Exploring perceptions and threats to sustainable community development in the inter-border region of Västervik-Åtvidaberg, Sweden

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2026 NORDPLUS intensive course (5 ECTS):
Sustainable practices and development for depopulating and peripheral localities in the European North

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Linköping
24th April 2026

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1. Introduction

Rural and peripheral regions across the European North are undergoing profound structural changes. Population decline, ageing demographics, and the gradual erosion of essential services and infrastructure pose serious threats to the long-term viability of local communities. These challenges are particularly acute in areas marked by low population density, significant distances to regional centres, and administrative borders that often fail to reflect the realities of everyday life. In Sweden and the wider Nordic context, processes of regional polarisation have intensified: economic opportunities, skilled jobs, and younger populations increasingly concentrate in dynamic urban nodes, while smaller localities face "structural urban shrinkage": a self-reinforcing cycle of out-migration, reduced services, and diminishing attractiveness (Haase et al., 2014; Niedomysl & Amcoff, 2010).

Sustainable community development in such settings hinges on three interdependent pillars: mobility, access to education (particularly for children and youth), and housing. Reliable transport links enable people to reach jobs, services, and social networks; quality educational opportunities determine whether families choose to stay or leave; and diverse, affordable housing shapes both demographic balance and a sense of place. When these elements weaken, communities risk entering a downward spiral that threatens not only economic vitality but also social cohesion and cultural continuity.

This report focuses on the inter-municipal and inter-regional border zone between Västervik Municipality (Kalmar County) and Åtvidaberg Municipality (Östergötland County) in south-eastern Sweden. Nestled in a landscape of forests, lakes, and rolling terrain that transitions from inland highlands toward the Baltic coast and Tjust archipelago, the area exemplifies the complexities of peripheral border regions. Although the two municipalities share historical ties, including the Tjustbanan railway, and natural connections through shared water systems, the administrative boundary between Kalmar and Östergötland counties creates tangible friction.

Residents frequently cross these borders for work, schooling, shopping, or healthcare, yet governance structures, funding mechanisms, and public transport planning remain largely confined within territorial lines. This mismatch between lived realities and administrative logic generates unique barriers and opportunities that merit closer examination.

Research problem and gap. Extensive research has documented rural depopulation and service decline in Sweden (Lovén et al., 2020; Olsson & Lindberg, 2024). However, far less attention has been paid to the specific dynamics of *inter-municipal and inter-regional border zones*. Most studies analyse municipalities as self-contained units, overlooking the everyday experiences of residents whose daily mobilities, educational choices, and housing decisions routinely transcend administrative boundaries. Qualitative insights into how these border effects influence community sustainability, especially from the perspective of families with children and young people, remain limited. Young people's opportunities and decisions serve as a critical barometer of a region's future: their ability to access quality education and envision a viable life locally strongly determines whether communities can maintain demographic balance and vitality.

Research focus. Guided by this understanding, the central research question of the report is: **How do mobility, youth's access to education, and housing contribute to sustainable community development in the cross-border area of Västervik-Åtvidaberg?**

The study pursues the following aims:

- To analyse how current conditions in mobility, education, and housing affect the region's demographic attractiveness and long-term stability.
- To identify the main perceived threats to sustainable community development as expressed by local residents, stakeholders, and municipal representatives.
- To illuminate the particular situation of children, youth, and families as a key indicator of community resilience.
- To formulate practical, evidence-based recommendations for municipalities, regional authorities, and local actors.

By integrating semi-structured interviews with stakeholders, a spatially explicit resident survey, and analysis of statistical data and planning documents, this study seeks to generate nuanced, place-based knowledge. The findings aim to deepen academic understanding of border-region dynamics in peripheral settings while offering actionable insights for policymakers and

communities striving to build more resilient and sustainable futures in the Västervik-Åtvidaberg area and comparable regions across northern Europe.

Positionality Statement

The graduate student research team consists of seven people from seven nationalities, including Canada, Germany, Sweden, Finland, Estonia, Latvia, and Lithuania. They represent six universities: the University Centre of the Westfjords, Vilnius University, University of Tartu, the University of Eastern Finland, the University of Latvia, and Linköping University. The majority of the team's researchers have not been to this region of Sweden before, which left room for personal bias, not understanding cultural norms, and language barriers. Additionally, one researcher is from a municipality within the research area, leaving room for personal bias within the research focus. The research team is aware of and has worked to limit the personal bias.

2. Brief history of the area: Developments in locality, demographics, education, and public transportation

2.1 Brief overview of the natural geography of the area

Åtvidaberg and Västervik are neighboring municipalities in south-eastern Sweden, each with its own distinct physical features (Åtvidabergs kommun, 2018; Västerviks kommun, n.d.b). Åtvidaberg is situated in the south-eastern part of Östergötland County, while Västervik lies in the northern part of Kalmar County, at the edge of Småland. Åtvidaberg is characterized by forests and lakes, while Västervik includes upland terrain, forests, and a Baltic coastal zone. These differences mark a transition from inland highlands to coastal and archipelagic landscapes.

Åtvidaberg's landscape is shaped by bedrock, valleys, and many lakes and streams (Åtvidabergs kommun, 2018). It is part of the South Swedish Highlands and lies on a gently sloping plateau, with elevations ranging from 170 meters in the southwest to 100 meters in the east. The area is marked by valleys and low basins, such as Lake Åkervristen, which sits only about 15 meters above sea level. Forests and inland waters dominate the landscape.

Västervik, in contrast, is known for the Tjust archipelago with nearly 5,000 islands, as well as its hilly, lake-rich inland terrain (Västerviks kommun, n.d.b). Stretching along the east coast, it is one of the region's largest municipalities. Västervik combines forests, rural areas, and deeply indented coastal landscapes, resulting in a maritime environment shaped by the Baltic Sea.

The two municipalities are linked by shared water systems. Rivers and lakes flow from Åtvidaberg's inland forests toward Västervik, where they reach the coast and the Baltic archipelago (Åtvidabergs kommun, 2024c). This hydrological connection means the area can be seen as a single landscape system shaped by landforms, water, and their interactions.

Different climate conditions underline the inland–coastal contrast. While the region overall has a temperate climate (SMHI, n.d.), Åtvidaberg's location and elevation give it more continental features, whereas Västervik's closeness to the Baltic Sea brings a strong maritime influence. This makes the area a good example of the shift from Sweden's highlands to its coastal and archipelagic regions.

2.2 Brief history of the area

The municipality of Västervik is named after its capital, the city of Västervik, and can be found in the Tjust archipelago in Southeast Sweden. The city of Västervik was first mentioned in 1275, located at today's village Gamleby, and moved to its current location in 1433. A shipyard established in 1548 in combination with lower taxes led to increased economic activity and income for over a century (Sweeds, n.d.). Västervik became a town known for its shipbuilding, shipping, and seafaring activities (Rodéhn, 2023). Other industries, including iron and timber export, further supported this development. This withstood the Danish invasions of the 17th century (Sweeds, n.d.). With the expansion of the shipping industry, Västervik's coastal residents benefitted from both increased demand for fish and the need for piloting in the area, the latter of which was state-organised since the 16th century. Ironworks and mining of metals were a major source of income for the town in the 18thcentury (Västerviks kommun, n.d.c).

In 1879, a narrow-gauge railway was constructed, connecting Västervik and its economic outputs to more places in Sweden. With this economic prosperity, the Herrgård culture developed in the archipelago, where affluent persons built manors (Sweeds, n.d.). These manors were usually built on fertile land, close to roads to bigger cities, and the coast. In the 1850s, farmers were given greater freedom in deciding how to use their land and the forestry industry became a dominant part of Västervik's economy, using timber not only for shipbuilding but also as an export product itself, for paper, and textiles (Västerviks kommun, n.d.c). During the 19th century, more social services were introduced in the villages of today's municipality, including schools and cottages for the poor. In 1837, Västervik attempted to break away from Kalmar län and become its own county including Norra and Södra Tjusts, Aspelands, and Sevede härader. However, in 1847, this was finally rejected (Västerviks kommun, n.d.d). In the discussions before this, Västervik had got the freedom of trade in 1846, which also allowed Västervik to trade internationally (Västerviks kommun, n.d.c). The late 19th century and early 20th century saw an expansion in population, buildings, and factories (15 in 1890) (Västerviks kommun, n.d.a). This was followed by a period of stagnation until the end of the Second World War, but by the 1970s, the population and industrial sector had grown (Ortshistoria, n.d.). 1946, for example, saw the construction of an Electrolux dust extraction plant, which, for some time, was a major contributor to the municipality's economy (Västerviks kommun, n.d.c). From 1863 until the

municipal reform of 1971, Västervik was the northern seat of Kalmar County Council, the southern one being located in Kalmar (Ortshistoria, n.d.).

Today's location of the Åtvidaberg municipality was rich in metals such as copper, with mines in the area first being mentioned in 1413 (Nrkphistory, 2013). A mining industry developed, and to this day, the symbol of copper can be found in the municipality's crest. After becoming the second largest copper producer in Sweden during the 19th century (1840-1870), the copper industry declined towards the end of the 19th century (Åtvidabergs kommun, 2024c; Kolsgård, 2002b; Larsson, 2025). During the copper boom, in 1957, a first railway was built between the copperworks and Bersbo (Asph & Blomberg, 2003).

In 1907, the football team Åtvidaberg FF was founded, which became very successful in the 1970s and has been a source of local pride ever since ('Historia Åtvidaberg', 2013).

Ebenezer Howard's influential idea of a garden city was implemented in Åtvidaberg, too, in an attempt to deal with the effects of the industrial age (Kolsgård, 2002a).

After various changes in the industrial profile in the early 20th century, in 1922, the company Facit was founded and the production of office furniture, typewriter, and computing machines began in the factory. The products were sold in 130 countries (Åtvidabergs kommun, 2024c; Kolsgård, 2002c). This company was very important to the municipality's economy, both in terms of tax income and jobs (during the 1960s, the company employed 1800 people in Åtvidaberg) but started to lose influence in the 1970s ('Historia Åtvidaberg', 2013; Kolsgård, 2002c). Since then, the municipality has attempted to find other sources of income, such as attracting tourists with the Brukskultur, the cultural heritage relating to, i.a., the copper industry ('Historia Åtvidaberg', 2013).

2.3 Demographic Development

The demographic and mobility dynamics within the Västervik and Åtvidaberg municipalities between 2015 and 2024 illustrate the process of regional polarization, a phenomenon Paul Krugman defines through the "center-periphery" model (Krugman, 1991). According to agglomeration theory, economic activities and populations tend to concentrate in areas with increasing returns, where specialized labor markets and knowledge spillovers create a self-reinforcing cycle of growth (Krugman, 1991). In this context, Linköping functions as the regional "center", whose pull is evidenced by the rapid surge in commuting along the

Åtvidaberg–Linköping route, which reached 2,568 daily commuters in 2022 (SCB, 2023). The process of regional polarization in the municipalities of Västervik and Åtvidaberg began well before the Covid-19 pandemic. This is evidenced by the stagnation or decline in population in the majority of smaller settlements between 2015 and 2019. During the pandemic years (2020–2021), a temporary increase in population was observed in several rural areas. However, since 2022, the structural trend of peripheral weakening has resumed (SCB, 2023). This trend confirms Philip McCann's thesis regarding the formation of Functional Urban Regions (FURs), where administrative boundaries lose significance as residents choose to live in the periphery while remaining economically integrated into the metropolitan labor market (McCann, 2013). Conversely, the decline in commuting intensity between Åtvidaberg and Västervik (dropping from 193 to 135 individuals) (SCB, 2023) indicates a weakening of historical peripheral ties as the region seems to transition into a monocentric system.

