topophilia in two cities. Our findings suggest that smartphone apps are a suitable and robust tool for collecting real time information about topophobia and topophilia. Analyses determined that positive and negative perceptions of places vary substantially across time and place. In line with previous research, we found that specific characteristics of places trigger unique emotional responses. These emotions are highly subjective, with some places in our studies evoking mixed and varied opinions between users of that place. There were also observed differences in the intensity of these feelings in our two samples. We unpack these findings in more detail below.

5.1 Feasibility and Data Collection

In our study, there was a 100% item response rate to each survey, with no missing data recorded. This finding is in line with prior research using mobile apps as a data collection tool, which have also reported reasonably strong response rates to survey prompts (De Vries et al., 2021). In their systematic review of 32 EMA studies, De Vries et al. (2021) found that participants completed on average 71.6% of all EMAs with a range between 43 to 95%. Our high response rates may be attributed to the short four item survey. Further, our sample may also contain 'super contributors' (Solymosi et al., 2018) who may exhibit high levels of intrinsic motivation to participate in smartphone research. Due to limitations of the Cin City app, we were not able to compute more detailed compliance and engagement rates, which are usually reported in EMA studies (see De Vries et al., 2021 for a review). Regardless of this limitation, the participatory based approach to data collection produced robust and reliable spatio-temporal information about perceptions of topophobia and topophilia.

5.2 Understanding Places and Times Associated with Topophilia and Topophobia

In both cities, there were more positive reports about places than negative ones, but there were significant differences in participants' perceptions. In Olomouc, the spatial distribution of hotspots of positive and negative perception captured in real time unveiled a tendency of night-time avoidance behaviour in areas with urban green spaces. The pattern of avoidance behaviour has been documented in studies employing retrospective participatory mapping (e.g. Doran & Burgess, 2012). Our study builds upon previous findings and emphasises the importance of addressing the question of personal safety as a top priority. Conversely, results from Brisbane indicated that participants frequently cited weather and traffic conditions as key factors influencing their subjective perception of the environment. For example, some participants noted certain smells (e.g. garbage, urine) or sounds (e.g. traffic, loud music) influenced their perceptions of a particular place. This shows how external conditions, such as weather, season, noise, or current mood, play a role in shaping perceptions of different places. It is also interesting that certain senses (e.g. hearing and smell) played a more direct role in shaping perceptions of a place and the people belonging to it.

Similar considerations have been noted in other studies emphasizing the significance of various factors when collecting affective responses to space (Degen & Rose, 2012; Klettner et al., 2013; Huang & Gartner, 2016; Sumartojo et al., 2019). Tuan (1997), in their seminal work on sense of place, notes that such sensory experiences occur through direct, repeated, and routine engagement with places. Through this process of habituation, humans experience and develop core memories about places and their time in them (Degen & Rose, 2012; Tuan, 1997). Based on our findings, and the studies mentioned above, future research could explore whether there is sensory dominance in individuals' experiences of places and how this influences place-based memory and recall of personal experiences in a place.

Temporal heatmap analysis confirmed that the perception of topophilia and topophobia in urban space is dynamic, undergoing changes and evolution over time. This was observed within a short-term period (days and weeks), which aligns with previous studies that reported changes in an individual's perception during the day (Šimáček et al., 2020) and week (Doran & Burgess, 2012). Further, individuals' activity spaces are not confined to being exclusively positive or negative; rather, they are often perceived ambivalently. Our case studies exemplify topo-ambivalent perception, as participants reported on several locations (e.g. city centre) as both topophilic and topophobic simultaneously (as described in Brisudová et al., 2020). In the current study, we asked users to indicate if they were in a location alone or with somebody else. Most users in Olomouc reported they were alone (65% of all reports). Conversely, in Brisbane, 58.5% of reports were made when the participants had company with them in a particular

place. Endogenous factors, such as population density have been found to influence peoples' perceptions of places and their feelings of safety, in both positive and negative ways (Hong & Chen, 2014). Future research should seek to investigate the association between population density and perceptions of topophilia and topophobia using more robust internal features of smartphones. For example, Bluetooth, video recordings and static images can all be used to develop an estimate of the number of smartphones and individuals within a specific place at the time of a report.

5.3 Limitations

This study is not without limitations. First, the Cin City app is limited in the background data it collects on user engagement and adherence. As noted above, the app is only available on Android devices, thereby limiting access to iOS users in both cities. In Australia, it is estimated that iOS represents 61% of the operating system market share (StatCounter, 2023). The opposite pattern is observed in the Czech Republic, with Android representing roughly 71% of the operating system market share (StatCounter, 2023). In addition to the above issue, the Cin City app does not provide passive tracking capabilities. Passive tracking would have enabled the research team to map activity spaces and users' engagement with a variety of spaces. It must be noted, however, that there are challenges associated with enabling passive tracking within smartphone apps, including the impacts it has on the smartphone battery life, data storage, analysis, and overall accuracy (de Vries et al., 2021).

Second, the sample sizes in both cities were quite small, comprising of mostly women, with age differences observed between to two sites. Gender and age can influence perceptions of places and safety (e.g. Hart et al., 2022). Small sample sizes are observed in most smartphone EMA studies, however, and can be attributed to a variety of potential causes, including the increased burden associated with repeated measurement and technical faults (i.e. loss of location or cellular service). Systematic reviews of EMA studies across several disciplines have also noted that compliance with EMAs is generally higher in studies that offer incentives to participants (Wrzus & Neubauer, 2023). They have also found that study design and sample characteristics are not significantly associated with lack of compliance in EMA studies. Further research is needed to understand the motivators for participating in smartphone app research. In addition, during the app development phase, there needs to be better consideration of user interaction with the app. Researchers need to look for ways to promote higher levels of genuine engagement in app research, independent of incentives. For example, using gamification to involve users in games within apps while collecting data may be one way to increase participation, compliance, and motivation (Mouchabac et al., 2021).

Finally, the research team were unable to completely differentiate responses to app notifications from public or private spaces in the two cities. We relied on the qualitative data from participants to remove any reports about private places (e.g. a residence). It must be acknowledged that a small number of users did not provide sufficient information about the type of place where a report was submitted. Adding a new question into the survey that asks the participant to indicate the type of place they are currently in, would address this limitation in future research (Hektner et al., 2007).

6. Conclusions and policy implications

Like the dichotomous narrative "it was the best of times, it was the worst of times" written by Charles Dickens in his famous novel, A Tale of Two Cities, our study shows the dualistic nature of human experiences with places. Topophobia is characterised by unpleasant feelings about places and can include emotional expressions such as worry and unease. Conversely, topophilia refers to the pleasant emotional attachment one has to a place. Using data collected by a bespoke mobile application, called Cin City, we were able to show the complex interplay between individuals and their urban environment, and how these two distinct phenomena shape human perception and reactions to the built environment. The current study paves the way for urban planners and researchers to look for new and innovative ways to address negative feelings about places in order to make places safer for all.

Our findings provide further guidance to urban planners interested in improving places. As noted above, many of the unpleasant locations in both cities were associated with everyday physical incivilities that were linked to the senses (e.g. the smell of urine, the smell of garbage, loud traffic). This information is valuable for urban planners and local governments tasked with enhancing safety, social cohesion, and attachment in public areas (Šerý et al., 2023; Wanner, 2016). As Thibaud (2015) argues, urban design must move beyond prioritising the static built environment and incorporate dynamic elements of sound, celebration, and ambience to create interesting and enjoyable cities. Further, real-time reports of topophobia could inform rapid and immediate responses to problems in public spaces, including the targetted allocation of resources, clean-up crews, and local traffic management teams (Solymosi et al., 2018). Moreover, insight from our comparative study revealed that the occurrence of both pleasant and unpleasant locations fluctuates over time. Similar to past research (e.g. Šerý et al., 2023; Solymosi et al., 2015) we found that the temporal variability of urban space influences peoples' perceptions of the environment and, subsequently, their spatial behaviour patterns. Policymakers should take this information into careful consideration when designing urban spaces to ensure they not only align with the general purpose of the locations but also meet the demands associated with different times of the day, week, or seasons of the year. Overall, in line with several urban space scholars (e.g. Šerý et al., 2023; Šimáček, et al., 2020; Sumartojo et al., 2019; Thibaud, 2015) we recommend the continued incorporation of residents' views on urban spaces to create safe, lively, and sustainable modern cities.

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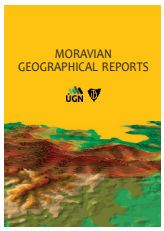

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Are Roma losing their roots? Traditional and non-traditional Roma occupations in two large communities in Romania: Timișoara and Cluj-Napoca

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Abstract

In Romania, one of the countries with the largest Roma community in Europe, the gap between the majority population and the Roma minority continues to be wide. The paper explores whether there is a sustainability of traditional Roma occupations and crafts or whether we are witnessing a continuous occupational dynamic. The objective of the research is to identify the patterns of traditional and non-traditional economic activities practised in Roma communities in two cities: Timişoara and Cluj-Napoca. The research hypothesis investigates whether there is a wide range of economic activities in analyzed Roma communities, where traditional activities tend to have a negligible share and dynamics compared to non-traditional ones. Also, we analyze whether traditional activities remain relevant in Roma communities and whether they represent a significant occupational resource in the case of external migration. The following statistical hypotheses are presented: there are significant differences between members of Roma communities in Timisoara and Cluj-Napoca. These are observed in the choice of practising non-traditional-traditional economic activities in the country. There are significant differences between members of Roma communities in Timisoara and Cluj-Napoca in the practice of traditional versus non-traditional occupations according to ethnic subgroup membership.

Keywords: *Roma, community, labour, ethnicity, Romania*

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1. Introduction

The objective of the paper is to identify patterns of (non-) traditional economic activities within the Roma minority in the municipalities of Timişoara and Cluj-Napoca, while considering the context of identity dynamics. Romania's developmental landscape demonstrates a dual pattern characterized by significant regional disparities. Notably, Timişoara and Cluj-Napoca emerge as growth poles exhibiting pronounced development compared to other Romanian regions. The research question is whether "Within Roma communities in Timisoara and Cluj-Napoca, non-traditional economic activities significantly outweigh traditional ones". The research inquiry recognizes the diverse nature of economic Roma practices, with a particular emphasis on the prevalence of non-traditional activities. The examination of social ties, identity dynamics, and regional contexts, as explained by Vacca et al. (2021) in their network analysis of Romanian Roma in France, furnishes pertinent background for comprehending these patterns.

As to originality, an understanding of traditional and non-traditional economic activities as a vector of social integration impacts on the reduction of disparities between the Roma community and the mainstream population. Roma crafts take on an entrepreneurial character (for a formal definition see section 3: "Entrepreneurship and traditional crafts") that demonstrates access to a better living standard. This study also brings as a novelty an internal economic analysis of the Roma nations in the two cities from traditional and non-traditional occupations perspective. The originality of the work is the novel comparative analysis of the two municipalities as Roma people. Formal and non-formal leaders consider that there are about 6,000–6,500 Roma people living in the municipality of Cluj-Napoca. Most live in compact communities on the outskirts of the municipality. The most numerous Roma community is Pata Rât made up of four communities, namely: Dallas, Cantonului, Coastei and Rampa (Dohotaru et al., 2016). We also find a significant number of Roma dispersed among the majority population. The Roma groups that we find in Cluj-Napoca are lute-players, Gaborans, cowboys, goldsmiths, spouses, florists and spoon-makers. Of these, the gossips, the spoonsmiths, the florists and the milkmen practise traditional trades.

The Roma of the Pata Rât community collect recyclable waste from the rubbish dump where they are settled. The Roma Gaborans, the Fiddlers and the Florists live in Cluj-Napoca and the

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Roma spoon-makers in the surrounding area. Among the Roma Gaborans, in addition to the men's processing of metal, the women also trade in second-hand clothes. The Roma lute sing at various events, both Roma and mixed. The Roma florists have flower stalls in the markets. The lingurists live in the rural areas, where they also get their raw materials, but sell their products in urban areas.

According to 2011 population and housing census, 2,145 Roma people were registered in Timişoara. The current number of Roma in the municipality is unknown. As in other cities, we have compact Roma communities such as Kunz with 164 households, the Roma community of the Ştrand colony, the Roma community of Freidorf and the Roma community of Fratelia. Some Roma are dispersed among the majority population. The Roma nations living in Timişoara are the Caldera family, the Piţuletis family (from Hunedoara), the Gaboran family, the Ghipter family (German Gypsies, Circassians living on Slavic Street), the Geamba family, the Lute family and the Boy family. Of these, the lute-players and the Gypsies practise traditional crafts. There are some families of Roma Gaboran who practise their trade abroad. The sedentarization of the Roma ethnic minority, the lack of market demand for traditional Roma products and industrialization have been factors that have led to the non-practice of traditional crafts.

Roma have been forced to access unskilled jobs and often accept unattractive wages. Roma, even if they have kept the name given to their nations by the occupation they used to practise in the past, no longer take up traditional trades. They have had access to non-traditional, modern jobs. Those Roma people who fulfil an education level required for (re)qualification have obtained a diploma, but the rest work mainly in unskilled jobs. Traditional crafts are passed down in the family, from generation to generation. They are an essential component of the collective identity that characterizes each ethnic nation, giving it a specific, distinctive cultural profile (Otovescu, 2017). The Gaboran Roma have small workshops where they work with sheet metal and for which they obtain their raw materials from the trade. The children of the Roma lute players are taught to play musical instruments from an early age. Florists usually identify their own customers or are recommended for their products. The ingot makers have the biggest problem in getting raw material and end up stealing wood from the forest because they are unable to buy it.

As traditional subsistence, manufacturing and untaxed trades, Roma people who practise these trades confront difficult access to raw materials and the market. This has led to the restriction and decline of traditional crafts. In European countries, we are witnessing the same phenomenon of the decline to the point of disappearance of traditional crafts. Teichmann (2002) shows that the Roma community is organized by Roma nations according to the traditional occupations practised. He classifies traditional Roma occupations into three categories: craft occupations (metalworking and woodworking), commercial occupations (horse trading) and entertainment occupations (bear-taming by bear-herders, musicians by lute-players). The author does not specify which trades are still practised (Teichmann, 2002).

If we look at the Roma in European countries, we see that they have given up their traditional crafts. Bulgarian Roma used to practice old trades which is not the case nowadays (Marušiakova & Popov, 2000). The practice of traditional trades by Gypsies and Travellers is in major decline (Mulcahy et al., 2017). A qualitative Romania-Serbia border study on social construction of otherness in a multi-ethnic rural area challenged the hypothesis of socially mixed communities as a solution to Roma marginalization (Creţan et al., 2023, pp. 14–15). On the other hand, a Roma study in Hungarian Szeged pointed out that social institutions should better integrate the social capital aspects such as the interpersonal relationship between the middle class and the underclass Roma (Mereine Berki et al., 2017). Relatively little has been written about traditional Roma crafts (Cace, 2002; Stănescu, 2013b; Vasile, 2016) probably because in European countries these are no longer practised and in Romania there are few Roma people who still practise it.

2. Theoretical framework

The sustainability of traditional crafts needs to be examined in the context of industrialization and globalization. After the displacement, many Roma families in communist Romania had to give up traditional occupations in favour of non-traditional ones with the sedentarization and forced labour integration. Romanian socialist industrialization produced a quick disqualification of the Roma generation since then and consequently broke the transmission circle of traditional crafts to new generations. The low educational level of Roma impacts their chances to obtain a formal job and support both self-employment and informal work (Zamfir & Zamfir, 1993) as day-to-day survival strategies. The Roma had to learn non-traditional trades as they could no longer find a market for their products and services. Some attended arts and crafts schools, others were qualified on the job or after Romania's accession to the European Union as they were qualified and retrained with the support of projects implemented through European funds. These non-traditional crafts were in services and trade, construction, and automotive trades (Cace et al., 2010). Traditional trades were less inter-generationally passed on (Mărginean, 2001; Berevoescu et al., 2002). The post-communism situation of Roma was challenged by both the collapse of cooperative farms and a failure to qualify for land restitution (Creţan & Turnock, 2008).

Other factors preventing Roma access to the formal labour market are: lack of incentives and supporting networks; educational disadvantages and lack of skills; low mobility; the informal labour market, and the circle of discrimination. Roma expectations to confront further discrimination when searching for a job prevent them from learning new working skills which strength their negative perception on behalf of employers (Cace, 2007). On the other hand, labour Roma discrimination confronts a vicious circle hard to deconstruct: the lack of a job leads to lack of a house which it is a barrier in accessing the formal labour market or various public services (Mihaiu, 2023). Ethnic intolerance is supported by low education levels and diffuse perception of an anomic society rather than poverty. Relatively developed rural areas with low ethnic diversity seem to represent suitable social spaces in this respect (Sandu, 2005).

The lack of qualifications for a modern job requested by the market exposes Roma to social exclusion (Preda, 2000). Besides, lack of official papers such as birth certificate or ID card (*buletin*) generates obstacles in accessing a formal job (Burtea, 2000). Lower Roma participation to education is characterized by higher incidence of uneducated people, school dropout in early education, and elderly illiteracy mainly due to economic precarious conditions, cultural factors and isolation (Surdu, 2002). Little evidence is available on how the poorest Roma sections (Creţan & Turnock, 2008) benefitted from progress in implementing educational programs.

Roma people in Romania present the highest risk of extreme poverty compared to other ethnic groups, mainly in urban area (Stănculescu, 2004). Comparative 1992 and 1998 Roma surveys with statistically representative samples, pointed out a decrease of the ones without a job: 77% in 1992 compared to 52% in 1998. The Roma population following traditional crafts increased from 7.2% in 1992 to 10.3% in 1998, while Roma with modern jobs doubled: from 15.7% in 1992 to 37.7% in 1998 (Cace, 2002). Qualitative exploratory research carried out on conflicts in a Roma – Romanian ghetto (Zăbrăuţi) from the District 5 of Bucharest

pointed out work-related stereotypes: the good Roma neighbours (stable and formal incomes) and the bad ones (occasional and informal incomes) (Preda & Rughiniş, 1998). Taking into account homogeneous Roma communities compared with dispersed ones, there are less employees, more unemployed people and more self-employment business in the first category (Zamfir & Zamfir, 1993).

Self-declared Roma nations within the first Roma quantitative research conducted after 1989 in Romania, emphasized a total of 28 categories. A further analysis based on Roma experts' descriptions concluded to a 13 nations condensate list (Burtea, 1994). Roma nations in Romania are to be analyzed through their self-classifications and are based on marriages among each nation, as alliances focus on preserving traditions as horizontal communities' solidarities (Mihăilescu, 2014). The Roma nations the article is focused on are: Vătraşi/kaştalii/Băieşi – romi thanesco, *Gabori*, *Lăutari*, *Căldăraşi*, *Lingurari*, *Aurari*, *Florari* and *Spoitori*.

Traditional Roma crafts correspond to their labour historical legacy, mostly related to their nations. As characteristics no formal training framework is requested and they are inter-generationally passed down (Cace, 2002; Fleck, 2008). According to the 1998 survey, this is mainly the case of *lăutari*, *căldărari*, *ferari*, *cărămidari* and *spoitori* (Cace, 2002, p. 162). Work as a successful life strategy is not necessarily perceived by Roma as linked with a higher educational level compared with having money or luck (Surdu, 2002). A qualitative study conducted in 15 Roma communities pointed out that traditional crafts represent a survival solution adopted due to post-communist economic recession. The identified crafts were manufacturing of boilers and bricks, as well as violins (*lăutăria*) (Voicu & Precupeţu, 2007).

In this article, we take into consideration the definition of a Roma traditional craft as involving a technological process, of the transformation of raw material into a finished product, it involves skills and competences, it requires the existence of specific work tools. Also, the traditional craft is an old job and has an innovative character. The 1993 Roma survey shows a higher number of employees in large cities compared with smaller ones and rural areas, where Roma unemployment is higher (Zamfir & Zamfir, 1993). The 1998 urban-rural comparison shows a higher percent of traditional crafts in rural areas compared with modern jobs in urban ones (Cace, 2002). From the gender perspective, women are less represented in the labour market in terms of both traditional crafts and modern jobs, as they are mainly running the households (Cace, 2002; Fleck, 2008).

Entrepreneurship in early post-communist Romania has involved social innovation due to the new situation – the economic role to be learned within an unfavourable environment. In rural areas this also involved the ability of taking a risk (Sandu, 1999). Besides, social entrepreneurship implies human resources searching for solutions to various social problems (Vlăsceanu, 2010). Profiles of Romanian entrepreneurs envisaged a more hostile economic environment for start-up comparative with other EU member states (Stănescu, 2013a). Still, social economy represents a sustainable solution to labour insertion of Roma, especially by revitalizing their traditional crafts (Alexandrescu, 2013).

3. Entrepreneurship and traditional crafts

Entrepreneurship involves individuals initiating and managing businesses, engaging in formal entrepreneurship training, and contributing to economic development through traditional and self-employment (emphasizes individuals taking the initiative to work for themselves). Roma entrepreneurship spans a range of activities, including traditional crafts, informal trading, and efforts to address barriers to equal participation. Many Roma have historically practised traditional crafts, passing down skills through generations, contributing to the cultural and economic identity of the community. Some engage in the informal economy through activities like itinerant trading, street vending, or recycling, providing a means of survival in the absence of formal employment opportunities. Roma entrepreneurship involves overcoming challenges such as discrimination, limited access to education and resources, and prejudices. Recent initiatives, including social enterprises, vocational training programs, and support for small businesses, aim to empower the Roma economically and break down employment barriers. As an example, the Roma from the Zabala-Pava community, especially the best-off Roma in Pava, have engaged in self-employment activities that have enabled them to become entrepreneurs. The number of social benefits received consequently decreased (Veres, 2023).

Since the 20th century, folk crafts are called traditional, being located with predilection in the world of villages and being transmitted from one generation to another orally, for the acquisition of knowledge, skills and the secrets of the trade (Bucur, 2012). The historical evolution of the Roma community in Eastern Europe, especially during the communist era, involved forced settlement and integration into the labour market (Flašíková-Beňová et al., 2011; Zamfir, 2013). The collapse of communism led to the adoption of pro-market policies, significantly altering their occupational landscape towards non-traditional vocations like construction and electrical work. Market-oriented reforms resulted in job loss and chronic poverty, however, marginalizing Roma from broader societal prosperity. Despite educational opportunities, such as attending vocational schools, historical patterns persisted with a reliance on economically marginal pursuits like agriculture and animal husbandry. The Roma community, particularly those outside traditional settlements, engaged in non-traditional trades like waste collection and recycling, reflecting contemporary economic marginalization. This spatial segregation aligns with scholarly perspectives, underscoring the enduring challenges faced by the Roma in achieving equitable participation in broader socio-economic structures (Dohotaru et al., 2016). Besides, their segregation in ghettos exposes them to higher epidemic risks (Berescu et al., 2021).

The Eastern Europe Roma economic activities encompass diverse temporary engagements, notably the harvesting of forest fruits and medicinal plants. This seasonal pursuit involves a substantial number of Roma individuals who establish improvized encampments in mountainous regions during the harvest season, undertaking transnational migrations to Spain and France for mushroom picking, and subsequently returning to Romania by winter each year. The conventional temporality associated with waste collection and forest fruit picking, could be regarded as traditional jobs (Cace et al., 2010). Contrary to the assertion of traditionality, certain economic activities, such as the sale of sunflower seeds and sugar-based sweets, are no longer prevalent. In contrast, non-traditional trades are acquired through arts and trades schools or qualification and retraining courses, often funded by European funds. Despite obtaining qualifications through these endeavours, a considerable segment of the Roma population remains engaged in unskilled and seasonal labour, both domestically and abroad, particularly in agriculture, where individuals frequently hold fixed-term contracts and possess low educational attainment.

Our work emphasizes the influence of historical factors on the mindset of many Roma individuals, shaping a focus on immediate financial needs without long-term planning. Poverty is pervasive across the entire Roma population, affecting them collectively rather than specific nations. Discrimination against Roma in non-traditional jobs is acknowledged, with instances of bias in employment announcements and face-to-face interviews. A 2023 Romanian survey shows that 31 percent of respondents have confronted discrimination in the last 12 months while job searching, due to their Roma ethnic minority (Mihaiu, 2023).

Over the past two decades, a substantial decline in the socio-economic status of the Roma minority has been observed, characterized by deteriorating living standards and a population increase. In contrast to other minorities in Romania, such as Hungarians, Germans, and Jews, the Roma have encountered difficulties in labour integration. Among influencing factors, we mention the state of the national economy, low education levels, lack of requisite qualifications, and involvement in traditional occupations (Stoian, 2012; Preoteasa, 2011; Dincă, 2012). Similar challenges are reported in Bulgaria (Tomova, 2009).

In the analysis by Lakatoş-Iancu's (2020), the intrinsic link between Roma spiritual values and linguistic, musical, and cultural expressions is delineated. This connection encompasses the Romani language, music, rituals, and traditional crafts. Traditional occupations, although currently holding a smaller share compared to non-traditional ones, play a crucial role in preserving the cultural identity of the Roma community. These trades, passed down across generations without formal certification, include tin processing by the Gabori nation, woodworking by the spooning nation, brass processing by the spoitori nation, and flower selling. Some traditional crafts, such as sheet metal processing by the Gabor nation, exhibit seasonality, while others are practised throughout the year.

The Roma organizational structure in Romania is based on Roma nations named after historically practised occupations. These crafts, rooted in the period of slavery, have adapted over time to meet subsistence needs and respond to evolving market demands. The impact of social-communist industrialization and forced sedentarization, lead to a narrowing of the market for traditional trades and taxation for certain practitioners (Burtea, 2000). Consequently, some Roma nations shifted to trading or established businesses in sectors ranging from automobiles to clothing.

Despite being one of the most numerous ethnic minorities in Romania, the Roma population faces marked disparities on the periphery of society. The 2011 Census reported 621,573 individuals of Roma ethnicity, the highest figure in successive censuses. The current number remains uncertain, estimated at a few million by Roma non-governmental organizations and community leaders. Burtea (2000) underscores the organizational structure, highlighting the naming of nations based on predominant occupations practised within each nation. Traditional crafts, crucial for income and familial bonds, remain within specific Roma nations, not crossing between them (Achim, 1998). These trades, like spoon making, goldsmithing, and floristry, vary across Roma communities. Timişoara and Cluj-Napoca are central locations for these occupations.

Despite extensive discourse on the Roma community, there is a lack of comprehensive insights into their traditional trades. Toma and Foszto delve into historical Roma occupations in Transylvania (16^{th}–18^{th} centuries), including executioners and jailers, situating Roma on society's periphery (Toma & Foszto, 2011). A similar study focusses on Roma's crafts involvement, emphasizing their role as a "factor of wealth for the country" (Achim, 1998).

Post-emancipation, after over five centuries of slavery, the Roma underwent a complex process leading to freedom, dividing into sedentary and nomadic groups. Despite contributing to various crafts, the majority face poverty in marginalized communities, with limited access to public services, especially education (Zoon, 2001, p. 54). Education proves pivotal for Roma social mobility, challenged by monocultural education systems in Europe limiting institutional representation from local to central levels (Lambrev, 2015).

At the European level, Roma represents perennial outsiders, and their constant and severe stigmatization is to be understood by analyzing their long-standing processes of disidentification and stigmatization (Powell & Level, 2017). In Romania, the Roma situation mirrors that of Europe, covering lifestyle, education, culture, and living standards. A qualitative study conducted in Timişoara, pointed out that new right political actions have exposed both poor and wealthy Roma to stigmatization (Creţan & O'Brien, 2019).

Post-emancipation, many initially pursued traditional trades, but industrialization made these obsolete. New occupations, like floristry, emerged, and certain traditional trades persisted, marked by distinct identities and practices. Identified through language and cultural markers, these traditional Roma groups endure, some practising abroad (Cousin et al., 2020). Romanian and Bulgarian Roma living in shantytowns in the Parisian metropolitan area highlighting the networks between individuals, as well as their attitudes, skills, and behaviour (PCT2). Uneven distribution aligns with specific regions practising traditional trades (Sala, 2005).

Abandonment of traditional trades is attributed to factors like sedentarization, reduced demand, and industrialization, leading many to low-paying unskilled jobs. Some Roma still retain occupational names, but the transmission of traditional trades within families has declined. Education facilitates qualification, while others are left with unskilled positions (Kiss et al., 2009).

Across Europe, there is a noticeable decrease, if not extinction, of traditional Roma trades, categorized by Teichmann (2002) into crafts, commercial, and entertainment professions. In Great Britain, a significant decline in traditional trades among Gypsy and Traveller communities was registered (Mulcahy et al., 2017). Evidence from other European countries, including Bulgaria, suggests even the disappearance of these crafts (Marušiakova & Popov, 2000).

