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Research Paper

Accepting and resisting densification: The importance of project-related factors and the contextualizing role of neighbourhoods

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HIGHLIGHTS

- Measuring local densification acceptance with online survey experiment (N = 3003)
- Project-related factors and neighborhood types affect local densification assessment.
- Densification resistance is either explained by NIMBYism or anti-growth sentiments.
- Higher acceptance of local densification in urban neighborhoods.
- Major shifts from general (57.5%) to local densification acceptance (11.9%)

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ABSTRACT

Densifying existing settlements is a top planning priority worldwide. Its main goals include protecting undeveloped land, reducing CO_2 emissions, and the provision of housing. Despite a common acceptance of densification as a planning strategy, the local implementation of densification tends to provoke local opposition. Based on the analysis of a survey on densification preferences (including an adaptive conjoint experiment), this paper examines how residents assess potential densification projects in the Canton of Zurich in Switzerland. The results indicate that residents tend to accept densification in general, but not in their own neighbourhood. Residents in urban neighbourhoods are more likely to accept densification, and if they resist it, they tend to be driven by NIMBY behaviour. The higher likelihood of resistance to densification in suburban and rural contexts seems to be based on either broader anti-growth sentiments or on NIMBY behaviour. Different project characteristics (project-related factors) can explain residents' acceptance of and resistance to densification projects, yet the neighbourhood types in which residents live moderate the impact of these project-related factors. Our findings distinguish between the preferences of residents who live in different residential neighbourhood types and can thus provide planners with a starting point from which to craft context-dependent densification projects tailored to these different neighbourhood types.

1. Introduction

Land scarcity in densely populated regions compels the efficient and sustainable use of land. There is broad public and scholarly consensus that densification can increase sustainability in several ways. First, densification (or infill development) aims to protect undeveloped land and its biodiversity, which may otherwise be consumed by urban sprawl (Angelo & Wachsmuth, 2020; Artmann, Inostroza, & Fan, 2019; Siedentop & Fina, 2012). Second, densifying metropolitan regions can reduce carbon emissions because denser settlements shorten commuting distances, thus reducing energy consumption and CO_2 emissions from the transportation sector (Angelo & Wachsmuth, 2020). Third, densification stimulates other desirable direct and indirect socio-economic effects (Ahlfeldt & Pietrostefani, 2019; Freemark, Steil, & Thelen, 2020; Trounstine, 2020). For example, by increasing the housing supply, densification can help to ensure housing affordability on a wider metropolitan scale (Ahlfeldt & Pietrostefani, 2019; Gyourko, Mayer, & Sinai, 2013; Phillips, 2020). Although increasing density alone is insufficient for addressing the critical challenges of our time, it is one crucial ingredient that contributes to sustainable development.

Abbreviations: NIMBY, Not in my backyard; OIMBY, Only in my backyard; LULU, Locally unwanted land use.

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Given the multiple potential benefits of densification, policymakers worldwide have begun to formulate policies that aim to enhance intensive land use (Dembski, Hartmann, Hengstermann, & Dunning, 2020; Duany, Speck, Lydon, & Goffman, 2011; Freemark, 2020; Rubin, Todes, Harrison, & Appelbaum, 2020). While people tend to accept densification as an important policy paradigm, specific densification projects frequently generate vocal resistance from local residents (Einstein, 2021; Lewis & Baldassare, 2010; Monkkonen & Manville, 2019). Conflicts arise around the specific design of densification projects, their potential impacts on neighbourhood amenities, and around which neighbourhoods should be densified and which ones should be allowed to remain as they are. Slow rates of urban densification and urban housing production can be linked to a lack of public acceptance and political obstacles surrounding urban development (Manville, Monkkonen, & Lens, 2020; Monkkonen & Manville, 2019; Whittemore & BenDor, 2018). Successful densification projects will thus require a clear understanding of why citizens accept or oppose densification. This paper aims to contribute to this understanding by analysing how residents assess densification projects. Three research questions drive our analysis:

How do the specific characteristics of a densification project (project-related factors) affect the way in which residents assess local densification projects in their neighbourhood?

How does general acceptance of densification translate into the local acceptance of specific densification projects within residents' own neighbourhoods?

How does residents' assessment of local densification scenarios differ depending on the neighbourhood types they reside in?

To tackle these research questions, we analyse survey data from the Canton of Zurich in Switzerland. We first examine how different *project-related factors* enhance or reduce residents' acceptance of densification. We then aim to explain these insights by focusing on *individual factors* (e.g., attitudes towards the neighbourhood and densification). For the project-related factors, we examine the effect of several potential positive and negative impacts that a densification project may have on an existing neighbourhood (such as parking facilities, quality of public transportation, availability of shopping facilities, accessibility of childcare, the degree of privacy and housing costs). We then explain these different impacts by analysing the individual-level factors. To do so, we first categorize survey respondents into four ideological groups based on their general and local acceptance of densification, which we obtain from the survey: (1) anti-growth, (2) not in my backyard (NIMBYs), (3) general acceptance, and (4) only in my backyard (OIMBYs). We then examine how these ideological groups differ depending on where they live (four neighbourhood types: single-family houses, apartment buildings, mixed-use central and urban). We also control for several other individual factors (such as age, gender, income, residential location, homeownership and neighbourhood preferences) that may also explain differences among these four ideological groups.

Our analysis builds on secondary data derived from an online survey of 3′003 residents of the Canton of Zurich in Switzerland, commissioned by the Canton of Zurich (2014). Residents were asked to assess different densification project scenarios for their neighbourhoods. The survey data allows us to examine whether different project-related factors can enhance the acceptance of densification and to examine how acceptance varies across neighbourhood types. Switzerland is an important case to study given that densification is its central spatial planning strategy for fulfilling the Swiss Federal Constitution's mandate to ensure the appropriate and economical use of land (Swiss Confederation, 1999, Article 75.1). In response to the increase of urban sprawl in recent decades, the revised Swiss Federal Spatial Planning Act of 2014 requires an emphasis on infill development, densifying settlements and converting brownfield sites to mixed-use developments (Scholl, 2014). As a result, densification is a prominent item on the agenda of today's Swiss spatial planners (Gerber, Hartmann, & Hengstermann, 2018; von der Dunk, Grêt-Regamey, Dalang, & Hersperger, 2011).

Our findings indicate that project-related factors can explain residents' assessment of densification projects. However, the findings also reveal that the specific project-related factors driving opposition to densification differ depending on residents' neighbourhood type and individual characteristics. For densification projects to be successful, it is crucial to examine how they will impact neighbourhood amenities and how residents perceive these impacts. Perceived negative impacts loom larger than positive ones, pointing to the human tendency to value the status quo over prospective changes. We also find that resistance to densification projects seems to be based on both NIMBY behaviour and anti-growth sentiments. These two groups are made up of similar numbers of survey respondents, but they differ depending on the type of neighbourhood they live in. Residents living in urban neighbourhoods tend to accept densification, yet they also display NIMBY behaviour. On the contrary, residents of more rural types of neighbourhoods generally oppose densification based on anti-growth sentiments. The specific neighbourhood amenities that influence positive or negative assessments of concrete projects differ across neighbourhood types. Policymakers and planners thus need to consider different neighbourhood settings when drafting densification strategies and projects.