The population decline in the majority of the analyzed districts, most notably in Överum (-90) and Västra Ed (-59) (SCB, 2024), points to a process characterized by Haase et al. (2014) as structural "urban shrinkage". According to this framework, the outflow of inhabitants from such areas is not a random crisis but a long-term process driven by deindustrialization and demographic shifts (Haase et al., 2014). In the case of Överum, where the population fell from 1,258 to 1,168 between the years 2015 and 2024, "smart shrinkage" strategies might help by focusing on maintaining infrastructure efficiency under the conditions of a decreasing population (Haase et al., 2014), which will be further discussed below. This process is further exacerbated by selective migration, where the youngest and skilled members of the workforce leave the periphery, resulting in an increased demographic dependency ratio and the decrease of human capital within the remaining community (McCann, 2013).

However, the statistics also reveal contrary, stabilizing trends in areas such as Gamleby (+11 residents between 2015 and 2024) and Dalhem (+7 residents, same timer period) (SCB, 2024), which can be explained through the lenses of spatial equilibrium and digital mobility. In modern regional economics, individuals choose their place of residence by balancing urban wages against quality-of-life factors or "amenities" found in the periphery (McCann, 2013). Erik Elldér's (2023) research on the Swedish labor market suggests that teleworking creates an "untethering" effect, reducing the necessity for a daily physical presence at the office and allowing residents to remain in more distant districts (Elldér, 2023). This technological influence

partially offsets agglomeration forces, enabling certain small districts, such as Gärdserum (+5 residents, between 2015 and 2024), to maintain their appeal due to lower housing costs and proximity to nature.

Consequently, the current regional situation reflects an asymmetrical development: while industrial peripheries undergo structural shrinkage, specific "local nodes" are successfully adapting to new mobility models by integrating into a wider regional network.

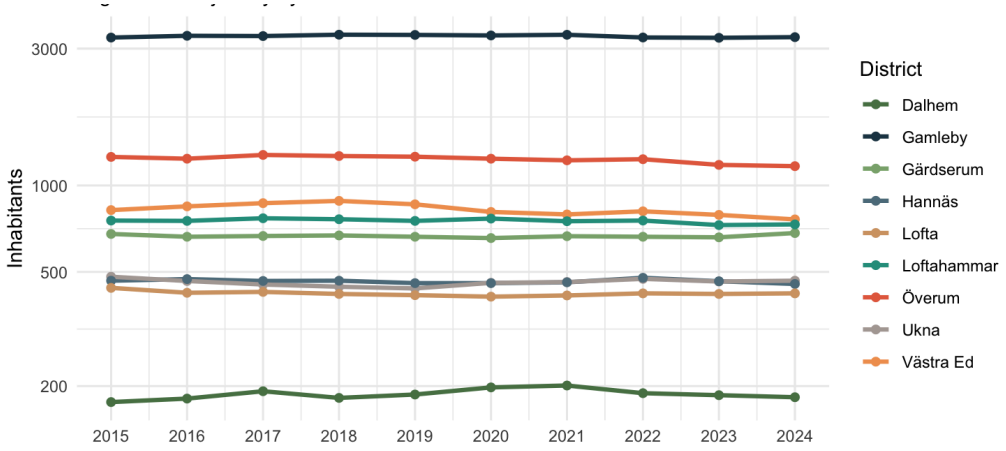


Figure 1. Population trends in selected districts of Västervik and Åtvidaberg municipalities (2015–2024). The chart utilizes a logarithmic scale to illustrate relative demographic trajectories across districts of varying sizes. *Note.* Graphic developed in RStudio based on population data from Statistics Sweden (SCB, 2024).

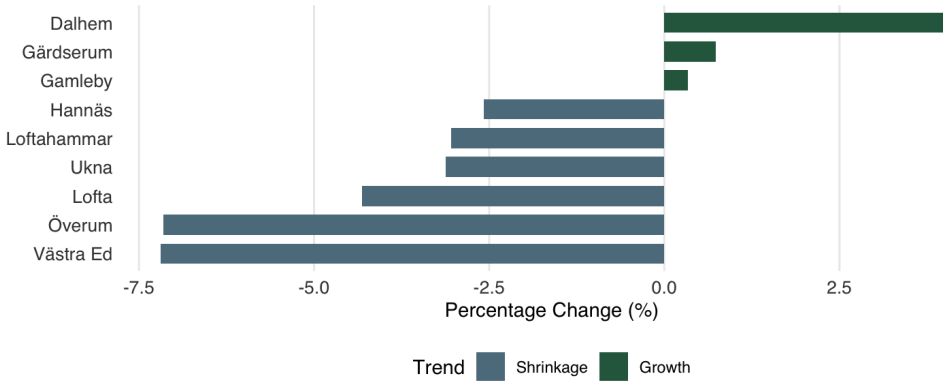


Figure 2. Relative population change in selected districts between 2015 and 2024. Positive values (green) indicate localized growth, while negative values (grey) highlight areas experiencing structural shrinkage. *Note.* Graphic developed in RStudio based on population data from Statistics Sweden (SCB, 2024).

2.4 Developments in Education

2.4.1 Education in Västervik Municipality

According to information available on the municipality's official website, there were 27 preschools in the municipality at the beginning of the 2025/2026 academic year, five of which were privately operated. Of these preschools, 12 were located in the municipal centre (Västerviks kommun, 2025-b).

In the municipality's northern border area, three preschools are located: Eken in Överum, where 47 children were enrolled in the 2023/2024 academic year (the latest statistics available on the site); Rävkullen in Edsbruk, where 22 children were enrolled in the same year; and Smurfboet in Ukna, where enrolment stood at 11 children. Altogether, children attending preschools in the study area accounted for slightly less than 6 % of all children enrolled in municipal preschools during that academic year (Skolkoll, n.d.c).

Approximately 88.9 % of children aged 1–5 are enrolled in preschool during the current academic year (Kommunio, 2025). On average, the child-to-teacher ratio in the municipality's preschools is 1:4.89 (Skolkoll, n.d.c), which is slightly below the Swedish national average of 1:5 for the same year (Skolverket, 2023). Within the border area, the highest ratio was recorded in Överum (1:6.6), whereas Edsbruk (1:3.3) and Ukna (1:2.2) had substantially lower ratios (Skolkoll, n.d.a).

There are 20 primary schools in the municipality, nine of which are located in Västervik, with a total enrolment of 3,700 pupils in the current academic year (Västerviks kommun, 2026a). Two of these schools are situated within the study area: Överumskolan in Överum, where 70 pupils were enrolled in the 2023/2024 academic year, and Ringeltaubska skolan in Edsbruk, where 50 pupils were enrolled during the same academic year (Skolkoll, n.d.b). In both schools, education is provided from preschool class to Grade 6, and after-school care services are also available (Västerviks kommun, 2026a). The schools differ, however, in their organisational structure: at Överumskolan, each grade is taught separately, whereas at Ringeltaubska skolan, teaching is organised into three multi-age composite classes (Skolkoll, n.d.b).

Overall, parents in Västervik tend to perceive the quality of education positively. According to data from Statistikdatabas, in 2025, 26.4 % of respondents rated the quality of preschool as very good, while 60.0 % assessed it as quite good. Compared with 2023, these evaluations indicate a slight improvement. A similar tendency can be observed in compulsory

school education, where 15.2 % of respondents rated the quality as very good and 60.8 % as quite good (Statistikdatabasen, n.d.).

For the higher levels of education, it is possible to pursue studies within the municipality in Gamleby and Västervik (Skolkoll, n.d.b). School transport is provided up to the ninth grade if the home is located sufficiently far from the school (Västerviks kommun, 2026b). For pupils up to third grade, the school must be at least two kilometres away; up to the sixth grade, at least three kilometres; and from the seventh grade onward, at least four kilometres away (Västerviks kommun, 2026b). In total, 11 bus routes provide school transport, of which one is designated for Edsbruk and two for Överum (Kalmar Länstrafik, 2025a).

In the 2023/2024 academic year, the share of teachers with formal teaching qualifications among schools in the area was 67 % at Överumskolan, slightly above the municipal average, and 56 % at Ringeltaubska skolan, which was significantly below the municipal average of 64.5 % (Skolkoll, n.d.b).

2.4.2 Education in Åtvidaberg Municipality

In the 2025/2026 academic year, there are six municipal preschools in the municipality, including one in Åtvidaberg and one in the border area, located in Falerum. In addition, four private preschools operate in the municipality, of which three are located in the municipal centre and one in the border area, in the village of Hannäs (Åtvidabergs kommun, 2026a).

According to Skolkoll, in the 2023/2024 academic year, 18 children attended the preschool in Falerum and 14 the preschool in Hannäs, together accounting for 6.4 % of all children attending preschool in the municipality (Skolkoll, n.d.a). While the municipal average teacher-to-child ratio in the same year was 1:4.86, the preschools in the border area had lower ratios than the average, standing at 1:3.8 in Hannäs and 1:4.5 in Falerum (Skolkoll, n.d.a). In the 2024/2025 academic year, approximately 88.3 % of children aged 1–5 attended preschool (Kommunio, 2024).

In the 2025/2026 academic year, there are six schools in Åtvidaberg Municipality, four of which are located in Åtvidaberg and the remaining two in the northern part of the municipality (Åtvidabergs kommun, 2024a). The nearest municipal schools to the border area are those located in Åtvidaberg (Åtvidabergs kommun, 2024a). Three of these schools all provide education at different educational levels of basic education, while the fourth is an adapted

primary school for students with an intellectual disability (Åtvidabergs kommun, 2024a). There is also an opportunity to continue studies at upper secondary level in Åtvidaberg (Åtvidabergs kommun, 2024b).

Similar to Västervik, school transport in Åtvidaberg isprovided up to the ninth grade if the home is located sufficiently far from the school. However, in this municipality the required distance may be one kilometre greater. Up to third grade, the school must be at least three kilometres away; up to the sixth grade, at least four kilometres away; and from the seventh grade onward, at least five kilometres away. A recommended maximum distance from home to the bus stop has also been established: up to the sixth grade it should not exceed two kilometres, and from then onward up to three kilometres (Åtvidabergs kommun, 2026b).

2.5 Developments in Public Transportation, especially railways

As described above, the area between Västervik in Kalmar County and Åtvidaberg in Östergötland County is characterised by a rural landscape and relatively low population density. In this context, transport accessibility plays a crucial role in supporting regional development, daily mobility, labour market integration, and demographic stability. The primary transport corridor in the region is the Tjustbanan railway line, which is complemented by regional bus services and on-demand transport (Närtrafik).