4. Research design

The municipality of Timişoara is located in Timiş county, being the county seat. In the 2011 census, 2,145 people declared themselves as belonging to the Roma ethnic minority. The large and compact Roma communities in Timisoara are: the Kunz community (where there are 164 households); the Strand colony community; the Freidorf community; and the Fratelia community. The rest of the Roma are dispersed and living in privately owned or rented housing. Cluj-Napoca is the county seat of Cluj County. Roma leaders declare that the number of Roma in Cluj-Napoca amounts to approximately 6,000–6,500. Access to the respondents in the community was facilitated by the informal leaders. Besides, one author is of Roma ethnicity with relevant advocacy and research activities carried out in these two communities.

We used a non-probability random sampling. Respondents were selected by the snowball method with a total of 214 respondents interviewed. To increase the quality of the sample, several variables were introduced such as gender, age and location of the respondent, and the principle of proportionality was ensured:

- 55.1% of the participants are from Cluj-Napoca and 44.9% from Timişoara;
- Women 49.1% (105), Men 50.9% (109);
- Age: 16–25 years (23.8%), 25–45 years (51.4%), 46–65 years (20.6%), over 65 years (4.2%);
- The average age is 37.7 years.

Considering the education level, a diversified sample was envisaged, ensuring the participation of the entire Roma social spectrum: 26.2% with 4 completed classes, 29.4% with 8 completed classes, 6.1% with vocational school, 22.9% with high school education, 13.6% with a higher education.

The goal of the paper is to identify the patterns of (non-) traditional economic activities practiced in Timişoara and Cluj-Napoca Roma communities in the context of identity dynamics. Specific objectives were defined as follows:

- To identify the traditional/non-traditional socio-economic activities practised according to their nation; and
- To identify the degree of integration of Roma in Timisoara and Cluj-Napoca from an identity, cultural and economic perspective.

The hypothesis maintains a focus on economic activities while acknowledging the importance of social ties and intergenerational transmission of traditional crafts. Roma communities in Timisoara and Cluj-Napoca exhibit distinct patterns in their engagement with non-traditional economic activities compared to traditional crafts. The hypothesis suggests a notable correlation between the inclination of Roma members in Timisoara and Cluj-Napoca to pursue lucrative and rewarding occupations abroad within stigmatized migrant minorities, particularly in the context of seeking economic opportunities. The hypothesis posits substantial disparities among Timisoara and Cluj-Napoca's Roma community members concerning the adoption of traditional versus non-traditional occupations.

The main research hypothesis is that in the Roma communities of Timisoara and Cluj-Napoca there is a wide range of economic activities in which the traditional ones tend to have an insignificant share and dynamics compared to the non-traditional ones. Among the specific hypotheses we mention:

- Non-traditional socio-economic activities are found to a high extent in Roma communities due to the fact that community members have interacted with other Roma communities during external migration;
- Traditional activities remain relevant in Roma communities today since they represent a significant occupational resource in case of external migration.

Statistical assumptions of the paper include:

- There are significant differences between members of Roma communities in Timisoara and Cluj Napoca in the choice of practising non-traditional economic activities – traditional in the country;
- There is a significant link between the willingness of members of Roma communities in Timisoara and Cluj-Napoca to seek a satisfying income-generating occupation abroad; and
- There are significant differences between members of Roma communities in Timisoara and Cluj Napoca in the practice of traditional versus non-traditional types of occupations, according to ethnic subgroup membership.

The research hypotheses align with Vacca et al. (2021) network analysis on Romanian Roma, emphasizing the significance of intergenerational transmission and diversity in social ties within stigmatized migrant minorities. In terms of international (post) communist migration of Olteni (people from the southeast part of Romania) in the region of Banat (where Timişoara is situated), the acceptance of new arrivals did not exempt their exclusion, discrimination, marginalization and even local stigmatization (O'Brien et al., 2023).

5. Results

Most Roma research ethnically delimit them from the rest of population, but the present research wants to draw on the internal boundaries of the community based on measurable identity elements (especially clothes and language). Three dimensions have been identified: belonging to the "lineage", assumptions of visual identity elements, and belonging to linguistic identity. Based on the processing of these variables, their identity was created from which the collected data were analyzed. In Roma studies, they are approached differentially, historically, by occupation or location for example i) the lutenists – musicians by profession; ii) Spoon-makers – producers of wooden handicrafts; iii) Gaborans – the Transylvanian Roma, recognized by their large black hats. In this article we propose to organize the nations along an identity continuum based on a statistical synthesis of identity elements. The following Roma categories were identified, of which 16.8% can no longer identify their belonging (see Tab. 1).

From the perspective of visual identity, the assumed elements specific to Roma culture were inventoried. Thus, only 32.7% adopt at least one visual identity element. The three most common visual elements are wide skirts (27.6%), beanies (22.4%) and hats (21.5%). Overall, female-specific visual identity elements are more frequently used than male-specific ones, as jewellery is common to both sexes. From a linguistic identity perspective two dimensions were considered: speaking the language and learning it in the family. 45.3% speak the Romani language, 43.5% learned it from family, the rest from school or groups of friends. The role of the family in maintaining linguistic identity is thus essential and public policies to support the preservation of identity must be built on this basis (Fig. 1).

52.3% have no assumed identity elements generating a sample average of 1.05. The rest of the sample have at least one or two identity elements (15.5%) – see Table 2.

Eliminating those with 0 identifiers generates a sample mean of 2.2. The main mean values are 1 (31 cases) and 3 (20 cases). The validity of the explanatory model of their identity is supported by the statistical analyses carried out. Relating the total identity mean to the Roma people produced a continuum on a scale of Roma people grouped into four summary categories:

- The situation of the cases who do not know which nation they belong to having marginal values of the total identity mean;
- The category of Vatiras, bullionists with a predominantly superficial "light" identity;
- The category of milkmen, florists and others (they did not indicate their lineage but have a clear average total identity) – average/coarse identity; and
- Goldsmiths, caldaraşi, Gaborans and spoitori with strong identity backgrounds – conservative category.

What kind of Roma are you?	Frequency	%
0. I don't know	36	16.8
1. Vătraşi/Caştalii/Băieşi	39	18.2
2. Spoon-makers	13	6.1
3. Fiddlers	35	16.4
4. Florists	24	11.2
5. Other	6	2.8
6. Goldsmiths	13	6.1
7. Căldăraşi	12	5.6
8. Gaborans	23	10.7
9. Spoitori	13	6.1
Total	**214**	**100**

Tab. 1: Self-identification of Roma people
Source: authors' survey

Average total identity	Frequency	Share (%)	Cumulative (%)
0.0	112	52.3	52.3
0.5	6	2.8	55.1
1.0	31	14.5	69.6
1.5	6	2.8	72.4
2.0	6	2.8	75.2
2.5	13	6.1	81.3
3.0	20	9.3	90.7
3.5	10	4.7	95.3
4.0	8	3.7	99.1
4.5	1	0.5	99.5
5.0	1	0.5	100.0
Total	**214**	**100.0**	

Tab. 2: Distribution of the average total identity
Source: authors' survey

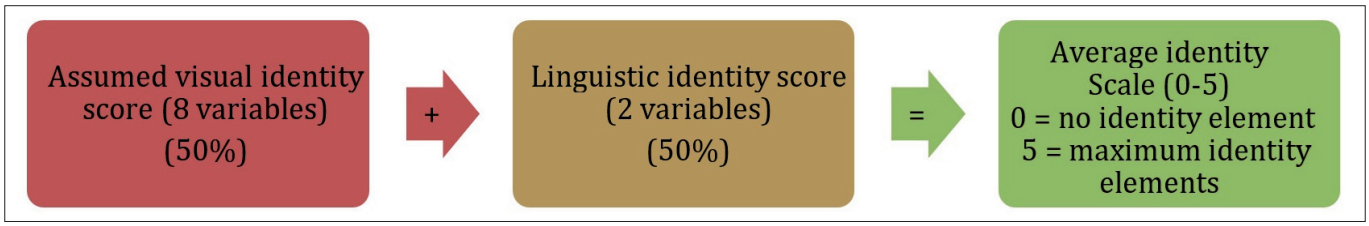

Fig. 1: Synthetic indicator of total identity average
Source: authors' conceptualization

Category	Score of average identity											Total
	0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	
	Share of people (%)											
0. I don't know	86.1		5.6	2.8	5.6							100
1. Vătraşi/ Caştalii/ Băieşi	79.5	10.3	5.1	5.1								100
2. Spoon-makers	84.6		7.7		7.7							100
3. Fiddlers	54.3	2.9	37.1	2.9				2.9				100
4. Florists	45.8	4.2	41.7	4.2		4.2						100
5. Other	50.0					33.3	16.7					100
6. Goldsmiths	30.8		7.7			15.4	15.4	30.8				100
7. Căldăraşi	16.7		16.7		25.0	16.7	25.0					100
8. Gaborans				4.3		26.1	60.9	4.3			4.3	100
9. Spoitori								30.8	61.5	7.7		100
Total	52.3	2.8	14.5	2.8	2.8	6.1	9.3	4.7	3.7	0.5	0.5	100

Tab. 3: Average identity by Roma families
Source: authors' survey

Category	N	Mean	Std. deviation	Min.	Max.
0. I don't know	36	0.208	0.553	0.0	2.0
1. Vătraşi/Caştalii/Băieşi	39	0.179	0.405	0.0	1.5
2. Spoon-makers	13	0.231	0.599	0.0	2.0
3. Fiddlers	35	0.529	0.727	0.0	3.5
4. Florists	24	0.604	0.659	0.0	2.5
5. Other	6	1.333	1.472	0.0	3.0
6. Goldsmiths	13	2.000	1.541	0.0	3.5
7. Căldăraşi	12	1.833	1.094	0.0	3.0
8. Gaborans	23	2.913	0.596	1.5	5.0
9. Spoitori	13	3.885	0.299	3.5	4.5
Total	**214**	**1.047**	**1.358**	**0.0**	**5.0**

Tab. 4: Descriptive statistics
Source: authors' calculations

Total identity average	Sum of squares	df	Average of squares	F	Sig.
Between groups	281.930	9	31.326	57.778	0.000
Within the group	110.603	204	0.542		
Total	392.533	213			

Tab. 5: ANOVA Test
Source: authors' calculations

Statistically, there is a strong positive correlation between the respondent's position on the lineage continuum and the overall identity mean (Spearman's rho = 0.706**). Thus, those who do not know which Roma people they belong to have predominantly no or low identity means and the higher the position on the nation scale, the higher the percentage of respondents with high identity means (Tab. 3).

The analysis of the identity environments for each nation indicates variations between nations (Tab. 4). The model indicates statistically significant differences in means by running the ANOVA variance test so that belonging to a certain nation is associated with differences regarding the total identity mean (Tab. 5). A synthesis of the main nations was made into four distinct categories as in the following table (Tab. 6).

Category	Frequency	Class
0. I don't know	36	Don't know
1. Vătraşi/Caştalii/Băieşi	39	Superficial identity class
2. Spoon-makers	13	Light
3. Fiddlers	35	Moderate identity class
4. Florists	24	Coagulated
5. Other	6	
6. Goldsmiths	13	Conservative identity class
7. Căldăraşi	12	
8. Gaborans	23	
9. Spoitori	13	
Total	**214**	

Tab. 6: Descriptive statistics
Source: authors' calculations

Participation in economic life by identity class indicates a higher share of employment among the class that does not know identity, light or with coagulated identity (over 50%). Among the conservative class entrepreneurship is dominant (57%), see Fig. 2.

Participation in mainstream economic life by traditional or non-traditional identity class indicates (Fig. 3):

- An overwhelming share of non-traditional activities within the non-identity class;
- A high share of non-traditional activities within the light identity class;
- A higher share of traditional activities in the class with a cohesive identity (78.5%) who were able to make use of these activities; and
- A balanced share among the conservative class where entrepreneurship is dominant.

The Pearson Chi Square test has a high value for a significant threshold indicating that there are statistically significant differences between identity classes and participation in traditional/non-traditional types of economic activities, likely due to the statistical contribution of the coagulated ones and those who are not aware of their identity. This validates the hypothesis that there are significant differences between members of Roma communities in Timişoara and Cluj-Napoca in the practice of traditional versus non-traditional crafts according to nation. Ethnic subgroups are subsumed under already established identity categories.

Further analysis of the types of (non-)traditional activities according to the city in which they live indicates a high degree of similarity between the two communities. 53% of non-traditional activities are predominant.

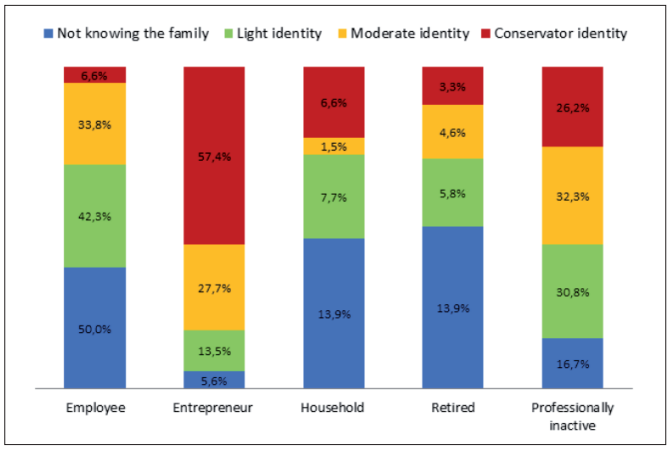

Fig. 2: Economic status by identity category
Source: authors' calculations

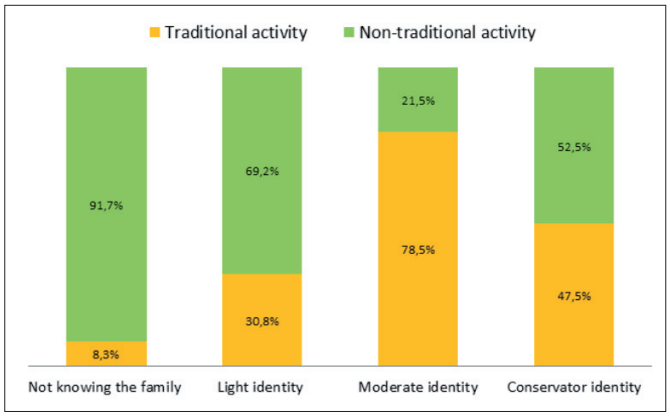

Fig. 3: Activity types by identity categories
Source: authors' calculations

The Pearson Chi Square test has a small value and the threshold is insignificant indicating that there are no statistically significant differences between participation in types of traditional/non-traditional economic activities between the two geographic communities (Tab. 8). The hypothesis that there are significant differences between the members of the Roma communities in Timişoara and Cluj-Napoca in choosing to practice non-traditional – traditional economic activities in the country is thus rejected.

The secondary activities refer to those (in)formal activities that respondents are performing to economically support their living. Romanian Roma people are usually performing a mix of activities, some of them formal acting as the main job but also additional (informal) activities based on community request. For example, the main job usually complies with the legal requirements (ex. drivers) and the second one is sometimes artistic performance shows at social events. Participation in economic life, though through secondary activities in traditional and non-traditional crafts by identity class, indicates an increase in the share of traditional secondary activities within classes where non-traditional activities were the main ones. This still indicates complementarity. Maintaining the higher share of traditional activities within the identity coagulated class (75.4%) that managed to exploit these activities (Fig. 5).

The Pearson Chi Square test is important, indicating that there are significant differences between identity classes and participation in (non-)traditional types of economic activities, probably due to the statistical contribution of those with coagulated identity. Within this group are the fiddlers who can afford more flexibility in performing traditional activities. Validation of IPS 3 Traditional activities maintain their actuality in Roma communities today due to the fact that they represent a significant occupational resource internally (Tab. 9).

	Value	df	Asymptotic meaning
Pearson Chi^2	53.001	3	0.000
Probability report	58.477	3	0.000
Linear association	21.936	1	0.000
Number of valid cases	214		

Tab. 7: Chi^2 Test
Source: authors' calculations

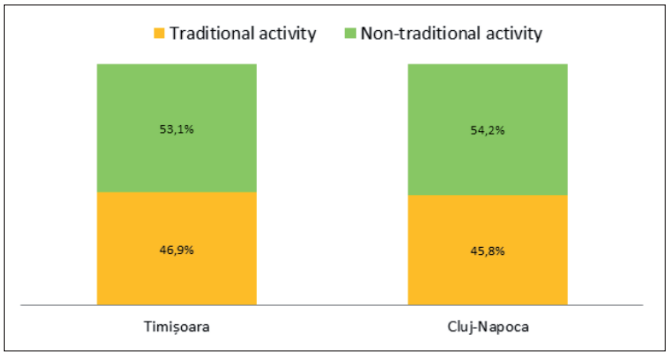

Fig. 4: Types of activity by geographical communities
Source: authors' calculations

	Value	df	Asymptotic significance	Exact Sig. (2)	Exact Sig. (1)
Pearson Chi^2	0.026	1	0.871		
b continuity correction	0.001	1	0.980		
Probability report	0.026	1	0.871		
Exact test of Fisher				0.891	0.490
Linear association	0.026	1	0.871		
Number of valid cases	214				

Tab. 8: Chi^2 Test for the participation in types of economic activities between geographic communities
Source: authors' calculations

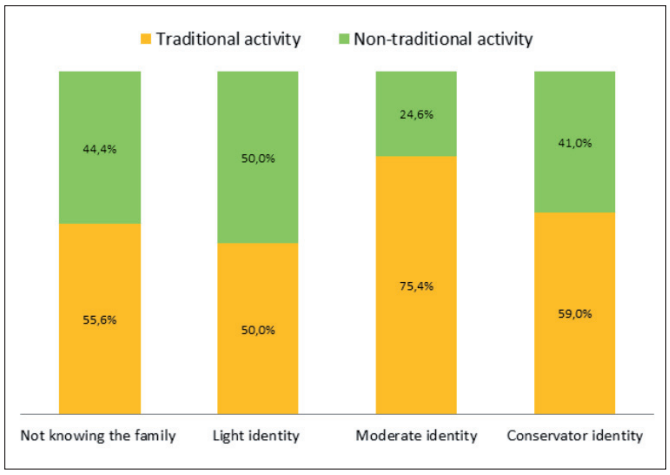

Fig. 5: Types of activity by identity categories
Source: authors' calculations

	Value	df	Asymptotic significance
Pearson Chi^2	8.861	3	.031
Probability report	9.141	3	.027
Linear association	1.290	1	.256
Number of valid cases	214		

Tab. 9: Chi^2 Test for the differences between identity classes and participation in (non-)traditional types of economic activities
Source: authors' calculations

When it comes to (non-)traditional activities in a generational context, an in-depth analysis was carried out on how (non-) traditional activities are passed on from generation to generation. In this regard, it was identified that for 62% of the respondents, the father carried out a traditional activity and in the case of this group, 58.5% of the grandparents also carried out traditional activities. Looking at the next generation, only 46.8% are currently still doing a traditional activity and of these 41.5% currently have fathers doing traditional occupations. At this generational level, the Pearson Chi Square test is statistically relevant, indicating that there are significant differences between the type of traditional/ non-traditional economic activities currently carried out by respondents and the type of traditional/non-traditional economic activities carried out by their parents (Tab. 10).

Overall, for 80 of the respondents who practise traditional crafts, there is consistency at the level of fathers and grandfathers. Within this sample 7 respondents do not know their grandfather's job and there is very little difference between the father's job and the grandfather's job. In 67 cases where it was identified that the grandfather-son occupation was maintained, we are talking about: fiddlers (25 cases), florists (15 cases), tinsmiths (15 cases), spoon-makers (5 cases), goldsmiths (2 cases), căldărari (2 cases) and spoitori (2 cases). In this regard, an attempt was made to identify an explanatory form by performing logistic regression analysis, in which the dependent variable is the type of activity currently carried out and the covariate factors are the father's and grandfather's occupation. Overall, the equation model is significant due to the Chi square test so that the type of traditional or non-traditional activity present in father and grandfather plays a role/predicts the respondents' current choice of traditional or non-traditional activity.

The following classification table indicates that in 73.2% of cases the model correctly predicts that the current activity is determined by the activity performed by the father and grandfather. The contribution of the grandfather's occupation to the explanatory model is higher (Tabs. 11 and 12).

The research has identified a continuum of maintaining the presence of traditional activities within the family from grandfather to father and to the actual respondent. This particularity has been further explored to find potential explanations; thus the nominal regression being applied. The overall model showed that the presence of traditional activities in case of both father and grandfather are predictors for the continuation of traditional activities by the actual respondent. The B parameter shows that the grandfather has a higher influence than the father. This is explained by the traditional living model where several generations and families are living and working in the same house. In the Roma culture, the grandfather status is more important than the father, thus explaining its direct role in the continuation of traditional activities. The grandfather decides on the nephew's education, professional activity, and is related also to other social and family events.

6. Discussion

The Timişoara and Cluj-Napoca comparison revealed a common background of (non-)traditional trades with more similarities than differences. We undertook this analysis by highlighting the internal Roma diversity through the elements of identity that we brought together in the form of a construct. This an identity pattern includes three dimensions: belonging to the "nation"; the assumption of visual identity elements; and belonging to the linguistic identity. 16.8% of Roma respondents can no longer identify their belonging to the "nation" (Vătraşi, Caştalii,

	Value	df	Asymptotic significance	Exact Sig. (2-fețe)	Exact Sig. (1-față)
Pearson Chi^2	50.779	1	0.000		
b continuity correction	48.735	1	0.000		
Probability report	54.946	1	0.000		
Exact test of Fisher				0.000	0.000
Linear association	50.532	1	0.000		
Number of valid cases	205				

Tab. 10: Chi^2 Test for the differences between the type of economic activities carried out by respondents and activities carried out by their parents. Source: authors' calculations

Please, indicate if it is a traditional or non-traditional activity for the main activity		
1 – traditional activity	**2 – non-traditional activity**	**Correct percent**
85	11	88.5
44	65	59.6
		73.2

Tab. 11: Nominal regression prediction
Source: authors' calculations

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for Exp(B)	
							Inferior	Superior
– Please, indicate if it is a work with traditional activity or non-traditional (grandfather or on behalf of father) (1)	– 1.071	0.525	4.157	1	0.041	0.343	0.122	0.959
– Please, indicate if it is a work with traditional or non-traditional activity (father) (1)	– 2.187	0.388	31.794	1	0.000	0.112	0.052	0.240
Constant	2.518	0.524	23.104	1	0.000	12.403		

Tab. 12: Nominal regression equation
Source: authors' calculations

Băieşi, Spoon-makers, Fiddlers, Florists, Goldsmiths, Căldăraşi, Gaborans, Spoitori or others). Is this a consequence of integration into the mainstream culture or rather a dilution of the norms' imposition of a tradition that no longer justifies its place in the contemporary Roma life? This is a question that we seek to answer to below.

We found that 32.7% of Roma adopt at least one visual identity element, most common practices being wearing wide skirts (27.6%), headkerchief (22.4%) and hats (21.5%). These practices are more common among women than men. These visual identity elements contribute to the day-by-day Roma particularization. Such practices are day-by-day: the living of traditional ethnic cultural norms and values in relation to the majority culture. Traditional dress, for example, has not been used in the general population or in the majority culture for a very long time, even in rural areas, where there are still only disparate elements of traditional dress in certain rural communities with except for secular and religious celebrations or other events (prayers, folk festivals, etc.) when these elements are revived. Roma is closer to and has preserved its traditional values to a greater extent than the mainstream population.

The identity pattern also contains two dimensions of the linguistic identity scale: speaking the language and learning it at home. We noticed that less than half of the ethnic members speak the language today, a sign of their integration into the majority population. In the future it could represent a dilution factor of Roma identity. If the case, we consider that Roma will be absorbed into the mainstream population and culture, a distinctive element of Roma culture being precisely its orality and its transmission through the Romani language. This statement is supported by the results of our survey, which indicates that 52.3% of respondents have no assumed element of identity. The rest of the sample have at least one or two identity elements

The validity of the explanatory model of the identity pattern is supported by the statistical analyses carried out, on a scale of the Roma nations grouped into four categories:

1. The situation of cases that do not know which nation they belong to, having marginal values of the total identity mean;
2. The category of vătraşi, spoon-makers with a predominantly superficial light identity;
3. The category of fiddlers, florists and others (they did not indicate their lineage but have a clear total identity average) – medium/coagulated identity; and
4. Category of goldsmiths, caldaraşi, Gaborans and spoitori with strong identity backgrounds – a conservative category.

Statistically, there is a strong positive correlation between the respondent's position on the nation continuum and the overall identity mean. Thus, those who do not know their ethnicity have predominantly no or low identity means and the higher the position on the ethnicity scale grows, the higher the percentage of respondents with high identity means.

Participation in economic life by identity class indicates a higher share of employment within the class who do not know identity, light or with coagulated identity (over 50%). Among the conservative class, entrepreneurship is dominant (57%). Economic participation in (non-)traditional identity class indicates:

- An overwhelming share of non-traditional activities within the unaware-identity class; high share of non-traditional activities within the light-identity class;
- A higher proportion of traditional activities in the bound-identity class (78.5%) who were able to make use of these activities; and
- A balanced share among the conservative class where entrepreneurship is dominant.

This validates the hypothesis that there are significant differences between members of Roma communities in Timisoara and Cluj-Napoca in the practice of traditional versus non-traditional types of occupations according to ethnic subgroup membership. Such validation is also since ethnic subgroups are not equally represented in the two communities.

Further analysis of the types of traditional – non-traditional activities according to the city in which they live indicates a high degree of similarity between the two communities as 53% non-traditional activities are predominant. This rejects the hypothesis that there are significant differences between the members of the Roma communities in Timişoara and Cluj-Napoca in their choice of (non-)traditional economic activities. We observe that the practice of (non-)traditional activities is balanced and without great differences between the two communities, even though the distribution by nation differs. Some nations, more than others, preserve the practice of traditional trades as long as they are able to practice them and there is a market and demand for them. But it is worth observing the significant share of traditional occupations, almost half of all occupations, compared to their practice in the general population, where they are insignificant.

Traditional activities are not only economic, but also a means of perpetuating the material Roma culture. Participation in economic life but through secondary activities indicates an increase in the share of traditional secondary activities within classes where non-traditional activities were the main ones. These still indicate complementarity. Maintaining the higher share of traditional activities within the identity coagulated class (75.4%) managed to exploit these activities. There are significant differences between identity classes and participation in traditional/non-traditional types of economic activities, probably due to the statistical contribution of the coagulated identity. Within this group are fiddlers who can afford more flexibility in carrying out traditional activities. This validates our hypothesis that traditional activities maintain their actuality in Roma communities today because they represent a significant occupational resource internally.

Further analysis was carried out on how (non-)traditional activities are passed on from generation to generation. It was identified that overall for 62% of the respondents, the father carried out a traditional activity and in the case of this group 58.5% grandparents also carried out traditional activities.

Looking at the next generation we indicate that only 46.8% are currently still doing a traditional activity and of these, 41.5% currently have fathers who are doing traditional occupations. At this generational level, the Pearson Chi Square test is statistically relevant, indicating that there are significant differences between the type of traditional/non-traditional economic activities currently carried out by respondents and the type of traditional/non-traditional economic activities carried out by their parents. In the case of 80 of the respondents who practise traditional activities, there is a constant transmission of these activities at the level of father and grandfather. Overall, the equation pattern is significant so that the type of traditional or non-traditional activity present at father and grandfather predicts the respondents' current choice of traditional or non-traditional activity. In 73.2% of the cases, the pattern correctly predicts that the activity currently carried out is determined by the activity carried out by father and grandfather. The contribution of grandfather's job to the explanatory model is predominantly higher.

7. Conclusions

European, national and local institutions as well as of civil society pay special attention to Roma socio-economic integration (Preoteasa et al., 2009; Ionescu & Stănescu, 2014). Adopted strategies in this respect are intended to reduce disparities between

the Roma communities, which lives mainly on the periphery of society in conditions of high poverty. Besides, Roma minority confronts an impossible choice in terms of choosing either to abandon their culture and integrate either to separate themselves (Creţan et al., 2023) from mainstream population.

The article focuses on Roma integration from the perspective of traditional occupations in the current market economy in Timişoara and Cluj-Napoca. These traditional crafts are at least as old as their appearance in Romania (e.g. metalworking by blacksmiths), or those that appeared later, traditional trades that have acquired over time an innovative character of adaptability according to the needs of the consumer market, for example: bone processing – the Roma family of "ursari" (or the "kokalor-ilor" people – from the Romanesque noun kokalo-bone) are on the way to extincion, even though some Roma groups are also practising their trades abroad, e.g. the Gaboran people – sheet metal processing.

With the great industrialization, these traditional crafts, which also give the name of Roma nations, have lost their usefulness on the consumer market. With the taxing of businesses, some Roma who were unable to tax their businesses stopped doing them, others continued to sell their products on the informal market. Currently, only few traditional crafts are practised such as blacksmithing, fiddlers, sheet metal working, woodworking, all of which are handmade as an element of originality. These are passed down from generation to generation, especially to the male part of the family.