2. Drivers of acceptance of and resistance to densification

Public acceptance is essential for enacting and implementing policies, and policymakers take public opinion into consideration when designing policies and projects (Huber, Wicki, & Bernauer, 2020; Pleger, 2018). The literature examines the acceptance of policies, projects, or changes in the built environment and the opposition to these specific actions by residents displaying NIMBY behaviour, especially in terms of local unwanted land uses (LULUs), such as high-speed railways (Mannarini, Roccato, & Russo, 2015), social housing (Nguyen, Basolo, & Tiwari, 2013), waste management facilities (Heiman, 1990) and wind farms (Bidwell, 2013). More recently, research has shown that a lack of public acceptance and the presence of political opposition can act as central obstacles to establishing denser settlement areas (Manville et al., 2020; Whittemore & BenDor, 2018).

Concrete densification projects tend to generate vocal resistance, especially from residents who live close to a densification project (Einstein, 2021; Monkkonen & Manville, 2019). The intense nature of land-use conflicts leads to animated political debates (Mannarini et al., 2015; Pleger, 2017; Pleger, 2018). Two explanatory dimensions from the literature particularly help us to assess public acceptance of and resistance to densification projects. The first explanatory dimension involves project-related factors. These factors include characteristics of the project itself and neighbourhood amenities that will be provided by the project or the real or perceived negative impacts on previously existing amenities. The second explanatory dimension consists of individual-level factors such as socio-demographics or political ideology. These factors also include general attitudes towards growth and urban development and the type of neighbourhood an individual lives in. In the following sections, we introduce these explanatory dimensions and formulate hypotheses related to each of them.

2.1. Project-Related Factors: Neighbourhood amenities

Densification projects invariably change the status quo of a neighbourhood. Residents may oppose a specific local project because they perceive it will negatively alter the existing amenities in their neighbourhood or affect their own property (Esaiasson, 2014; Whittemore & BenDor, 2019). Despite this perception, projects have the opportunity to enact positive changes that can result in direct amenity benefits from the project itself (Esaiasson, 2014) or anticipated favourable spillover effects that may affect the surrounding area (Weilenmann, Seidl, & Schulz, 2017). Aesthetic improvement of the area, updated infrastructure and new green spaces and parks may produce positive spillover effects onto how residents perceive their neighbourhood (Ooi & Le, 2013). In

contrast, examples of negative spillover effects include the loss of open space, the loss of views, changes in neighbourhood character, increased local traffic, increased pollution and overcrowding. In addition, when densification involves affordable housing, residents may express their concerns, although not always openly, about the influx of lower-income residents, crime, noise and decreasing property values (Esaiasson, 2014). We expect residents to prefer densification projects that create positive effects and to dislike those that may be accompanied by negative effects.

H1.1: The more positive (negative) project-related factors there are, the more (less) willing residents are to accept local densification projects in their neighbourhood.

The existing literature shows that people tend to overestimate how a change in their life would negatively affect their happiness. We expect that residents fear losses related to local densification more than they anticipate gains from potential project-related benefits because of this tendency to be risk-averse (Kahneman & Tversky, 1979). Thus, residents tend to oppose changes to the status quo (Hankinson, 2018).

H1.2: Negative effects of project-related factors have a more substantial influence on people's attitudes than positive effects.

2.2. Individual factors: Anti-growth attitudes, NIMBY behaviour and the importance of neighbourhood types

The literature on individual factors towards densification and urban development explains resistance in terms of people's general attitude towards urban development, which may be dependent on their proximity to the location of a densification project as well as a number of individual-level predictors (such as age, income, political ideology, etc.).

With regard to general attitudes and location, Pendall (1999) distinguishes between general opposition to growth and urban development and NIMBY resistance. NIMBY resistance specifically refers to adjacent-use complaints that object to projects that take place in one's own neighbourhood that one might otherwise support if implemented elsewhere (Doberstein, Hickey, & Li, 2016; Lewis & Baldassare, 2010). Concretely, NIMBY behaviour occurs when residents oppose densification developments in their neighbourhood but accept similar developments elsewhere (Esaiasson, 2014; Wolsink, 2006). NIMBY behaviour is often described as predominantly self-interested local opposition that leads to selfish, sometimes irrational conduct in public discourse. However, some have criticized this characterization of local opposition as self-interested behaviour because attitudes toward a project do not necessarily depend on knowledge of its specific details or the distance between the proposed project and the objecting residents. Egoistic interests are also not always among the main reasons for mobilization (Takahashi & Gaber, 1998). Objections often stem from more general complaints about the pace of growth and are thus more appropriately described as 'anti-growth' rather than NIMBY (Pendall, 1999).

It is therefore important to conceptually distinguish NIMBY behaviour from other sorts of resistance so as not to overstretch the NIMBY concept and thereby misrepresent the reasoning of local opponents (Pendall, 1999; Wolsink, 2006). Accordingly, we distinguish between general resistance to densification based on anti-growth sentiments and location-specific resistance (i.e., NIMBYs). We predict that general resistance to densification will be positively correlated with local resistance to densification, meaning that people who do not accept densification anywhere will oppose specific densification projects in their own neighbourhood. We also expect to find substantial instances of NIMBY behaviour in which general acceptance of densification co-exists with local resistance to a local densification project.

H2.1: General resistance to densification translates into resistance to densification projects within the resident's own neighbourhood.

H2.2: General acceptance of densification can co-exist with resistance to densification projects within the resident's own neighbourhood.

The literature reveals a variety of individual-level predictors of acceptance of urban development projects and spatial planning policies, such as age, income, gender, political ideology, home ownership and type of neighbourhood residents live in (Einstein, Glick, & Palmer, 2019; Hankinson, 2018; Pleger, 2017). We mainly focus on the type of neighbourhood residents live in, while we control for the other individual characteristics in our empirical analysis. We employ this focus because we think it is how we can best contribute to the literature and leverage the strength of our research design, which compares attitudes across a wide range of urban, suburban and rural neighbourhood types. For this reason, we develop a hypothesis related to the influence of neighbourhood types but no hypotheses on the other individual factors.