Tjustbanan is a 116-kilometre non-electrified single-track railway line, connecting Linköping Central Station with Västervik via Basthagen, Åtvidaberg, Falerum, Överum, and Gamleby. The maximum operating speed on the line is 110 km/h. Passenger services are provided by the Krösatågen regional trains (operated by SJ AB on behalf of regional public transport authorities since December 2021). On weekdays, approximately 6–8 trains run in each direction, while the frequency drops to 3–5 services on weekends and public holidays. The journey time between Västervik and Åtvidaberg is around 65–70 minutes. Some services are replaced by buses (Västerviks kommun, 2014; Kalmar länstrafik, 2026).

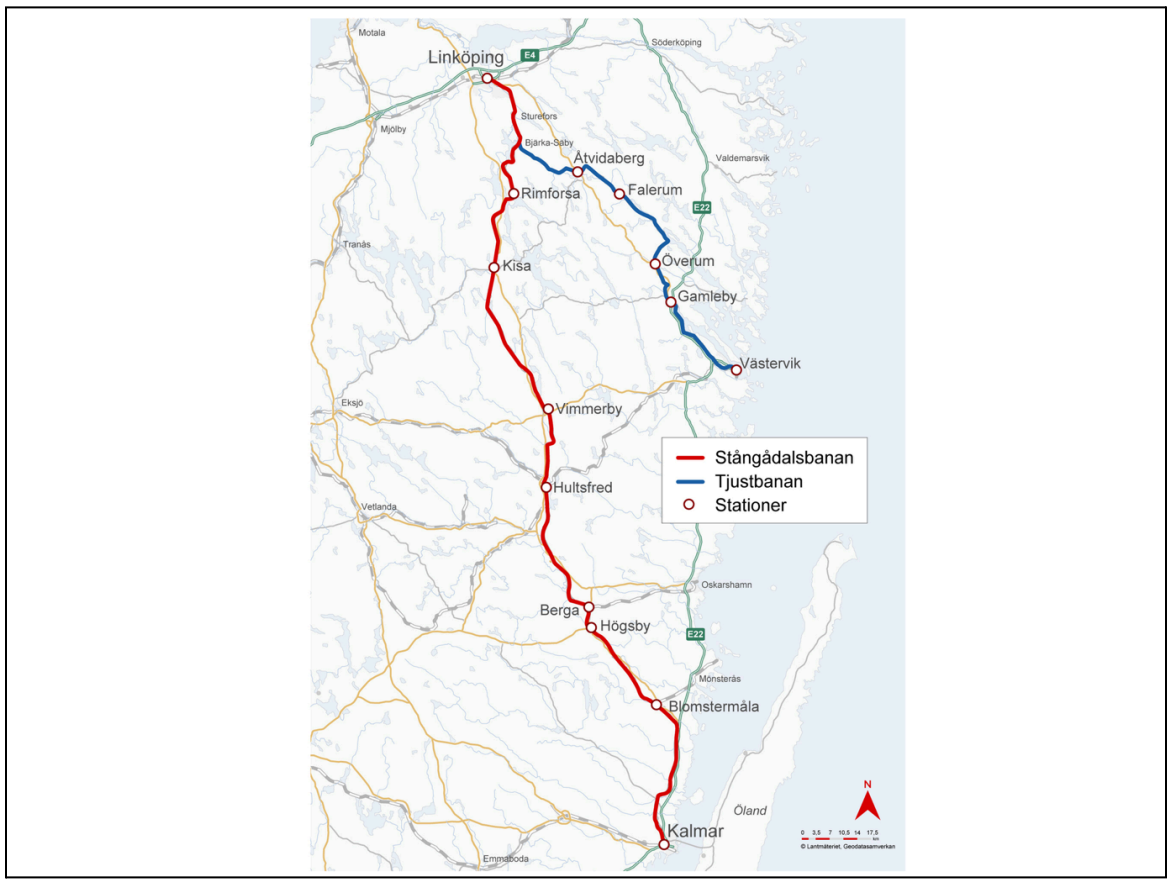


Figure 3: Map of the Stångådalsbanan and Tjustbanan routes. (Trafikverket, n.d.)

Despite substantial maintenance investments exceeding 120 million SEK between 2021 and 2025 (including the renewal of sleepers, rails, and ballast), the line continues to experience low operational reliability. Cancellation rates in certain periods have reached 13–30 %, primarily due to technical failures, vegetation interference, and weather-related disruptions (Trafikverket, 2024; Alvarsson, 2026). Low passenger numbers (averaging only 7.2 passengers per journey on the main bus replacement service in 2025) have led to a reduction in train services and an increased reliance on bus transport (VT, 2026).

Regional bus services are managed by Kalmar länstrafik (KLT) on the Kalmar County side and Östgötatrafiken on the Östergötland County side. The main regional bus route is line 185 (Landsbygdsbuss 185), which operates between Linköping and Västervik and serves both as a complement to and a substitute for the railway. On weekdays, it provides approximately 6–8 departures in each direction between roughly 5:45 and 21:20. The frequency is lower on Saturdays (4–5 services) and Sundays/public holidays (3–5 services). Journey times between

Västervik and Åtvidaberg by bus are approximately 60–75 minutes. Additional local bus routes, primarily serving school and work commutes, operate in the Kalmar County area, including lines connecting Västervik with Gamleby and Edsbruk, as well as routes serving Överum and surrounding settlements. In Östergötland County, local services focus on connections to Åtvidaberg and Falerum. Overall, around 10–15 bus routes are active in the region, although service frequency in rural areas remains limited, often running every two to four hours or less. In more remote settlements, on-demand transport (Närtrafik) supplements the regular network (Kalmar länstrafik, n.d.a.; Region Kalmar län, 2025; Moovit, 2026).

A key strength of the system is the full integration of ticketing and fares between KLT, Östgötatrafiken, and Krösatågen, allowing seamless transfers without additional cost. Real-time information is available through the Resrobot.se platform and the operators' mobile applications (Kalmar länstrafik, 2026; Östgötatrafiken, 2026). Nevertheless, coverage in rural areas is insufficient outside peak hours, weekends, and the summer period, which limits the flexibility and spontaneity of travel.

Recent developments between 2025 and 2026 have been shaped by low passenger demand, challenges with ageing trains, and financial considerations. The introduction of new bimodal (electric and biodiesel) trains into the Krösatågen system has been delayed by approximately 2 years, with the first units now expected in early 2027 (Kalmar länstrafik, 2025b; Järnvägar.nu, 2026). Minor timetable adjustments were implemented in December 2025 and for the summer schedule of 2026, but no fundamental changes were made to the main services.

Looking ahead, the future of Tjustbanan is closely linked to the national Ostlänken high-speed rail project. Regional strategies envisage the line developing into a functional feeder system for the new high-speed rail hub in Linköping. Current proposals by the Swedish Transport Administration (Trafikverket) suggest a technical solution in the northern Tannefors area rather than full integration with the new Steninge station. Consultative planning on this integration is expected to continue until 2027 (Trafikverket, 2026; Corren, 2026b).

By 2037, priority will shift towards comprehensive modernisation, particularly the implementation of the European Rail Traffic Management System (ERTMS). This upgrade, estimated to cost approximately 750 million SEK, involves replacing the existing signalling system with an interoperable digital control system. The project will require an approximately one-year closure of the line (planned from late 2027 to 2028) and is intended to significantly

improve safety, punctuality, and capacity (Region Kalmar län, 2025; VT, 2026a; Trafikverket, 2026). Parallel efforts include the development of multimodal hubs, upgrading the adjacent road network (Riksväg 35) to higher bearing capacity standards, strengthening bus feeder services to smaller settlements, and enhancing freight logistics, particularly for the Port of Västervik (Västerviks kommun, 2014; Region Kalmar län, 2026; Region Östergötland, 2024).

Transport development in this border region is also considered from the perspective of national defence and civil security. In line with EU guidelines on military mobility, the railway forms part of dual-use infrastructure that provides critical redundancy and connectivity between inland areas and the Baltic coast, serving as an alternative corridor in times of crisis (European Commission, 2022; Region Kalmar län, 2026).

In conclusion, the current Tjustbanan railway and its associated multimodal transport system provide a basic but functional level of connectivity between rural settlements and the regional centres of Linköping, Västervik, and Norrköping. The main limitations remain the ageing infrastructure, low passenger numbers, and operational instability. However, planned investments in ERTMS, new bimodal rolling stock, and multimodal integration are expected to create the conditions for a more reliable and higher-frequency service by 2037. This would enhance the attractiveness of smaller settlements such as Överum and Falerum as residential locations within the functional urban regions of Linköping and Norrköping, thereby supporting long-term economic resilience, demographic balance, and national security in the area (Trafikverket, 2024; Region Kalmar län, 2025).

3. Conceptual and topical framing

Population decline is characterized by rising life expectancy, low birth rates, and low mortality, leading to an aging population (Kirjane et al., 2023). In the European context, for decades, the development has led to rural areas losing their population due to outmigration to more urban areas (Niedomysl & Amcoff, 2010). The predominant reason for outmigration from rural areas is that young adults are leaving for their higher education and opportunities in cities, and not returning to their hometowns after completing their education (Lovén et al., 2020). The population left in rural areas is aging, and faces problems caused by population shrinkage, such as falling real estate values, access to elderly care and shrinking public and private sectors for goods and services (Niedomysl & Amcoff, 2010).

Choices regarding migration and education can be seen in economic theory as human capital investments. This is because people invest when they can expect a return for their investments in the future. Educated people move to cities because they can expect higher pay in urban areas for their work, so they gain greater benefits from moving. This is why highly educated people most often live in urban areas, and why the pay gap between rural and urban areas is increasing (Lovén et al., 2020).

The theory of agglomeration explains why most of the human capital ends up in the same areas. Academic activities, such as development and research, add more human capital to the area where they occur. This is called endogeneity, leading to a situation in which highly skilled jobs are geographically concentrated in areas with high population density. Additionally, in rural areas, less-skilled jobs are often overrepresented (Lovén et al., 2020). Leading to increased job opportunities in urban centers, making it harder for educated people to move to rural areas, even if they wanted to.

3.1 Mobility

Mobility is a part of a person’s daily life, and access to public transport can sometimes be seen as a citizen's right (Andersson & Hermelin, 2024). For people living in rural localities, a lack of transport opportunities has been shown to hinder social inclusion and access to services. For children, poor public transport is especially a hindrance to independent mobility in rural areas and can add barriers to accessing education. In addition, adults and elderly people without

a driver's license also suffer the consequences of poor public transport (Berg & Ihlström, 2019). In these areas, distances to daily needs or tasks such as the workplace or services are often longer than in other areas. In Sweden, more rural areas have decreased access to public transport compared to densely populated areas (Macuchova & Brandt, 2025). However, according to Macuchova and Brandt (2025), when population density is taken into account, public transport is fairly distributed. Furthermore, Andersson and Hermelin's (2024) findings imply that while limited public transport in rural areas can lead to injustices, it need not. Small communities can be efficiently supported by modest levels of public transport (Macuchova & Brandt, 2025). However limited, rural communities depend on public transport, as Berg and Ihlström's (2019) findings show, some families could not live in rural areas without the school bus.