Despite extensive Roma research, relatively little was written about Roma crafts. The scarcity of literature on Roma traditional occupations underscores the diminishing prevalence of these trades, both in European countries and specifically in Romania, where only a few Roma still engage in them. From this perspective, the article enriched the Roma literature focus on crafts and contributes to current scientific debate in the field. Besides, traditional crafts, as an integrated element of Roma culture, have been under-promoted by Roma civil society, formal and informed leaders and non-Roma researchers The article highlighted the fact that in every Roma nation there are people with entrepreneurial potential. The support of Roma entrepreneurship represents a vector of their socio-economic improvement.

The research identified three crucial dimensions of identity: belonging to the "lineage", visual identity elements, and linguistic identity. The statistical findings categorized Roma people into distinct identity classes, revealing a correlation between identity and economic participation. The study highlighted a continuum of identity maintenance from those unaware of their identity to those with a strong conservative identity, impacting employment and entrepreneurship.

The research hypothesis validation process underscored significant differences in economic activities based on identity classes, particularly the influence of coagulated identity. Notably, the rejection of the hypothesis regarding differences between Timişoara and Cluj-Napoca communities in choosing traditional or non-traditional economic activities emphasized a high degree of similarity.

The analysis delved into the persistence of traditional activities, showing a continuity from grandfathers to fathers and the present generation. Logistic regression confirmed that both father's and grandfather's occupations predicted the respondent's current choice of traditional or non-traditional activity, with the grandfather's role being more influential.

The study highlights the significance of traditional occupations in the Roma community's integration into the market economy. The article underscores the historical importance of these traditional trades, adapting to the evolving consumer market. It acknowledges the challenges faced by traditional crafts, attributing the decline to industrialization and taxation. The research calls attention to the low focus on Roma crafts in both nationally and internationally research.

The future of traditional Roma crafts is not certain due to needed resources as well as current economic characteristics which require specific qualifications, legal and financial knowledges (Fleck, 2008, p. 122) especially for formal provision of the traditional outputs. Potential revival of traditional crafts would be possible in favourable conditions but confronting certain difficulties such as partially lost specialized knowledge and skills (Zamfir & Zamfir, 1993).

Public-private partnership represents success factor in Roma labour integration but no general employment solution is available (Cace, 2002). The personalization of social institutions in the Roma issues could better promote less rigidity, flexibility, and autocracy (Mereine Berki et al., 2017). Educational policies doubled by Roma affirmative employment policies could also improve their efficiency (Surdu, 2002).

The current article contributes to in depth understanding of the Roma occupations dynamic within a current challenging economic context which supports an accurate social policy design focused on improving their socio-economic conditions. The outputs give us the opportunity to propose public policies both at the central and local level. Although the current Romanian legislation supports entrepreneurship, it is desirable to adopt additional regulations better focused on the development of entrepreneurship and labour insertion of vulnerable people, Roma included. The adoption of Law 219/2015 on social economy was welcomed but further fiscal facilities are to be boosted. We also consider that the research outcomes could support efforts of non-governmental organizations interested in implementing programs to support entrepreneurship. In this respect, the revival of traditional crafts would be a vector in the development of the Roma communities by sustainably supporting their entrepreneurs and businesses digitalization.

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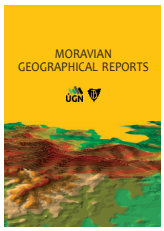

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Estimating required general practitioner capacity due to generational change in Czech regions up to 2035

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Abstract

The Czech healthcare system primary care segment, comprising general practitioners and pediatricians, faces persistent challenges due to the unbalanced and aging workforce of physicians. Ensuring adequate generational turnover in this sector is threatened at the national level and will exert an even more significant impact regionally. The changing age structure of the population will also play a crucial role in shaping the future demand for healthcare services. Using data obtained from the largest Czech health insurance company, this article highlights current regional disparities regarding the number, structure and capacity of general practitioners and pediatricians. It estimates the potential decline in the availability of physicians due primarily to advancing age – it has been estimated that almost 40% of general practitioner and 55% of pediatrician capacity will be withdrawn by 2035. Using regional population projections, the study determines the capacity required in each region to maintain the appropriate doctor/patient ratios. The results of the projections serve to raise awareness of the impact of changing age structures on the future supply of, and demand for, healthcare. Although the study does not determine a precise estimate of unfilled capacity, it prompts further discussions on ensuring accessible healthcare in the future.

Keywords: *General practice, general pediatrics, regional differences, demographic aging, model projections, Czech Republic*

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1. Introduction

The Czech Republic is one of a large number of countries that are being forced to address the impacts of generational change on the supply of healthcare workers due mainly to the unbalanced age structure of this group with its high proportion of doctors in older age groups (e.g. European Commission, 2021; Šídlo et al., 2015, 2021) and the expected increase in demand for health services due to the aging Czech population.

Thus, the double impact of the aging of recipients and service providers must be considered. Regional challenges concerning the provision of selected health services are already evident. Although the preparation of regular analyses and model projections at the national (let alone the regional) level has not yet been institutionally consolidated, the results of partial analyses conducted to date point to potential major problems in terms of the future provision of basic health services (e.g. Šídlo, 2011; Burcin & Šídlo, 2017).

One of the most intensely discussed sectors in terms of its pivotal position in the general healthcare system concerns primary healthcare (WHO, 1978), particularly the general practical medicine segment, which in the Czech Republic consists of two fields: general practice (hereinafter referred to as GP) and general pediatrics (PED). A range of interested institutions, e.g. the Ministry of Health, health insurance companies, professional societies, etc., have been attempting for several years with varying degrees of success to find a recipe for managing the generational turnover of general practitioners, due primarily to the high proportion of pre-senior and senior doctors in the Czech healthcare system.

This study attempts to provide a picture of both current regional differences in terms of capacity and the age structure of the two groups of general practitioners, and to highlight the effects of ageing of general practitioners that may lead to reduced capacity and thus threaten the future availability of these health services. From these objectives, the main research question arises: What decline in the capacities of general practitioners can be expected up to 2035 due to aging of physicians, both in the regions and in the Czech Republic as a whole?

Administration Districts of Municipalities with Extended Powers (AD MEP) of the Czech Republic (including the capital city of Prague, i.e. 206 regions) were chosen as the considered regional unit; this unit is considered to be a suitable level for analysis with concern to the so-called geography of services, including primary healthcare sector services. 2035 was chosen as the horizon for our estimates for purely practical reasons, i.e. taking into account the education and training of "new" doctors from general to specialized postgraduate education, which takes an average of 10–12 years. Thus, at the time of the writing of this article (2023), it is already clear that we cannot expect significant changes due to e.g. the entry of a higher number of students in

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the relevant medical fields followed by the entry of more newly-graduated doctors to the system than is currently the case. This renders the challenge ahead of us as a society all the greater.

2. Theoretical background

Almost all developed countries, including the Czech Republic, are facing a shortage of healthcare workers, whether they be specialists, general practitioners or nurses. As a result of the aging population, which is associated with an increase in the number of chronically ill and multimorbidity patients (Marengoni et al., 2011), the demand for healthcare services is increasing (Prince et al., 2014) while the supply of these services is declining due to the aging of healthcare workers (Kurashvili et al., 2023).

In 2019, more than one-third of doctors in OECD countries were over 55 years old; the Czech Republic was only slightly below this average (OECD, 2021a). In 13 of the 44 member countries, 40% of doctors were over 55 years old, whereas in Italy this proportion was as high as 56% (WHO, 2022). Moreover, the aging of the healthcare workforce and increased shortages are particularly evident in the rural areas of these countries (Kroezen et al., 2018).

Gender inequality comprises a further important factor in terms of the capacity of the healthcare sector, with women making up almost 80% of the healthcare and social services workforces (Kluge & Azzopardi-Muscat, 2023). The OECD reported that the proportion of women of physicians increased from 40% to 49% between 2000 and 2019. Moreover, the Czech Republic has one of the highest proportions of female physicians in the healthcare sector, i.e. 56% of GP and 85% of pediatricians in 2019 (OECD, 2021a). This is likely to further negatively impact access to healthcare going forward due to the taking of temporary maternity and parental leave, a higher proportion of part-time work (Strazdins et al., 2018) and earlier ages at retirement.

In addition to the gender imbalance, the aging of the healthcare workforce and its uneven geographical distribution are particularly acute for general practitioners, who comprise a key element in any effective healthcare system. Research in a number of countries has revealed that a robust primary healthcare system positively influences both the health status and satisfaction of patients and acts to reduce overall health care costs. Thus, the aging of this sector is a major concern for all developed countries (Kringos et al., 2013; Schäfer et al., 2019).

The availability and capacities of general practitioners are difficult to compare and evaluate across countries due to differing category definitions. In the US, for example, internists fulfill the same role as a GP in other countries; however, they are classed as specialists (OECD, 2021a). Pediatric primary care comprises three systems according to the type of specialist (Ehrich et al., 2015). Primary care for children is the responsibility of pediatricians, especially in Central and Eastern European countries. Here, however, the Czech Republic is a global exception since primary care for children is provided by "general practitioners for children and adolescents" (referred to in this article as general pediatricians). Primary care for children is provided in Scandinavian countries and the UK by general practitioners and family doctors, who may or may not have formal training in pediatrics (Newson, 2020). In other countries, the provision of care changes from pediatricians to GP over the course of the child's life. We clearly need to take these differences into account when comparing the situation across countries. Most foreign research to date has tended to analyze all GP together, aimed at eliminating differences between healthcare systems.

Most European countries are experiencing a decline in the number of GP compared to specialists due to the higher average age of primary care physicians. The average age of GP in almost all EU states is around 50 years or more (Kringos et al., 2015). The average age of primary care physicians in the Czech Republic is among the highest in Europe. The increasing age of GP and the shrinking number of practices has been addressed by a number of experts; for example in Germany (Wangler & Jansky, 2023), Hungary (Papp et al., 2019) and England, where GP are increasingly taking early retirement (Dale et al., 2015; Moberly, 2023); the number of doctors in England who opted for early retirement increased by 9.3% from 2022 to 2023 (Moberly, 2023).

Ensuring generational renewal will be a major challenge for all those countries that have witnessed increases in the number of general practitioners aged over 55 in recent years. France, for example, has sought to address this problem by increasing the number of postgraduate training places in general medicine, which in 2017 accounted for almost 40% of all training places, a much higher proportion than in other countries (OECD, 2021b). In many countries, however, it remains very difficult to attract sufficient numbers of medical graduates into general practice due to the lower prestige and remuneration of this specialization. Other factors have also been identified; for example, it has been noted in the Netherlands that the level of attraction for young doctors to work in primary care is low due to a preference for working in teams (Batenburg et al., 2018).

The main challenges, however, include not only ensuring a sufficient number of new GP but, equally importantly, attracting young doctors to rural areas, which are struggling most with limited GP capacity (Gibis et al., 2012; Barriball et al., 2015). The problem of the uneven geographical distribution of GP is being faced by almost all European countries and constitutes a major challenge for the health systems of around half of all EU countries (EU, 2022). Therefore, experts are increasingly focusing on the differences between the structures of GP in urban and rural areas (Groenewegen et al., 2020; Ozegowski, 2013). The lack of primary healthcare services in rural areas is due to a combination of the increasing number of patients and declining numbers of GP who are interested in working in such areas (WHO, 2018), factors that have been confirmed through research in the Czech Republic (Šídlo et al., 2021).

The Czech Republic faces similar problems to those of most developed European states. Previous studies have confirmed the ever-increasing number of older GP, the high proportion of women of the total capacity of healthcare service providers and the widening gap in terms of the availability of GP between urban and rural regions (e.g. Maláková, 2022; Maláková et al., 2020; Šídlo et al., 2021, Bělobrádek et al., 2021). This evident increase in regional inequality is negatively affecting accessibility to general GP services, especially general pediatricians.

3. Data and methods

3.1 Data

The baseline data on physicians were provided by the General Health Insurance Company of the Czech Republic (GHIC) – the country's largest health insurance company. The GHIC covers the care of approximately 55% of insured persons and has concluded contractual relationships with almost all the country's health service providers, especially in the general practice sector. The data on GHIC contracts includes a detailed breakdown of healthcare professionals by location, with their age, gender and capacity. The contractual terms require that such data is updated regularly by providers; thus, this source of information can be regarded as highly reliable, accurate and relevant for the purposes of processing analysis. No other sources, i.e. not even the two basic national registries that contain potential data sources managed by the Institute of Health Information and Statistics of the Czech Republic, provide such comprehensive data: the National Register of Health Professionals does not cover such a high percentage

of providers with detailed and updated data, and the National Register of Reimbursed Health Services, which is based on data submitted by all the Czech Republic's health insurance companies, did not contain data on the capacity of individual providers at specific locations at the time of data processing.

The GHIC input data (GHIC, 2022), covering both types of general practice physicians (GP and PED), comprised anonymized individual data on the age, sex and capacity of doctors aggregated at the regional AD MEP level for the period 2015–2021 (end states as of December 31 of the given year).

The data thus provided a useful basis for fulfilling the main objective of the study, i.e. the estimation of the proportion of the current capacity of physicians in each AD MEP region that will be terminated by 2035 as a result of their withdrawal from practice. The secondary objective was then to determine how much new capacity will be required for both types of practitioners so as to maintain the current population (expressed in terms of the "age-adjusted population" – AAP) per 1 FTE practitioner/pediatrician.

3.2 Regional context of the study

To better understand the subsequent methodological steps and the analysis itself, it is necessary to present the basic trends in the number and structure of physicians in both observed medical specialties at the level of the entire Czech Republic. This will also allow a better understanding of the specific objectives of this article, which are formulated in the introduction of this article.

The aging demographic structure of both general practitioners and general pediatricians currently comprises one of the most intensely discussed problems in the Czech healthcare system. The representation of the number of doctors aged 60 and over currently stands at 40% for GP and almost 50% for PED (Tab. 1). Once doctors in this age group leave the system, serious problems can be expected with concern to the availability of these essential health services at both the national and, especially, the regional levels.

3.3 Methods

The modelled projection of the departure of physicians from the system, with the threshold comprising the number, structure and capacity of physicians as at December 31, 2021 and a horizon of December 31, 2035, was based on several common initial assumptions:

a. The potential departure of doctors was monitored only for the age category in which increased departures from the system are due mainly to retirement or death. The lower limit of the age category comprised the so-called threshold age, which was determined based on the analysis of the average probability of doctors leaving the system by age, gender and medical specialty for the period 2016–2021. The calculation of this probability employed so-called tabular functions e.g. in the construction of mortality tables, specifically the so-called direct calculation of a given probability method, modified by the authors for analysis purposes and respecting the available data, i.e. the gender and age structure of doctors as of December 31 of each year;

$$ {}^{c}_{t}q_{x}^{x+1\,g,s} = \frac{{}^{c}_{t}O_{x}^{x+1\,g,s}}{{}_{31.12.t-1}{}^{c}P_{x}^{g,s}} $$

where ${}^{c}_{t}q_{x}^{x+1\,g,s}$ is the probability of leaving the system during year t between age x and $x+1$, ${}^{c}_{t}O_{x}^{x+1\,g,s}$ is the number of physicians that leave the system in year t and ${}_{31.12.t-1}{}^{c}P_{x}^{g,s}$ represents the number of physicians at the end of the previous year, all for the generation of doctors c, gender g and specialty s. Both the number of outgoing physicians and their number at the end of the year comprised the sum of six years of observation (2016–2021); this was aimed at enhancing the robustness of the calculation since some ages featured very few observations. The probabilities were then smoothed for the purposes of our study via moving averages (the simple arithmetic mean of the five closest values – i.e. the arithmetic mean of values over ages $x-2$, $x-1$, x, $x+1$ and $x+2$).

The investigation of the sex- and age-specific probabilities of leaving the system (see Fig. 1) allowed for the identification of the age at which we can infer that potential departures from the system are already reaching levels that may affect the number of physicians, and which are due predominantly to reaching retirement age or death. Based on the analysis of the resulting values, a threshold age of 59 years was set in order to generalize the process for both the specialties and genders of doctors. Moreover, we set an upper limit, i.e. a probability of 1.0 for the age of 90. The probabilities thus determined for the age units in the 59–90 age group were then invariant throughout the projection period in the model. The minimal attrition of physicians in the 45–58 age category from the system was also important for the modelled projection (see Fig. 1), i.e. those cohorts of physicians that gradually enter the age interval with a lower threshold age of 59 over the projection period with a horizon of 2035. For the sake of completeness, we also assumed, based on a partial analysis of the input data, that the vast majority of physicians will have entered the general medical services system by the age of 45, and that the chances of a significant increase in the number of foreign physicians aged 45–58 is minimal given the specific requirements of this sector (e.g. good language skills). Thus, we assumed that the initial numbers of physicians in the cohorts that progressively enter the model projections with a horizon of 2035 are already known and remained unchanged at the time of the projection.

b. Our calculations aimed to determine the capacities of doctors who will leave the system predominantly as a result of reaching the most frequent retirement age or death, and to determine how much new capacity will be required so as to ensure

Indicator	General practitioners				General pediatricians			
	2015	2017	2019	2021	2015	2017	2019	2021
Number	6,259	6,459	6,607	6,777	2,349	2,330	2,294	2,279
Capacity (sum of FTE)	5,383	5,432	5,368	5,328	2,060	2,046	1,965	1,920
– % of female	62.6	62.9	63.3	63.5	85.8	85.5	85.3	85.6
– % at age under 40	11.6	13.0	14.1	15.4	5.3	6.8	6.8	7.9
– % at age 40–59	50.7	45.4	42.9	42.4	52.5	46.8	44.1	43.0
– % at age 60 and over	37.7	41.6	43.0	42.1	42.3	46.4	49.1	49.1
Weighted mean age	54.7	54.8	54.8	54.7	56.5	57.0	57.5	57.3
Average FTE	0.86	0.84	0.81	0.79	0.88	0.88	0.86	0.84

Tab. 1: Development of the number, capacity and structure of general practitioners and general pediatricians in the Czech Republic between 2015 and 2021 (selected years, as of December 31 of the given year)
Note: Weighted mean age; the weighting comprises the amount of the physician's FTE (full- time equivalent)
Source: authors' calculations based on data from the GHIC (2022)

a certain physician/population ratio under the relevant option. It was not considered a rule that the number of doctors was equal to their total capacity (see Tab. 1). Moreover, the average amount of FTE capacity varies according to the age, gender and duration of service of doctors. Again, we proceeded toward a generalization of this variable, starting from the average values for the end states of 2015–2020, which we then again equalized within the age profile applying the moving averages of five consecutive ages (Fig. 2). We also assumed with respect to the model calculations that the average values by age and gender were constant over the projection period.

c. The GHIC input database revealed instances in which physicians practice in multiple AD MEP regions simultaneously. In such cases, we included the physician in all the regions involved, but adjusted the data to take into account the time worked in each region.

The modelled projection of the departure of physicians was based on the so-called cohort-component method, according to which we shifted individual cohorts of physicians from year t to year $t+1$, and from age x to age $x+1$ by applying the respective sex and age-specific probabilities of leaving between the completed age x and x+1 to the number of physicians. We then applied the average FTE according to the age, gender and specialization of the physicians to the newly-determined headcount, rounded to the nearest integer. The calculation employed the following formulas:

$$_{31.12.t+1}{}^{c}P_{x+1}^{g,s} \doteq {}_{31.12.t}{}^{c}P_{x}^{g,s} \times {}_{t}{}^{c}q_{x}^{x+1\,g,s}$$

$$_{31.12.t}{}^{c}FTE_{x}^{g,s} = {}_{31.12.t}{}^{c}P_{x}^{g,s} \times c_{x}^{g,s}$$

where ${}_{31.12.t}{}^{c}FTE_{x}^{g,s}$ is the sum of the capacities of physicians at age x, ${}_{31.12.t}{}^{c}P_{x}^{g,s}$ is the physical number of physicians at age x, ${}_{t}{}^{c}q_{x}^{x+1\,g,s}$ is the probability of leaving the system between ages x and $x+1$ and $c_{x}^{g,s}$ represents the average FTE at age x, all in year t (or $t+1$), cohort c, gender g and specialty s.

The analysis also included the estimation of how much new capacity is required in each region in order to achieve a model variant that assumes that the ratio of the number of the "age-adjusted population" (AIP) per 1 FTE physician in a given AD MEP from the end of 2021 is maintained (see below). The model aimed to highlight differences in the demand for health services depending on the age of patients (see e.g. van den Bussche et al., 2011; Schulz et al., 2004) and regional differences in the capacity of health service providers in relation to the expected changes in the age structure of the population.

In view of the fact that no officially available population forecasts are published for individual AD MEPs (especially at the age-specific level), we compiled our own, somewhat simplified, estimates. The

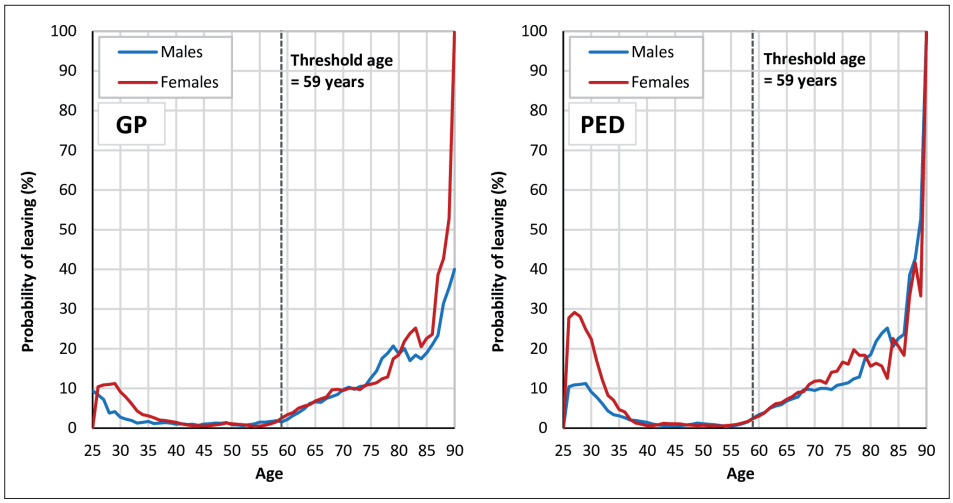

Fig. 1: Probability of leaving the system by the age and gender of general practitioners (GP) and general pediatricians (PED), Czech Republic, average 2016–2021
Source: authors' calculations based on data from the GHIC (2022)

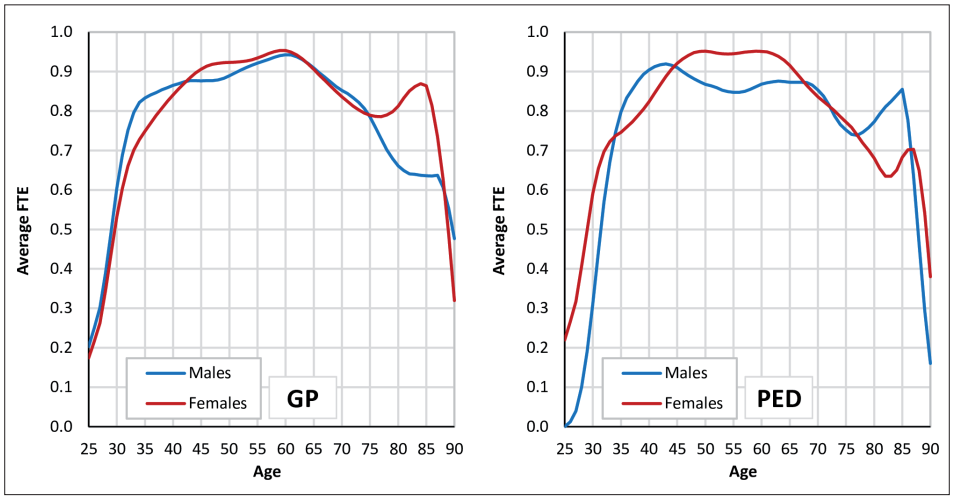

Fig. 2: Average FTE by the age and gender of general practitioners (GP) and general pediatricians (PED), Czech Republic, average 2015–2021
Source: authors' calculations based on data from the GHIC (2022)

population projection for each AD MEP was calculated taking into consideration the baseline population as at December 31, 2020 and based on the following assumptions: a stable age fertility profile (data for the whole of the Czech Republic, average for the period 2017–2021); a stable mortality intensity by age and gender for persons under 30 at the level of 2021 and, for the elderly, a gradual return to pre-COVID-19 pandemic values over the first five years (average of 2019 and 2021) followed by stable mortality rates (2019 values) up to 2035; zero migration.

We are aware of the significant simplification of the projection input parameters, especially considering new developments since the time at which the estimates were compiled, e.g. the influx of Ukrainian refugees with temporary protection status of more than 1 year to the Czech Republic and a significant decline in the birth rate in 2022. However, the intention was to determine indicative population numbers up to 2035 according to five-year age groups (15 and over for GP and up to 19 years for PED – the reason for the overlap of the 15–19 years age group relates to the option to register insured persons in this group with both GP and PED) so as to reflect the potential demand for health services. The comparison of the aggregated results of our projections for the sex-age structures of all the AD MEPs with the latest published official projections for the Czech Republic as a whole (variant without migration) (CZSO, 2018) revealed no significant differences. The most noticeable difference related to the registration of higher ages related to the increase in the mortality rate due to the COVID-19 pandemic, which could not have been expected at the time of the compilation of the national projection.

The afore-mentioned assumption of differences in the demand for health services according to the age of patients is taken into account in the Czech healthcare system. The so-called reimbursement decree, which provides an annual financial evaluation of individual medical procedures (Czechia, 2020), includes so-called indices (sometimes referred to as "capitation indices" due to their use for the calculation of the so-called capitation payment for general practitioners), which express the ratio of the costs of insured persons in given age groups to the costs of insured persons in the 15–19 age group (assigned an index of 1.0. Thus, the analysis included the estimation of the sum of the age-adjusted population (AAP), i.e. the sum of multiples of the estimated population in given regions by age category with the relevant age-specific (capitation) index, valid as at 2021 (see Tab. 2):

$$_{31.12.t}AAP^{s} = \sum {}_{31.12.t}P_{x}^{s} * i_{x}$$

where $_{31.12.t}AAP^{s}$ is the number of the age-adjusted population, $_{31.12.t}P_{x}^{s}$ is the number of inhabitants as of December 31 of the given year t, and i_x represents the so-called capitation index, all for the given age x and specialty s.

4. Results

Regional differences in the number and age structures of both groups of general practitioners were found to be significant at the AD MEP level. The consideration of the results, which for reasons of comparison were expressed in terms of the sum of the AAP per 1 FTE, revealed regions with values of up to twice as high as regions with the lowest values, with concern to both medical specializations (Figs. 3A and 3B). These differences may be due to a variety of factors, particularly in areas surrounding large cities (see the Discussion). It is noticeable however that with concern particularly to regions that are generally perceived as peripheral or socio-economically disadvantaged (border areas, inner periphery areas, etc.), the resulting values were above average.

Since the distribution of capacity is difficult to assess without having more detailed information at hand such as the commuting of patients for medical care, it was considered more appropriate to focus on the age composition of doctors. If we assume the ideal situation in the model, i.e. that current capacity in each region is relatively adequate, the age structure of doctors is the main factor that will influence the future availability of health services at the regional level. Figures 3C and 3D illustrate the share of the capacity of general practitioners under 40 years of age of total capacity. The variation in the distribution is clear; while certain regions had a proportion of younger doctors of more than 40% at the end of 2021, certain regions had no contracted physicians aged below 40 – 31 such regions (15%) for GP and as high as 120 for PED, i.e. more than half of all AD MEPs (58%). The low or zero representation of younger doctors does not represent a problem from the future perspective provided that sufficient capacity is ensured by doctors in the intermediate age group, and that the representation of doctors at pre-senior and senior ages does not comprise the majority of practitioners. Figures 3E and 3F suggest that this is not the case, however. Concerning GP, 59 AD MEPs (29%) had a share of doctors aged 60+ of more than 50% at the end of 2021, while regions with a proportion of more than 70% were not exceptional. The situation concerning PED is even more critical in this respect: 45% of AD MEPs (92 regions) had a share of doctors aged 60+ of more than 50% at the end of 2021, with around a quarter of regions with a share of more than 80% of older aged doctors. The comparison of the figures shows that these regions have a correspondingly low or even zero representation of younger physicians. Therefore, more attention should be directed to these regions so as to ensure the availability of general practitioner health care services in the future.

The current age structure will largely determine the future availability of health services in Czech regions. Our research included the modelling of the reduction in the capacities of general practitioners for each region up to 2035 due to their gradual departure from the healthcare system due to reaching retirement age or death. We applied the afore-mentioned conditions, i.e. the application of the age- and gender-specific probabilities of leaving the system (see Fig. 1) and average capacities (see Fig. 2). A summary of the results is provided in Table 3, which illustrates the gradual decrease in capacity in five-year intervals at the national level, and in Figure 4, which shows the potential decrease in capacity up to 2035 at the AD MED level.