The type of neighbourhood residents live in influences their assessment of local densification projects (Whittemore & BenDor, 2019). Their choice of neighbourhood tends to depend on the self-selection of specific neighbourhoods and depends on predictors such as proximity to the workplace, the socio-economic environment and the type of the built environment (Guidon, Wicki, Bernauer, & Axhausen, 2019; Schirmer, van Eggermond, & Axhausen, 2014). Research has shown that residents also choose their residential location based on their individual preferences related to urban density (Walker & Li, 2007). Residents who live in very dense urban settings may appreciate or be accustomed to the ongoing changes, complexities and chaos that urban life entails (Kaufmann & Sidney, 2020). Thus, we argue that residents who live in dense urban areas are more familiar with and accepting of density, or that residents with higher preferences for urban density already choose to live in more urban neighbourhoods. On this basis, we anticipate that residents who live in dense neighbourhoods will be more likely to accept local densification projects. In addition, residents' location choice also correlates with their preferences regarding project-related factors. This correlation suggests that residents' preferences differ depending on the neighbourhood they live in.

H3: Residents of relatively dense neighbourhoods are more likely to accept local densification projects than residents of less dense neighbourhoods.

3. Methodological approach

This section describes the empirical methodology, the survey, the adaptive conjoint experiment as a central part of the survey, the operationalization of various variables and the multinomial regression analysis. We employed a three-step methodological approach to test our hypotheses. First, to address hypotheses H1.1 and H1.2, we analysed the results of the adaptive conjoint experiment (detailed below) that forms part of the survey conducted by Anovum on behalf of the City of Zurich, to analyse how project-related factors affect residents' assessment of densification scenarios. Second, to address hypotheses H2.1, H2.2 and partly H3, we categorized respondents into four ideological groups based on their general and local acceptance of or resistance to densification: (1) anti-growth, (2) NIMBYs, (3) general acceptance and (4) OIMBYs. Third, to further address hypothesis H3, we used these four categories to run a multinomial regression, which enabled us to identify how these groups differ with regard to their individual-level factors.

3.1. Study setting and empirical data

We studied acceptance of and resistance to densification in the Canton of Zurich, one of 26 cantons (subnational units) in Switzerland. The Canton of Zurich is a particularly suitable case to study due to its size and variety of settlements (Wicki, Guidon, Bernauer, & Axhausen, 2019). Zurich is the most populous Swiss canton, and as of 2019, it contained 162 municipalities ranging in size from around 350 inhabitants (Volken) to about 400′000 (City of Zurich). This variety allows us to examine the differences in attitudes between urban, suburban and rural settlement settings.

The Canton of Zurich provided the survey data used in this paper. A research company, called Anovum, collected the data within the context

of the development of a publicly available report, *Acceptance of Densification* (*Akzeptanz der Dichte*; Canton of Zurich, 2014). The report, one of a series of similar inquiries, aimed to provide insights into people's attitudes toward densification to inform the formulation of a long-term spatial development strategy for the Canton of Zurich. The online survey used a representative, randomly selected sample of 19′000 addresses from the cantonal population registry. All respondents were 18 years or older and received an invitation letter with a web address and an individual access code for the online survey. From the initial sample, a total of 3′003 respondents completed the questionnaire for an approximate response rate of 16%. This type of probability sampling generally provides a more representative sample than other sampling strategies, irrespective of the response rate (Dutwin & Buskirk, 2017).

The survey consisted of six parts: (1) socio-demographic data (such as age, gender, income, residential location, homeownership and neighbourhood preferences); (2) questions about the individual's housing situation (type of housing, tenure, classification into one of seven neighbourhood types); (3) a personal valuation of neighbourhood amenities; (4) questions about their attitudes towards densification; (5) an assessment of the individual's own housing situation; and (6) an adaptive conjoint experiment (described below).

3.2. Measuring the acceptance of local densification

The first step of our methodology measured he acceptance of densification as our dependent variable by analysing the results of the Canton of Zurich, 2014 survey (Canton of Zurich, 2014). To go beyond this survey, we used the raw data from the experiment to re-analyse the utility scores derived from the adaptive conjoint experiment to characterize different respondent groups depending on their ideology towards general and local densification acceptance and to obtain a comprehensive understanding of who these residents are and what explains their attitudes, specifically regarding their differences towards general and local densification.

Adaptive conjoint experiments are able to customize survey questions to each respondent, and they are designed for situations in which the number of attributes (in our case the project-related factors) exceeds what can reasonably be measured using more conventional conjoint experiments (Chapman, 2009; Cunningham, Deal, & Chen, 2010). An adaptive conjoint experiment assesses individual preferences towards packages of various attributes. Based on respondents' recorded preferences, the survey assigns a utility score that measures how important a given attribute is within the entire densification scenario (Toubia, Hauser, & Garcia, 2007). We then used a hierarchical Bayesian method to estimate the aggregated and individual utility scores obtained from the experiment to determine individual attribute values and to identify differences between individual utilities and the entire sample's mean utility (Rao, 2014).

Within the scope of the Canton's survey, respondents received a choice of scenarios that differed in their project-related factors (for example, amount of green space, see also Fig. 1). They were asked to compare these choices and indicate their preference. We then quantitatively calculated the benefits of the individual project-related factors in the scenario. We used these calculated values for further analyses aimed at explaining the differences between these values (see, for example, Chapman, 2009).

Adaptive conjoint experiments have several benefits compared to conventional surveys. First, this approach allows us to overcome well-known challenges in survey research, such as social desirability bias. This bias may otherwise arise when respondents have to rate densification within their own neighbourhood, although they generally feel that it is desirable, thus leading to the underreporting of local densification resistance (Bansak, Hainmueller, Hopkins, & Yamamoto, 2021). Second, an adaptive conjoint experiment produces more accurate measurements of residents' preferences with lower standard errors, and it mimics real-world decisions better than comparable conjoint methods (Toubia et al., 2007). This approach thus ensures that respondents' acceptance of densification is not based on an entirely hypothetical situation. Instead, residents base their responses on a hypothetical change in their own neighbourhood. Third, despite their complexity and long completion time, adaptive conjoint experiments are also considered more engaging and more likely to yield better-quality data than conventional conjoint experiments (Chapman, 2009; Cunningham et al., 2010). Last but not least, compared with conventional conjoint approaches, adaptive conjoint experiments are able to include more attributes. In this specific case, the adaptive approach tailors the questionnaire to the current living situation of each respondent and is able to integrate a wide range of project-related factors. This approach yields a more realistic scenario as respondents assess a situation in which they are personally involved and that only includes aspects that are relevant to them.