It's often difficult to provide comprehensive public transport in rural areas for citizens with diverse needs in a cost-effective way. One solution has been Demand Responsive Transport, where the user must book their trip in advance, which has been in use, for example, in the UK and Ireland, and it has been looked into in Sweden as well. (Berg & Ihlström, 2019; Zhao et al., 2024). A personal car, most likely because of its convenience, remains the most used mode of travel in the countryside. Public transport is made even more inconvenient when the travel crosses a regional border, such as the border between Åtvidaberg and Västervik. Most buses don't cross regional borders; two tickets are required, which is more expensive. Furthermore, bus routes can be either inaccessible or too dangerous in rural areas. (Berg & Ihlström, 2019).

In terms of planning for public transport, Swedish municipalities are currently in a complicated situation: they are encouraged to include public transport plans in their comprehensive plans, but mandated planning is done by the regional public transport authorities. Swedish municipalities, however, have a monopoly on planning for welfare services, such as rides to school and for the elderly or disabled. Because of the divide between planning authorities, smaller, less populated municipalities are known to have difficulties integrating their public transport plans with the regional authority's plans (Andersson & Hermelin, 2024).

Västervik's comprehensive plan notes that providing attractive public transport is difficult in the municipality as it is so sparsely populated. The population is reportedly reliant on personal cars (Västerviks kommun, 2014). Åtvidaberg's comprehensive plan mentions that public transport in the municipality has got a lot to get better at. The bus stops need to become better, public transport more accessible, service intervals more frequent, and the bus routes must

connect both localities within the municipality to each other and the municipality to neighbouring municipalities (Åtvibergs kommun, 2018).

3.2 Education

The border area between Åtvidaberg and Västervik is characterized by an increasing distance between home and school from a certain educational stage on both sides. In the settlements south of the centre in Åtvidaberg Municipality, children can only attend preschool in Falerum and Hannäs (Åtvidabergs kommun, 2026a), after which the nearest school within the municipality is located in Åtvidaberg itself (Åtvidabergs kommun, 2024a), more than 25 kilometres away from some of the more distant villages such as Hannäs.

In Västervik Municipality, children in the border-area schools can attend school from preschool through sixth grade in Överum and Edsbruk (Västerviks kommun, 2026a), and in addition, attend preschool in Ukna (Västerviks kommun, 2025a). At higher educational levels, the nearest opportunity to continue schooling is in Gamleby (Västerviks kommun, 2026a), which is more than 27 kilometres from villages closer to the border, such as Ukna. Although in some cases a practical solution would be to attend a closer educational institution on the other side of the municipal border, this is made more difficult by public transport arrangements, where cross-border cooperation between the municipalities remains insufficient (Åtvidabergs kommun, 2018).

Some studies focusing entirely or partly on rural schools in Nordic countries have highlighted the impact of rural schools on local communities (Bagley et al., 2026), including the effect their closure can have on population numbers (Lehtonen, 2021; Sørensen et al., 2021).
Bagley et al. (2026), in a meta-analysis based on observations and interviews with people connected to schools in different ways across three countries or regions (Northern Ireland, Sweden, and Spain), found that rural schools play an important role in maintaining community cohesion and functioning as central hubs of local life.

Lehtonen (2021), in a study focusing on school closures in Finland, found that over an eight-year period, around two-thirds of rural school closures took place in rural areas. The study showed that within a 5-kilometre catchment area, there was a certain association between school closures and population decline in sparsely populated rural areas, core rural areas, and rural areas located close to urban centres. By contrast, no such relationship was identified in rural centres or

urban areas. The same pattern was also confirmed when analyzing areas within a 10-kilometre radius.

A similar conclusion was reached by Sørensen et al. (2021), who found that a reduction in the number of schools negatively affected migration patterns. Using both qualitative and quantitative methods, they compared migration trends in one municipality in Denmark between 2000 and 2020, where eight schools had been closed before 2011, while nine schools (control group) remained in operation.

At the same time, Sørensen et al. (2021) noted that earlier studies from various countries have not always identified such a relationship. For example, Amcoff (2012), who examined migration in areas surrounding closed schools in Sweden during the period 1990–2004, used Voronoi polygons and a 500-metre buffer area around each school to define the study area, and found no clear overall trend.

3.3 Housing

According to the detailed development plan published by Åtvidaberg Municipality in 2018, there is a shortage of housing, particularly in terms of residential properties that meet different needs, including in the border-area settlements. The municipality identifies the greatest potential among the settlements near the border in Falerum, where the plan designates development opportunities in several areas. In addition, the nearby cluster of villages comprising Yxnerum, Hannäs, and Kvarnvik, is also regarded as a potential development area, where additional construction may, in certain cases, take place even within shoreline and coastal protection zones (Åtvidabergs kommun, 2018).

In the detailed development plan published by Västervik Municipality in 2014, several areas within the study region—such as Överum, Edsbruk, Tyllinge, Helgenäs, Björnsholm, and Ukna—are likewise identified as potentially attractive residential locations. Similar to Åtvidaberg Municipality's development plan, Västervik Municipality's document also highlights the need for a wider range of housing types, including variation in both dwelling size and forms of tenure (Västerviks kommun, 2014).

One possible reason for the shortage of available housing is that older residents may be unwilling or unable to move to smaller homes, and therefore continue living alone in their houses (Abramsson & Hagberg, 2020; Stenbacka & Cassel, 2024). Abramsson and Hagberg (2020)

examined this issue in three small semi-rural municipalities in Östergötland, including Åtvidaberg. Their 2014 survey received responses from more than 800 inhabitants aged 80 or older, most of whom lived in single-family housing. Most respondents stated that they planned to remain in their homes for the rest of their lives. At the same time, only 36% were certain that this would remain possible for their health, while 12% said that they had considered moving.

Eliasen et al. (2020) noted in their report on housing challenges in rural areas of Nordic countries that one big problem is the lack of discussion over these in rural planning compared with urban planning. The report also highlights that residents in areas experiencing a housing shortage often face difficulties obtaining loans, as low market property values reduce access to financing.

Stenbacka and Cassel (2024), in their overview article on planning for socially sustainable rural housing in Sweden, point out that in rural areas that are attractive to tourists, summer houses and second homes can create major sustainability challenges in the housing market, as demand from tourists and second-home owners drives up prices, which makes these less affordable for local residents.

4. Method

4.1 Data Gathering

4.1.1 Semi-structured interviews

First, we defined our research area. Between the central localities of Åtvidaberg and Västervik, there are several smaller localities. Gamleby, the largest locality, was excluded due to its large relative size and its relatively far distance from the regional border. In short, the borders of the research area could be described as five kilometres south of Åtvidaberg and five kilometers north of Gamleby (Fig.4). Second, we searched for potential interviewees within the research area. To be considered a potential interviewee, a person had to either live or work in the research area or provide services within it. We reached out to them mainly via e–mail, and via Facebook Messenger if their e-mail addresses were unknown to us. In total, we contacted 12 local interest/parents' associations, 18 local firms or services, two municipal planning departments in each municipality, two principals of four pre-schools in total, one principal for two schools (classes 1-6), two elderly homes, and one municipal rescue chief.

Semi-structured interviews were conducted with three general introduction questions and 10 predetermined questions regarding the border region. Semi-structured interviews were chosen to allow stakeholders to guide the interviews toward themes and threats they felt were important to the border region of Västervik-Åtvidaberg (Adeoye-Olande & Olenik, 2021). Interview questions for both municipalities were created using very open-ended questions to gain a basic understanding of the border-area context. These interviews were then used to refine the general interview questions for all stakeholders and to focus on mobility, education, and housing (as seen in the appendix). When possible, interviews were conducted in English (nine), with four in Swedish. When possible, participants were met at a location convenient to them, and two interviews were conducted via Zoom at their request. Interviews ranged from 20 minutes to an hour, depending on the interviewee's availability, the number of participants, and the interviewee's willingness to answer questions.

With participants' permission, all interviews were audio-recorded using Apple Voice Memos. Apple Voice Memos uses end-to-end encryption and requires two-factor authentication to access data (Apple Support, n.d), and all recordings were deleted from personal devices after transcription. Transcriptions were checked for accuracy and anonymized within 24 hours of the

interview. Audio recordings will be stored on a password-protected server for up to five years (until 2031) for potential use in the GEONORDBALT project. At the end of this term, the data will be deleted in accordance with the GEONORDBALT data protection policy.

The four interviews in Swedish were auto-transcribed using 1transcribe. This was chosen because the data will be automatically deleted after 14 days and not used to train any Artificial Intelligence (1Transcribe, n.d). Transcriptions were checked and anonymized by a native Swedish speaker. The transcripts were translated into English for coding using DeepL. The translation service DeepL was used because it does not save any data (DeepL, n.d).

4.1.2 Survey

The study employed a mixed-methods framework, leveraging the ArcGIS Survey123 platform to facilitate data collection. This instrument was specifically selected for its integration of Public Participation GIS (PPGIS) functionalities, which empowered respondents to spatially delineate their lived experiences rather than relying solely on conventional textual responses. Digital accessibility was optimized through the strategic distribution of QR codes and direct hyperlinks, while linguistic inclusivity was maintained by providing the instrument in both English and Swedish, thereby mitigating potential participation barriers (Brown & Kyttä, 2014). The questionnaire architecture combined quantitative measures (including Likert scales and multiple-choice selections) with qualitative open-ended inquiries to capture nuanced insights. Furthermore, the implementation of advanced Survey123 features, such as conditional logic for dynamic question visibility and a geospatial tool for the visual definition of the 'border area,' provided a comprehensive analytical foundation for understanding respondent realities concerning mobility, education, and housing (Brown & Kyttä, 2014). The key thematic areas covered included daily mobility within and across municipal borders (including children's commutes), access to services such as healthcare and groceries, digital infrastructure in rural settings, and housing affordability.

The survey was conducted with strict adherence to anonymity, and all collected data were used exclusively for academic analysis. Dissemination followed a dual-channel strategy: (1) digitally, via local Facebook groups and snowball sampling through interviewees; and (2) physically, through the distribution of over 750 flyers across the border area between Åtvidaberg and Västervik, placed in residential mailboxes and on village notice boards.

4.2.3 methodology limitations

The primary **methodological limitations** encountered during the survey and the interview study were related to the local communication environment and severe time constraints. Furthermore, the data collection window was limited to five days (April 17–21, 2026). As this period included a weekend, it minimized opportunities for formal cooperation with municipal administrations, local media, and other public communication channels that could have further amplified the studies reach. For the survey, the digital community proved highly insular; of the 16 local Facebook groups contacted, only 3 approved the survey post, as most groups require verified local residency or address-linked profiles.

For the interviews, english was the second language for all interviewees; most were comfortable conducting interviews in English. However, many mentioned being less comfortable or out of practice in English, which could pose a potential communication barrier. While interviewees were offered the option to conduct interviews in Swedish, the research team had limited capacity, as only one of the seven team members spoke Swedish. Using online translation can lead to the meaning or tone of the interview being lost. The severe time limitation meant that many participants were unavailable during the five-day research period (April 17–21, 2026).