The aggregation of the changes at the AD MEP levels revealed that the reaching of retirement age or death will reduce the capacity of GP by 4% and PED by 8% as soon as in 2025. It is expected however that, subsequently, the rate of departures will vary considerably, as driven by the initial age structure of the doctors (Tab. 1). While the current GP capacity will be reduced by a quarter due to doctors leaving the system by 2030 and by nearly 40% by 2035, a decline of 36% in the availability of PED can be expected as early as in 2030 and up to 55% of the current physician capacity by 2035.

Age Group	0–4	5–9	10–14	**15–19**	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+
Index	4.10	1.90	1.45	**1.00**	0.90	0.95	1.00	1.05	1.05	1.10	1.35	1.45	1.50	1.70	2.00	2.40	2.90	3.40

Tab. 2: Age groups and indices that express the ratio of the costs of an insured person in the given age group to the costs of an insured person in the 15 to 19 years age group, applicable in 2021
Source: Czechia (2020)

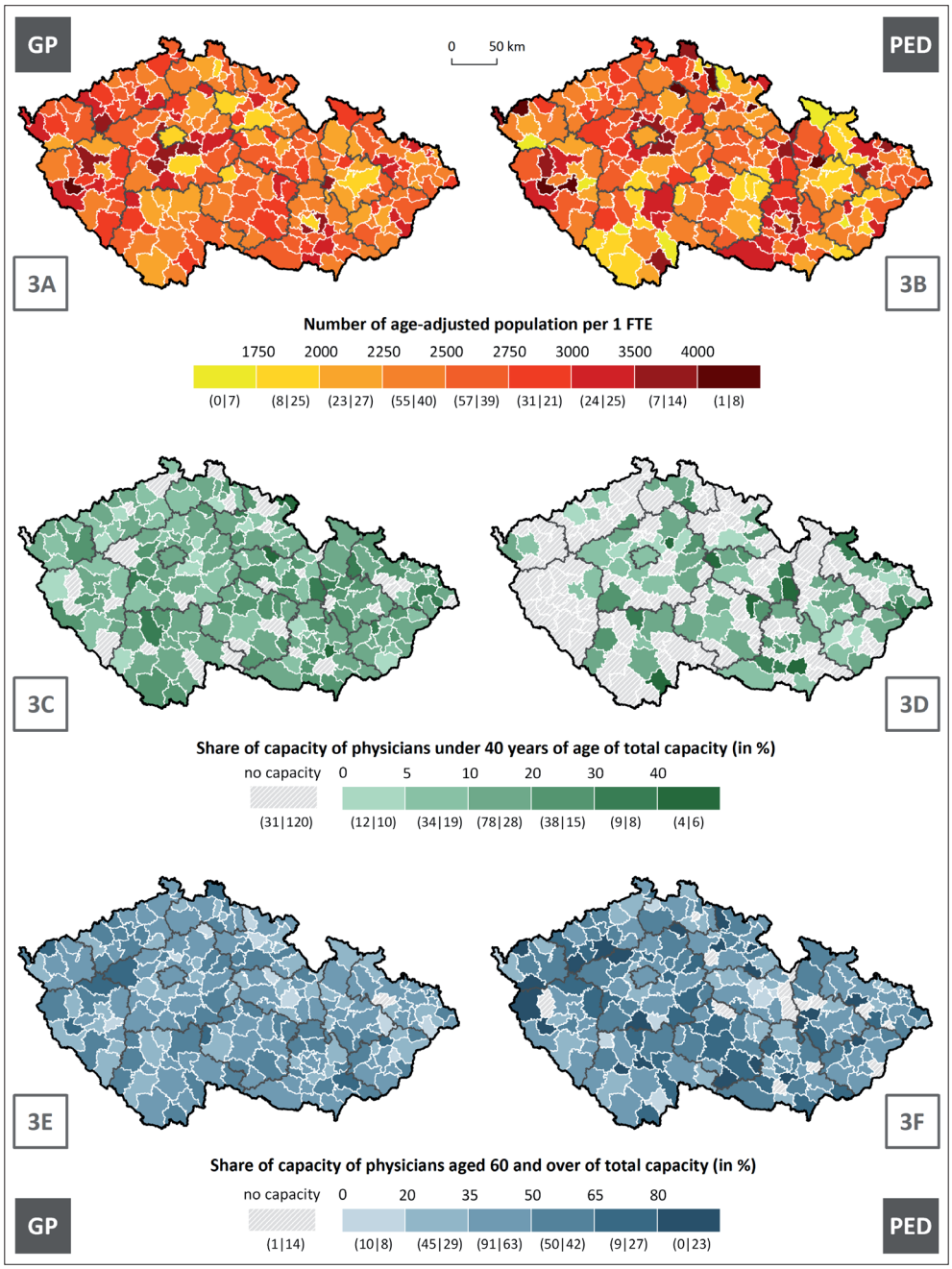

Fig. 3: Age-adjusted population per 1 FTE (3A, 3B) and the representation of the capacity of younger (3C, 3D) and older (3E, 3F) physicians of the total capacity of both types of general practitioners in AD MEP regions, Czech Republic, as of December 31, 2021
Note: the values in brackets indicate the number of AD MEPs in the given category (GP|PED)
Source: authors' calculations based on data from the GHIC (2022)

	2021	2025	2030	2035
General practitioners	5,328	5,135	4,016	3,252
– absolute change	0	– 193	– 1,312	– 2,076
– relative change	0%	– 4%	– 25%	– 39%
General pediatricians	1,920	1,770	1,233	867
– absolute change	0	– 150	– 687	– 1,053
– relative change	0%	– 8%	– 36%	– 55%

Tab. 3: Modelled estimates of the total FTE of general practitioners and general pediatricians up to 2035 excluding doctors who leave the system due to reaching the age of retirement or death and the change from the base year of 2021 (selected years, as of December 31 of the given year)
Note: This is the so-called bottom-up sum, i.e. the sum of the estimates for all the AD MEPs; these estimates may therefore differ significantly from model projections for higher-level administrative units or for the country as a whole
Source: authors' calculations based on data from the GHIC (2022)

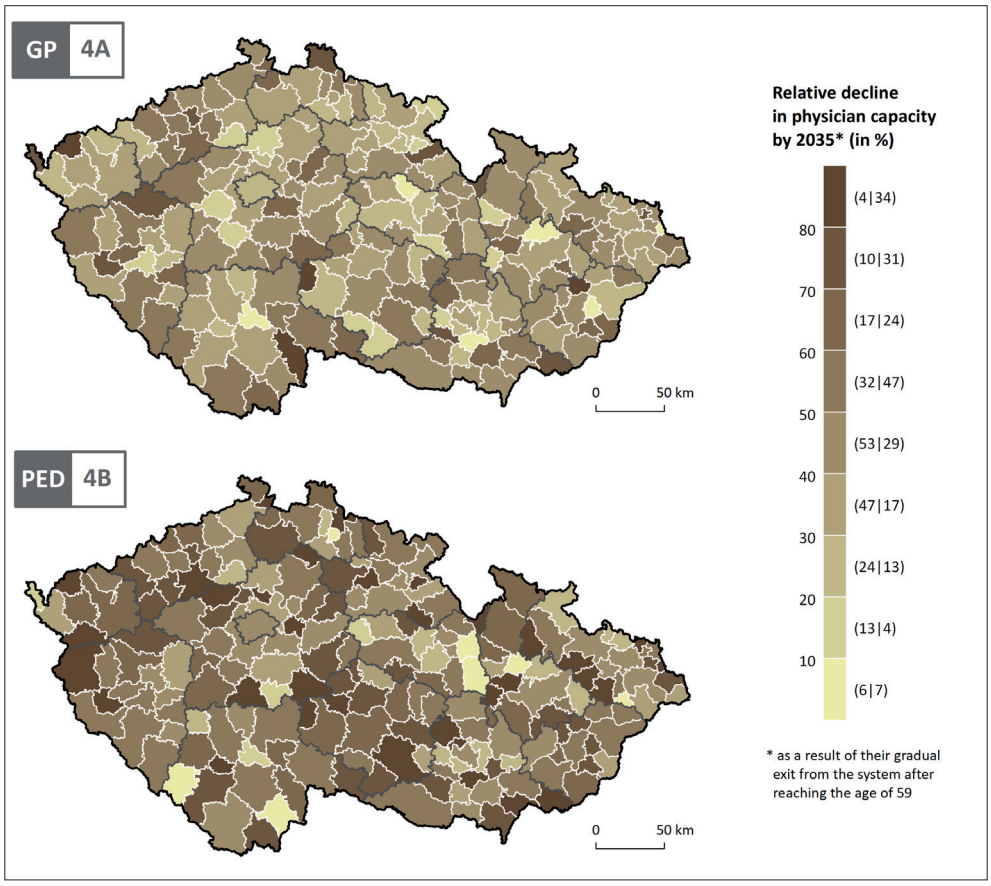

Fig. 4: Relative decrease in the capacity of GP and PED physicians up to 2035 compared to 2021 due to their gradual withdrawal from the system after reaching the "baseline age" of 59 years, AD MEP regions, Czech Republic (as of December 31 of the given year)
Note: the values in brackets indicate the number of AD MEPs in the given category (GP|PED)
Source: authors' calculations based on data from the GHIC (2022)

Clearly these rates of decline are more differentiated at the regional level (Fig. 4). Although many AD MEPs enjoy a good initial position in terms of the age structure of general practitioners and can expect a decline of up to a maximum of just 15%, 4 AD MEPs should plan for a decline of more than 80% of GP capacity and up to 20 AD MEPs can expect a decline of more than 90% of PED capacity, i.e. practically none of the physicians currently in practice will be providing healthcare services in these areas by 2035.

Clearly, the expected changes in the age structure of doctors present a serious challenge going forward. It is also important, however, to consider changes in the age structure of healthcare recipients, i.e. the general population. It is inevitable that the population of the Czech Republic will experience a relatively significant rate of aging, which will be manifested both at the top and at the bottom of the age pyramid. By as soon as 2035, the number of seniors in the population according to the current official national projection (medium variant, see CZSO, 2018) will increase by up to 16% compared to the situation at the end of 2021, while the representation of persons aged under 15 will decrease by approximately 11%. Expressed in terms of the "age-adjusted population", i.e. applying the so-called capitation indices to the expected age structure, the number of the AAP of GP patient age (15 and over) will increase by 12% by 2035, while the number of AAP of PED patient age (0–19 years) will decrease by 10% by 2035. Thus, the demand for GP services will increase over time, while the demand for PED care is more likely to decline. Hence, the planning of the future capacity of GP and PED care services should take these trends into account.

Figures 3A and 3B show the regional differences in the AAP to 1 FTE ratio. If we assume that the differences largely reflect the current "optimal" state of the current supply-demand conflict, given the estimates of the future size and age structure of the population in each AD MEP, it is possible to model the ideal optimal sum of FTEs in 2035, as well as at previous intermediate time intervals (Tab. 4). The aggregation of the expected numbers of new entrants to the system reveals that capacities of more than 2,200 new GP and almost 800 PED positions will be required by 2035 so as to maintain the appropriate ratio. This is approximately 140 more GP capacity and 280 less PED capacity than the number of expected departures.

Model estimation	General practitioners				General pediatricians			
	2021	2025	2030	2035	2021	2025	2030	2035
The capacity required	5,328	5,416	5,481	5,466	1,920	1,873	1,737	1,643
Capacities of outgoing doctors	–	193	1,312	2,076	–	150	687	1,053
New capacities needed	–	281	1,465	2,214	–	103	504	776

Tab. 4: Modelled estimate of the total and new FTE of both types of general practitioners required by 2035 so as to maintain the 2021 AAP/1FTE ratios in Czech AD MEP (selected years, as of December 31 of the given year)
Note: This is the so-called bottom-up sum, i.e. the sum of the estimates for all the AD MEPs; these estimates may therefore differ significantly from model projections for higher-level administrative units or for the country as a whole
Source: authors' calculations based on data from the GHIC (2022)

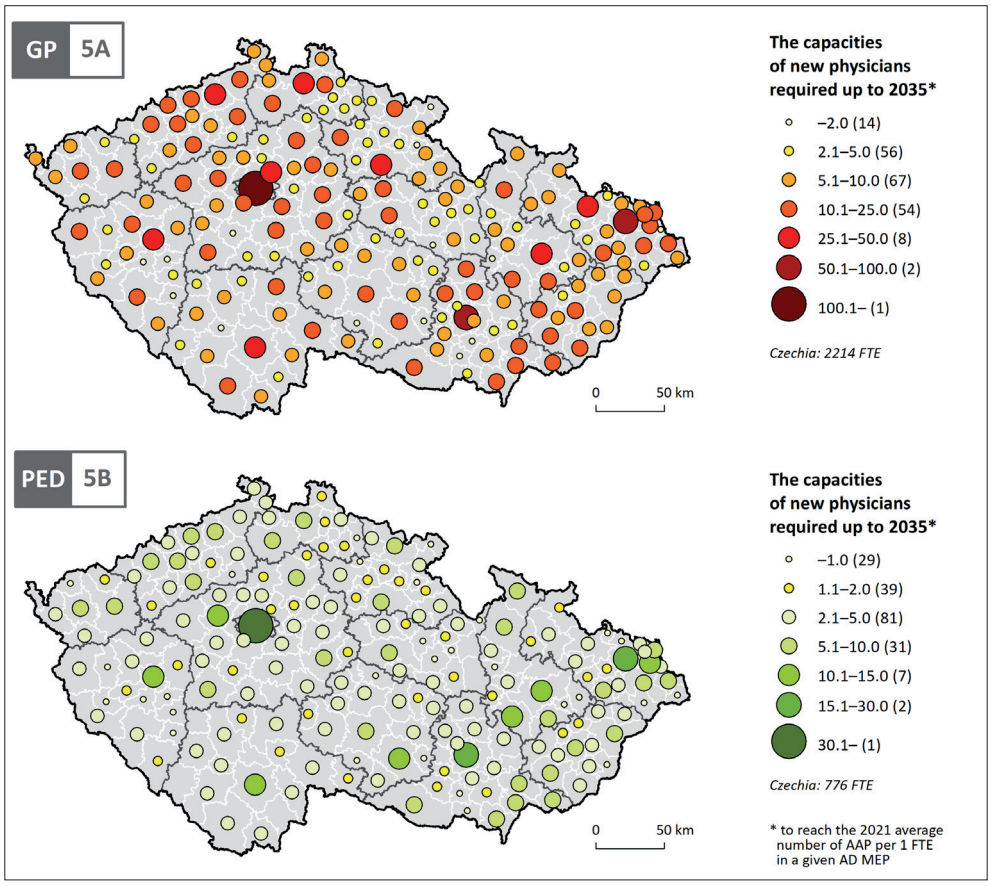

Fig. 5: The capacities of new physicians (GP and PED) required up to 2035 so as to maintain the 2021 AAP/1 FTE ratio, AD MEP regions, Czech Republic (as of December 31 of the given year)
Note: the values in brackets indicate the number of AD MEPs in the given category
Source: authors' calculations based on data from the GHIC (2022)

Figure 5 shows how much new capacity will be needed for each AD MEP by 2035 so as to maintain the same AAP per FTE ratio as in the base year of 2021. While the regional differences largely reflect the population size of the region, it is clear that higher numbers of new practitioners (both GP and PED) should be directed to regions with large (regional) city populations, as well as north-western Bohemia and south-eastern Moravia.

5. Discussion

The representation of physicians in the various regions is clearly uneven (also in per capita terms), as highlighted by the description of the results provided in Figures 3A and 3B. The factors behind these differences primarily reflect the location of the regions. According to previously published studies (e.g. Šídlo & Maláková, 2022), it is clear that in suburban areas many local residents are willing to commute to the local city centre for healthcare treatment since, in many cases, they work or study and spend most of their time in the centre. This, in turn, means that health service providers often concentrate their capacity in city centres so as to meet this increased demand. In many areas, however, commuting for medical care reflects the unavailability of health services in the patients' home regions, a phenomenon known as involuntary commuting. In such cases, health insurance companies should provide assistance to patients either by creating the appropriate conditions for the establishment of new contractual relationships in the respective areas or by ensuring affordable healthcare for their insured clients in other locations within the legally defined travel time limit, i.e. 35 minutes for practical medicine. The question that has yet to be addressed in the Czech Republic concerns the determination of the "optimal" number of the age-adjusted population per 1 FTE doctor. Defining of such a benchmark figure, however, which should reflect the wider discussion of the provision of affordable healthcare services, requires both detailed analysis based on the benchmarking of individual health service providers and a broader professional and political consensus.

Therefore, when assessing the availability of health services, it is not sufficient to simply consider the ratio of the medical capacity available to the population of the respective region. At present (despite the media coverage of selected local problems), it is reasonable to state that the basic provision of general practice services is sufficient. Thus, going forward it would seem more appropriate to highlight the future capacity shortages that will arise from the current age composition of doctors. Figures 3E and 3F clearly show that regions already exist in which the proportion of care provided by doctors of pre-senior and senior age is in excess of three-quarters of the total capacity provided. These regions are located primarily in areas that are not particularly attractive for young doctors, i.e. in the borderlands or inner peripheries (areas that lie on the borders of the Czech Republic's NUTS 3 regions), as confirmed by Figures 3C and 3D.

Previous studies in the field of GP showed that the rate of aging of GPs in rural municipalities is significantly higher than in urban areas (Šídlo et al., 2021) and that areas with a higher representation of the elderly population also often have a higher proportion of older doctors (Maláková et al., 2020). Nevertheless, concerning the GP sector, it can be assumed that with targetted intervention measures involving the full range of actors in the public health sector and a well-set contractual policy, generational renewal can be achieved even at the regional level.

In contrast, several problems are evident in the area of PED, related mainly to the low number of new doctors entering the system. This is largely linked to changes to, and the unclear concept

of, the setting of postgraduate training in the field of pediatrics. Thus, recent years have seen a significant reduction in the number of newly certified general pediatricians. It is not the case that interest in pediatric medicine is low among young doctors. A number of professional forums have highlighted that while the number of young general "practical" pediatricians is decreasing, their number in hospitals has been increasing over the long term.

This is thought to be due to a number of factors, including the lack of a coherent concept concerning the training of pediatricians and the reluctance of young pediatricians to assume the role of "entrepreneurs" who have to deal with administrative issues, employ a nurse, etc. and cover a much wider range of activities than doctors who are employed by a provider of in-patient services. This is one of the reasons for the emergence of new forms of providing such services in recent years, including the establishment of "practitioners for children and adolescents" (general pediatricians) facilities in hospitals, which eliminate the administrative obligations of small local practices. Nevertheless, such developments are unlikely to solve all the problems inherent in the system. Going forward, the currently low numbers of new PED will be unable to compensate for the departure of older colleagues from the PED system due to age and, in some cases, increasing administrative demands. Despite the reduced demand for PED services due to low birth rates, ensuring an adequate number of PED even at the national level will present a serious challenge (see Tab. 1 and Fig. 5), as confirmed by previously published model projections (e.g. Burcin & Šídlo, 2017). Thus, the various authorities and institutions involved must prioritize the stabilization of the postgraduate training of new pediatricians, as well as create the conditions for evening out the number of hospital-based and general (practical) pediatricians.

The Czech Republic is thus faced with an acute problem in terms of ensuring affordable healthcare services over the long-term and avoiding the exacerbation of regional differences in this respect. This issue has been under discussion in Western European countries for many years. In addition to increasing the number of healthcare professionals, the solutions proposed include the introduction of an electronic healthcare (eHealth) system, which, however, has a number of disadvantages (Valokivi et al., 2021). Hence, most countries are making efforts to increase the attractiveness of working as a general practitioner for young doctors, particularly in rural areas. Most countries have also considered financial incentives; however, non-financial measures such as professional development, access to social services, etc. are also being seen as important (EU, 2022). There are many reasons why young doctors choose to practice in urban rather than rural areas (Weinhold & Gurtner, 2014) or prefer to avoid working in peripheral regions. Rural and peripheral regions are often associated with a higher workload, lower incomes (Steinhaeuser et al., 2011), fewer job opportunities for the partner (Lee & Nichols, 2014) and professional and social isolation (Straume et al., 2010). Moreover, the experience medical students have with rural areas and the attention devoted to rural areas in their postgraduate studies are further important factors in the decision-making process (Lee & Nichols, 2014). In France, the approach to addressing the shortage of general practitioners outside urban areas involves providing support for so-called primary care teams, which include, e.g. dentists, nurses, and administrative staff (Chevillard et al., 2019).

6. Conclusions

The results of the analysis pointed to several important aspects that affect the current and future availability of general practice health services, particularly at the regional level. Firstly, the increasing importance of age structure changes on both the supply side (health service providers – physicians) and the demand side (insured persons, specifically the populations of selected areas). The generational turnover of physicians is currently one of the most intensively discussed topics in the Czech healthcare system. This factor is impacting most medical specializations, especially in those regions that are not seen as particularly attractive, i.e. where it is difficult to motivate young doctors to practice. In general, however, greater efforts will have to be made by the authorities involved to prevent potential shortages in the future. Admittedly, concerning the potential number of providers in at-risk specializations, including general practice, steps have been taken in recent years to address both overall undercapacity in the healthcare sector and increasing regional inequalities.

With respect to general practical medicine, a working group on primary care reform, which brought together experts from various institutions and disciplines, was established by the Ministry of Health of the Czech Republic in early 2018. The aim was to define the main problem areas and to propose solutions that will ultimately enhance the attractiveness of this field for young doctors and thus ensure the stabilization of staffing requirements going forward. The project output comprised Implementation Plan 1.1 of the Strategic Framework for the Development of Health Care in the Czech Republic up to 2030 (MoH, 2020), one of the proposed and already partially implemented measures of which concerns the provision of incentives for providing primary medical care in less attractive areas. Further examples include the provision of subsidies by the Ministry of Health of the Czech Republic aimed at supporting the availability of general practitioner health services in 2020–2021 and health insurance company subsidy programs aimed at increasing the availability of health services (e.g. the VZP Plus program provided by the GHIC). Measures are also being introduced at the local government level that provide financial and non-financial incentives for the recruitment of new medical capacities in individual municipalities and even in entire regions.

The awareness of the problems associated with the generational turnover of general practitioners, as well as their disproportionate capacity and age composition, has increased significantly in recent years, which has been reflected in an increase in research on identifying current needs and potential solutions. The number of support measures at both the national and regional levels has also increased (see above). It is generally acknowledged however that current measures will not be sufficient to address future problems with the availability of (particularly PED) general practitioner services. Thus, to determine long-term sustainable solutions, it is essential that experts work with the relevant data and identify the potential risks aimed at finding systemic solutions that provide for the stabilization of the situation (WHO, 2008). Enhanced targetted cooperation between public health authorities and the other institutions involved will become increasingly important, and real efforts should be made to ensure that there is the political will to translate proposed solutions into practice. It is already evident that the Czech Republic is facing a difficult period in terms of the provision of GP and PED services and that many challenges lie ahead in terms of effectively addressing this issue.

Abbreviations

AAP = Age-Adjusted Population

AD MEP = Administrative Districts of Municipalities with Extended Powers

FTE = Full-Time Equivalent

GHIC = General Health Insurance Company of the Czech Republic

GP = General Practice

PED = General Pediatrics

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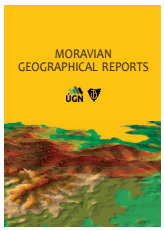

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An opportunity missed is an opportunity lost. Flood maps and their (non-)utilization by local government bodies in the Czech Republic

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Abstract

Flood maps are a crucial component of integrated flood risk management. While their key role is commonly acknowledged by experts and scholars, however, literature and findings on the practical utilization of flood maps (including the user' experiences) within the processes of governance are scarce. Our study aims to contribute to closing this gap; by focusing on the Czech local government bodies, data collected through a questionnaire survey allowed us to examine (a) how, or whether at all, the officials employ flood maps in their agendas; (b) how do they experience and assess working with the maps; and (c) which data would they supplement the extant flood maps by. Our findings show that the praxis of local flood-related governance in the Czech Republic still largely neglects the up-to-date approaches and practices of flood risk management. The officials addressed mostly continue to rely on the earliest type of floodplain maps and purely technical aspects of floods, while largely omitting the newer flood danger and risk maps; thus, they are also missing the opportunities of applying multi-criteria assessment of the flood risk and more effective communication with the public. The paper concludes with a set of suggestions for relevant praxis and future research.

Keywords: *Flood maps, flood risk management, local government bodies, questionnaire survey, Czech Republic*

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1. Introduction

Floods are one of the most severe and damaging extreme weather events, moreover with a projected increase in their future adverse impacts (Mohanty & Simonovic, 2022; Newell et al., 2016). Complete flood protection is unattainable, and the reliance on strictly technocratic approaches and solutions to the manifold flood-related issues, including the preference for the public-engineered (or so-called structural) measures, proved to be inadequate (Buchecker et al., 2016; Glosińska, 2014; McEwen et al., 2018; Santoro et al., 2022; Schober et al., 2015). Accordingly, the attention of academics, experts, and policy-makers turned to what is termed integrated flood risk management (Bodoque et al., 2019; Bubeck et al., 2012; Fuchs et al., 2017; Schelfaut et al., 2011), and the respective fields of research, knowledge, and practical applications recently witnessed the introduction, application, and further advancements of a wider spectrum of tools and measures available to improve our understanding of risk and support flood preparedness (Andráško, 2021; Glosińska, 2014).

Without a doubt, flood maps represent one of the crucial components of these developments, gaining growing attention not only within the respective research (Albano et al., 2015; Dottori et al., 2022; Mudashiru et al., 2021; Müller, 2013), but also as regards the policy-making processes, planned interventions, and legal frameworks such as the Floods Directive 2007/60/EC.

In this study, we focused on whether and how local government bodies in the Czech Republic utilize (particular types of) flood maps within the relevant planning and decision/policy-making processes. Since the respective field of knowledge is largely under-investigated so far, with the extant findings rather scarce, the study was exploratory, focusing on the following research questions:

- How, or whether at all, do the local government bodies utilize (individual types of) flood maps available to conduct their governance-related activities?
- How do the local government bodies experience working with flood maps?

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- How are (if at all) the local government bodies aware of/informed about flood maps available?
- How do the local government bodies comprehend and interpret the contents of flood maps?
- Which data/information the local government bodies consider necessary to be added to the flood maps?

2. Theoretical background

2.1. Flood maps as a part of integrated flood risk management

Important flood prevention measures include, among others, increasing flood awareness and improving flood communication. It is argued that through flood maps, flood-related information can be obtained in a graphical/visual form facilitating its understanding and acceptance, and thus reinforcing risk awareness (Albano et al., 2017; Kjellgren, 2013; Munz et al., 2023), and, eventually, flood preparedness (Birkholz et al., 2014; Bradford et al., 2012; Klemešová & Andráško, 2015; Mondino et al., 2020; Ridolfi et al., 2021; Santoro et al., 2022). Hence, various flood maps (Section 2.3) increasingly come to the fore as essential instruments and means of a) more competent decision-making and land-use planning (*cf*. Kopp et al., 2021); b) raised adaptive and coping capacities in flood-prone areas; and c) improved risk communication between particular levels of governance, experts, and authorities involved, but also, at least potentially, the lay public (Auliagisni et al., 2022; Kjellgren, 2013; Porter & Demeritt, 2012).

Compared with the body of literature and findings on the respective methodologies and technicalities (de Moel et al., 2009; Dráb & Říha, 2010; Hagemeier-Klose & Wagner, 2009; Heintz et al., 2012; Meyer et al., 2012; Mudashiru et al., 2021), however, including current improvements in terms of the underlying data and application of new technologies (Beden & Ulke Keskin, 2020; Gebrehiwot & Hashemi-Beni, 2020; Jiun-Huei et al., 2022; Kim et al., 2020), other aspects of flood maps remain rather under-investigated. Despite the valuable work done so far, this holds as regards the perceptions (Houston et al., 2019; Maidl & Buchecker, 2015; Sanders et al., 2020; Seipel & Lim, 2017) and practical utilization of flood maps by particular target groups (Auliagisni et al., 2022; Minucci et al., 2020). In the Czech Republic, there is currently, to our best knowledge, a complete lack of such research.

An important target group for the implementation of flood risk management is the public governance. Accordingly, our research centred on the usage of flood maps by the officials of local governments; these bodies play a key, yet often also largely contested and complicated role in the complexities of planning interventions, policy implementations, or reconciliation of various interests (Frantál et al., 2023; Handmer, 1996), including the mediatory position in the communication between agents such as governments, authorities, experts, entrepreneurs, local inhabitants, and others. Governments (including the local ones) and other authorities commonly officially acknowledge the importance of getting along with and implementing the up-to-date developments of the flood risk management approaches, including the wider utilization of flood maps to address the flood risk, within their everyday duties, tasks, and overall professional conduct; on the other hand, extant research suggests that such steps and measures too often remain rather declared than actually taken and utilized (Henstra et al., 2019; Rauter et al., 2020; Slavíková et al., 2019; Vávra et al., 2017).