3.3. Measuring project-related factors that explain acceptance of densification

The Canton of Zurich's survey design and its adaptive conjoint experiment (2014) allow us to determine the extent to which residents are willing to accept a higher density level if they receive project-related

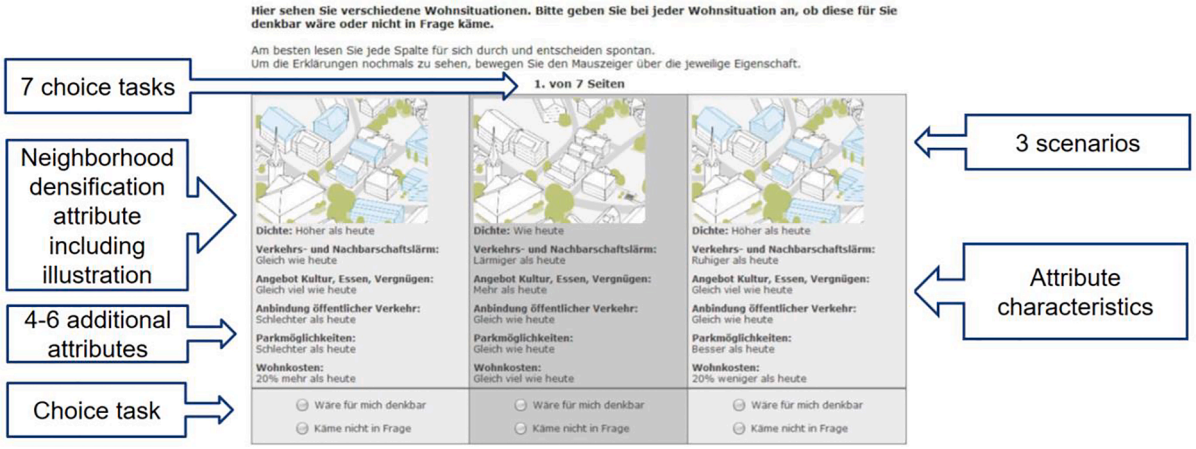

Fig. 1. Example of a choice task.
Note. The adaptive conjoint experiment was designed for an official report by the Canton of Zurich (2014). The order of factors was kept constant for all respondents. The attribute characteristics appeared randomly. Each respondent completed five to seven choice tasks. Respondents were asked to choose between three densification scenarios.

benefits that are important to them as a result. To compare the various densification scenarios in the adaptive conjoint part of the survey, residents evaluated scenarios that included the *building density* attribute plus four to six additional project-related factors based on the answers they provided to the first part of the survey (i.e., their neighbourhood type and the amenity factors they considered to be most important to them). Building density was set as a default attribute that could have two characteristics (either the same as the status quo or denser) and appeared in every choice task. In addition to the building density attribute, 14 other project-related factors appeared as attributes in the experiment (see Fig. 1 for an illustrative example). These 14 factors fall into four overarching categories:

1. *Mobility aspects* (3): Availability of parking facilities; quality of public transportation connections; level of traffic and neighbourhood noise
2. *Amount and diversity of leisure activities* (5): Availability of public recreation areas; availability of shopping facilities; supply of culture, food and entertainment; availability of sports and local recreation; accessibility of childcare
3. *Individual living requirements* (4): Availability of private outdoor space; living space size; degree of privacy; housing costs
4. *Neighbourhood composition* (2): Percentage of foreign residents; neighbourhood contacts

The adaptive conjoint experiment only sought to compare factors that were relevant to the respondents. The adaptive characteristics of the conjoint experiment enables respondents' preferences to be gradually determined by repeatedly presenting choices for fictitious scenarios containing five to seven of the 14 project-related factors, in varying degrees. If the experiment revealed that the respondent's preferences depended on a certain attribute (i.e., specific values of a particular factor), respondents were only given options that contained that attribute in all subsequent scenarios. For example, if a respondent consistently preferred options with the same or better public transportation connections, subsequent scenarios only included the same or better public transportation connections.

3.4. Categorizing four individual groups

The second step of the methodological approach involved determining general attitudes towards densification. We hypothesized that there are two individual factors that mainly influence these attitudes: general and local attitudes to densification and different neighbourhood types.

We measured residents' general policy attitudes towards densification with one question in the survey and local attitudes towards densification with the results of the adaptive conjoint experiment. With regard to the general policy attitude, we analysed the question on how they would vote if there would currently be a ballot on the topic of densifying existing settlement areas (translated from German: 'Should existing residential areas (village, neighbourhood) be redeveloped so that more residents can live in them?'). They could answer using a four-point Likert scale, including *agree, somewhat agree, somewhat disagree and disagree*. We then compared the response to this question with attitudes on local densification that we measured with the estimated utility from the adaptive conjoint experiment that can be either positive or negative. A positive utility means that residents receive a higher utility from densifying their neighbourhood compared with retaining the status quo of neighbourhood amenities and density. A negative utility indicates that residents perceive less utility from densifying their neighbourhood compared with the status quo.

The comparison between general and local attitudes to densification yielded four different ideological groups: anti-growth, NIMBYs, general acceptance and OIMBYs. Respondents were grouped as anti-growth if they were against densification in general and against densification within their own neighbourhood, as NIMBY if they did not oppose densification in general but opposed it in their neighbourhood, general acceptance if they were in favour of densifying existing neighbourhoods, including their own, and as OIMBY if they were against densifying existing settlements overall but would be in favour of densifying their own neighbourhood.

3.5. Measuring individual factors that explain acceptance of densification

The third methodological step is a regression analysis based on a multinomial model that tests the hypothesis about the impact of neighbourhood type on local acceptance of or resistance to densification. To measure neighbourhood type, respondents were asked to indicate which of seven neighbourhood types they lived in: (1) sparse single-family houses, (2) dense single-family houses, (3) sparse apartment buildings, (4) dense apartment buildings, (5) a mixed-use neighbourhood close to the city centre, (6) a mixed-use neighbourhood in a village or (7) an urban neighbourhood mixed with residential and commercial uses, stores and services. To simplify the presentation and interpretation of the results, we categorized these neighbourhood types into four overarching categories: (1) and (2) as 'single-family houses', (3) and (4) as 'apartment buildings', (5) and (6) as 'mixed-use, central', and (7) as 'urban' This simplification did not alter the results on the differences between urban residents and other categories. The results of the multinomial model without this categorization and the model of the separate treatment of all seven categories can be found in Table A1 in the Appendix.

The survey data allow us to control for a wide range of other individual factors that could explain acceptance of or resistance to local densification. In our analysis, we included socio-demographic characteristics often used in the literature to predict attitudes towards urban development—namely, income, age, gender and home ownership. The survey also measured residents' social commitment to a place through three different questions. First, respondents were asked how important it was for them to stay in their current neighbourhood. Second, they assessed their social network within their neighbourhood on a three-point scale, with choices of *no contact*, *some contact* and *intensive contact*. Finally, they evaluated their general feeling of social connection within their neighbourhood as to decide whether they would say that it is a good neighbourhood and whether people know one another. Furthermore, we controlled for satisfaction with the neighbourhood status quo using two distinct four-point scales to measure whether respondents felt comfortable within their neighbourhood and whether they would like to stay there. We also asked respondents if they had previously been affected by a development project in their neighbourhood that was explicitly intended to densify their area. This question had three possible responses: (1) unaware of any such project, (2) aware of such a project but not affected and (3) directly affected by such a project.