4.2.4 Map creation

QGIS maps. Maps for this research were made using two different GIS software platforms: ArcGIS Online and QGIS version 3.44.9.

We gathered preliminary data additionally in GIS format. Our aim was to gain a preliminary understanding of the area by mapping its forests, settlements and major roads. We gathered the data used for the maps from different websites. The forests and settlements were extracted from a land use raster layer Nedladdning Basskikt NMD2023 v2.1 by Naturvårdsverket (Naturvårdsverkets Metadatakatalog För Geodata, n.d.). QGIS's raster calculator was used to extract these areas and then they were transformed into shapefiles. The major roads were filtered from Humanitarian Data Exchanges' layerhotosm_swe_roads_lines (Sweden Roads (OpenStreetMap Export), n.d.). Borders for the municipalities of Åtvidaberg and Västervik were

extracted from Huwise Data Hub's shapefile layer Kommuner – Sweden (Opendatasoft, 2021). The basemap we used was from OpenStreetMap.

From the data we gathered, we have concluded that the area is mostly forested. The biggest settlements are Åtvidaberg, Västervik and Gamleby, which were excluded from our research area.

Part of the preliminary mapping was also refining our research area. We chose the research area by mapping an 18 km wide buffer on Västervik's side of the border of the municipalities, and a less uniform and thinner buffer on Åtvidaberg's side. The buffers are not uniform, because Västervik is a considerably larger municipality than Åtvidaberg when in terms of area. Furthermore, the location of the villages we decided to visit during both the survey distribution and the interviews affected our final research area. In addition, we mapped the villages we visited on both maps.

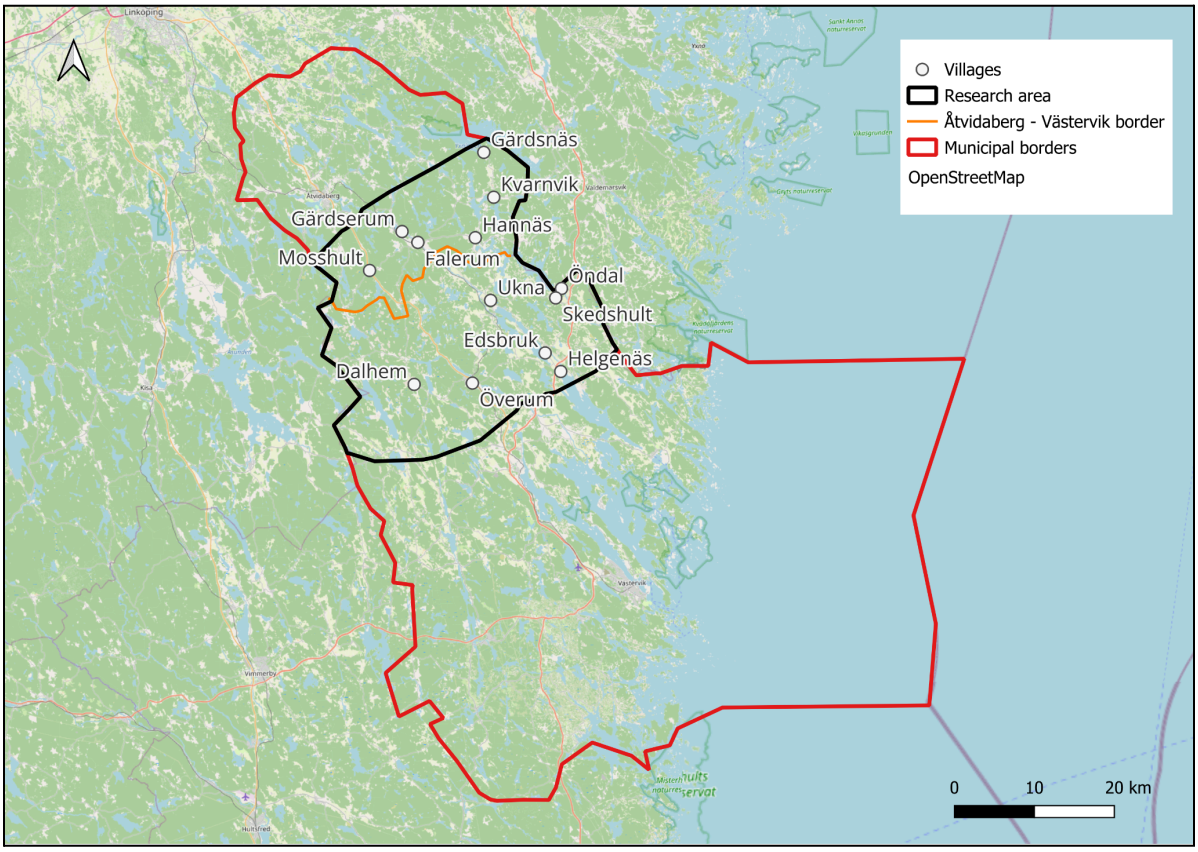


Figure 4: The research area within the borders of Åtvidaberg and Västervik municipalities

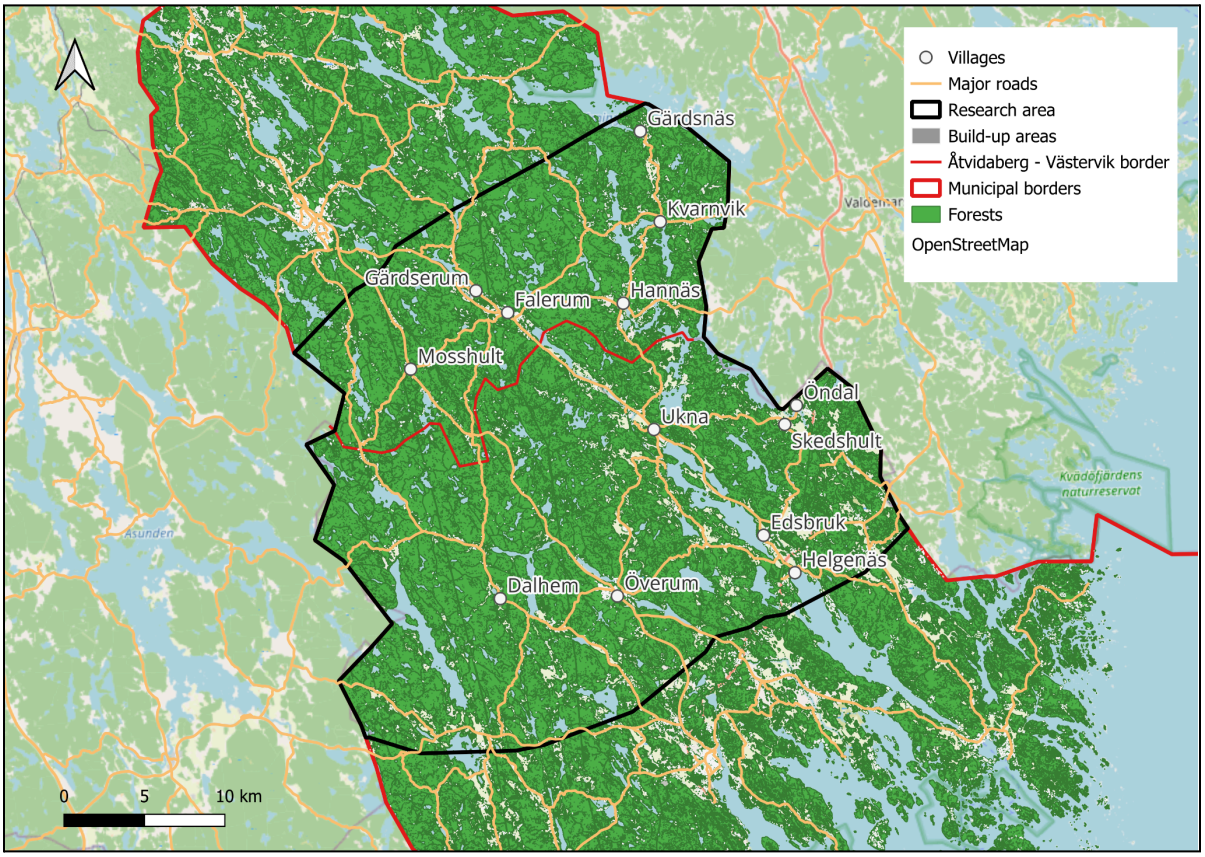


Figure 5: The research area within Åtvidaberg and Västervik municipalities with major roads, built-up areas and forests.

ArcGIS Online maps

Survey results in Åtvidaberg and Västervik municipalities. This map was prepared from the survey response summary exported to Excel. The key attribute used for mapping was the percentage ofresponses collected by postal code area. These values were linked to postal code polygons in GIS, which allowed the response distribution to be visualised spatially across the study area. The final map, therefore, shows the spatial distribution of survey participation by postal code area rather than by individual respondent locations.

In terms of visualisation, the map uses a choropleth approach, in which postal code areas are classified according to the share of respondents and displayed using a graduated blue colour scheme. Postal code areas with no responses are shown separately using hatching, allowing distinction between low response intensity and a complete absence of responses. Additional

reference layers include the research area, the municipal boundary between Åtvidaberg and Västervik municipalities, other municipalities, and the main localities of the study area.

Perception of the border area among respondents. The map was based on data collected through the ArcGIS Survey123 questionnaire. In one survey question, respondents were asked to draw the area they perceived as the border region. Each valid response, therefore, contained a respondent-defined polygon representing their own spatial understanding of the border area. These polygons were overlaid in GIS to produce a composite representation of the perceived border region. Out of 59 responses, 57 were included in the final analysis, while two were excluded because they were drawn incorrectly as predefined geometric shapes rather than meaningful spatial outlines.

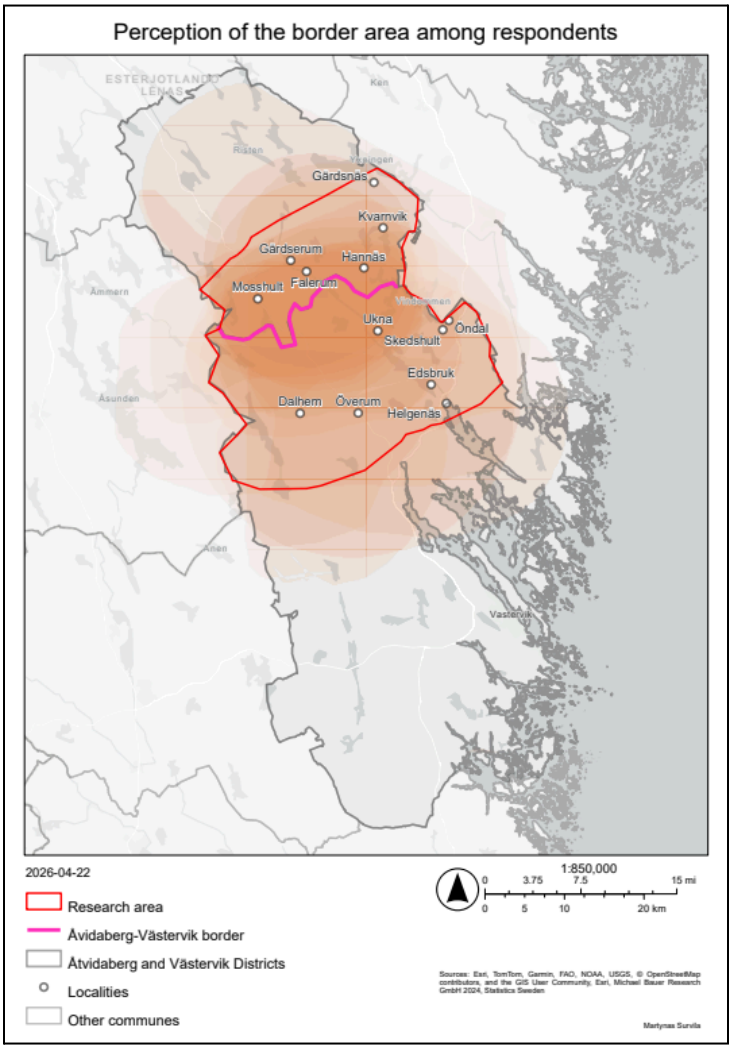


Figure 6: Map showing the perception of the border area among survey respondents.