2.2 The origins of flood mapping in Czechoslovakia/Czech Republic and the impact of joining the European Union

While the first flood marks indicating the level of flooding at a given location were mentioned already in the 15th century (Munzar et al., 2006), more sophisticated methods of flood mapping found their way into the legislation only throughout the second half of the 20th century (Tab. 1) (*cf.* e.g. Porter & Demeritt, 2012).

2.2.1 The Floods Directive 2007/60/EC

An important milestone for flood mapping is the adoption of the European Floods Directive (2007/60/EC) in 2007 and its subsequent transposition into the Czech legal framework (Water Act No. 254/2001 Coll.). Implementation was carried out in 2009 by the Ministry of the Environment. From the territorial perspective, the issue of flood management concerns the Czech parts of three international river basins – Elbe, Danube, and Odra.

Three follow-up phases of implementation of the Floods Directive are reviewed and updated in six-year cycles. The implementation phases are listed below within the schedule of the first planning cycle, which the Czech Republic has prepared in accordance with the requirements of Chapters 2, 3, and 4 of the Floods Directive in the same way as other member states (Vermeulen et al., 2019): i) preliminary flood risk assessment (end of 2011); ii) creation of flood hazard and flood risk maps for areas at significant flood risk (end of 2013); and iii) creation of comprehensive Flood risk management plans (end of 2015).

As part of the preliminary flood risk assessment, areas at significant flood risk were identified. These areas were defined according to the number of potentially affected permanent residents (minimum 25 inhabitants/year) and/or the value of potentially affected property in the affected municipalities (minimum CZK 70 million/year) (TGM WRI, 2012). In the second phase of implementation, flood hazard and risk maps for different flood scenarios corresponding to low, medium, and high probability of flood occurrence were prepared for these defined areas (see Section 2.3 for more details). The maps subsequently became part of the Flood risk management plans. These plans are an important conceptual document that sets out the objectives and measures for flood risk management in a binding manner (Záruba, 2022). They serve as a basis for the exercise of public governance, in particular for spatial planning and water management in areas at significant flood risk, altogether aiming to manage flood risks effectively (for more details, see e.g. Alexander et al., 2016).

Similarly to other countries, for example, Poland (Hegger et al., 2013), the central government in the Czech Republic plays a major role in flood protection, operating through national and regional water agencies. Legislation at the national level is primarily issued by the Ministry of the Environment, and processing of the preliminary flood risk assessment and its subsequent updates falls under the responsibility of the T.G. Masaryk Water Research Institute (hereafter TGM WRI). This nationally funded institute has also developed a uniform methodology for the creation of flood hazard and flood risk maps (TGM WRI, 2012). The methodology was subsequently approved by the Ministry of the Environment, and the State enterprises of river basins were the producers of each type of map (flood hazard, flood danger and flood risk maps). The costs are covered by the state budget. In order to preserve one of the principles of the Floods Directive, namely public participation in the process, Decree No. 50/2023 Coll., stipulates that the public has the right to be heard (i.e. to express their concerns) within each phase of the implementation of the Directive (including the updates) within the comment procedure following the implementation of the phase.

The Floods Directive changes the approach to dealing with floods from one focused on local protection to one concerned with comprehensive flood risk management, centred also on prevention and preparedness. Similarly to other European countries (Vermeulen et al., 2019), there is not yet sufficient information in the Czech Republic to claim to what extent the implementation of the Floods Directive has succeeded in reducing flood risk.

Legal regulation No.	Title of the legal regulation	Force	Integration of flood mapping
175/1953	Decree of the Ministry of the Interior on flood protection	Repealed 1959	The requirement to produce flood maps indicating hazardous areas where floods, ice barriers, etc. may form.
126/1959	Decree of the Ministry of the Interior on flood protection	Repealed 1975	The text of the decree has not been preserved.
27/1975	Regulation of the Government of the Czech Socialist Republic on flood protection	Repealed 1999	Required only ex-post recording of flooded areas, ice barriers etc. in flood plans.
100/1999	Regulation of the Government of the Czech Republic on flood protection	Repealed 2002	The requirement that flood plans must include a graphic section containing information on, inter alia, floodplains.
254/2001	The Water Act	In force since 2002	Until 2009, the requirement for: 1) flood plans must include a graphic section containing information on, *inter alia*, floodplains; 2) the production of floodplain maps and active flood zones. Amendment in 2010 – incorporated articles on flood mapping resulting from the transposition of the Floods Directive requiring the production of flood hazard and flood risk maps (Section 2.3).
236/2002	Decree of the Ministry of Environment on the method and scope of design of floodplains	Repealed 2018	Detailed requirements for the design of the floodplains and the determination of the active flood zones.
24/2011	Decree on river basin management plans and Flood risk management plans	Repealed 2023	Detailed requirements for preliminary flood risk assessment, content and method of creation of flood hazard maps, flood risk maps, and forms of their publication.
79/2018	Decree of the Ministry of Environment on the method and scope of design of floodplains	In force since 2018	Detailed requirements for the design of the floodplains, determination of the active flood zones, and creation of flood danger maps.
50/2023	Decree on river basin management plans and Flood risk management plans	In force since 2023	Detailed requirements for preliminary flood risk assessment, content and method of creation of flood hazard maps, flood risk maps, and forms of their publication. Compared to Decree No. 24/2011 Coll., expansion of scenarios for the creation of flood hazard and flood risk maps.

Tab. 1: The most important legal regulations of Czechoslovakia and the Czech Republic entailing requirements for different levels of flood mapping. Source: authors' processing using ASPI legal software

2.3 Flood maps in the context of Czech legislation and transposition of the Floods Directive

There are four types of flood maps[1] codified in Czech legislation. These maps are used by the public governance: namely, i) Floodplain maps; ii) Flood hazard maps; iii) Flood danger maps; iv) Flood risk maps. Amongst these closely interconnected flood maps[2] (see Fig. 1), flood hazard maps (see also Section 2.3.2) are important mainly from the theoretical and methodological perspective; there is an obligation to create them, stemming directly from the Water Act, and they serve as an intermediate step for the creation of flood danger maps (§ 5 of Decree No. 79/2018 Coll.). On the other hand, from the viewpoint of their utilization by local public authorities in statutory cities, these maps do not serve as an independent basis for decision-making. That is why they were not part of our empirical research (i.e. the questionnaire survey and analyses; Section 3 onwards). The terminology of flood mapping was not uniform in the past in the Czech Republic (Dráb & Říha, 2010); in this paper, we draw on the terminology of the Floods Directive and the Methodology of TGM WRI (TGM WRI, 2012).

2.3.1 Floodplain maps

Floodplain maps show the floodplains bounded by the flood line for the flood scenarios Q5, Q20, Q100, and Q500 (flood occurrence that is reached or exceeded on average once every 5, 20, 100, and 500 years) (§ 2 of Decree No. 79/2018 Coll.). They represent a purely technocratic approach to flood risk assessment using hydraulic modelling and other supporting documents defined in § 4 of Decree No. 79/2018 Coll. Floodplains are one of the bases for flood hazard maps (see Section 2.3.2). For built-up areas, there are also active flood zones defined as parts of the floodplains. "An active zone is an area in the built-up areas of municipalities and in areas designated for development according to Local plans that drains a decisive part of the total flow during a flood event and thus poses an immediate threat to human life, health, and property." (§ 2 of Decree No. 79/2018 Coll.). To define active flood zones more precisely, flood hazard and flood danger maps (Q100) must be used for the task and given section of a watercourse since 2018 (Decree No. 79/2018 Coll.).

The processing and updating of floodplains are dealt with by watercourse managers and approved by the water authority. Floodplain maps have been prepared at a scale of 1:10 000 (*cf.* Porter & Demeritt, 2012), since 2018 in a uniform graphic format (Decree No. 79/2018 Coll.). There is no single official source/storage/map application, however, where a guaranteed and always up-to-date floodplain layers for the whole territory of the Czech Republic watercourses, including small streams, could be found (Klemešová, 2016). Thus, official data are primarily collected from the managers of the given watercourses, who also obligatorily submit their data for the Planning analytic materials (see Section 2.3.6).

2.3.2 Flood hazard maps

Using designated floodplains, flood hazard maps identify areas that could be flooded under different flood scenarios (§ 64a of the Water Act). The essence of the flood hazard statement is the determination of the spatial distribution of the characteristics of the flood extents[3], flood depths, and flow velocities, and their processing into flood hazard maps for the flood scenarios Q5, Q20, Q100, and Q500 (TGM WRI, 2012, § 17 of Decree No. 50/2023 Coll.). Flood hazard maps quantify flood hazard via hydraulic calculations and the evaluation of flood intensity. Subsequently, they are used as a basis for the creation of flood danger maps (see Fig. 1). Flood hazard maps are prepared for areas at significant flood risk at a scale of 1:10 000.

[1] The fifth existing type of flood maps in the Czech Republic are flood insurance maps, which are not codified in Czech legislation. These are only used in the commercial sphere and they are therefore not the subject of this study. For more about flood insurance maps see e.g. Klemešová (2016).

[2] When addressing the technological, methodological, or processing-related aspects of flood-risk mapping in general, we refer to these maps in the paper collectively as the "flood maps".

[3] They use existing floodplain maps that exist for all areas at significant flood risk.

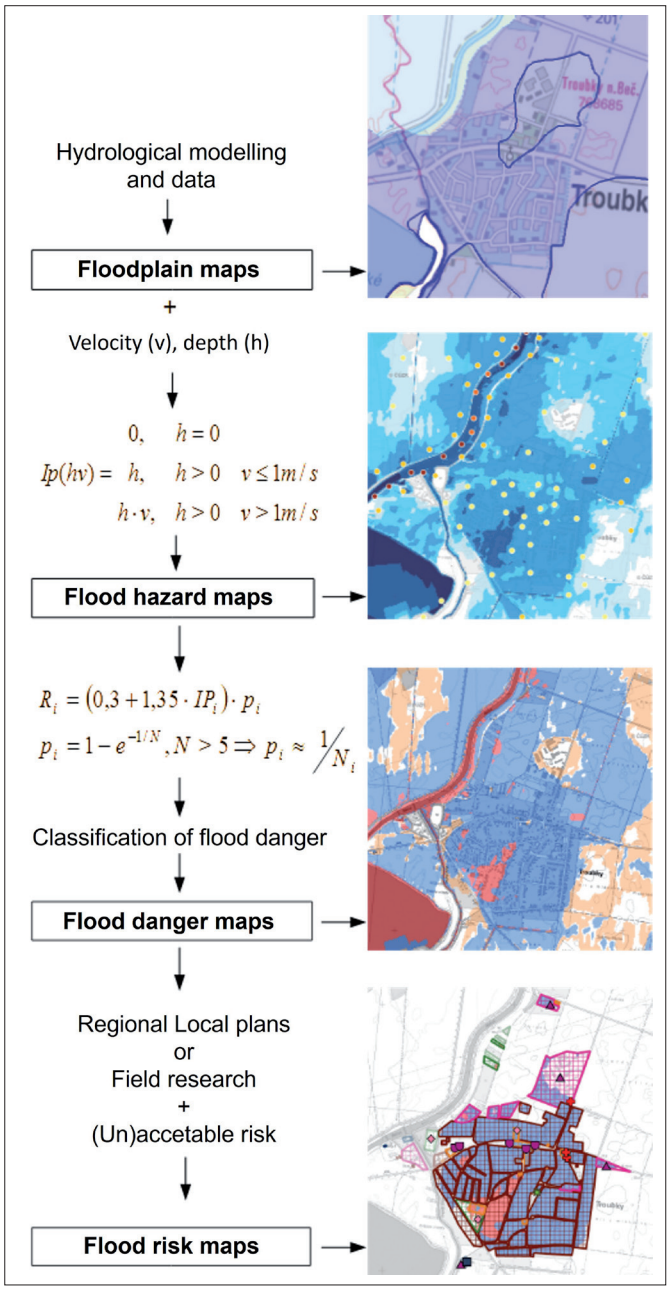


Fig. 1: Four types of flood maps and their interconnection – the example of Troubky village (R_i = flood danger; I_{Pi} = flood intensity of a given flood scenario; p_i = probability of occurrence of a given flood scenario; N_i = return period in years)
Source: modified from Klemešová (2016)

2.3.3 Flood danger maps

Flood danger maps represent/demonstrate the level of threat to a flooded area on a four-level scale, determined as a combination of the probability of occurrence of an undesirable event and the flood hazard (§ 17 of Decree No. 50/2023 Coll.). Then, the danger can be high, medium, low, and residual (§ 2 of Decree No. 79/2018 Coll.) (Fig. 2). The maps are prepared for areas at significant flood risk at a scale of 1:10 000. The matrix method is used, which does not require a quantitative estimation of the damage caused by water discharge from the channel but expresses the flood danger using a matrix categorizing flood-prone areas due to their relative level of threat expressed by a colour scale (Dráb & Říha, 2010).

The uniform TGM WRI methodology (2012) has its drawbacks: for example, its use for flood danger maps results in difficulties in interpreting the blue colour, traditionally and even somehow intuitively associated with the extent of flooding (Hagemeier-Klose & Wagner, 2009; Klemešová et al., 2014; Ministry of Transport and Water Management of the Netherlands, 2007). In flood danger maps, the blue colour indicates a medium level of flood danger (see Fig. 2). This issue comes to the fore even more when considering the maps as a means of effective risk communication with the lay public (Hagemeier-Klose & Wagner, 2009). A more appropriate scheme seems to be the alternative of the so-called traffic light display (green, yellow, orange, red) used for example in Romania (Vermeulen et al., 2019).

2.3.4 Flood risk maps

The flood risk maps focus on the potential adverse consequences associated with particular flood scenarios (Q5, Q20, Q100, Q500) (§ 64a of the Water Act). They are based on flood danger maps and area vulnerability. For each category of land use (for example, housing, transport infrastructure, agricultural land) the level of acceptable risk is determined. The flood risk maps show the areas of each land use category where the level of this acceptable risk is exceeded (TGM WRI, 2012) (Fig. 3). Maps are prepared for areas at significant flood risk at a scale of 1:10 000. Relying not only on the hydrological modelling but also on the information on land use and vulnerability, the flood risk maps represent a shift toward a multi-criteria flood risk assessment (Klemešová et al., 2014; Konečný, 2011).

2.3.5 Comparison of flood maps from the perspective of flood management developments in the Czech Republic

Besides others, the differences between the four types of maps also aptly illustrate the respective developments in flood risk management; exemplary is in this case the altering conceptualization and incorporation of flood risk, commonly defined as a function of threat and vulnerability, or, more specifically, as (the combination of) the probability of a flood event and its adverse consequences for human beings/society (Floods Directive, 2007, Few & Matthies, 2006). The earliest types (floodplain maps) are based on purely technocratic approaches relying on hydrological modelling and probability calculations. More recent types (flood danger and risk maps) involve, to some extent, also the aspects of perceptions, experience, and social construction of risk (Andráško, 2021), by applying flood danger categories, and zones of acceptable and unacceptable risk identified through land use data, spatial planning documents, but also personal knowledge of the area (Klemešová, 2016).

Nevertheless, these aspects still regard only experts (map makers) and particular methodologies (Hagemeier-Klose and Wagner, 2009; Minucci et al., 2020). Thus, while public hearings are sometimes held, their outcomes are, as affirmed by authors' professional experience, not sufficiently (or not at all) incorporated in the (processes of creation of) flood maps yet; the potential to, for example, refine the boundaries between areas of acceptable and unacceptable risk based on knowledge from the personal experience or memories (Atreya et al., 2017; Auliagisni et al., 2022; Harclerode et al., 2016; Markanday & Galarraga, 2021) of those who came through a particular flood event(s) at the place in question, then remains largely underutilized. Moreover, the underappreciation of the lay, yet often very rich and practical understanding of floods (Duží et al., 2017; Jakubcová et al., 2016; Vaishar et al., 2000; Vávra et al., 2017), including a certain proficiency in dealing with them, may weaken the local inhabitants' trust and interest in, and utilization of, the "made by some experts" measures (including the flood maps); the public's future willingness to support respective interventions and engage personally in the decision-making processes and bearing the burden of mitigating floods and their consequences may be negatively affected this way as well (Begum et al., 2007; Kundzewicz, 2004; Raška & Dubišar, 2017).

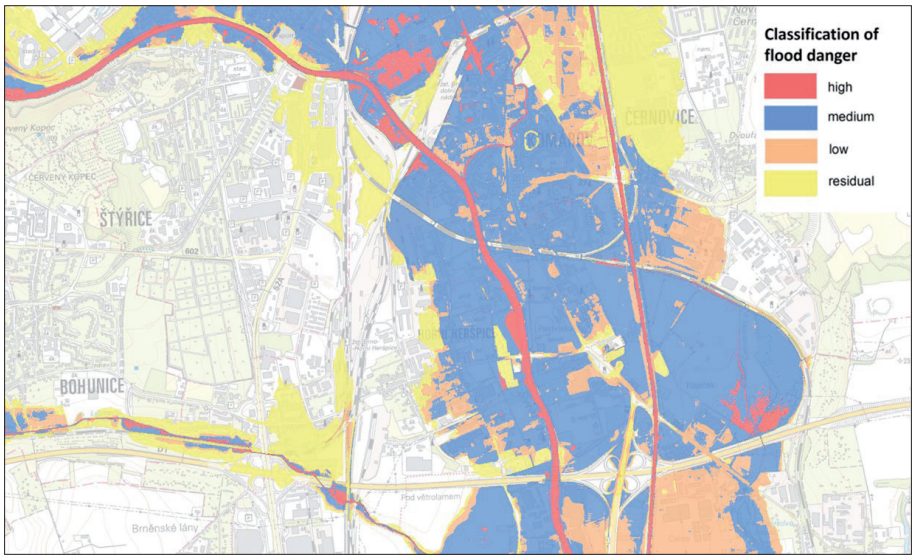


Fig. 2: An example of a flood danger map from Central Data Storage – Statutory city of Brno
Source: modified from Ministry of Environment of the Czech Republic (2021)

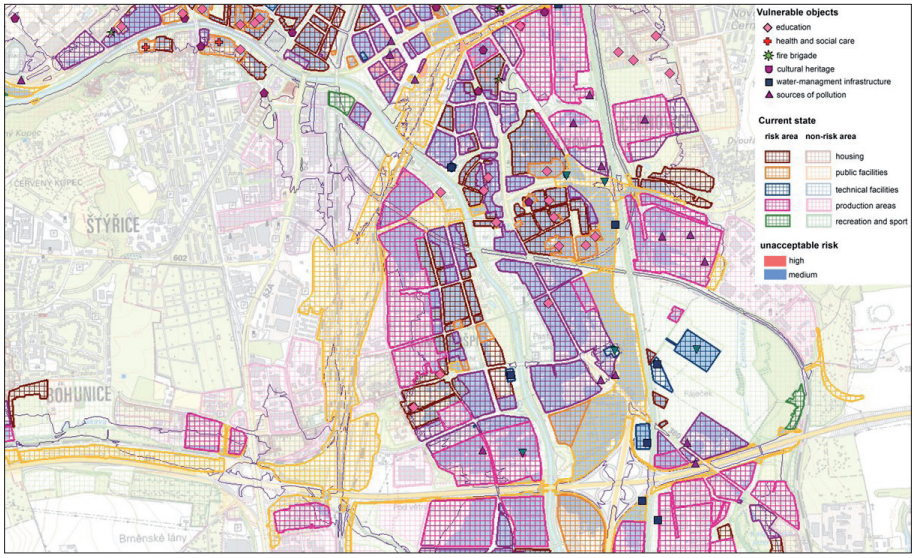


Fig. 3: An example of a flood risk map from Central Data Storage – Statutory city of Brno
Source: modified from Ministry of Environment of the Czech Republic (2021)

2.3.6 Opportunities and obligations for flood maps' utilization by the Czech (local) governments

Similarly to other European countries affected by floods at the turn of the millennium (for example, Poland, Germany), the need for a convergence of water management and spatial planning has been emphasized (Hegger et al., 2013); this has been reflected, among other things, in a stronger embedding of the use of flood tools such as flood maps by public administration/local governments.

Floodplain maps are binding for both spatial planning and water management activities, which follows directly from the Water Act; namely § 66 states that floodplain maps and their flood active zones are issued as Measures of a general nature[4]. Paragraph 67 of the Water Act lists binding restrictions in floodplains, for example, the prohibition of construction in flood active zones[5] or the competence of the water authority to set conditions for the use of floodplains outside flood active zones.

As the basis for setting restrictive conditions in floodplains serve, among others, the Flood risk management plans. Floodplains are also included among the so-called Land use limits[6] in the Planning analytical materials[7]. Limits are an indispensable basis for the creation of spatial planning documentation, although in the new legislation (Act No. 183/2006 Coll.) they are no longer part of the binding part of the Local plan. According to

[4] A measure of a general nature is a new type of decision-making by administrative authorities, introduced into the Czech legal system by Act No. 500/2004 Coll. In this administrative act, the subject matter is determined specifically, but the range of recipients is defined generally.

[5] Similarly, a building prohibition in the most risky areas is also set, for example, in France (Hegger et al., 2013).

[6] Land use limits create restrictions on changes/development in the territory due to the protection of public interests, resulting from legal regulations or resulting from the characteristics of the territory (§ 26 of Act No. 183/2006 Coll.). They set an insurmountable limit for the use and arrangement of the land.

[7] The Planning Analytical Materials contain the ascertainment and assessment of the state and development of the area, its values, programs for executing the changes in the area, ascertaining and assessing the area's sustainable development, and determination of problems for solution in the planning documentation (Tunka, 2010).

Macháčková (2018), "Planning analytical materials are a legally non-binding instrument of spatial planning, which has no binding external legal form, but at the same time, they are a very important basis for the acquisition and issuance of other spatial planning tools"; thus, they are always taken into account in the creation of the Local plan and other spatial documents. Planning decisions and building permits made by the building authorities must subsequently be in accordance with the spatial planning documentation (for example, Local plan).

Flood danger and flood risk are also among the Land use limits contained in the Planning analytic materials. The Spatial development policy of the Czech Republic in Article 12 prescribes "to define and protect development areas for the relocation of buildings from areas with a high risk of flood damage" (Ministry for Regional Development of the Czech Republic, 2023). For this reason, it is necessary to know the flood risk maps.

The legally binding nature of the flood hazard and danger maps is based on Decree No. 79/2018 Coll. These maps are a necessary basis for defining the active zone of floodplains, which are defined by Act No. 254/2001 Coll. The situation regarding the legal binding force of the flood risk maps is more complicated though since it is not directly defined in the legislation. The flood risk maps are part of Flood risk management plans, however, which are legally binding. The binding nature of the plans derives chiefly from the fact that they are issued by a Measure of a general nature and from § 23 of Act No. 254/2001 Coll., which states that "...the plans are the basis for the state administration, in particular for spatial planning and water management". The local authorities are obliged to evaluate each project in the given area individually and assess it in the light of the relevant Flood risk management plan (Záruba, 2022). One of the objectives of the Flood risk management plans is to prevent the emergence of new risks and to reduce the extent of areas at unacceptable risk. Knowledge of flood risk maps is essential for achieving this objective.

The above-mentioned legislation shows that the objective of the public interest in the Czech Republic is not only to increase the level of protection but also to move towards a multi-criteria flood risk assessment including, among others, efforts to assess the vulnerability of the area, and to mitigate the risk.

3. Materials and methods

Data were gathered by the Computer Assisted Web Interviewing (CAWI) online survey from the local government bodies/officials of all Czech Republic's statutory cities (in total 26 cities) in 2016; since parts of the territories of all of these cities belong to the Q100 flood zone (Fig. 4), it can be expected that activities, tasks, and decisions carried out by the respective bodies necessarily include those associated with floods and thus also with the use of flood maps (for example, building permits according to § 17 of the Water Act, setting the conditions for particular construction projects in flood zones, etc.). Furthermore, it can be reasonably expected as well that due to the spatial extent of the area under their administration, respective bodies are familiar with the territories covered by flood maps, and that they also possess sufficient technical equipment and personal capacities to enable adequate use and interpretation of flood maps, including the communication of the relevant information to various agents, such as other municipalities, levels of governance, or the public.

Through a combination of a pilot survey at the Municipality of Brno and the first author's professional experience with spatial data management and the creation of flood plans, particular departments within the local governments to be addressed by the survey were identified as those dealing with the issues of environment, water management, spatial and strategic planning, constructions, properties, and crisis management. The individual officials to be addressed were then further specified based on consultations with GIS (Geographic Information System) officials of the statutory cities, who, as managers of spatial databases, know precisely which job positions and individuals should use the flood maps.

The questionnaire used consisted of 10 questions (Tab. 2) regarding the flood maps and several identification questions (statutory city, department, job position, sex, age, and length of professional experience). As already mentioned in Section 2.3, data collection and analyses focused on three types of flood maps (floodplain maps, flood danger maps, and flood risk maps); flood hazard maps, despite their methodological importance, are not used as an independent source of information relevant for the decision-making of the statutory cities authorities and therefore

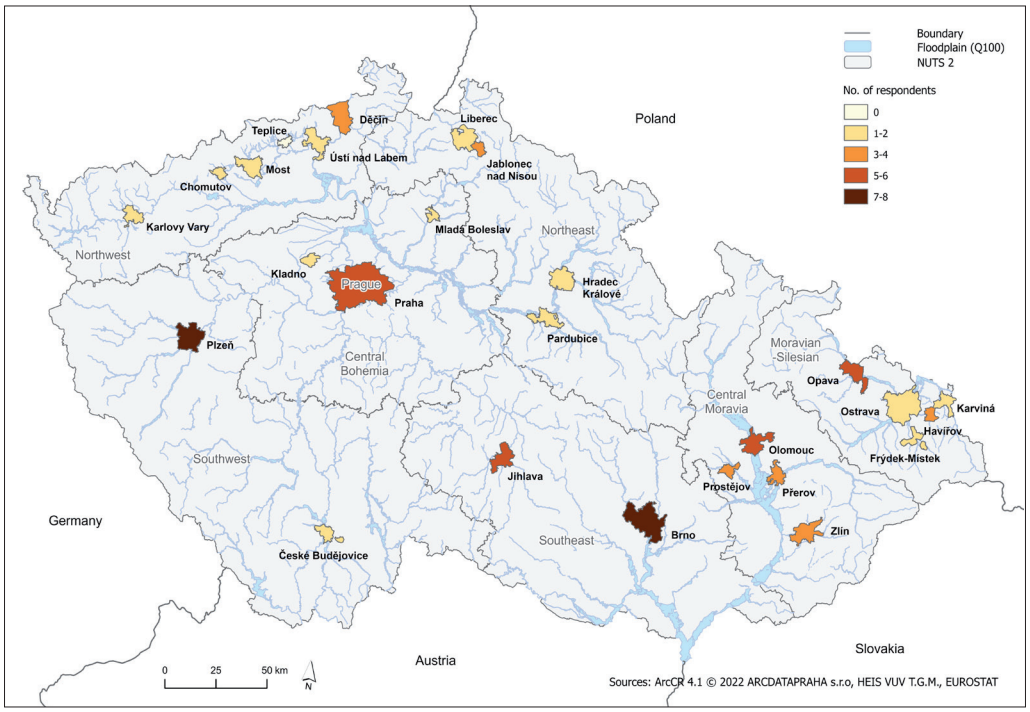


Fig. 4: Czech statutory cities addressed by the questionnaire survey
Source: authors' elaboration

Question No.	Question	Question type
Q1	Which flood maps do you use at your work?	closed
Q2	How often do you work with flood maps?/How often do you use flood maps?	closed
Q3	Do you use the Central Data Storage as a source of flood danger and risk maps?	semi-closed
Q4	If you do use the Central Data Storage, how would you assess working with it?	semi-closed
Q5	In the processes of spatial planning and decision-making, do you use flood maps or prefer to rely on your personal/professional experience?	semi-closed
Q6	How would you rate the sufficiency and availability of information about flood maps?	closed
Q7	How would you rate the flood maps according to the demands placed on you when interpreting and using them?	closed
Q8	Do you (or did you) take any further education on flood-related issues as part of conducting your profession?	semi-closed
Q9	Is there any data missing in your City's information system that you have to search for/acquire from other sources?	open
Q10	Are there any data you would add to the extant flood maps to aid the conduct of your professional tasks?	open

Tab. 2: Survey questions used in the study
Source: authors' survey

were not part of the data collection and analyses. The questions used to collect data were discussed and tested in cooperation with officials of the Brno City Municipality before being sent to all statutory cities.