4. Results

We present the results following a three-step approach. First, we analysed the responses to the adaptive conjoint experiment, which asked residents to assess a local densification scenario that includes 14 project-related factors. Second, we categorized the survey's 3′003 residents into the four ideological categories of anti-growth, NIMBYs, general acceptance and OIMBYs. Third, we used these four categories to run a multinomial regression to identify how they differ with regard to individual-level factors. This three-step approach allows us to test all formulated hypotheses.

Fig. 2 displays the results from the adaptive conjoint experiment according to the four different neighbourhood types. The percentage associated with each project-related factor (attribute) in the boxes on the left side of the figure is based on the frequency with which the respondents preselected that attribute in the adaptive conjoint experiment, thus indicating the factor's relative importance compared with the other project-related factors. The most important project-related

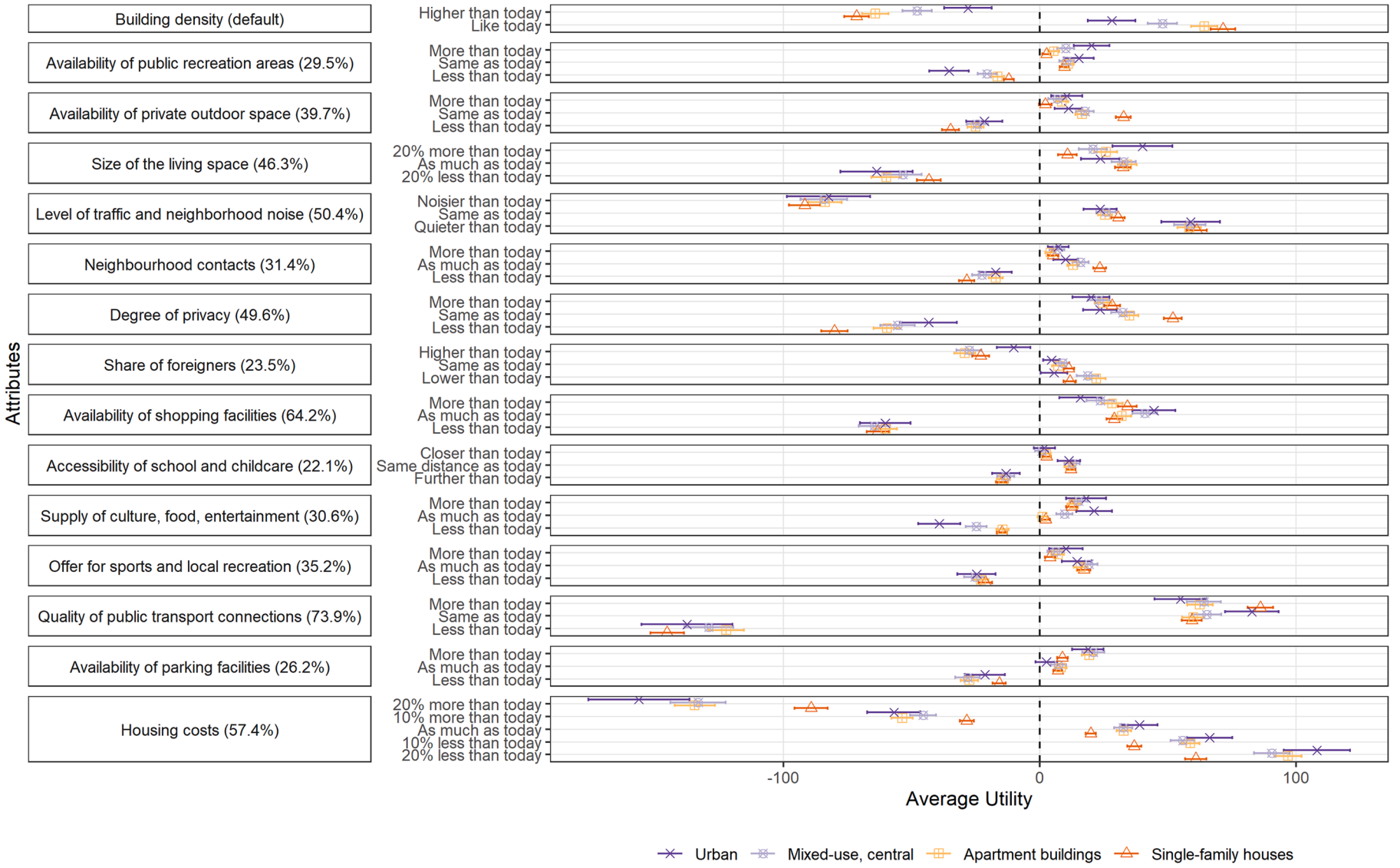

Fig. 2. Results of the adaptive conjoint experiment.

Note. The results of the adaptive conjoint experiment displaying average utilities for all project-related factors by type of neighbourhood. The percentage of residents preselecting each attribute appears directly after it. The average utility summarizes the utility scores that measure the contribution of a specific attribute to the total utility of a scenario among all residents. Error bars display 95% confidence intervals.

factor was public transportation accessibility (73.9%), followed by the availability of shopping facilities (64.2%) and housing costs (57.4%). In contrast, the least important project-related factors, with selection percentages ranging from 22% to 26%, were accessibility to school and childcare, the proportion of foreign residents and the availability of parking facilities. However, this preselection of the criteria heavily depended on residents' neighbourhood type and other individual characteristics such as number of children, age and mobility behaviour.

Overall, the utility of each attribute followed the expectations stipulated by hypothesis 1.1, i.e. a decrease in facilities, such as recreational areas and shopping facilities, leads to lower average utilities. We observed similar effects regarding living space (the more, the better) and housing costs (the less, the better). Residents also appeared to be somewhat reluctant to accept negative impacts on the status-quo of neighbourhood amenities (e.g., fewer public transportation connections), meaning that they were against changes that would have negative impacts to the status quo. However, positive impacts on the status-quo quality of neighbourhood amenities (e.g., more public transportation connections) did not necessarily increase the overall perceived utility. In other words, the relative utility decline that resulted from decreasing neighbourhood amenities was larger than for every attribute that resulted in a utility increase from improving neighbourhood amenities. This finding is in line with hypothesis 1.2, which stipulates that people tend to be risk-averse and prefer keeping the status quo.

Breaking down these utility results by neighbourhood type reveals some noteworthy differences between them. First and foremost, urban residents tend to indicate a lower utility loss in response to increasing density than residents from other neighbourhood types. This finding supports hypothesis 3. Interestingly, urban residents have a higher utility loss resulting from a decrease in the supply of culture, food and entertainment or an increase in housing costs than residents living in other types of neighbourhoods. The different effects of housing costs is especially amplified between residents in urban areas and single-family houses. Residents living in single-family houses value their degree of privacy much more than residents from more densely populated neighbourhoods.

The second methodological step is visualized in Fig. 3, which displays the correlation between general and local densification attitudes. It plots the individual local densification utility on the y-axis and general acceptance of densification on the x-axis. The results of the adaptive conjoint experiment inform the y-axis values. The x-axis summarizes residents' responses to the survey question on whether they generally favour the densification of existing settlement areas.