The map is visualised as an overlapping, semi-transparent areal layer, which conveys the perceived spatial extent of the border area as understood by respondents. This method was chosen because the borderland was not treated as a strictly fixed administrative strip, but as a territorially interpreted and experience-based space. The map also includes the research area, the Åtvidaberg–Västervik border line, district boundaries, localities, and neighbouring municipalities to provide spatial context for the perception layer.

Conceptual plan for Åtvidaberg and Västervik municipalities. The map was developed as a conceptual planning synthesis based on analysis of interview transcripts and GIS background data. The functional relations between settlements, service centres, and mobility flows were inferred from the interview material, particularly where respondents referred to everyday service access, transport links, administrative barriers, and the importance of maintaining existing functions in the border area. The map was therefore not designed as a quantitative transport model, but as a concept sketch grounded in qualitative evidence and translated into spatial form in GIS.

The proposed territorial structure was drawn with a future-oriented planning approach. Rather than promoting territorial expansion, the concept focuses on retaining and concentrating existing services within the study area, since the interviews showed that the continued availability of everyday services is highly important to local residents. For this reason, the concept map visualises key settlements, strategic links, and functional concentrations as sketch-based planning propositions over a cartographic base. Environmental context was also included through polygons and other territorial reference layers.

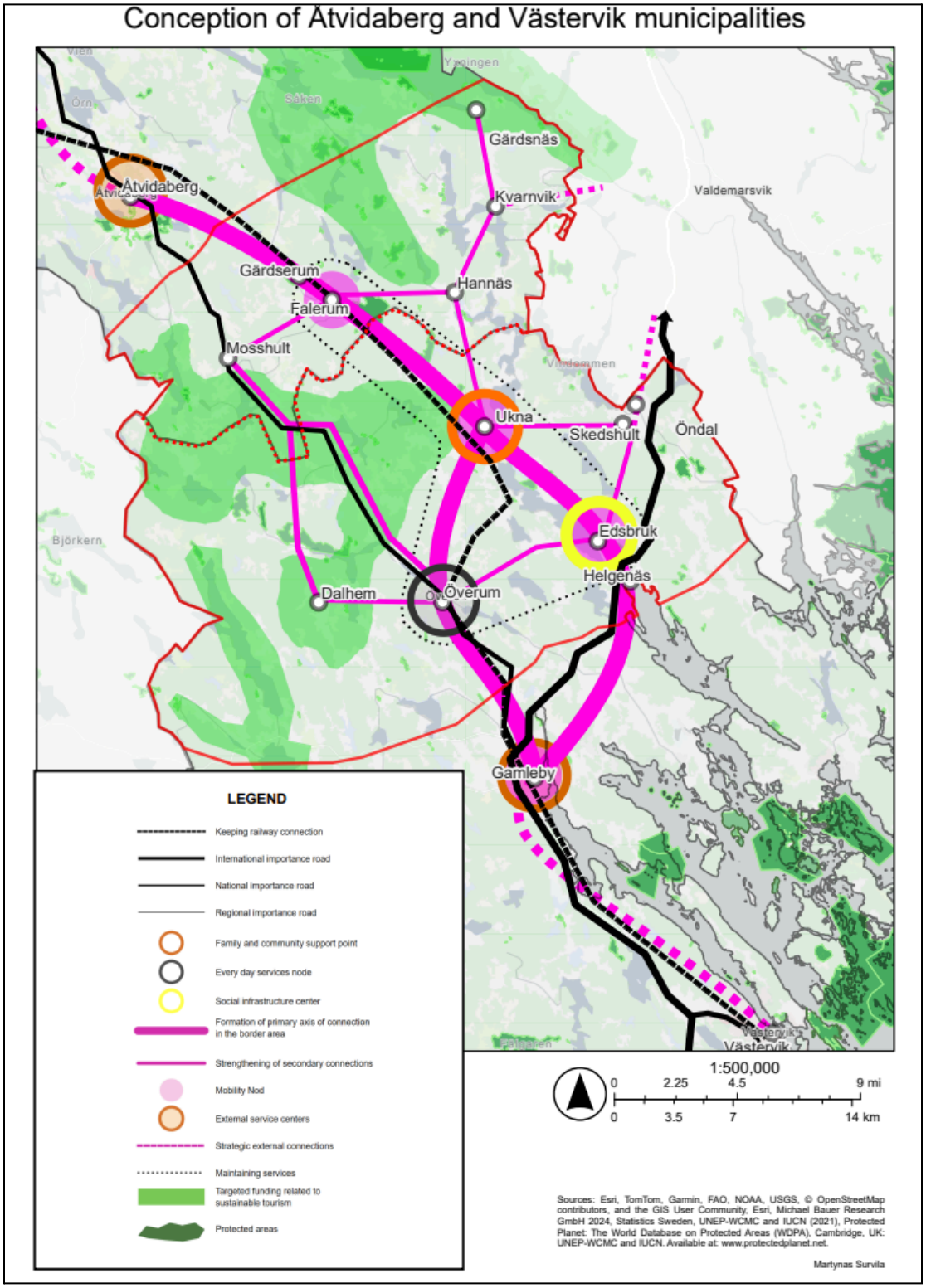


Figure 7: Conception map of the research area of Åtvidaberg and Västervik municipalities.

Limitations

ArcGIS Online. Map production in ArcGIS Online involved several practical and technical limitations. First, data ownership and sharing settings restricted the use and exchange of some layers, especially when datasets were not fully shareable outside the original account or organization. Second, the platform is browser-based, which slows down and may destabilise the workflow when working with larger datasets, multiple overlapping layers, or more complex symbology. Performance was affected by internet connection quality, browser memory, and the overall responsiveness of the web platform.

In addition, ArcGIS Online provides less cartographic control than desktop GIS software: some aspects of map design, such as advanced symbology, precise label placement, annotation control, and highly customized layouts, are more limited than in ArcGIS Pro or other desktop GIS environments. There are also limitations related to geoprocessing and spatial analysis, since ArcGIS Online is better suited to lightweight web mapping than to more advanced analytical workflows. Certain operations require simplification, workarounds, or preprocessing outside the platform.

Another practical limitation involved the visualization of sketched data. ArcGIS Online did not automatically generate an appropriate legend for features derived from respondent-drawn sketches or manually created conceptual lines. As a result, the legend for these elements had to be produced manually in an external image-editing software and then added to the exported PDF version of the map. This introduced an additional post-processing stage, reducing the level of automation and reproducibility of the mapping workflow.

Another limitation concerned export and reproducibility. Web maps may render slightly differently depending on browser rendering, active basemap services, or sharing permissions, making it more difficult to produce consistent print-quality outputs than in desktop GIS. ArcGIS Online also depends on platform availability and access to online services, meaning that work cannot be completed fully offline. Finally, additional limitations may relate to data privacy, editing precision, file size, and the long-term management of joined or hosted data layers, especially when survey data, respondent-drawn features, or temporary web layers are used.

4.2 Analysis methods

4.2.1 Semi-structured interviews

Interview transcripts were uploaded to MAXQDA Pro version 26.2.1 for analysis. Prior to coding, each transcript was read in full. Transcripts were then manually coded using a mixed top-down and bottom-up coding approach to extract valuable information from each interview. Value coding was used to systematically analyze the interviewees' intent and group them into themes and patterns (Campbell et al., 2013). This process helps decrease research bias during interviews by providing a standardized analysis for all interviews and increasing the replicability of methodology (Campbell et al., 2013).

Deductive (top-down) coding was used from the start, drawing on themes from municipality interviews and thorough background research on the area (Delve, 2024). Three infrastructure threats to the region were chosen for focus: mobility (transportation), housing, and youth education. To answer the research question, 'How do mobility, education, and housing contribute to sustainable community development in the cross-border area of Västervik-Åtvidaberg?', we identified 12 codes: four positive, four negative perspectives, and four future goals for the community. Each heading consisted of mobility, housing, youth education, and 'other' topics. Within the 'Other' category (present in positives, negatives, and future goals), inductive coding was used to identify additional themes raised by stakeholders and to examine patterns.

We added the transcriptions to the document sets to enable comparative analysis. Four sets were created to compare two groups of participants. We first compared 'Residents' of the area (people who live within the border regions, regardless of their work location) and 'Organizations' composed of people who work within the border region but do not live in the community. We then compared people from 'Åtvidaberg' and 'Västervik', determined by where they worked and lived. We chose this technique to limit researcher bias, by coding anonymized interviews, however, coding is highly subjective and based on coders perception of interviewees intent behind the statements. Listening to audio recordings during transcriptions helped reduce this bias. Additionally, as time was a constraint only 2 rounds of coding were conducted. In the future, more thorough analysis of coding is recommended to ensure no codes are missed, or miss labelled.

4.2.2 Survey

We used Microsoft Excel, R Studio, and ArcGIS Survey123.

Microsoft Excel allowed us to clean the data, separate them as needed, and visualise them. We used R Studio (Version 2026.01.0+392) to run χ^2-tests whether the respective two categorical variables are independent of each other. This test is appropriate as the sample sizes were, depending on the number of responses per question, 38, 39, and 59, thus sufficiently large for running χ^2-tests. The data was categorical and the categories mutually exclusive (for multiple response possibilities, the pairs were kept). For the datasets that we used χ^2-tests on, the observations were independent (to a possible degree). However, we would caution against generalising from the results as the expected outcomes were not always larger than or equal to 5, thus some of them violate this χ^2-test assumption.

To analyse the geospatial input provided by the respondents on their perception of the border area, we used ArcGIS Survey123, created shapefiles of each respondents drawn border area, increased their transparency, combined and then layered them.