The data gathered were analyzed using the methods of descriptive and inferential statistics; besides Cramer's coefficient and Spearman's rank correlation coefficient, non-parametric statistics were used as well, namely the Mann-Whitney U test, the Kruskal-Wallis test and Friedman's ANOVA.

4. Results

A total of 78 questionnaires were obtained from officials of 25 statutory cities (i.e. in one case only none of the city's officials responded). Table 3 shows the numbers of respondents by selected categories.

4.1 Utilization of flood maps (Q1)

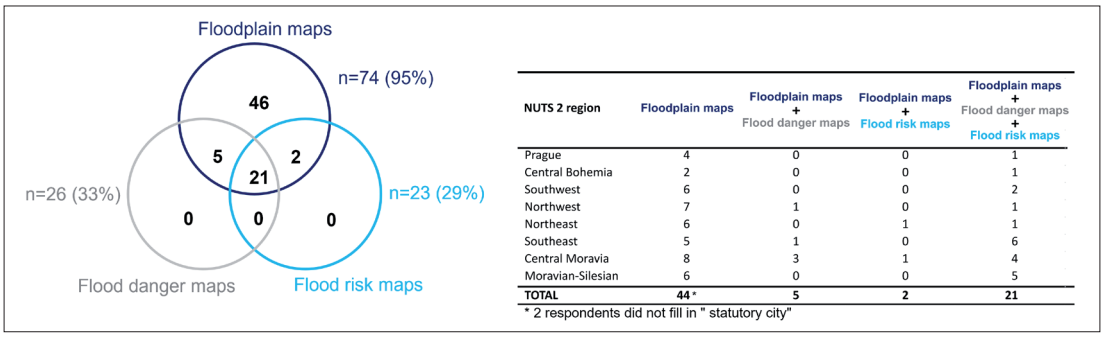
Particular types of flood maps are used unevenly (Fig. 5). A majority (95%) of respondents rely on the floodplain maps, while approximately one-third of them stated to use (also) other maps; combining all the maps took place in 27% of cases, and if two kinds of maps were used, floodplain maps were always one of them. Around 5% of respondents do not use flood maps at all.

The strongest association has been found between the number of flood maps in use and the department respondents work at (Cramer's V = 0.35). Almost 77% of spatial and strategic planning officials use more than one map (apart from them and the departments classified as 'other', respondents from no other department work with at least two types of flood maps in more than half of the cases). Thus, concerning the others, most of the respondents only use floodplain maps (these shares were approximately 54% in the Water management department, 64% in the Environment department, and nearly all of the respondents working at the Building offices). Another statistical association, although relatively weak (Spearman's coefficient − 0.18) was found between the usage of flood maps and length of professional experience, suggesting that the number of types of flood maps used increases with the length of the officials' professional careers. Our data (Spearman's coefficient 0.08) also suggest a certain role of the city size categories; it can be pointed out that officials from cities with more than 200 thousand inhabitants in more than half of the cases used all types of flood maps.

When considering the identification variables (Fig. 6), the relationship between the use of floodplain maps is strongest in the case of the department (Cramer's V = 0.27), but it is not statistically significant (almost everyone uses them). In contrast, the use of flood danger maps is related to both department (Cramer's V = 0.48) and length of experience (Spearman's rho = − 0.29). This means that the longer the respondent's experience, the less they use them. Figure 6 shows that these maps are used most by respondents with 6–10 years of experience. The use of flood risk maps is again associated with the department (Cramer's V = 0.47).

Department	**Water management**	**Environment**	**Spatial and strategic planning**	**Building office**	**Other**	**Unfilled**
	26	14	13	15	6	4
City size (number of inhabitants)	**0–50 000**	**50 001–100 000**	**101 000–200 000**	**> 200 000**		**Unfilled**
	18	28	14	15		3
Length of professional experience (years)	**0–5**	**6–10**	**11–20**	**21–30**	**> 30**	**Unfilled**
	7	15	28	15	4	9

Tab. 3: Number of respondents by selected categories (N = 78)
Source: authors' survey



NUTS 2 region	Floodplain maps	Floodplain maps + Flood danger maps	Floodplain maps + Flood risk maps	Floodplain maps + Flood danger maps + Flood risk maps
Prague	4	0	0	1
Central Bohemia	2	0	0	1
Southwest	6	0	0	2
Northwest	7	1	0	1
Northeast	6	0	1	1
Southeast	5	1	0	6
Central Moravia	8	3	1	4
Moravian-Silesian	6	0	0	5
TOTAL	44 *	5	2	21

* 2 respondents did not fill in " statutory city"

Fig. 5: Utilization of different types of flood maps by respondents (N = 78)
Source: authors' survey

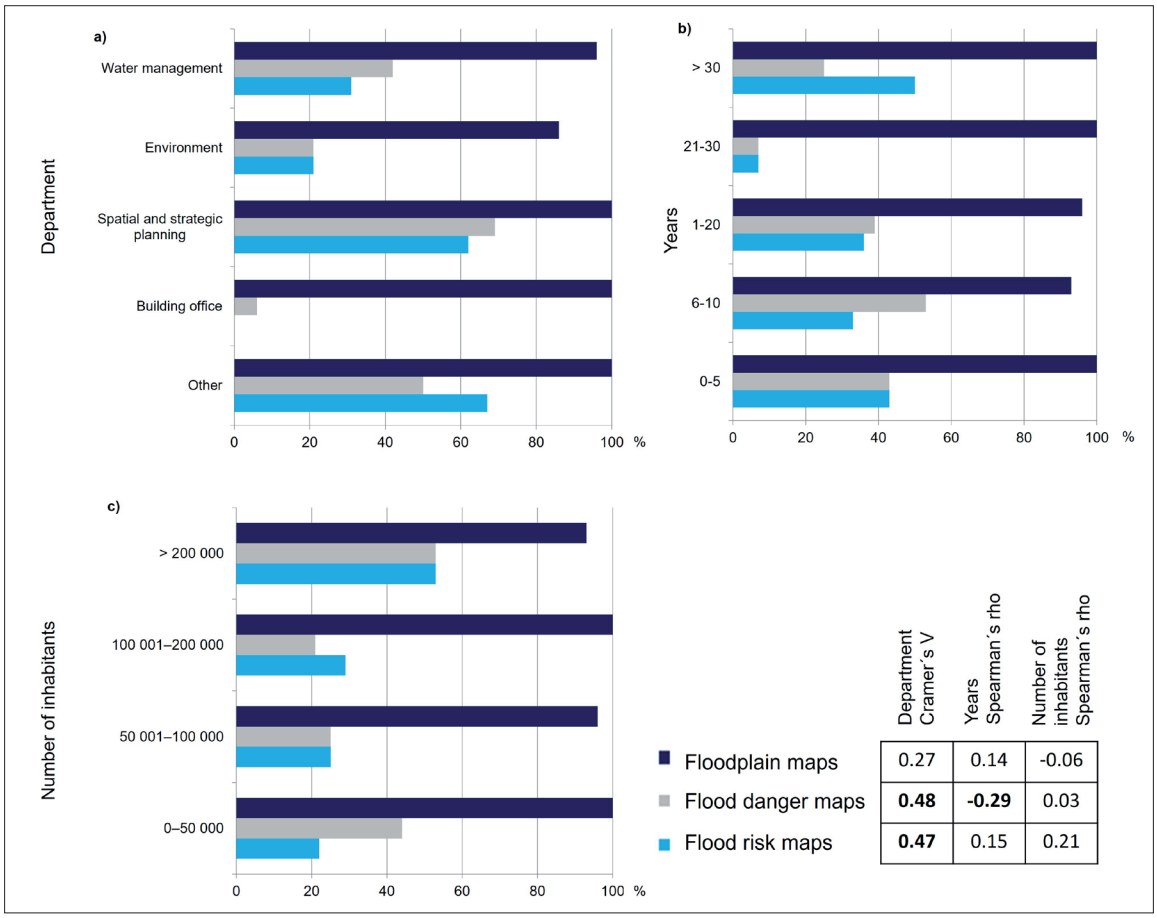


Fig. 6: The use of flood maps by respondents (%) according to (a) department; (b) length of professional experience; and (c) city size
Note: coefficients in bold are statistically significant at the α = 0.05 level of significance)
Source: authors' survey

4.2 Intensity and ways of using the flood maps (Q2, Q3, Q4, Q5)

The most frequently utilized were floodplain maps (at least once a week by more than 63% of respondents). The other maps are used much less frequently (Fig. 7).

For floodplain maps, an analysis was conducted to determine which groups of respondents utilize floodplain maps more frequently. At a significance level of $\alpha = 0.05$, the Kruskal-Wallis test was applied to test the hypothesis that the medians of the intensity of use of the floodplain maps by officials in each department were consistent. This hypothesis was rejected (p-value 0.005), with multiple comparisons revealing a difference between the officials of the Water management department on the one hand and the officials of the Spatial and strategic planning and the Building office on the other. The median intensity of floodplain maps utilization by Water management officials was equal to "daily", i.e. at least half of the Water management respondents use these maps on a daily basis (Fig. 8).

When conducting spatial planning and decision-making, 29% of respondents reported relying on flood maps rather than on personal/professional experience, while in 63% of cases they combined the two approaches. Regarding the source of the flood maps, only 15% of respondents stated to work with the official map portal, i.e. Central Data Storage (Ministry of Environment of the Czech Republic, c2021), wherefrom flood danger and flood risk maps are available. Within open commentaries, these respondents pointed out the portal's complicatedness, lack of clarity, and user-unfriendliness. The rest of the respondents use other flood map sources, primarily documentation of the river basin managers, municipal GIS, regional documentation, Planning analytic materials documents, etc.

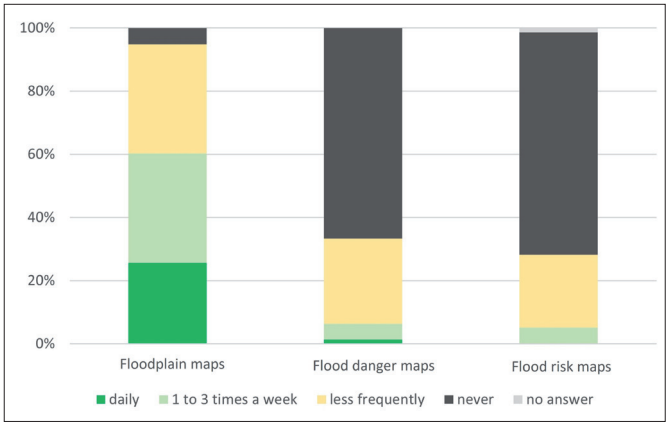


Fig. 7: Intensity of use of different types of flood maps by respondents
Source: authors' survey

4.3 Data in flood maps and their interpretation and usage (Q6, Q7, Q8)

Information on floodplain maps was sufficient and available for most (92%) of the floodplain map users, while information on flood danger and risk maps was considered insufficient and less available by around one-third of both their users and non-users (Fig. 9). There was no difference in median score values of information sufficiency between users and non-users for either type of flood map (Mann-Whitney U test p-value was greater than the $\alpha = 0.05$ significance level each time). If we did not separate the information sufficiency of each type of flood map, but evaluated respondents' answers among themselves, there was a clear difference in median information sufficiency scores among map types (Friedman's ANOVA p-value = 0.000).

Respondents' ratings of the ease of interpretation of individual flood maps varied considerably. The difference was demonstrated by Friedman's test (p-value = 0.000). Floodplain maps were viewed as the most easily interpretable and utilizable (Fig. 10). As regards flood danger and risk maps, their interpretation and usage were relatively more often considered challenging or complicated (24% and 17%, respectively).

More than half (55%) of the respondents stated to undertake further education on water/flood-related issues, mainly through workshops, seminars, and studying relevant documents. Cramer's coefficient (0.61) indicated a relatively strong association between further education and the respondent's department; Water management officials and respondents belonging to the category "other" took such training/education much more often.

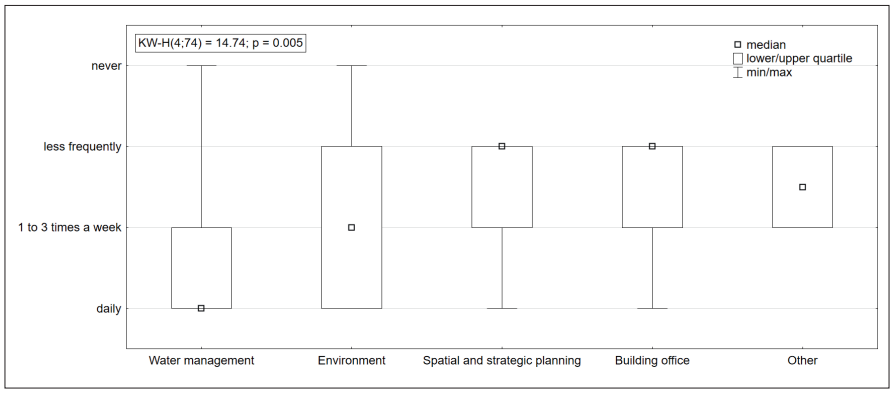


Fig. 8: Intensity of floodplain maps utilization by individual departments
Source: authors' survey

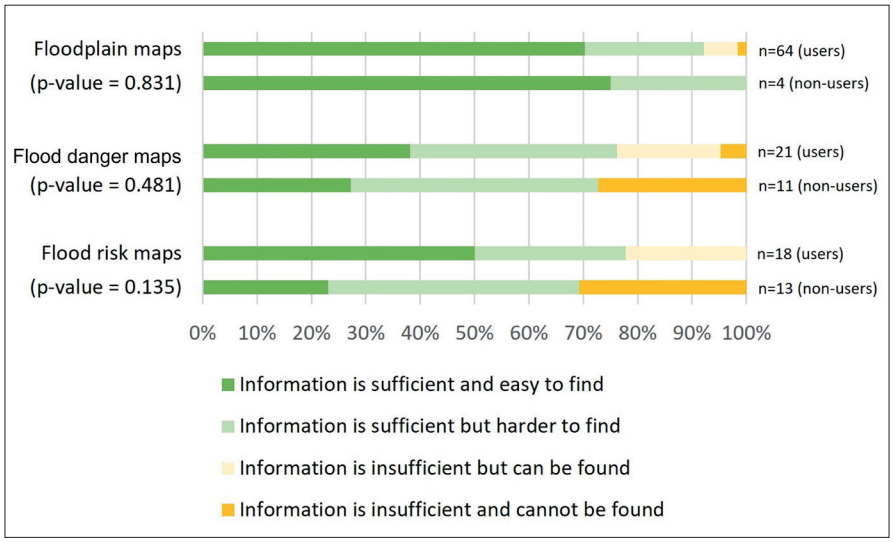


Fig. 9: Respondents' assessment of the sufficiency and availability of information on flood maps
Source: authors' survey

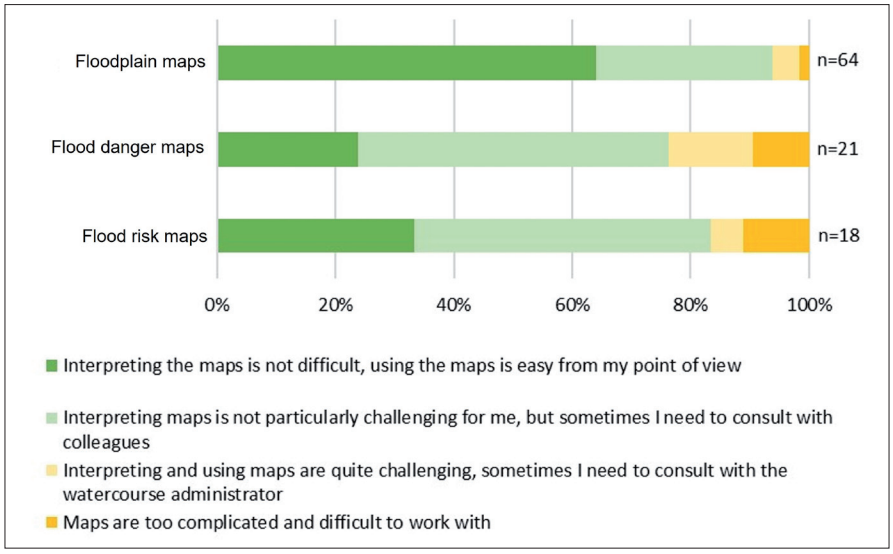


Fig. 10: Respondents' assessments of the difficulty of interpreting and using flood maps
Source: authors' survey

4.4 Suggestions for the flood maps adjustments (Q9, Q10)

Around one-third of respondents (30%) commented on the possibility of adding new data/information to the flood maps. Requests concerning any missing information were purely technical, including the addition of information on gauge curves, carrying out manipulations at water bodies, or construction activities in riverbeds. Only two respondents expressed a need for greater detail maps for working with specific parcels. None of the requests concerned the socio-economic data.

5. Discussion

Our data show that compared to other types of flood maps (flood danger and risk maps), local government bodies in the Czech Republic prevailingly rely on floodplain maps. Factors of a certain "tradition" can be at the game here, since these maps were for a long time almost the only flood map base (if leaving aside technical studies) available and used within relevant decision-making and planning processes (Section 2.2). Our results, however, also confirm that respective officials consider floodplain maps easier (or not particularly difficult) to interpret, and more than 60% of them regard information about these maps to be sufficient and available/easy to find. On the other hand, just less than one-third of officials use all three types of flood maps. In addition, even if the newer types of flood maps (i.e. flood danger and flood risk maps) are used, the intensity of their utilization is relatively low. In line with other authors (Andráško, 2021; Bera and Daněk, 2018; Fox-Rogers et al., 2016; Rauter et al., 2020), our findings thus confirm that despite certain developments already observed, the practices and processes of planning and policy/decision-making still largely neglect the up-to-date approaches and practices of flood risk management, including the multi-criteria risk assessment.

Hence, while flood maps have been recognized as one of the most important measures for improving public flood awareness and preparedness (Floods Directive, 2007), in the Czech Republic, but also elsewhere (Auliagisni et al., 2022; Meyer et al., 2012), they remain rather a technical information base than a risk communication instrument (*cf.* Maidl & Buchecker, 2015; Houston et al., 2019). This issue comes to the fore when considering our finding that flood danger and risk maps are used the least by Building office authorities. As stated in Section 2.3.1, Decree No. 79/2018 Coll. establishes the flood danger maps as a legally binding basis for the delimitation of active flood zones. Thus, Building office representatives should be those most aware of particular maps available and their contents to provide active, effective, and well-informed governance, including communicating the information on the methods and necessity of the active zones delineation (with pending restrictions on new construction) to the public (for example, to those applying for building permits). Notably, building and living in floodplains and active flood zones are particularly sensitive and important issues in many countries (Glosińska, 2014; Kongmuang et al., 2020), including the Czech Republic (Andráško et al., 2020; Hudson et al., 2022; Pechanec et al., 2011; Raška et al., 2018; Raška et al., 2022). On the positive side, our data also show that Spatial and strategic planning officials use the respective maps (i.e. the newer types – flood danger and flood risk maps) the most among all departments surveyed, which corresponds with recommendations on using flood maps in the formulation and evaluation of individual risk scenarios and adaptation strategies (Dottori et al., 2022). Our results, though, do not allow us to assess whether the utilization of flood danger and risk maps is not only a formal inclusion in the Planning analytic materials.

Another noteworthy finding our study brings is that almost a quarter of the officials working with flood danger and risk maps report that the interpretation of these maps' contents is challenging or even too difficult for them; this state of affairs is a bit surprising since more than a half of the respective officials also stated they regularly improve their flood risk management skills through some forms of further education (mostly seminars and workshops). Anyway, once the local government bodies are not well-versed in flood maps, it can be hardly expected that the lay public will do better (Albano et al., 2015; Kjellgren, 2013), a situation that definitely cannot aid the goal of making flood maps a vital part of more effective flood risk-related governance and communication (Auliagisni et al., 2022; Meyer et al., 2012).

Flood danger and flood risk maps are officially stored at the Central Data Storage (Ministry of Environment of the Czech Republic, c2021). Our findings however show that well less than a quarter of the respective officials use this storage; furthermore, it has been largely pointed out that the storage is user-unfriendly and too complicated to work with. For this reason, it seems appropriate and reasonable to integrate flood maps directly into web-based applications within the GIS systems of cities or any other levels of governance. Applications developed this way can also carry additional/supplementary information on flood risk and serve as a more appropriate risk communication tool (Albano et al., 2015; Maidl & Buchecker, 2015; Sanders et al., 2020).

Remarkable is also the finding that while flood maps are accepted by most officials as "helpers" for conducting their work tasks, in almost two-thirds of the cases they also combine them with one's own professional experience. This might not be seen as an issue at first glance. Such an experience however is usually tacit and non-transferable, a problem that aggravates in the light of situations associated, for example, with job/employment fluctuations/turnover, retirements, etc. Therefore, incorporating experience-related information from the officials into the flood maps is an essential, yet still underemphasized aspect of creating and utilizing flood maps (Auliagisni et al., 2022; Meyer et al., 2012). The same holds, however, also for the lay experience of the public; the potential for a better understanding of flood risk, making more competent decisions, and taking more effective actions by involving the personal experience of, for example, local inhabitants in the mapping process is then inevitably wasted (Sanders et al., 2020), with repercussions for the local communities' levels of risk awareness and flood preparedness/resilience (De Dominicis et al., 2015; Lechowska, 2018; Raška et al., 2018).

Considering the aspect of adjusting the extant flood maps, for example through supplementing them with any further information, we have found that only 2 of 78 officials addressed mentioned the additional spatial scales of the data displayed. The currently most used scale of 1:10 000 is, however, rather insufficient for decision making at the level of individual objects and small areas (*cf.* Porter & Demeritt, 2012); the fact that the flood maps are not customized to their primary users (Hagemeier-Klose & Wagner, 2009; Meyer et al., 2012; Sanders et al., 2020) may be one of the reasons (and hence explanations) why they are not used, for example, by the Building office representatives, as found by our survey. As regards any other additional data that the officials would consider useful to have in the flood maps, in general, these were primarily those associated with the hydrological and hydrogeological technicalities. The variety of individual responses (there were almost no overlappings in the stated requirements), however, points out the diversity and specifics of the positions using flood maps, and, at the same time, stresses the importance of taking the respective particularities into account when considering adjustments of the flood maps and their adaptations to the needs of the individual users (Mohanty & Simonovic, 2022). The observed complete absence of requests to supplement flood maps with socioeconomic information presumably suggests, once again, that the maps are not yet viewed as a tool for more complex, multi-criteria assessments and decision making (*cf.* McLaughlin, 2019;

Dottori et al., 2022), involving also the "human" or social aspects of the issues in question. Simultaneously, demands for only technical refinements of hydrological modelling outputs and technical data may indicate the overestimation of the accuracy of models applied and oversimplifications of the complexities of everyday reality, at least potentially leading to issues such as ineffective or even harmful decisions or interventions. Seipel and Lim (2017) then emphasize the need to include and visualize the respective uncertainties in flood-prone areas' delimitation.

6. Conclusions and suggestions for relevant research and practice

The paper presented the results of a study centred on whether and how local government bodies in the Czech Republic utilize particular types of flood maps within the processes of planning and decision/policy making. Results of a survey addressing the relevant officials from the Czech statutory cities showed that the earliest type of flood maps, i.e. the floodplain maps remain the most used, while the newer types, i.e. the flood danger and risk maps are utilized rarely. The mere inclusion of newer flood maps in national legislation thus seems to be an insufficient incentive for their more intensive use in the respective authorities' agendas. Furthermore, our findings suggest that flood risk management at the studied level of governance continues to stress the purely technical aspects of flood risk and flood protection, instead of promoting and applying integrated approaches incorporating, besides others, a multi-criteria risk assessment. This "inertia" thinking, and approach was confirmed also by the officials' suggestions for future improvements of the extant flood maps, involving solely their technical features and completely omitting any aspects and components of vulnerability or the social construction of risk. Unsurprisingly then, we found that the officials continue to use the flood maps only as technical tools, rather than (also) as a means of effective communication with other subjects/agents officially expected to be involved in managing the flood risk and dealing with flood events. The potential of more advanced flood risk management and improved flood resilience relying on multi-criteria assessment, the inclusion of a spectrum of agents (for example, local inhabitants) in the processes of policy/decision-making, and more effective cooperation, communication, and responsibility sharing, thus still represents a largely missed opportunity in the Czech statutory cities.

Except for contributing to closing the knowledge gap on the perception and utilization of flood maps by agents such as local government bodies, this study also suggests several avenues for future research and practice.

First, more needs to be known on the particular reasons for the underappreciation and underutilization of flood danger and flood risk maps at individual levels of governance. Because of their crucial role in information processing and interpretation, attention should also be paid to more intensive interfaces with GIS systems. Moreover, it seems appropriate to develop methodologies for adjusting the extant flood maps for the needs of target groups such as individual authorities/departments/job positions, potentially raising the interest and motivation to use the maps in the officials' everyday professional conduct. The processing of such customized maps could then be carried out by the GIS departments (assuming the availability of the necessary thematic spatial datasets), allowing for their regular updates and continuous development.

Second, the utilization of flood maps as a tool for fostering risk communication between individual levels of governance and agents such as the public needs to be not only more emphasized, but, especially, practised. To exemplify this requirement, there are more than 6,200 municipalities in the Czech Republic, and their representatives have to face and deal with an overwhelming number of frictions between various interests, and demands of numerous agents, not exceptionally associated with flood-related issues. Flood maps can be thus the means of supplying not only the representatives but also other agents (for example, residents) with the information needed in a relatively fast and sufficient way, allowing for more competent decisions, but also clear arguments for reconciliations of disputes and resolutions to dilemmas. Also at this point, an adaptation of the flood maps to the target groups (including the local inhabitants) seems to be an appropriate step, relying, first, on a methodology setting up a certain solid minimum of information every map must contain, and second, on the refinement and supplementation of these contents based on particular needs and demands in the areas in question. Therefore, the public is inevitably assumed to be involved in the identification of relevant data, provision of these data (for example, incorporation of the locals' flood memories, experience, practices, traditional measures taken in the past, etc.), and updates/maintenance of the final product (i.e. the customized flood maps). This way, not only the flood risk management in the area can be improved, but also the community's risk awareness, trust in the measures adopted, and willingness to participate in the numerous flood-related activities may be supported.

Third, funding for the flood maps' creation, updating, and maintenance is another issue to be (re)considered. The current praxis of relying on the state budget seems to be rigid, ineffective, and unsustainable. Drawing on the internal budgets for the GIS technologies development, already present and in use in the statutory cities and regions, may be an option here. In the cases of smaller municipalities, however, it will be necessary to find other ways of financing the preparation and maintenance of flood maps by external entities. Considering the pace at which data in flood maps become obsolete and need to be updated (and due to the climate change-associated challenges this pace will presumably speed up in the future), it seems reasonable to focus on the respective web applications, which are much more flexible and adjustments-friendly than their printed counterparts.

Fourth, for all the previously mentioned research and practice topics, it would be useful to focus in the future on a broader geographical area of European countries with similar public governance structures and flood management structures (for example, Poland, Slovakia, and others). Given the mandatory transposition of the European Directive into the national legislation of all EU countries, such research could provide a basis for obtaining best-practices in each of the studied thematic areas.

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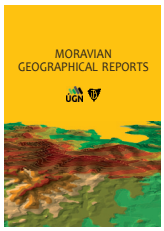

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Cross-border cooperation of Polish and Czech area-based partnerships supported by Rural Development Programmes: Genuinely international or solely national projects?

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Abstract

The literature on cross-border cooperation in Europe is predominated by the analysis of the European Union (EU) INTERREG Programmes' results, while other support funds are often neglected. To fill this research gap, the authors undertook the research on cross-border cooperation of the area-based partnerships (Local Action Groups – LAGs) from Poland and the Czech Republic, financed by the Rural Development Programmes (RDPs) 2014–2020. The main purpose of our paper is to identify the rationales for cooperation, strategies to find partners, the scope of activities and obstacles in implementing the joint projects. The qualitative research involved a content analysis of LAG documents and interviews with LAG managers. The actions in twelve identified cooperation projects were mainly related to local traditions, inventory and the promotion of local products and services, the development of tourism and environmental issues. The respondents have emphasised that these actions required separate financing by national RDPs following different administrative rules, even though when constituting the components of a single project. The bureaucratic restrictions resulted in a clear asymmetry of LAGs activities, manifested in a lower involvement of the Czech LAGs. As a result, many projects can be considered as highly unilateral, solely national rather than genuinely international, which has not been the intention of the LAG managers, however.