Overall, there is a positive correlation between general and local resistance to densification, but the correlation is rather flat. Although general resistance tends to translate into local resistance, general acceptance does have to lead to local acceptance due to the prevalence of NIMBY behaviour. Thus, the results support hypotheses 2.1, which states that general resistance to densification translates into resistance to densification projects within the resident's own neighbourhood, and 2.2, which stipulates a potential co-existance of general acceptance of densification with resistance to densification projects within the resident's own neighbourhood. To put this result into perspective, of the 2′937 respondents (66 respondents of the original 3′001 were excluded due to non-response), around 41% are anti-growth (N = 1′204), 47% are NIMBYs (N = 1′382), 10% generally accept densification (N = 307) and <1 % are OIMBYs (N = 44). It is not surprising that the OIMBY group is small as it represents theoretically inconsistent acceptance behaviour.

We further analysed these four groups using a multinomial regression to identify their potential differences regarding individual characteristics (see Table 1 and Fig. 4). The results are stable, even when running the usual diagnostics for multinomial models (see Table A1 in the Appendix). We use the NIMBYs as the baseline group against which we compare the other three ideological groups.

Urban residents are more in favour of general densification and are consequently less likely to be part of the anti-growth group. They are instead either general accepters or NIMBYs (4A). Again, this finding lends support to hypothesis 3, stipulating that residents of relatively dense neighbourhoods are more likely to accept local densification projects than residents of less dense neighbourhoods. Several of the control variables support the findings of previous literature (Einstein et al., 2019; Hankinson, 2018; Pleger, 2017). For example, older citizens are more likely to be NIMBYs (Fig. 4I), and residents who indicate a relatively higher preference for preserving their neighbourhood characteristics tend to be more opposed to densification (4C). Furthermore, NIMBYs seem to be more satisfied with their neighbourhood (4D) than

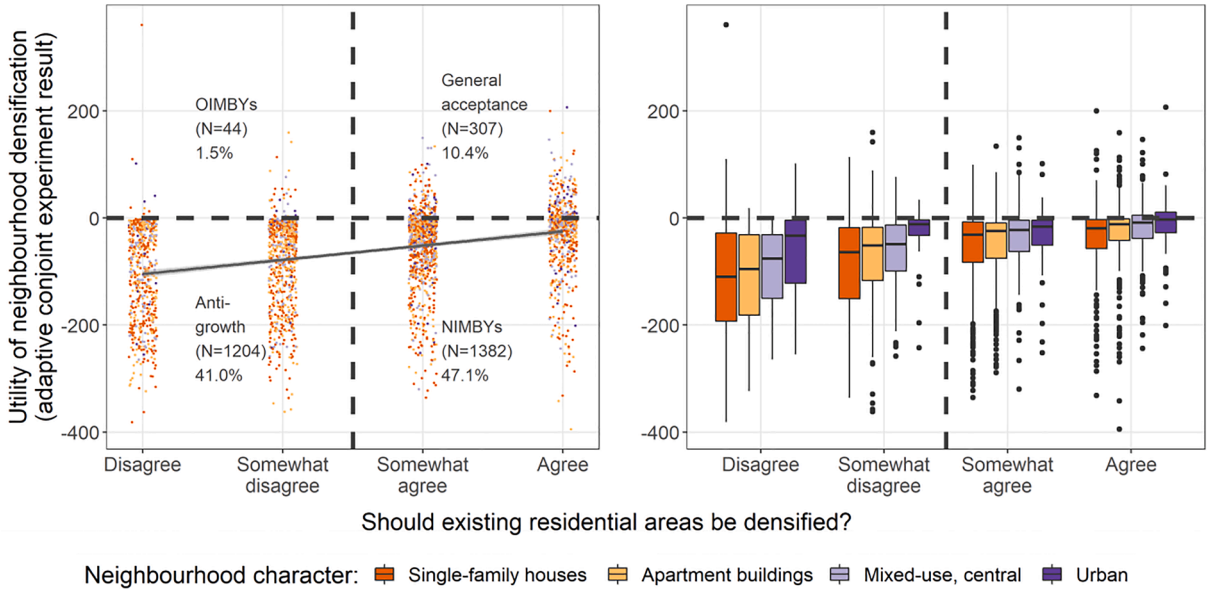

Fig. 3. Local densification utility and general acceptance of densification. The y-axis displays the estimated utility based on the adaptive conjoint experiment on densification within residents' neighbourhoods. If the measure is positive, residents receive a higher utility from densifying their neighbourhood compared with retaining the status quo of their neighbourhood's amenities. The graph to the left displays all respondents. The graph to the right summarizes the results by neighbourhood characteristics as a box plot. The correlation line in the graph on the left displays the smoothed prediction of a linear model with 99% confidence level intervals. Sixty-six respondents are missing due to their non-response to the general densification question.

Table 1
Multinomial model for the four ideological groups.