5. Results

5.1 Outcomes of semi-structured interviews

This section represents the findings from the 13 semi-structured interviews we conducted, involving 18 interviewees. Of these, two interviews were held with municipal planners in each municipality. Two interviews were conducted with representatives of the two LEADER areas of Folkungaland (Åtvidaberg municipality) and Kustlandet (Västervik municipality). One interview was held with the principal of two schools (class 1-6). Two interviews were held with three staff members of an elderly home in the border area. Another three interviews were conducted with representatives of interest/rural development/parents' groups. Two interviews were also conducted with a local supermarket owner and with a representative of a parent advocacy group. Another interview was held with a local resident of a village in Åtvidaberg municipality. Of 13 semi-structured interviews, nine were with people based in Västervik municipality, three in Åtvidaberg municipality, and one in Linköping municipality (Folkungaland). Five interviewees lived in the border region, while eight worked in this region but lived elsewhere. These groups were used to analyze perspectives related to challenges and opportunities for sustainable community development in the border region.

5.1.1 Overall perceptions

Overall, the perception of sustainable development, in terms of mobility, access to education, youth services, and housing, was 57.4 % negative and 22 % positive, among coded segments, as seen in figure 8. Negative perceptions were predominantly around transportation (16.3 %, percentage of the coded segments), youth and access to education (14 %), and 'other' (22.7 %). Under "other", perceptions of living on the border between the municipalities Åtvidaberg and Västervik, and the regions Östergötland and Kalmar, came up in 13.7 % of coded segments across eight interviews. While questions seven and eight in the interview (see Appendix) asked interviewees what they perceived the municipality was doing to aid the community and whether there was tension in this relationship, the questions did not specifically address how they were affected by living or working across the border between the two municipalities and regions. Based on background research and meetings with the municipalities, we expected to see higher overall dissatisfaction with housing. However, only 4.4 % of coded

segments had negative perceptions of housing, and 1.5 % of coded segments had positive perceptions of the housing market. The majority of these responses came from questions seven and ten, which directly asked respondents about housing. Even in these questions, interviewees prioritized threats to transportation and education.

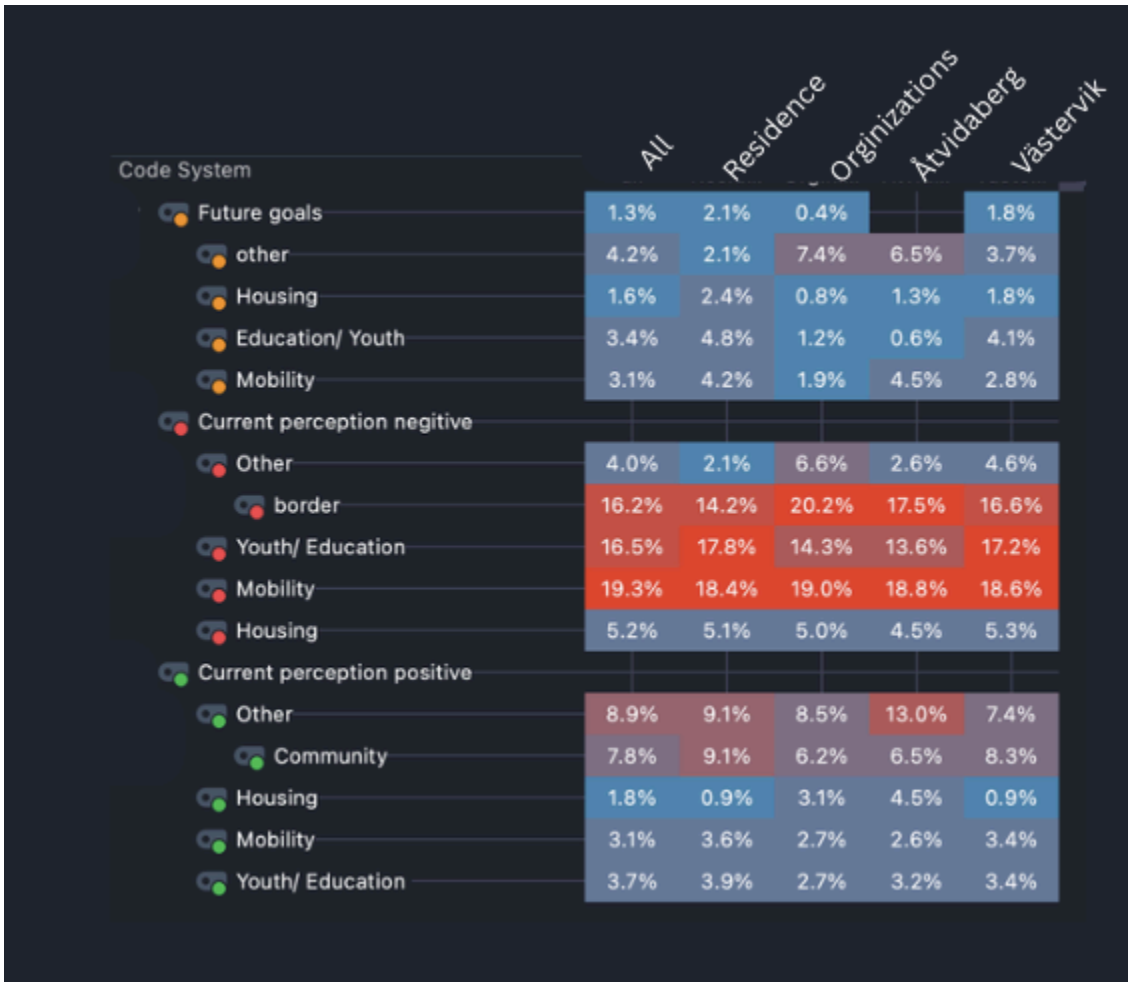
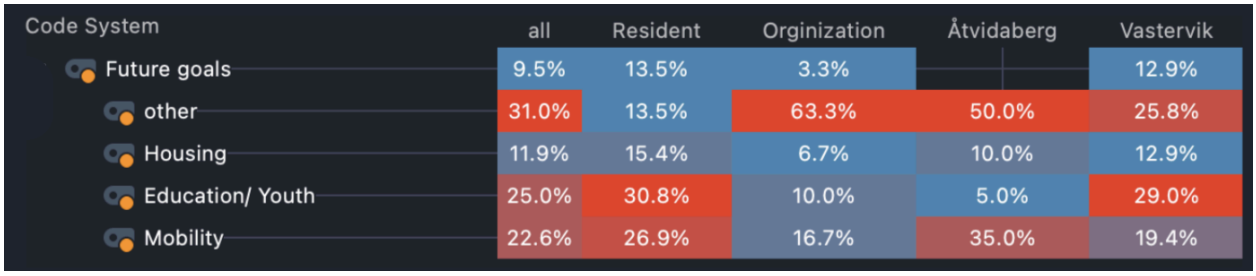


Figure 8: The percent of coded segments for all transcriptions.

Overall, the positive perception, as seen in figure 8 was predominantly coded as 'other' (14.7 %). Using inductive coding, we found that many respondents mentioned that the strengths of their community were a sense of community and belonging (6.6 %) or natural beauty and environment (7 %). Very few respondents had positive perceptions of youth services or access to education (3.2 %), housing (1.5 %), and transportation (2.6 %) among the coded segments.



Code System	all	Resident	Orginization	Åtvidaberg	Vastervik
Future goals	9.5%	13.5%	3.3%		12.9%
other	31.0%	13.5%	63.3%	50.0%	25.8%
Housing	11.9%	15.4%	6.7%	10.0%	12.9%
Education/ Youth	25.0%	30.8%	10.0%	5.0%	29.0%
Mobility	22.6%	26.9%	16.7%	35.0%	19.4%

Figure 9: Heatmap of the percentage of coded segments, of future aspirations for the communities in border areas. Results are broken fown into all interviews, residence, orginizations, living in Åtvidaberg or Västervik.

Finally, interviewees were asked about their future desires within border communities that would help maintain community stability. When focused solely on future aspirations, see figure 9, 25 % of coded segments were about youth access to education, 11.9 % about housing, and 22.6 % about mobility. Residents had a stronger desire to improve youth access to education (33.8 % of coded segments) and mobility (26.9 % of coded segments). In the interviews with representatives of the municipalities, 63.3 % were coded '*other*'. This "other", however, predominantly reflects a desire for increased collaboration and communication, both between municipalities and between municipalities and communities. People in Vastervik had stronger aspirations to increase youth access to education, 29.0 % of coded segments compared to just 5.0 % in Åtvidaberg. Åtvidaberg's primary goals for border communities were increasing mobility (35.0 % of coded segments) and communication coded under '*other*' (50.0 % of coded segments).

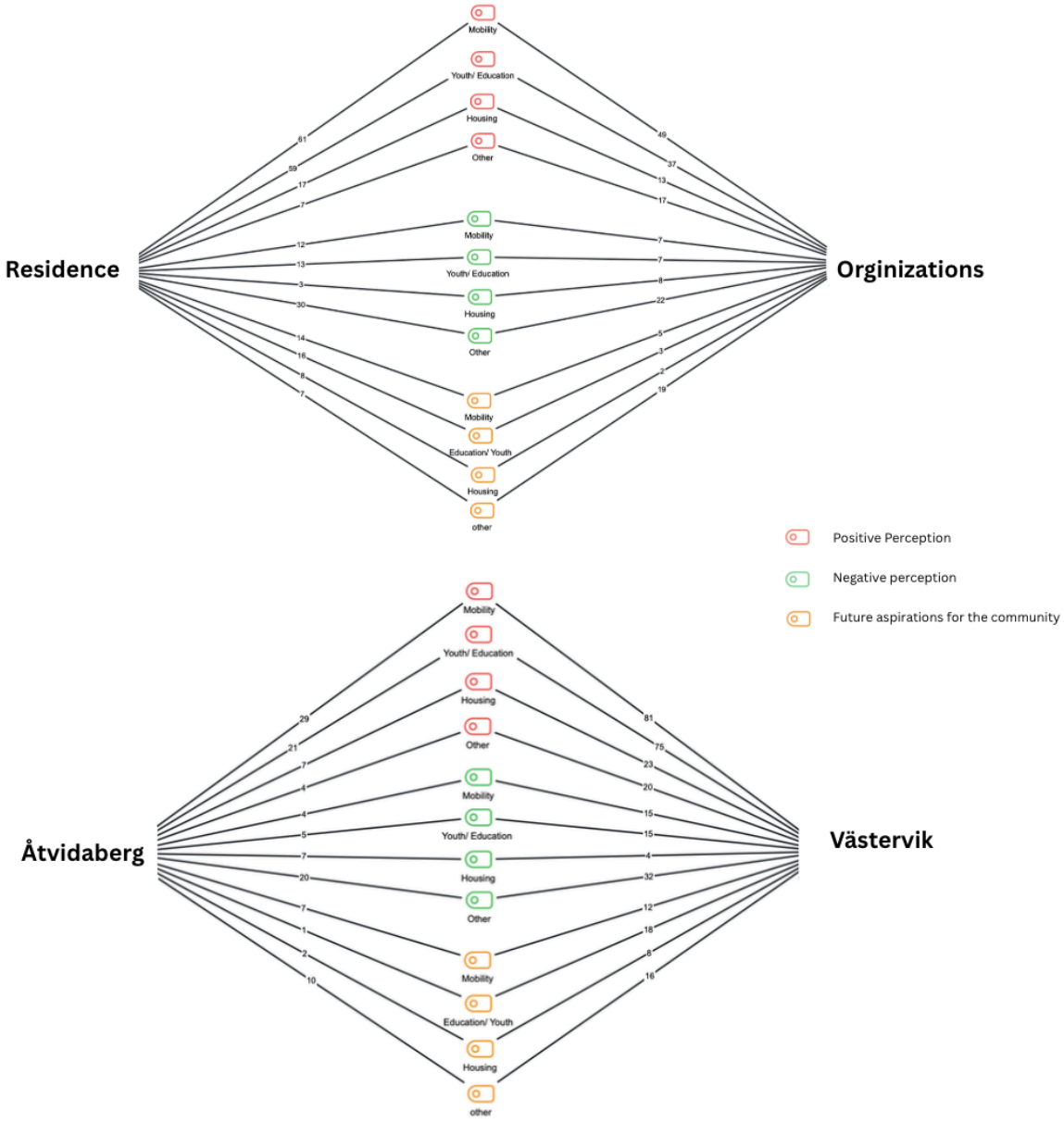


Figure 10: This figure compares two sets of interviews, based on what side of the border they are on, or whether they live or work in the region. The number indicates how many times each theme was mentioned. The colour of the theme is the perception, positive, negative or future aspirations.