Key words: *Area-based partnerships, Local Action Groups, Rural Development Programme, cross-border cooperation projects, evaluation, Poland, Czech Republic*

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1. Introduction

Cross-sectoral area-based partnerships, so called Local Action Groups (LAGs) in the European Union (EU), are most commonly the associations of people and organisations, representing social, economic and public sector, operating in the territorially compact areas (Thuesen, 2011; Gąsior-Niemiec & Pawłowska, 2014; Konečný, 2019). LAGs prepare territorial development strategies and receive public funds to support projects of local voluntary organisations, entrepreneurs and public entities to enhance local social and economic participative development (Chmieliński et al., 2018; Lacquement et al., 2020; Shishkova, 2020; Opria et al., 2023). LAGs are supposed to stimulate local stakeholders' mutual good relations and bottom-up cooperation in the management of local resources (Esparcia et al., 2015; Navarro et al., 2016). The collaboration is intended to ensure greater effectiveness in creating local social and human capital, meeting the needs of residents and contributing to sustainable development (Duguet, 2007; Macken-Walsh, 2009; Marquardt et al., 2011). Although they focus on local actions, the exchange of information between LAGs within European, national, regional and cross-border networks and the implementation of joint cooperation projects are also important in supporting their activities (Ray, 2001; Marquardt et al., 2009; De Luca et al., 2018; Marhoff, 2019). The main purpose of this type of interregional relations is to transfer information, good practices, innovative ideas, and to strengthen the mutual respect of local communities despite cultural differences – similarly as in the municipal international cooperation (Lucke & Bellocchi, 1997; Baldersheim et al., 2002; Furmankiewicz, 2005).

Currently, an abundant literature is available dealing with the internal cooperation of stakeholders within LAGs territory, specific power structures, the creation of social capital, the effects of implemented local projects and other results of their operation (Moseley, 2003; Kull, 2014; Zajda, 2014b). However, much less attention is devoted to the issues of their international cooperation, diffusion of information, good practices and innovations (Ray, 2001; Duguet, 2007; Marquardt et al., 2009; Pisani & Burighel, 2014; Pylkkänen et al., 2020). In turn, the

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literature on cross-border cooperation is dominated by studies analysing projects implemented under the EU INTERREG cross-border cooperation programmes (e.g. Dołzbłasz, 2013; Dołzbłasz & Raczyk, 2015; Martín-Uceda & Jańczak, 2018; Nadalutti, 2015; Böhm et al., 2021, 2023) while other sources of financing are relatively rarely analysed and discussed (McCall & Williamson, 2000; Ray, 2001). There is a particularly striking scarcity of studies analysing the extent to which LAGs are involved in international and border cooperation in the frame of Rural Development Programmes (RDPs), which has been also subject to significant support in the integration policy of the EU (Ray, 2001; Zajda, 2013; Pylkkänen et al., 2020). Thus, in this paper, the authors attempt to develop the discussion on the significance of formal, cross-border LAGs cooperation supported by RDPs, independently of the programmes such as INTERREG. As an example of this type of cooperation, Polish-Czech projects initiated and implemented by LAGs located in border regions, in 2014–2020 financial perspective (in practice contracting till 2023) were analysed. The main research objectives (RO) of this article are as follows:

- RO1: to identify the cross-border cooperation networks co-financed under RDPs within the so-called Community-Led Local Development (CLLD) framework and differences in the involvement of Polish and Czech partners;
- RO2: to evaluate the rationales and scope of LAGs cooperation, strategies in finding partners, identifying the main obstacles and assessing the prospects for further development of cooperation;
- RO3: to assess the conditions of the RDPs in supporting cross-border cooperation based on the opinions of LAG representatives.

The main added value of this article is presenting the relatively poorly discussed topic of LAGs cross-border cooperation within the RDPs framework, its limitations and challenges. Our analyses can prove useful for the developers of future support programmes (i.e. officials and politicians) offering an additional evaluation of cooperation projects implemented as part of the CLLD approach. The paper is also intended as a contribution to the research carried out on the basis of political geography, presenting the widely discussed problem of asymmetry issues of cross-border cooperation.

2. Networks and cooperation of LAGs in the EU rural development policy

2.1 The role of inter-regional cooperation of LAGs in boosting local development

In contemporary socio-economic development, the authors emphasise the high role of group work, cooperation and voluntary non-hierarchical relations, which are an important component of territorial governance systems in democratic countries (Murdoch, 2000; Simard & Chiasson, 2008; Furmankiewicz et al., 2014; Pappalardo et al., 2018). This approach to local development also involves the establishing of cross-sectoral territorial partnerships, such as LAGs, in the EU. LAGs have been supported in rural areas in the countries of the European Economic Community since 1991 (Barke & Newton, 1997; Ray, 2000); and in Poland and the Czech Republic after the accession of these countries to the EU in 2004 (Furmankiewicz et al., 2015; Šaradín & Zapletalová, 2021). Since 2014, LAGs can operate in both rural and urban areas, under the Community-Led Local Development (CLLD, formerly LEADER) approach (Miller, 2014; Servillo & De Bruijn, 2018; Kola-Bezka, 2020). The assumptions of CLLD approach have already been widely described and analysed in the literature (creation of area-based local development strategies, bottom-up elaboration and implementation of strategies, local public-private partnerships, integrated and multisectoral actions, innovation, cooperation, networking) (European Commission, 2006; Bosworth et al., 2016). In this subsection, however, the authors have focused on two promoted activities: the 'networking', and primarily the 'cooperation'.

The idea of networking is focused on creating transnational, national and regional information exchange networks (Duguet, 2006; Marquardt et al., 2011; Marhoff, 2019) while cooperation is focused on undertaking joint ventures in smaller groups (Lepik & Bremse, 2013; Zajda, 2013; Esparcia & Abbasi, 2020). Networking includes both the exchange of information between LAGs, and between LAGs and state administration entities that participate in rural development (Silina et al., 2012; NSMAS, 2015). The cases are the National Network of LAGs of the Czech Republic (NSMAS, 2021) and the National Rural Network in Poland (Chmieliński, 2011).

Cooperation under the CLLD approach is meant to take place on two main formal and legal levels – within a cluster of organisations working for the development of a specific territory (i.e. territorial cooperation) (Da Re et al., 2017) and between LAGs and other public or private organisations from different areas (i.e. inter-regional cooperation) (Ray, 2001; Duguet, 2006; Pylkkänen et al., 2020). In both cases, LAGs are to ensure the broad participation of local communities in cooperative activities.

In the source literature, it is believed that both the horizontal networks of coordination (exchange of information) and cooperation (joint activities involving own resources) can bring a number of benefits to its participants (individuals and organisations) (Nunn & Rosentraub, 1997; Furmankiewicz et al., 2014; Da Re et al., 2017). Networking can have a positive impact on the relations and exchange conditions between the local stakeholders and the outside world (Saraceno, 1999). External networks are designed to help overcome the isolation that often involves actors and individuals living in rural areas, especially the peripheral ones (NSMAS, 2015). The authors emphasise that the voluntary nature of creating cooperation networks increases their flexibility in solving local problems and generating stimuli for development (Esparcia & Abbasi, 2020).

Information exchange networks serve to expand the knowledge of the participants involved and stimulate the diffusion of innovation (Srsen et al., 2017). They can facilitate the modernisation or introduction of new organisational solutions and ideas that – even if already known in other regions – provide innovations on the local scale that positively affect the efficiency of enterprises, local governments and social organisations (Doitchinova et al., 2019). The acquisition of new knowledge and skills allows for competence building, meeting the needs of local communities and solving their problems more effectively. Networks and clusters also facilitate obtaining financial support, providing regulatory frameworks and measures, stimulating needs, creating markets and reducing uncertainty in economic activity (Conway & Waage, 2010). They can be particularly important in rural areas, which are more hesitant in accepting innovations, due to social attachment to tradition and often relatively low level of education among the population (Floriańczyk et al., 2012).

In the case of both cross-border and far-distance international contacts between organisations and local communities, the authors also point to their significant role in overcoming national prejudices as well as building mutual trust and respect for cultural differences, which may help to mitigate conflicts and stimulate social inclusion of the excluded social or national minorities (Furmankiewicz, 2005; Böhm & Drápela, 2017). The European cooperation between local stakeholders is considered to be particularly important for the integration of a culturally and ethnically diverse Europe and is often interpreted as the process of the 'Europeanization' (Scott, 2018; Heidenreich, 2019).

The participation of both local leaders and managers of LAGs (people who are moderators of local social activity) in international contacts is of great importance for local development (Koschatzky, 2000; Bábíková, 2019). The qualifications of these people can be increased through their participation in conferences and trainings organised with the representatives and LAGs office staff (direct learning), but also through study visits, during which the representatives of local communities learn about the effects of successful projects in other areas (Zajda et al., 2017). Owing to international cooperation, LAGs can add value to their human resources and be more creative in terms of activating rural communities (Ray, 2001; Lepik & Bremse, 2013).

As a result of the positive perception of the possible effects of inter-regional relations in the EU policy, significant attention was also paid to the international cooperation of LAGs (Ray, 2001; European Commission, 2006; 2018). The EU programmes supporting the activities of LAGs usually involved separate allocation of funds for the implementation of national and international cooperation projects between these organisations (Ray, 2001; European Commission, 2008; Sykała et al., 2015).

2.2 The development of international cooperation of LAGs

International cooperation of LAGs has a longer tradition in Western Europe than in Eastern Europe. LAGs from the EU Member States could participate in transnational cooperation in two subsequent LEADER Community Initiatives: LEADER II (1994–1999) and LEADER+ (2000–2006) (Ray, 2001), when Poland and the Czech Republic were not yet members of the EU (accession to the EU in 2004). Despite the emphasis in the EU documents on the high role of supporting the international cooperation of LAGs (European Commission, 2006; De Luca et al., 2018), some studies indicate that their real involvement in international cooperation was not intensive. For instance, Schiller (2008) found that LAG international relations in LEADER+ were not considered important by the Eurosceptic rural communities in British LAGs.

In the EU 2007–2013 programming period, the budget which the Member States programmed for inter-territorial LAGs cooperation projects was € 265 million from the European Agricultural Fund for Rural Development (EAFRD) (European Commission, 2008). It is estimated that approximately 360 international cooperation projects were supported (Lepik & Bremse, 2013), which seems a relatively low number for the entire EU. Authors conclude that the European LAGs expressed only a relatively small interest in international relations (Bedrac & Cunder, 2010; Zajda, 2013; Pylkkänen et al., 2020). For instance, 189 national cooperation projects were implemented in Poland under the RDP 2007–2013, and only 34 projects with a foreign partner (Wojewódzka-Wiewiórska, 2017). Kalisiak-Mędelska (2013) assessed that in the Łódź region in Poland, international cooperation projects were implemented to an 'insufficient degree', as out of twenty existing LAGs, only three participated in international projects. The research of 22 LAGs from the Lublin region in Poland revealed that only one LAG expressed the will to implement an international project (Guzal-Dec, 2018). International LAG cooperation has also proved less popular than the local issues in the Czech Republic. An analysis of the content of press articles about LEADER approach showed that only 5% contained information on international LAG activities (Lošťák & Hudečková, 2010). According to the ex post evaluation of the RDP 2007–2013 in the Czech Republic, LAGs were involved in 162 national and 40 transnational projects of this type. The most common foreign partners were LAGs from Slovakia, and only in four cases from Poland (EKOTOXA and IREAS, 2016; SZIF, 2015).

The literature offers relatively few analyses of the scope of activities and barriers for international LAG cooperation. In Poland, cooperation projects involving foreign partners most often concerned the development of tourism, the preservation and promotion of cultural heritage and enhancing pro-ecological attitudes of local communities (Kalisiak-Mędelska, 2013; Hoffmann & Hoffmann, 2018; Zajda, 2014a). The main identified barriers to international cooperation include relatively high financial costs and difficulties in coordinating activities due to geographical distance, language barriers and differences in legal conditions and formal requirements for LAGs in different countries (Wojewódzka-Wiewiórska, 2017). In other countries, De Luca et al. (2018) analysed the example of an international cooperation project led by the Italian LAG, whose main themes were rural tourism and the sustainable development of forestry. In this project, the main difficulties of cooperation identified were differences in financial abilities, regulations and procedures in different EU countries and the Managing Authorities' bureaucracy and timing. In other cases the scope of activities concerned information exchange, tourist small infrastructure or training and educational activities (Srsen et al., 2017; Krasniqi, 2020; Voth, 2024).

2.3 The issue of influence of top-down policy on LAGs scope of cooperation

In the literature, the authors point out numerous limitations of LAG support programmes, which emphasise the need for 'bottom-up' and 'innovation', and at the same time introduce numerous restrictions on the scope of financed activities, limiting their innovative character and effective operations (Kis & Szekeresne, 2011; Konečný et al., 2020). According to the original assumptions, LEADER and CLLD approaches were to promote grassroots innovation through a high level of freedom in the types of implemented projects. Similarly to the idea of New Public Management, the main element of the final evaluation regarding local activities was to be their effects, including positive impact on achieving the goals of social development (participation, activation of residents) and economic development (a bottom-up development based on small and medium-sized enterprises and multifunctionality of agricultural farms), rather than focusing on compliance with administrative procedures (Moseley, 2003; Pawłowska, 2016; Konečný et al., 2020). Hence, initially, this programme was associated with the concept of endogenous development (fully bottom-up), based mainly on local needs, ideas, resources and grassroots activities (Barke & Newton, 1997; Ray, 2000).

The analyses of subsequent LEADER type programmes indicated that their aims and rules had a strong impact on the scope of local activities (e.g. Furmankiewicz et al., 2015; Konečný et al., 2020). A fear of non-settlement of funds and the loss of refinancing limited project innovation and increased the efforts of public authorities to the standardisation of local projects and to expand control over LAGs, project selection and their implementation (Zajda et al., 2017). Pisani and Burighel (2014) suggested that in Italy bureaucratic constraints may have reduced interest in transnational projects in subsequent LEADER programmes. The autonomy of LAGs, as a local actor, was therefore limited (Kovacs et al., 2023).

As a result of these observations, the concept of neo-endogenous development was popularised, indicating a deliberately strong influence of top-down rules on bottom-up actions (Ray, 2006). However, the analyses of this issue concerned mainly local activities within the LAG territory. The impact of procedures and restrictions included in the programmes on inter-regional (including international) cooperation undertaken by LAGs was relatively rarely discussed. The literature provides almost no information if LAGs are involved in regional cross-border cooperation, what is its scope and what problems arise in the implementation of joint projects. It is the reason why the authors focused on analysing the projects implemented by Polish and Czech LAGs in border regions in the frame of RDPs.

3. Materials and methods

The conducted research covered Polish-Czech cross-border cooperation projects implemented with the funds obtained from national Polish and Czech RDPs 2014–2020 by LAGs operating under the CLLD approach. The research covered projects whose leader (main contractor) was LAG located in the regions adjacent to the state border (Lower-Silesian, Opole and Silesian voivodships in Poland, and Liberec, Hradec Králové, Pardubice, Olomouc and Moravian-Silesian regions in the Czech Republic), and at least one foreign partner was no further than 150 km from the border. The cooperation projects financed by RDP may include partners from different EU countries and do not have to be cross-border in nature, but the presented research is focused on cooperation in border regions.

The list of projects financed by Polish RDP was provided by the Marshal Offices (regional self-government supervising LAGs), and on the Czech side by the State Agricultural Intervention Fund (SAIF) in Prague (SZIF, 2023). In total, twelve Polish-Czech projects that received funding from the Polish or Czech RDP and one project that was prepared but ultimately not implemented were identified and used for further analysis.

In each project the authors interviewed their main manager in 'lead LAG' (project leader – a contractor responsible for submitting and accounting full project in their national RDP on behalf of all partners from a given country) – one in Poland and one in the Czech Republic. Interviews were also conducted with the representatives of the so-called 'non-financial partners' (Czech LAGs that did not receive financial support from the Czech RDP and were only partners of the Polish project without the possibility of financing their own activities). The authors conducted additional interviews with the representatives of three LAGs who were originally supposed to participate in two projects, but withdrew from the cooperation. This allowed better understanding of the difficulties in the preparation and implementation of projects. In total, the authors conducted twelve interviews with project managers in Polish LAGs and nine in the Czech LAGs (see Appendix 1). The unequal number of interviews on the Polish and Czech sides is due to the fact that some LAGs participated in two projects, and in two other projects the partners of Polish LAGs were other types of organisations (explained in the results).

As no previous analyses of cross-border cooperation of LAGs were available, the method of qualitative interviews using questionnaires with open questions was applied, which facilitates the exploration of issues that have so far been poorly described in the literature (Babbie, 2011). The first interviews were conducted between November 2021 and October 2022. The results of pilot studies were presented in Furmankiewicz and Trnková (2022). In January and February 2024, the research was supplemented by asking additional questions to the same respondents (at the request of the reviewers) and to five new respondents. The final list of questions asked concerned:

- The motives (rationales) of LAGs for cross-border Polish-Czech cooperation;
- The ways to find a partner from a neighbouring country;
- Project objectives;
- Planned activities (the scope of works);
- Information regarding the fulfilment or non-fulfilment of the planned goals and activities;
- The effects and benefits of the project;
- The main difficulties encountered in the preparation (planning) and implementation of the project;
- Respondents' opinions on the reasons for the relatively low involvement of LAGs in international cooperation projects;
- The possibilities and scope of future cooperation (further projects in the future).

The interviews were mostly conducted by telephone and transcribed directly to the text during the interview. In a few cases, the respondents checked and authorised the answers or preferred to complete the research questionnaires themselves, using the questionnaire (text) electronic file. We have also used the information provided in the documents publicly available on the websites of the surveyed LAGs.

Telephone interviews have disadvantages known from the literature: e.g. the problem of 'satisficing', i.e. the respondents' tendency to agree with the statements read by the interviewer regardless of their content or to repeat similar content in relation to different questions (Krosnick & Presser, 2010). In addition, methodological analyses show that in a telephone interview, the respondents' answers to open questions are less comprehensive and honest than in face-to-face ones (Sykes & Collins, 1988), which was especially possible in case of LAGs managers feeling discouraged due to numerous surveys. International studies are also burdened with semantic differences in translated questions and cultural differences, which may negatively affect the comparability of national results (Scheuch, 1993).

The collected data were subjected to a qualitative analysis, structured according to the research questions. The answers to open-ended questions on the rationales, scope of activities and obstacles to cooperation were assigned (coded) to the authors' own predefined research categories. It is the classical sociological method (Babbie, 2011; Züll, 2016). This kind of method brings a certain degree of the researcher's subjective influence into the results, but it is acceptable in exploratory research (Sandelowski, 1995; Neuendorf, 2002). Surveys with project managers (therefore not all cooperation partners) are also often used in research on the cross-border activities of local organisations (Nadalutti, 2015; Martín-Uceda & Jańczak, 2018).

In this paper, the authors focused on transnational cooperation financed by RDP. The other sources of possible border cooperation support, like INTERREG Microprojects Funds (Dołzbłasz, 2013; Böhm et al., 2021) accessible for LAGs located in Euroregions were not included. However, the review of documents and websites showed that only three Polish LAGs used other source of financing cooperation with Czech partners (not LAGs). Focusing on the analysis of RDP projects limits conclusions about the general willingness of LAGs to cooperate across borders, but it is justified in relation to the evaluation of the international cooperation sub-programme under the RDP.

4. Results

4.1 LAG cooperation projects financed by the RDPs on the Polish-Czech border

In the EU programming period 2014–2020, international LAG cooperation was financed under the sub-measure '19.3. Preparation and implementation of cooperation activities of the local action group' of the national RDPs. Partners of cooperation projects must, in each case, apply for funds from their own national RDP (i.e. the national RDP finances only the LAGs from its country) (European Commission, 2018). Each application was submitted by one 'lead LAG' as the 'project leader' to national supervising institution, with the documents confirmed by the project partners.

According to our research, a total of twelve cooperation projects have been implemented by the 'lead LAGs' located in Polish and Czech regions adjacent to the state border (Tab. 1, Fig. 1). The contracts were signed in the years 2018–2023 (the duration of the programme was extended due to the COVID-19 pandemic). In an additional (thirteenth) analysed case, the LAGs resigned from the project's implementation (not included in the Figure). A total

of 27 LAGs from Poland and nine LAGs from the Czech Republic participated in the analysed projects. Four LAGs from Poland and three LAGs from the Czech Republic participated in two projects.

All twelve cooperation projects were co-financed through the Polish RDP (support for Polish LAG activity), however, only three of them were financially supported also through the Czech RDP (support for Czech LAG activity) – namely the 'A year in the Country' project, implemented by the Hlučínsko and the Płaskowyż Dobrej Ziemi LAGs, the 'Visit the borderland' project, implemented by the Hrubý Jeseník and Nyskie Księstwo Jezior i Gór LAGs, and 'Love Food – Polish Czech cooperation to promote local culinary traditions', implemented by three Polish and two Czech LAGs. There were seven projects, in which Czech LAGs were 'non-financial partners' of Polish LAGs and did not received any RDP funds, however, in three Czech LAGs some very limited actions were financed from their own funds. One project, financed by Polish RDP, was implemented with the help of the Czech Euroregion Glacensis association (non-financial partner), after the Czech LAG did not receive funding and withdrew from the project, and one more with the local public service company Geopark Český ráj (it is not a LAG, also a non-financial partner), because the Czech LAG refused to cooperate due to the lack of any funding.

For a better understanding of the LAGs' administrative staff potential in the implementation of international projects, it should be added that the analysed Polish LAG associations had between 27 and 135 members (average 83) and employed between two to six employees in the LAG office, while the Czech LAG associations had between 34 and 108 members (average 65) and had between three and 12 members of staff employed in the LAG office.

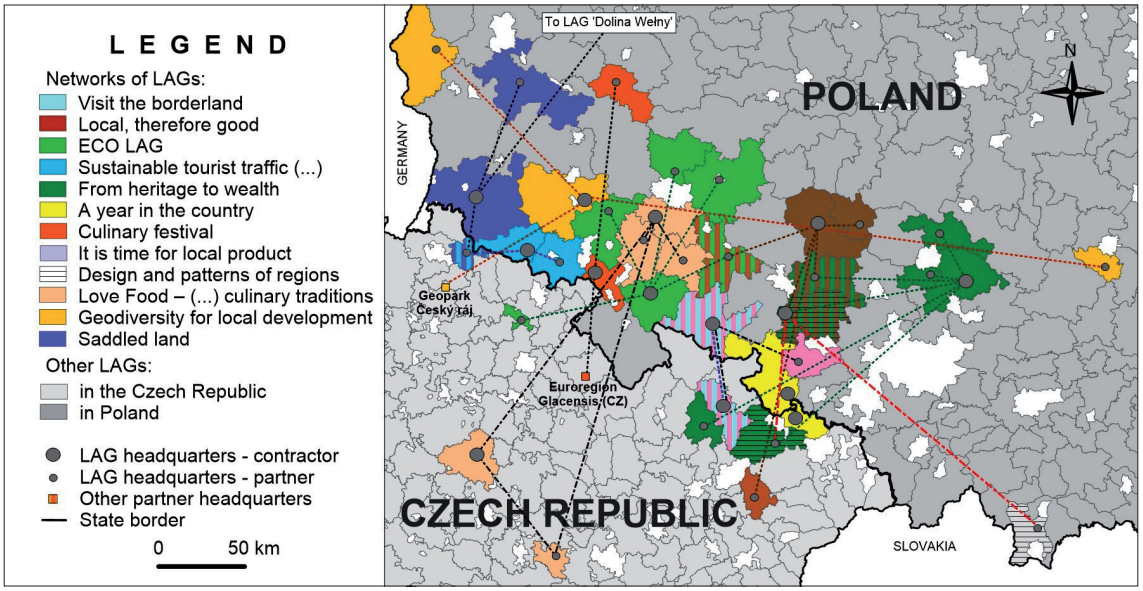

Fig. 1: The networks of Polish and Czech LAGs implemented cooperation projects supported by the RDPs. Two Polish LAGs (financial partners) are located outside the map area. Full project names are provided in Appendix 1
Source: authors' research. The map layers with LAG boundaries were obtained from the Ministry of Agriculture and Rural Development ('Ministerstwo Rolnictwa i Rozwoju Wsi') in Warsaw (Poland), and the National Network of Local Action Groups of the Czech Republic in Prague, Czech Republic ('Národní síť Místních akčních Skupin České republiky, z.s.')

No.	Project	RDP contract date	Partners from Poland (PL)		Partners from the Czech Republic (CZ)			
			Financed by RDP	With-drawn	Financed by RDP	Non-financial partner – own funds	Non-financial partner – lack of funds	With-drawn
1.	Visit the borderland	28.08.2018 (PL) 22.10.2018 (CZ)	1 LAG		1 LAG			
2.	Local, therefore good	24.10.2018 (PL)	4 LAGs				1 LAG	
3.	ECO LAG	16.11.2018 (PL)	5 LAGs			1 LAG		
4.	Sustainable tourist traffic (...)	31.12.2018 (PL)	2 LAGs			1 LAG		
5.	From heritage to wealth	15.03.2019 (PL)	5 LAGs				2 LAGs	
6.	A year in the country	25.07.2019 (PL) 02.08.2019 (CZ)	1 LAG		1 LAG			
7.	Culinary festival	10.05.2021 (PL)	2 LAGs				Euroregion Glacensis*	1 LAG
8.	It is time for local product	11.05.2021 (PL)	2 LAGs			1 LAG		
9.	Design and patterns of regions	13.10.2022 (PL)	2 LAGs				1 LAG	
10.	Love Food – (...) culinary traditions	13.01.2023 (PL) 08.11.2022 (CZ)	3 LAGs		2 LAGs			
11.	Geodiversity for local development	28.07.2023 (PL)	3 LAGs				Geopark Český ráj**	
12.	Saddled land	04.12.2023 (PL)	3 LAGs				1 LAG	
13.	Folk-Demotic-Cultural	resignation of the applicants		1 LAG				1 LAG

Tab. 1: The complexity of funding sources of Polish and Czech LAGs cross-border cooperation projects planned with support from the RDP 2014–2020 (contracted till 31.12.2023). Full project names are provided in Appendix 1
*Notes: * Association of legal entities ['Zájmové sdružení právnických osob' in Czech] 'Euroregion Pomezí Čech, Moravy a Kladska – Euroregion Glacensis' (Rychnov nad Kněžnou, Czech Republic); **Public service company ['Obecně prospěšná společnost' in Czech] 'Geopark Český ráj'(Turnov, Czech Republic)*
Source: authors' research

4.2 Rationales to cooperation and methods of acquiring partners

The main reason for establishing cross-border cooperation under the RDP platform was the desire to learn about different activities and ideas in foreign LAGs (this type of reason was mentioned by five Polish and five Czech LAGs). However, in other five cases, managers in Polish LAGs admitted that they would gladly choose a distant partner from other European countries, but due to limited financial resources, they were forced to look for a partner as close as possible in terms of geography to reduce transport costs for direct visits. Hence, they chose relatively close partners from the Czech Republic. One manager replied that she wanted to stimulate cross-border contacts of local communities (including local organisations), and these are the easiest to maintain at a relatively close distance. In three cases of projects involving Polish and Czech LAGs adjacent to each other across the border, project managers from Poland and the Czech Republic indicated that the common history or similarities of the regions separated by a state border were of great importance to them (especially in Opole/Czech Silesia region and in Izerskie/Jizerské (Jizera mountain) – Karkonosze/ Krkonoše (Giant mountain) region).

Searching for cooperation partners were usually based on long-standing cross-border relations, which were most commonly created on the basis of direct contact and projects previously supported by the EU cross-border cooperation programmes such as PHARE (before Poland and Czech Republic joined the EU) and INTERREG (after accession in 2004). In the cases of LAGs located within a short-distance or adjacent across the border these relationships were established at various local events, meetings, conferences or even tourist excursions. In four cases of cooperation between LAGs adjacent to the border, the most important were the personal contacts of LAG managers who participated in the events organised by other entities in a neighbouring country (e.g. local governments), where they met people associated with other border LAGs. In three projects, Polish and Czech respondents indicated assistance from member municipalities that had previously cooperated with the municipalities on the other side of the border. They also used the help (intermediation) of the other LAGs, other local associations, the Euroregion associations, the National Network of Local Action Groups of the Czech Republic and the Centre for Regional Development in Olomouc.

4.3 The aims, scope of works and effects

The main aim of the cooperation projects (both the implemented and those only planned) was the support of tourism development (the promotion of tourist attractions and activities in the given regions), the mutual exchange of experience regarding the identification, certification and promotion of local products (including handicraft, food and services), the exchange of experience regarding waste management, and activating local communities in the Czech and Polish countryside. Both in Poland and the Czech Republic, the topics of cooperation were usually similar to the scope of activities carried out within the LAG territory (see Tab. 2). This resulted from the RDPs principle that the goals and activities in cooperation projects must be consistent with the goals of the local development strategy, the provisions of which were valid for both internal and inter-regional projects. The main difference was the limited possibility for implementing investment in cooperation projects, stronger on the Czech side.