	Dependent variable: Local densification utility (Baseline = NIMBYs)		
	Anti-growth	General acceptance	OIMBY
	(1)	(2)	(3)
Neighbourhood type (ref.: Single-family house)			
Apartment buildings	−0.115 (0.107)	−0.309+ (0.187)	−0.642 (0.438)
Mixed-use, central	−0.341** (0.122)	0.181 (0.184)	−0.630 (0.489)
Urban/city	−1.046*** (0.226)	0.604* (0.245)	0.277 (0.540)
Neighbourhood satisfaction (ref.: Satisfied)			
Somewhat satisfied	0.261+ (0.139)	−0.304 (0.218)	−0.913 (0.756)
Somewhat unsatisfied	0.397 (0.329)	0.400 (0.401)	0.251 (1.076)
Unsatisfied	0.835* (0.414)	−0.570 (0.690)	2.393** (0.786)
Not specified	−17.233*** (0.000)	−16.343*** (0.000)	−12.449*** (0.00000)
Preserve neighbourhood characteristics (ref.: Agree)			
Somewhat agree	−0.832*** (0.091)	0.383* (0.151)	0.176 (0.341)
Somewhat disagree	−1.384*** (0.202)	0.921*** (0.211)	−0.148 (0.649)
Disagree	−1.326*** (0.286)	0.878** (0.302)	0.330 (0.778)
Not specified	−0.880* (0.408)	0.895+ (0.458)	0.648 (1.076)
Homeowner	0.083 (0.104)	−0.182 (0.168)	−0.400 (0.405)
Household income (ref.: below 2,000 CHF)			
2′000 CHF to 4′000 CHF	−0.335 (0.543)	−0.679 (0.732)	4.521*** (0.964)
4′000 CHF to 6′000 CHF	−0.517 (0.517)	−0.883 (0.676)	5.455*** (0.434)
6′000 CHF to 8′000 CHF	−0.431 (0.513)	−0.799 (0.668)	5.846*** (0.357)
8′000 CHF to 10′000 CHF	−0.895+ (0.512)	−0.869 (0.662)	4.974*** (0.405)
10′000 CHF to 15′000 CHF	−0.713 (0.510)	−0.854 (0.659)	5.012*** (0.386)
15′000 CHF to 20′000 CHF	−0.835 (0.525)	−0.922 (0.681)	5.273*** (0.502)
More than 20′000 CHF	−0.833 (0.539)	−1.036 (0.712)	5.068*** (0.677)
Do not know/not specified	−0.600 (0.514)	−1.117+ (0.676)	5.027*** (0.460)
Age	−0.006* (0.003)	0.002 (0.005)	−0.013 (0.011)
Female	0.114 (0.084)	−0.140 (0.135)	−0.390 (0.328)
Importance of staying in the neighbourhood (ref.: Important)			
Somewhat important	−0.204+ (0.106)	−0.029 (0.170)	−0.480 (0.410)
Somewhat unimportant	−0.556*** (0.167)	0.480* (0.218)	−0.706 (0.663)
Unimportant	0.028 (0.166)	0.739*** (0.224)	−0.376 (0.611)
Not specified	0.646 (0.396)	1.865*** (0.478)	−21.808*** (0.000)
Good neighbourhood	0.011 (0.095)	0.192 (0.155)	−0.187 (0.363)
Neighbourhood contacts (ref.: No contact)			
Some contact	−0.023 (0.161)	−0.331 (0.215)	0.092 (0.550)
Intensive contact	−0.169 (0.185)	−0.505+ (0.264)	0.043 (0.649)
Densification affectedness (ref.: directly affected)			
Aware of project, not affected	−0.237+ (0.128)	0.008 (0.198)	−0.153 (0.468)
Not aware of any project	−0.160 (0.110)	−0.106 (0.177)	−0.203 (0.418)
Do not know/not specified	0.128 (0.179)	−0.104 (0.294)	0.223 (0.635)
Constant	1.495** (0.572)	−0.944 (0.771)	−6.951*** (0.893)

Note: Table entries represent the results of the multinomial analysis based on the four categories (NIMBY, Anti-growth, General acceptance, OIMBY) displayed in Fig. 3 and using NIMBY opposition as the baseline. Estimated standard errors are displayed in parentheses. ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$, +$p < 0.1$. See Table A1 in the Appendix for the multinomial analysis, including the original categorization of seven separate neighbourhood types. CHF = Swiss Francs.

the average of respondents and have a higher average income (4 K). There were no significant differences between homeowners and non-homeowners (4B). The analysis also reveals some noteworthy differences between ideological groups regarding their neighbourhood type.

5. Discussion

This paper seeks to identify how project-related factors and individual factors affect the acceptance of densification. Overall, the results indicate that opposition to general densification and to specific densification projects is more complex and context-dependent than often described. Various individual-level factors drive both NIMBY behaviour and anti-growth sentiments, and this resistance, as well as the impact of project-related findings, varies across neighbourhood types. Table 2 highlights the results of our hypotheses. The findings support all the proposed hypotheses. This indicates that the general findings from the literature about the acceptance of densification and housing developments can also be supported in a different context and across very different neighbourhood types.

Our categorization of the four ideological groups (anti-growth, NIMBYs, general acceptance and OIMBYs) reveals the often-described dualism between the general and local acceptance of densification. The largest share of residents supports densification in general but rejects such projects within its own neighbourhood, pushing these residents into the category of NIMBYs. The second largest share of residents opposes densification due to its general resistance to growth, thus indicating that these residents base their general resistance towards densification on their anti-growth sentiments. Thus, densification as a general paradigm tends to receive solid majority support, whereas a vast majority of residents feel negatively affected when densification projects occur within their own neighbourhood. Our four-tier categorization illustrates why densification projects often fail: they do not mainly collide with a lack of general public acceptance; they collide with opposition from residents who are directly affected (Einstein et al., 2019).

There are significant differences between the four ideological groups and the neighbourhood types they reside in. Residents living in urban neighbourhoods indicate more acceptance of densification than rural and suburban residents. This may be because residents living in dense urban areas are more accustomed to density or because residents with higher preferences for density self-select urban neighbourhoods. The higher likelihood of general acceptance in urban areas also explains why NIMBY behaviour was more widely detected in urban neighbourhoods given that NIMBY behaviour itself presupposes a general acceptance of densification.

6. Conclusions

Based on an analysis of Swiss survey data, this paper found that residents tend to accept densification as a general policy strategy but overwhelmingly reject concrete densification projects in their own neighbourhoods. Residents in urban neighbourhoods are more likely to accept densification, yet if they resist it, they tend to be driven by NIMBY behaviour. The resistance in suburban and rural contexts seems to be based either on anti-growth sentiments or on NIMBY behaviour. The neighbourhood types in which residents live moderate the impact of different densification project characteristics (project-related factors).

This paper contributes to the literature on the acceptability of densification as it combines the following four innovative elements. First, it demonstrates significant differences in how residents assess

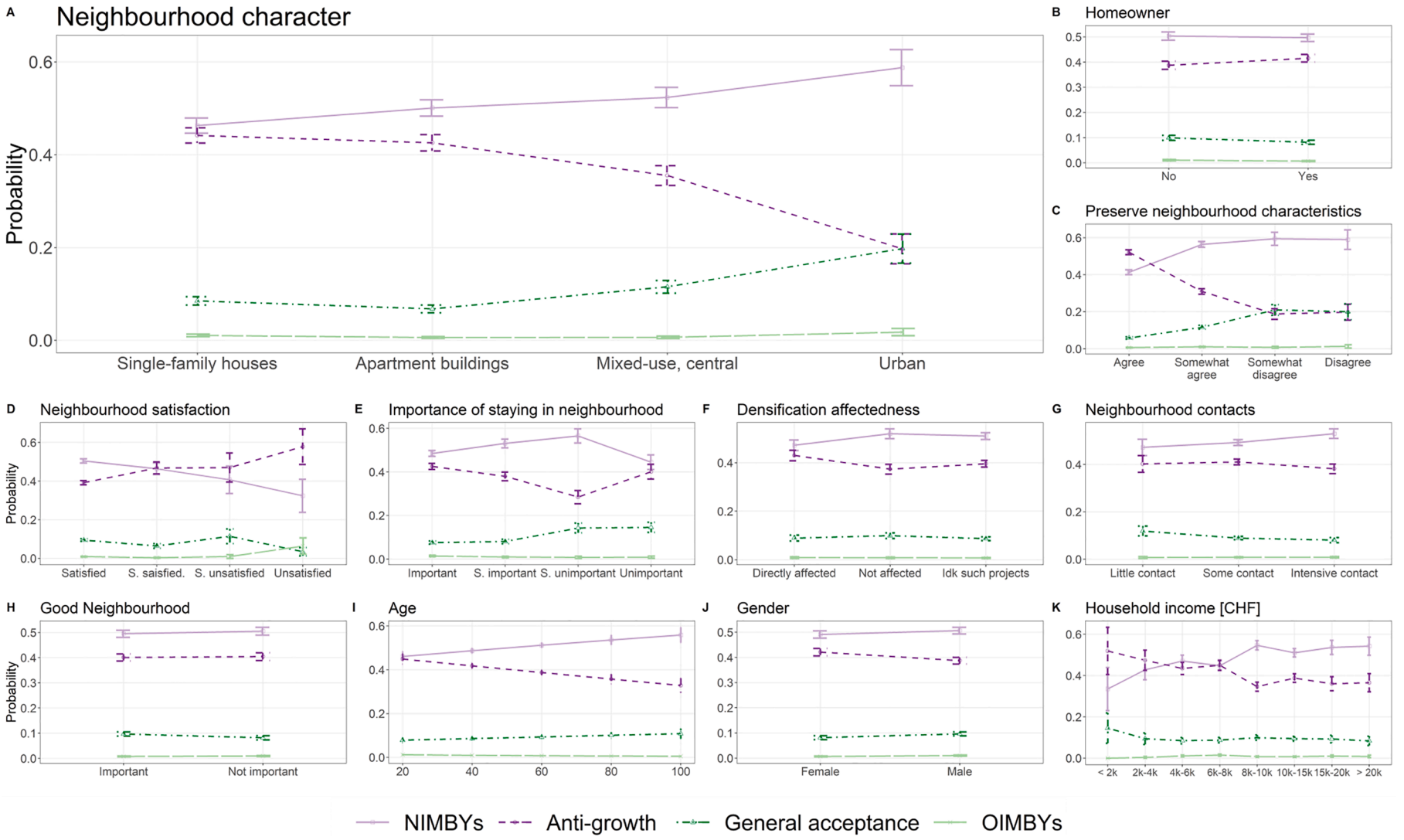

Fig. 4. Visualizations of the multinomial regression analysis results. *Note.* Each graph shows the predicted probability that respondents will fall into one of the four ideological groups displayed in Fig. 2. For example, urban residents have an almost 60% chance of being categorized as NIMBYs (A). Error bars display 95% confidence intervals.

Table 2
Results of hypothesis testing.

		Hypothesis supported?
H1.1:	The more positive (negative) project-related factors there are, the more (less) willing residents are to accept local densification projects in their neighbourhood.	Yes
H1.2:	Negative effects of project-related factors have a more substantial influence on people's attitudes than positive effects.	Yes
H2.1:	General resistance to densification translates into resistance to densification projects within the resident's own neighbourhood.	Yes
H2.2:	General acceptance of densification can co-exist with resistance to densification projects within the resident's own neighbourhood.	Partly
H3:	Residents of relatively dense neighbourhoods are more likely to accept local densification projects than residents of less dense neighbourhoods.	Yes

densification by comparing attitudes towards densification across different neighbourhood types. Whereas most studies focus on explaining public opposition to densification in urban areas, to the best of our knowledge there is no prior study that examines resistance to densification projects across such a diverse territory including urban, suburban and rural neighbourhoods. Examining a full range of residential contexts is important because densifying settlements must occur across a variety of settlement and neighbourhood types, not only in centrally located places (Ströbele & Hunziker, 2017).

Second, we employ a specific methodological approach, the adaptive conjoint experiment, to measure local acceptance of densification by including many varying factors. This experimental design allows scholars studying urban densification to simultaneously make inferences about the effects of several different characteristics of a densification project on its degree of acceptance by the target population. This approach allows for the inclusion of many attributes and attribute levels (e.g., degrees of intensity) in a conjoint design (Cunningham et al., 2010). In addition, this approach provides a robust indicator of how residents assess densification within their own neighbourhood and overcomes well-known survey biases. However, conjoint experiments do not necessarily demonstrate what the majority of people would vote for. Thus, we cannot ensure that a particular acceptance rating would transfer into the actual policy acceptance of densification policies or projects.

Third, our paper tests whether well-known predictors from empirical studies of US cities also hold in a different case (that of the Canton of Zurich in Switzerland) and whether the existing knowledge can thus be generalized. As with US-based studies, we find that the amenities offered as part of densification projects play an important role in acceptance to or resistance to densification and that residents tend to prefer the status quo. Additionally, attitudes such as preserving neighbourhood characteristics or neighbourhood satisfaction significantly affect how residents assess local densification. Our geographic focus is also practically relevant because densification has become the preferred Swiss spatial planning paradigm (Debrunner, Hengstermann, & Gerber, 2020), and it has the primary goal of containing urban sprawl (Weilenmann et al., 2017). Efforts to implement densification and to protect undeveloped land are likely to further intensify land-use conflicts around settlement and neighbourhood development in Switzerland (von der Dunk et al., 2011). Studies such as this one can help to better understand what drives opposition towards densification across different residential settings.

Fourth, we distinguish between four different ideological groups of supporters of and resisters to densification. This distinction allows us to elaborate on the different ways of assessing densification projects and provides an additional nuance for discussing NIMBY behaviour and how it affects motivations for rejecting or accepting densification projects. Our findings reveal a large gap between the general acceptance of densification and the local acceptance of densification projects. Future research could delve deeper into residents' reactions to proposed densification developments based on the distance of these projects from residents' homes, ranging from very close to their residence to elsewhere in the city.

This paper helps to better explain the acceptance of densification, and it provides several practical implications for planning practices. To begin with, it highlights that densification strategies are context-dependent. Therefore, planners must start by learning about the concrete amenities and contextual factors that are important to the community in which the densification project is proposed. They can do this through participatory processes or other ways of acquiring local knowledge. With such knowledge in hand, planners can then consider how these crucial neighbourhood amenities could be enhanced or safeguarded. For example, they should anticipate potential local effects of densification projects on housing costs in urban neighbourhoods and consider how such projects can be accompanied by ancillary planning and housing policies that aim to include affordable housing (such as inclusionary zoning, rent control or not-for-profit housing supply), which may alleviate urban resistance to densification.

Our findings may also help to address the issue of how to densify neighbourhoods beyond urban settings. Densifying neighbourhoods of single-family homes, for instance, may require even more analysis based on what we know about this category's sensitivity to perceived negative effects. Given densification's aim to increase the number of housing units within existing areas and the resistance of residents in neighbourhoods of single-family houses to the potential negative effects of these transformations, architects, policy-makers and planners will have to find ways to design densification projects that do not negatively affect the status quo of these neighbourhoods. Planners would then have to focus their communication on how the neighbourhood's status quo will be not negatively affected. We envision that our findings will help inform these solutions. As we have shown, densification is, first and foremost, an implementation challenge. Analysing the acceptability of densification is crucial for finding solutions for densifying our settlements while upholding the democratic right to resist densification.

Declaration of Competing Interest

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

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