The most common scope of implemented activities in cooperation projects included workshops on the production of local dishes or handicraft products, as well as promotional materials for local products and tourist services. These activities were most frequently financed on the Polish side, however, promotional materials were usually issued simultaneously in Polish and Czech languages. Promotional or educational films (usually available on the Internet) were produced as part of five projects. Similarly,

Country	**LAGs in Poland**	**LAGs in Czech Republic**	
Main internal subject of actions (defined in the RDP rules) – through grant competitions for local entities and LAG's own operations	• Strengthening social capital (local events, meetings, trainings etc.); • Supporting local entrepreneurship; • Supporting cooperation between local entities conducting business activities; • Development of sales markets for local products and services; • Development of non-commercial tourist, recreational or cultural infrastructure; • Construction or reconstruction of local public roads; • Promoting the area covered by the LAG strategy.	• Actions supporting education, community planning of social services, cultural and social activities; • Caring for people; • Educating children and youth; • Supporting small businesses in the countryside (including the introduction/management of a regional brand) and tourism; • Improving the environment; • Landscape care in the countryside; • Development of rural infrastructure; • Development of smart innovative solutions to rural problems and challenges.	
Type of partner	**Leader and Financial Partner*** (possibility to finance own actions from Polish RDP)	**Leader and Financial Partner** (possibility to finance own actions from Czech RDP)	**Non-financial partner in Polish projects** (no possibility to finance own actions from the RDP)
Main international subject of action – through LAGs cooperation projects	• Conferences/ seminars/ workshops; • Study visits to partner areas; • Very small infrastructure (e.g. redecoration) or equipment; • Promotional materials (folders, films) related to local service providers, craftsmen and local producers, tourist attractions, traditional events etc.; • Educational materials related to environmental issues, local heritage; • Educational competitions for youth; • Internet application related to local products.	• Promotional materials (folders, films) related to local service providers, craftsmen and local producers, tourist attractions, traditional events etc.; • Local conferences/ seminars/ workshops; • Local events or meetings for social integration.	• Free participation in events organised by financial partners; • Free assistance in organising the reception of partners' visits; • Possibility to provide information for publications and promotional materials financed and published by the project leader.

Tab. 2: The scope of internal LAGs activities and activities conducted under cross-border cooperation projects in Polish and Czech LAGs
*Notes: * In Poland there were no non-financial partners*
Source: authors' questionnaire research and content analysis of LAGs documents and websites; Binek et al., 2020; NSMAS, 2021; SZIF, 2023

five cases involved study tours to partner LAGs. One especially interesting initiative was the organisation of the Local Product Centre in Nysa (Nyskie Księstwo Jezior i Gór LAG, Poland). This Centre deals with the promotion and organisation of sales of local products from the area of the Polish LAG, and promotes the tourist offer of the partner LAG from the Czech Republic.

On the Czech side, the scope of financed activities was clearly more limited. Czech LAGs organised mutual meetings, often combined with an excursion and presentation of experiences in a specific area, such as regional product labelling, waste management, etc. One-day cultural events, where local crafts and food were presented, were mentioned for two projects. Common conferences or workshops were indicated as an output in only two projects. Regarding four projects Czech LAG representatives stated that they were originally intended to implement a much wider range of activities, but due to difficult rules of the Czech RDP it was not possible.

Most LAGs implemented all contracted activities and two Polish LAGs even increased the scope of activities owing to savings. Only the projects implemented during the maximum restrictions due to the COVID-19 pandemic in 2020 encountered problems in conducting face-to-face meetings and study visits.

For comparison, according to the collected data, the national cooperation projects of LAGs in the Czech Republic were aimed at increasing the quality of tourism and cultural heritage, supporting the local economy through the labelling of local producers and their products, educating the general public about natural resources and ecological problems. The supported activities took the form of soft actions – mainly workshops, conferences, creation of informational and promotional materials and info-points or web applications. Similar goals and actions were in Polish national projects, however, Polish LAGs could invest in small infrastructure and the promotion of historical and cultural heritage was frequent. Generally, it can be said that national and international projects had similar goals and scope of activities, both in the Czech Republic and in Poland.

The exchange of experience and deepening of cooperation were perceived as positive results by the representatives of Czech LAGs in five implemented projects. However, in the case of two projects, this contribution was perceived as completely insufficient, which was related to the failure to obtain financing for the activities planned on the Czech side. The representatives of all 'lead LAGs' from Poland which implemented the projects expressed opinions about obtaining benefits from the implemented projects. However, two were not satisfied with the cooperation with Czech partners, who withdrew or limited their activities due to failure to obtain funding from the Czech RDP. The representatives of Polish LAGs pointed to the benefits of promoting the LAG area, including the inventory of local products in their region. The projects facilitated the cooperation of local food producers, creators and artisans in joint promotion. According to one LAG representative:

> Folk artists and handicraftsmen became more active, […], these local producers were better promoted. There were many benefits for our local handicraftsmen, they acquired knowledge in marketing and business. Despite the completion of the formal project, we are still introducing new craftsmen [in promotional materials and an online store] (manager of Polish LAG – project leader, interview 02.12.2021)

The representatives of Polish LAGs also pointed to the lasting benefits of the projects that included the implementation of small infrastructure and purchasing office equipment, which, among others, enabled the establishment of marked educational routes, setting up information boards or equipping facilities promoting local products. Two respondents from Poland also pointed to the benefits of transferring ideas for new local products, which were not previously known in the given LAG. For example, the representatives of Polish LAGs paid special attention to the ideas of a Czech local producer for food products with garlic, or to learning traditional crafts in Czech schools (which is rarely practised in Poland).

4.4 The obstacles to cooperation

Most of the respondents indicated that the main difficulty in implementing cooperation projects with the support of RDP were the unfavourable rules for implementing these programmes (Tab. 3). First of all, it was pointed out that joint cooperation projects require separate applications to national institutions with different procedures and different scopes of eligibility costs. As commented by LAG managers in Poland:

> The main problems were the differences in procedures and in the scope of possible activities to be implemented under cooperation projects, because the tasks are financed completely separately

	Poland												Czech Republic								
Short name of LAG* / **Obstacles**	Nyskie Księstwo	Dolina Stobrawy	Qwsi	Ducha Gór	Północnej Jury	Płaskowyż Dobrej	Sowiogórskie	Kraina św. Anny	Lider A4	Kaczawskie	Izerskie	Cieszyńska Kraina	Hrubý Jeseník	Hranicko	Královédvorsko	Rozvoj Tanvaldska	Opavsko	Hlučínsko	Královská Stezka	Sdružení Splav	Jablůnkovsko
Unfavourable rules of the RDPs	☒	▣		☒		▣	▣	▣	☒		☒	☒	☒	☒	☒	☒	☒	☒	▣	☒	☒
Difficulties in coordinating activities and documentation between partners		☒								☒		☒									
Language barriers	▣	▣	☒			▣		▣			▣										
Restrictions related to the COVID-19 pandemic			▣		☒	☒															
Cultural differences				☒				☒													
The distance makes face-to-face contacts difficult and costly		▣	▣					▣													
Need to pre-finance activities	▣			▣																	
Too few local NGOs to develop bottom-up border relations													☒								
Lack of trust	▣																				

Tab. 3: The obstacles to international cooperation within the RDP framework in the years 2018–2023 in the opinion of Czech (N = 9) and Polish (N = 12) LAGs managers engaged in preparation or/and implementation of cooperation projects
Legend: ☒ LAG had this obstacle in planned or completed cross-border cooperation project; ▣ LAG had no such obstacle in Polish-Czech project, but it is possible in other international cooperation projects (data from coding responses to open-ended questions to predefined categories).
*Note: *The full names of LAGs are given in Appendix 1. Source: authors' research results*

> in each country, although it is considered a single project. In terms of content, the scope of permissible activities in the Czech Republic differs from those on the Polish side. […] The Czechs did not receive funds from their programme for the planned scope of activities. They did not abandon us, but they had to carry out tasks from their own resources. If they had not done so, we would have had a problem with the settlement of the project. […] It was not possible to correct the provisions of the project, because they were already approved in Poland. Each LAG in their home country has submitted a part of the cooperation project to its own institution. It is like two independent applications submitted separately, but each depends on the implementation of the other. (manager of Polish LAG – project leader, interview 16.12.2021)

Czech LAGs particularly emphasised that the national rules and the scope of financing cooperation projects were very narrowly defined. They indicated that the conditions for the implementation of such projects have deteriorated comparing to the previous EU programming period of 2007–2013. According to one Czech LAG representative, the Czech rules enabled mainly soft (non-investment) projects, like mutual meetings, educational events and the creation of promotional materials, while in Poland, it was possible to purchase equipment and invest in the so-called small infrastructure. Several Czech LAGs indicated the difficult bureaucratic relations with the State Agricultural Intervention Fund of the Czech Republic. As one Czech respondent claimed, the main obstacle to cooperation under the RDPs was:

> […] the inconsistency of the funding rules on the Czech and Polish sides, the significantly limited range of activities that can be financed from the RDP. [Additionally], the conditions of the RDP would change significantly within the programme periods, which also limited cooperation […] (manager of Czech LAG which participated in a project, interview 17.10.2022).

Three representatives of 'lead LAGs' from Poland mentioned difficulties in coordinating activities and financial settlements between partners. Several respondents listed language barriers, distance limiting direct contacts and generating transport costs, difficulties related to the COVID-19 pandemic and cultural differences. Another problem involved the need to pre-finance activities (EU funds only refinance the costs incurred after the project is completed). On the Polish side, this issue was solved, among others, through bank loans, which generated additional costs. Only one Polish respondent noted the lack of trust towards the previously unknown partners as problems that make it difficult to establish a formal cooperation with foreign LAGs, so it was not a significant factor.

A representative of one Czech LAG mentioned that the very low number of formal local NGOs in their area was a real obstacle to trans-border cooperation, because there were no local entities which could activate local people to participate in events and workshops funded by the cooperation project.

4.5 The prospects for future cooperation

Among the 11 Polish LAGs – project leaders (who implemented a total of twelve projects) – the majority were interested in further cooperation, however, if funds were available for such cooperation. Particular emphasis was placed on the willingness to exchange experiences in the field of development and promotion of local products (both food and crafts), development of catering services and promotion of local traditions. Representatives of Polish LAGs emphasised that, in their opinion, the Czechs have more experience in promoting and certifying local products (especially catering services). One Polish LAG which had difficulty implementing a project, and one that had to withdraw their project, considered that they saw no prospects for the future implementation of cross-border cooperation projects from the RDP funds. Two Polish LAGs pointed out that in the new Polish Strategic Plan for the Common Agricultural Policy for 2023–2027 there is no possibility of financing cooperation projects of LAGs as entities. Only local social organisations can submit cooperation projects if the LAG includes such actions in its strategy (status as in March 2024, procedures may be adjusted). Managers of the two Polish LAGs located in the Euroregion areas planned to submit applications under the INTERREG Microprojects Fund programme. However, INTERREG type programmes were not popular between LAGs. As commented by the manager of one LAG:

> Theoretically, there are funds in the Nysa Euroregion, but the financing conditions are terrible. We cannot afford to pre-finance activities because we are too small an association. The waiting period for a refund after implementing the activities can range from one to two years. This is terrible, only local governments can afford to implement the projects. There are no prospects for this to change. (manager of Polish LAG, interview 16.12.2021)

Polish LAGs were a source of inspiration for the Czech LAGs due to deeper connection of the population with the countryside and agriculture, in contrast to the more industrially oriented communities in the Czech Republic. One Czech LAG representative stated that Polish LAGs have a lot of ideas in terms of promoting traditions and customs, culinary arts and appreciation for the environment, or involving pensioners in experiencing an active life in the countryside. Czech representatives often perceived Polish LAGs as quality partners with whom they would like to cooperate in the future. However, four representatives of Czech LAGs (including two LAGs whose sub-project was not financed) stated that they are not interested in another cooperation project under the current conditions of the Czech RDP. However, they did not exclude the possibility of developing such cooperation in the future when the procedures of the support programme are simplified, and include a greater scope of eligible costs. In any case, the interviews with Czech managers revealed a great deal of scepticism towards the newly established RDP conditions.

5. Discussion

5.1 The asymmetry of LAGs cooperation

In this study, the authors identified twelve contracted, cross-border cooperation projects of Polish and Czech LAGs financed by the RDPs, however, financing projects on both sides of the border was highly asymmetric. All projects were financed by Polish RDP, only three – also by Czech RDP. Most commonly Czech partners were only 'non-financial partner', which meant that the projects were often more national than truly international in nature. The Czech LAGs often expressed their dissatisfaction with the established rules for providing support from the Czech RDP. Obtaining project funding was very difficult and led to the withdrawal from cooperation projects (or refusal to cooperate) of several Czech LAGs. As this threatened the loss of funds on the Polish side, the partners simply signed the documents to make the project 'international' and, at most, helped organise study visits for the Polish partner who received funding or provided materials to be used as promotional materials prepared in Poland, free of charge. In this case, the benefits of cooperation could be highly one-sided, which discouraged further cooperation.

In the analysed period, the requirements and difficulties were higher on the Czech side. To compare national differences, it is worth knowing that the contract for operation under the RDP in the years 2018–2023 was signed by 292 LAGs in Poland (Zajda et al., 2017), and a total of 317 cooperation projects were implemented (no data available on how many of them with a foreign partner). There were 180 LAGs operating in the Czech Republic (NSMAS, 2021), but only 15 cooperation projects were implemented, including 9 domestic ones and 6 with the participation of a foreign partner (including three analysed

ones with a partner from Poland) (SZIF, 2023). Therefore, there was much less interest in projects of this type in the Czech Republic, not only in the field of Polish-Czech cooperation. The Czech LAGs suggested that conditions for implementing the cooperation projects in the Czech Republic had deteriorated, because 40 international projects were supported from the RDP in the programming period of 2007–2013 in the Czech Republic (SZIF, 2015).

The problems of asymmetry in the conditions for the development of border regions have been often discussed in the literature (Dołzbłasz, 2015; Martín-Uceda & Jańczak, 2018; Jędruch et al., 2020). In our study, we emphasise that the asymmetry of LAGs engagement and actions is not a result of the existence of the border as a barrier (because it is not physically important due to the freedom to cross the border without a control), but a consequence of the legal, economic and administrative differences in the neighbouring regions, as investigated by Böhm and Opioła (2019). These differences are much more difficult to overcome than simply opening the border for the movement of goods and people. This problem has already been noticed in the evaluation of the LEADER 2007–2013 programme in the Visegrad Group countries (Dvořáková Líšková et al., 2019) and clearly in the 2014–2020 edition, bureaucratic constraints have not been significantly reduced yet.

5.2 The regional conditions and scope of LAGs cooperation

In Polish border regions, the cooperation with the Czech Republic was most often established by LAGs from the Lower Silesia and Opole (historical Opole Silesia) regions, but not from the Silesia (historical Upper Silesia) region (only one 'lead LAG' with two partner LAGs). In the Czech Republic the LAGs located in the middle area of historic Czech Silesia were most willing to cooperate with Polish partners. The LAGs with the most intensive short-distance cooperation were located in the Pradziad/Praděd and Silesia Euroregions, which generally have a wide scope of local cooperation under INTERREG programmes (Böhm et al., 2023). However, the Śląsk Cieszyński/Těšínské Slezsko and Glacensis Euroregions also have a wide scope of cooperation, but the LAGs from these areas ultimately did not cooperate within the RDP. This may indicate the high role of historical, cultural and local economic ties, like in the Hlučín Region (Šťastná & Vaishar, 2023) and that the main rationale to short-distance border cooperation was 'to take advantage of similarity', using the typology given by Ray (2001). About two-thirds of the Polish-Czech border area is a part of the tourist region of the Sudety (Krkonošsko-jesenická soustava) Mountains (Potocki et al., 2014; Przybyła & Kulczyk-Dynowska, 2017; Böhm & Šmída, 2019) and a smaller part in the East of the Beskidy/Beskydy Mountains. Relatively small part covers the lowland and upland areas of the old mining and industrial basin of Upper Silesia (Kolejka et al., 2015; Šťastná & Vaishar, 2023). These border areas used to be subject to numerous restrictions related to the protection of the state border in the 20th century, which had a negative impact on their development (Jędruch et al., 2020; Sikorski et al., 2020; Vaishar et al., 2013). Currently, due to the far-reaching integration of Poland, the Czech Republic, Germany and Slovakia into the EU, the borders in these regions are no longer a strong barrier. This ensures a relative ease of tourism development, establishing economic links and cooperation of local communities in border regions, with an additional benefit in the support from the EU funds (Dołzbłasz, 2013; Kachniarz et al., 2019). As a result, obtaining income from tourism (and agritourism) is perceived by local communities as a particularly attractive direction of development (Dołzbłasz & Raczyk, 2015; Dołzbłasz, 2017; Przybyła & Kulczyk-Dynowska, 2017), which is also visible in the analysed LAGs' cooperation projects. Such activities are conducive to the diversification of rural development towards the projects other than those typically involving agriculture, and they are considered an important direction of development in the RDPs (Trnková, 2021; Průša et al., 2022; Biczkowski et al., 2021).

Several identified cooperation projects did not have a typical border character, but we cannot perceive them as far-distant. This is confirmed by the responses regarding how LAGs found partners for cooperation – in most cases, the local cross-border personal contacts of LAGs managers were used and intermediation of member municipalities or other local organisations that had already been conducting cross-border cooperation with the Czech partner many years earlier. We did not obtain data from all of Poland, but the data from other studies suggest that most projects financed by the RDP in Poland, which engage the Czech LAGs into cooperation, were implemented by LAGs from these two border regions (SZIF, 2015, 2023). The relatively short-distance Polish-Czech cooperation of various entities is very popular in the regions adjacent to the border (Furmankiewicz, 2005; 2007; Dołzbłasz, 2013; Kafarski and Kazak, 2022).

It is difficult to assess whether a longer distance cooperation could be a longstanding one. In some cases, the choice of partners was quite random – after the LAG with whom other LAG tried to establish contacts refused, Polish LAGs looked for any LAG that would agree to cooperation or even for a completely different organisation. These were kind of 'rescue' actions aimed at using the grant funds, being not aimed at a longstanding cooperation. There was no real choice due to a relatively small number of LAGs willing to pursue foreign contacts. However, in previous studies of the intermunicipal partnership cooperation, cases of establishing contacts 'by chance' did not exclude subsequent long-term cooperation (Furmankiewicz, 2005). While the individual cooperation between Polish and Czech municipalities has been intensively developing for a long time, LAGs (having a legal form of the association) are less involved in cross-border contacts (only 12 projects). Similarly, the implementation of cross-border micro-projects funded through the INTERREG programme were first and foremost dominated by local governments and public institutions of culture and recreation, rather than non-governmental organisations (NGOs) (Dołzbłasz, 2013; Böhm et al., 2021). What could be the reasons for this? Our respondents mainly pointed out the difficulties related to obtaining funds for such activities and project settlement. It can be assumed that the LAG's weak human resources (a small number of staff being able to prepare projects) and financial resources (the lack of permanent income to independently finance such activities) influenced the effectiveness of dealing with these problems. Compared to regional and national environmental NGOs, LAGs associations are relatively small (the average number of analysed LAG members – 83 in Poland and 65 in the Czech Republic), while the average for Environmental NGOs in Central and Eastern European countries was 309 members (Carmin, 2010). However, LAGs have higher potential than a typical local social association in Poland, which has on average only 25 members (Charycka et al., 2022). The limited cooperation may also be affected by the weak tradition in the self-organisation of society (independent of political authorities) within local NGOs, due to the undemocratic, communist systems being in force in the Czech Republic and Poland from 1945 to the end of the 1980s (Chloupkova et al., 2003). According to Zajda (2023), almost 96% of rural local organisations were characterised by a low level of cooperation with external NGOs. The low openness of rural communities to inter-regional and international contacts may also be important (Schiller, 2008). Some studies from Poland also noted that urban municipalities were more often involved in international cooperation than rural communes (Furmankiewicz, 2007).

The analysed cooperation projects concerned mainly the exchange of knowledge and information, educational events and the development of market for local products and services, especially for

the purposes of developing revenues from tourism (which is largely due to the existence of tourist mountain regions on the Polish-Czech border). It can be considered that these are very traditional areas of cooperation, typical for NGOs and local governments in many border areas. Both the international LAG cooperation projects in Europe (Ray, 2001) and the projects implemented under the Microprojects Fund within INTERREG Poland-Czech Republic Programme had a similar thematic scope (Dołzbłasz, 2013; Guzal-Dec, 2018; Marhoff, 2019; Böhm et al., 2021).

5.3 The conditions of national RDPs support

Considering the scope of cooperation, it should be remembered that the European Commission designed the main themes of cooperation projects as the enhancement of local products, natural and cultural resources, utilising know-how and new technologies, and improving the quality of life in rural areas (De Luca et al., 2018). Additional restrictions have been introduced by national programmes. Thus, the scope of cooperation in the RDP was not fully bottom-up, but strongly determined by the support programmes. It means that the presented research on cooperation projects has revealed a problem that has been already described in the analyses of local activities implemented by LAGs – a strong limitation of the bottom-up activities and their innovation due to top-down restrictions and rules incorporated in the supporting programmes (Kis & Szekeresne, 2011; Furmankiewicz et al., 2014; Konečný et al., 2020).

In some cases, LAGs' managers complained about the need to pre-finance projects, for which they often lacked their own resources (because they do not have, for example, a fixed budget, as local governments have). Other analyses of LAGs also identified difficulties with pre-financing activities (Lengerer et al., 2023). Similarly, the costs of international cooperation and language barriers were also problem for local governments participating in international bilateral cooperation (Lucke & Bellocchi, 1997; Furmankiewicz, 2005). It is worth noting, that both this research as well as studies by other authors (Zajda, 2013; EKOTOXA and IREAS, 2016) indicate that the domestic LAG cooperation is much more popular than international and cross-border cooperation. This may indicate even a much greater importance of language and cultural barriers than suggested by the LAGs involved in the international cooperation.

Our research shows that, contrary to the rhetoric about the importance of networking and cooperation in the EU documents, RDPs are not always adapted to contribute effectively to the international cooperation of rural communities. This is not conducive to European integration which is understood and promoted as an increase in social ties (networking) and an increase in positive attitudes between local communities from different countries. The results of many studies suggest that the communication of LAG stakeholders across different territories is typically weak (Schiller, 2008; Da Re et al., 2017; Pylkkänen et al., 2020). The unilaterally led cooperation usually leads to a discouragement and 'closing' of local communities off from the external contacts. This limits the reduction of unfavourable prejudices against the foreign nations and the EU and hinders the diffusion of innovations that would help to develop peripheral rural areas.

It is definitely possible to argue that the main focus of CLLD and LAGs is local, rather than international, outreach. However, the same can be said about the local self-governments, which are very active in international networks of information exchange and cooperation worldwide (Furmankiewicz, 2007; Dołzbłasz, 2013; Dołzbłasz & Raczyk, 2015; Böhm et al., 2021). That said, they have much greater human (qualified officials) and financial (fixed income) resources, required to organise and maintain social and official international contacts. LAGs are relatively small associations with a small number of office staff and negligible own income, which probably limits their possibilities with regard to implementing and financing relatively costly face-to-face international contacts.

6. Conclusions

The literature on LAGs indicates that they have become very important actors in the EU, activating local communities and helping to implement their relatively low-cost activities and local investments (Moseley, 2003; Cańete et al., 2018; Konečný, 2019). However, our research indicates that their involvement in international projects under the RDP was not so common and was highly depended on the ease of obtaining funds for such activities. In the 2014–2020 programming period, the procedures for obtaining funds for cooperation projects were clearly more attractive and transparent in the Polish RDP than in the Czech one. This resulted into a clear asymmetry in the activities of project participants on the Polish and Czech sides of the border. Only three bilaterally financed projects can be considered as really international. The others were more one-sided in nature, with the Czech LAG unable to finance any of its activities. In extreme cases, the Czech partner has just signed documents, but could hardly do anything. It should be emphasised that this was not the intention of LAGs, but the result of difficulties in obtaining funding. This study confirms how much influence the benefits from cooperation have on entering into common projects, which can be referred to the second-generation rational choice theory (Won Lee & Jun Park, 2007).

The authors propose that international cooperation programmes financed from the EU funds should either be able to finance, to a certain extent, partners from different countries (not only LAGs from their own country), or the principles of financing cooperation should be unified across the nation states (i.e. one agreement for all partners, the same scope of activities and investments that can be co-financed, one institution settling the subsidy for all cooperation partners). It is necessary to harmonise the national rules in the field of cooperation projects between the Member States, which has already been pointed out by Dvořáková Líšková et al. (2019).

It is particularly important to free up the scope of funding: if LAG projects are supposed to be bottom-up, why do the programme rules so strongly limit the scope of supported activities? The idealistic rhetoric of innovative bottom-up LEADER approach is becoming clearly different from its actual administrative rules, which are highly imposed by governments in national programmes. In the authors' opinion, the cooperation projects should include not only soft activities (e.g. meetings, cultural events and study tours), but also small investment activities (i.e. hard projects), e.g. investments implemented according to a proven pattern (good practice) from the territory of a friendly, foreign LAG with the advice of its representatives.

The presented difficulties in international LAG cooperation do not differ significantly from the problems encountered in the implementation of other cross-border cooperation programmes, like INTERREG, where administrative, legal and financial problems are usually identified (Zabielska, 2020; Böhm & Opioła, 2019). If we consider that LAGs are associations created by stakeholders from rural areas, then the support for their international cooperation should be based on particularly simple rules.

In the authors' opinion, the good examples of international cooperation (regional border and long-distance trans-border) of LAGs do not change the fact that the main entities initiating cooperation and international contacts of local communities remain local governments, which have adequate human and financial resources to implement such activities (Lucke & Bellocchi, 1997). However, it is worth improving the procedures for supporting

international LAG cooperation, so that these organisations can also involve local communities in international contacts, similarly to other local NGOs (Carmin et al., 2003). Supporting international contacts of rural territorial partnerships is particularly important since the rural communities are slower to adopt innovations and are often more sceptical about the European integration, which often arises from their isolation. In the future, it would be worth conducting a research on the central administration actors to explain why they introduce certain restrictions in support programmes and what their justifications for such actions are.

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Appendix

Appendix 1 – The list of surveyed LAGs (full names in national language) and their projects (full names in English)

Poland: 1) Stowarzyszenie LGD – Partnerstwo Izerskie ('Saddled land' – contract under the Polish RDP); 2) LGD 'Partnerstwo Sowiogórskie' ('Culinary festival: traditions of Polish and Czech villages Kul-Fest' – contract under the Polish RDP); 3) Stowarzyszenie LGD 'Qwsi' (EKO LAG – contract under the Polish RDP); 4) LGD na rzecz zrównoważonego rozwoju gmin Kąty Wrocławskie, Kobierzyce, Siechnice, Żórawina, Domaniów – Lider A4 ('Love Food – Polish Czech cooperation to promote local culinary traditions' – contract under the Polish RDP); 5) LGD Ducha Gór ('Sustainable tourist traffic in the Western Sudetes on the Polish-Czech border' – contract under the Polish RDP); 6) LGD Nyskie Księstwo Jezior i Gór ('It is time time for local product!' and 'Visit the borderland!' – both contracts under the Polish RDP); 7) Stowarzyszenie Kraina św. Anny ('Design and patterns of regions' – contract under the Polish RDP); 8) Stowarzyszenie LGD Płaskowyż Dobrej Ziemi ('A year in the country' – contract under the Polish RDP); 9) Stowarzyszenie LGD 'Dolina Stobrawy' ('Local, therefore good' – contract under the Polish RDP); 10) Stowarzyszenie 'Partnertwo Północnej Jury' ('From heritage to wealth' – contract under the Polish RDP); 11) LGD Partnerstwo Kaczawskie ('Geodiversity for local development' – contract under the Polish RDP); 12) Stowarzyszenie LGD 'Cieszyńska Kraina' ('Folk-Demotic-Cultural' – resignation).

Czech Republic: 1) MAS Rozvoj Tanvaldska ('Sustainable tourist traffic in the Western Sudetes on the Polish-Czech border' and 'Saddled land' – both non-financial partner); 2) MAS Sdružení Splav ('Culinary Festival' – resignation); 3) MAS Královédvorsko ('EKO LAG' – non-financial partner); 4) MAS Hrubý Jeseník ('Visit the borderland' – contract under the Czech RDP; and 'It's time for local product' – non-financial partner); 5) MAS Hlučínsko ('A year in the country' – contract under the Czech RDP); 6) MAS Hranicko ('Local, therefore good' – non-financial partner); 7) MAS Opavsko ('From heritage to wealth' and 'Design and patterns of regions' – both non-financial partner); 8) MAS Jablůnkovsko ('Folk-Demotic-Cultural' – resignation); 9) MAS Královská Stezka ('Love Food – Polish Czech cooperation to promote local culinary traditions' – contract under the Czech RDP).