5.1.2 Mobility

Whilst there was an overall negative perception of transportation in the border region, there was very low variance between groups, including stakeholders and residents, in both Åtvidaberg and Västervik. Responses were overwhelmingly negative, ranging from 16.8 % to

17.5 % across all respondent groups. This consisted of 119 coded segments appearing across all 13 interviews. There were, however, only 19 positive perceptions of transportation, accounting for 2.9% of all coded segments.

Primary concerns about mobility included public transportation, train frequency, the impact of bus routes, and road infrastructure. Many interviewees also mentioned understanding having fewer trains and buses compared to urban centers, as the population and demand is lower. However, many interviewees noted that train frequency has decreased over the past few years, with departures now occurring only once or twice a day. While many organizations and residents mentioned that this would be replaced by buses, they quickly followed up by noting how unreliable the bus service has proven to be. Interview respondents mentioned that the remaining bus routes run only a few times a day, the roads are winding, and there's potential for animals running into the road, meaning the bus connection is much slower than the train used to be.

Bad roads were mentioned as an infrastructure threat to border communities. It was said to decrease individuals' willingness to commute to work, making it harder to live in remote areas. Negative perceptions of the surrounding transportation were mentioned 48 times in relation to the municipal border. Roads and buses were both mentioned as affected by the municipal border, with many residents noting that municipalities do not coordinate who pays for the service and maintenance. Since road maintenance is a municipal responsibility, some roads will be repaired up to the border, and then not maintained on the other side. This is a barrier for the train connection as well, whilst residents said the train was more efficient and connected both municipalities, currently, it also requires two tickets, one for each side of the municipal border. However, many bus routes were reported to operate only on one side of the border. One interviewee mentioned they had been left off the replacement bus route, meaning they now had to travel into Åtvidaberg to get bus connections across the border in Vastervik, or into Linköping, more than doubling the prior commuting time (Interview 5, Personal communication, April 2026).

Residents and workers both felt that having a car was a necessity to live or work in this area. Interviewee Two stated, “It’s practically impossible to get to and live here. Commuting back and forth.” (Personal communication; April 19, 2026). Many participants mentioned the threat of reduced transportation as a limiting factor for people without a driver's licence or access to a car. This is especially hard for youth and the elderly who may be unable to drive themselves.

Many interviewees mentioned teenagers choosing to buy an A-tractor or an EPA-tractor to enable them to move around independently after age 15. Multiple interviews mentioned a fear of reduced public transportation options, which would limit more people from moving into the region. Overall, there was a strong desire to improve transportation infrastructure, including train reliability, expanded bus schedules, and road maintenance. With 22.6 % of coded segments for future aspirations for all interviewees. Multiple interviewees mention transportation instability for commuting to work, school, and essential services, which is or could be a barrier to living in border regions.

5.1.3 Housing

Overall perceptions of housing reveal that it is not a primary concern in small rural localities. With only 4.8% of coded segments referencing a negative housing situation in rural areas. However, the problems in rural areas differ from those in larger cities. Housing prices were not a concern, with many interviewees repeatedly answering that you can get more for the same money in the countryside compared to what one would get in a city, unless the house enjoys a really nice view. Additionally, many interviewees mentioned that rural areas struggle to access bank loans and building permits because they worry that depopulating areas will not yield a return on investment. One interviewee explained, “You can't loan the money from the bank to build it because it won't be worth the money that you spend on building the house. That is one big problem…” (Interview 11, Personal communication, April 2026).

It was also mentioned that finding houses on the market can be difficult because there aren’t always houses up for sale. With an aging population, many elderly people can stay in their homes longer. Municipal support through elderly care and weekly food deliveries has made it possible for elderly to stay in their homes. Additionally, there are limited rental apartments available, and it is not economically feasible to take on rental payments when elderly people often own their homes outright in rural areas. Interviewees mentioned rental apartments that do become available are in the center of localities.. Therefore, to live in the study area people have to buy a house according to two interviewees, these average ~1–1.5 million sek, increasing in price as the view gets nicer.

Interviewees mentioned a positive perception of housing in the study area in 1.7% (of coded segments). Many interviewees mentioned increasing fiber connection; all homes now have

or have the option to connect, which used to be a problem in this area. Causing a discrepancy between cities and the countryside, in previous decades. Furthermore, a better internet connection has increased the possibility to work from home, or hybrid work, which has become more common in the 2020's.

Finally, many interviewees mentioned non-permanent residents buying second homes in these areas. While the interviewees in Gamleby, a larger town just outside the study site, had an almost exclusively positive attitude to foreign tourists buying second homes, the attitude in more rural areas, such as Hannäs, were opposed since the local supermarket and especially pre-schools are highly dependent on year-round customers and children living in the area to stay operational. Therefore, to the interviewees in very rural areas, a house sold to a non-permanent resident is seen as a loss for both the social community and the services. Several interviewees mentioned the importance of making more families with young children move to the area and the problem of an ageing population. For a younger generation to move into the houses, there have to be available houses ready to be bought. Right now, many of the older generation still own houses that are bigger than they need. Finally, both municipalities had interviewees mention the difficulty and cost of getting building permits. However, some interviews reveal that in the Åtvidaberg side of the border, the response rate has been getting better than it used to. While the results of the semi-structured interviews reveal housing is not the main threat or concern to the border area, there remains concerns regarding housing and rental availability, predominantly for young families and the ability to build or expand houses to suit a new generation's needs.

5.1.4 Youth access to education

Youth and access to education were coded for segments that mention children living in the border regions' access to preschool (Förskoleklass) through grade school (Year 1-9). Organizations mentioned border communities struggling with access to education 37 times across 5 separate interviews, accounting for 12.1 %. Residents, however, mentioned education 59 times across 5 interviews, accounting for 15.1 % of coded segments. Both organizations and residents mentioned barriers to accessing education, which are current and future barriers to population stability. Children who currently reside in border areas struggle with large age gaps in the classrooms, long commutes to school, and degrading school building quality. Additionally, schools struggle to find trained staff willing to work in the region. However, amongst

interviewees, there were differing perspectives on grades; some stated that kids received more attention, with little difference between grades, while others mentioned that less-trained staff meant children's grades suffered disproportionately.

In terms of community stability, many people mentioned fragile schools and dropping grades as reasons young families might be hesitant to move to the area. While many communities in the border region continue to have preschools and grade schools, they are being threatened with closure based on annual enrollment numbers. Multiple interviewees stated that closing schools would double their children's already long school bus commutes. There were 19 coded segments on improving youth access to education in future years; just three came from organizations, including a school worker and municipalities. While residents mentioned youth access to education 16 times, it was the most dominant future aspiration among the communities, accounting for 4.1 % of the coded segments. Additionally, access to education for youth in Vastervik was mentioned 75 times compared to just 21 times in Åtvidaberg.

Some interviewees also mentioned communities starting their own private schools to ensure access to education for children, funded by the community and grant funding. However, this also caused tension with the local council and is an example of communities finding local solutions to municipal shortcomings.

Access to education was mentioned in relation to municipal borders 36 times throughout all interviews. Since municipalities are responsible for access to education and school transportation, many children do not have a choice about which school they attend. If one school is located in close proximity, but it is across the municipal border, parents bear the responsibility of children's transportation. Since public transportation is often unreliable in these communities, children often have longer commutes to schools within their own municipalities. Whilst 3 interviews mentioned that there have been solutions for this in the past, it often requires many layers of bureaucracy, including proving that the opposite municipality does not bear additional transportation costs for children to school if they were only transported from the host municipality.

5.1.5 Cross-regional relations

Several interviewees in the Västervik municipality mentioned that it was usual for them to go to Linköping and to some extent to Norrköping. Interviewees describe these urban centers

in Östergötland region as offering a wider selection for shopping, upper secondary school programmes as well as having the closest university. Furthermore, people from Västervik municipality commonly get treatment in the hospital of Linköping instead of the hospital in Västervik, especially forspecial treatments.

Linköping is a common destination for people living in Västervik municipality. During the interview with municipal planners in Västervik, it was clear how the potential closure of the trainline between Linköping and Västervik was something that disturbed Västervik more than Linköping, which values the upcoming high-speed connection (Ostlänken) to Stockholm more. Åtvidaberg residents similarly perceive localities within the region such as Linköping and Norrköping as the most important urban centers, but not Västervik.

Interviewees based in Västervik municipality were dissatisfied with the quality of roads that connects them to Åtvidaberg and Linköping, but this cross-border connectivity issue mainly affects people in the south of the border, since people in Åtvidaberg seldomly have a reason to go to Västervik when Linköping is close.

Summer times are the exceptions, some interviewees mentioned that visitors from mainly Östergötland and Stockholm but also other parts of Sweden come to the coast of Västervik to camp or live in their summer houses, some of them using the road from Åtvidaberg to Västervik However, for most of the year, the cross-border mobility remains asymmetrical.

Västervik is part of the Kalmar region, whose capital is the city of Kalmar. Kalmar is further away than Linköping. Some interviewees in Västervik municipality brought up the debate about Västervik seceding from the region of Kalmar and joining the region of Östergötland, because of the deeper connection to Linköping.

5.2 Outcomes of survey

5.2.1 Demographic data

This section presents the findings from the survey of 59 residents, focusing on demographic characteristics, education, transport, and housing. The survey was conducted from 17-21 April through an online questionnaire. The rate of response was 7,8%. We received responses from all defined age groups, with the 60-69-year-olds being the most prominent (28.07 %), while two people indicated they were between 18 and 29 years old (3.51 %). In terms of gender, approximately half of the respondents identified as female (54.63 %), the other

approximate half (45.61 %) as male. Most respondents (42.37 %) earned between 200,000 and 399,999 SEK p.a. (see Fig. 11), which is less than the national average (499,200 SEK p.a. in 2024; Statistics Sweden, 2025). Nearly half of the respondents (49.15 %) live in a two-person household (see Fig. 12).

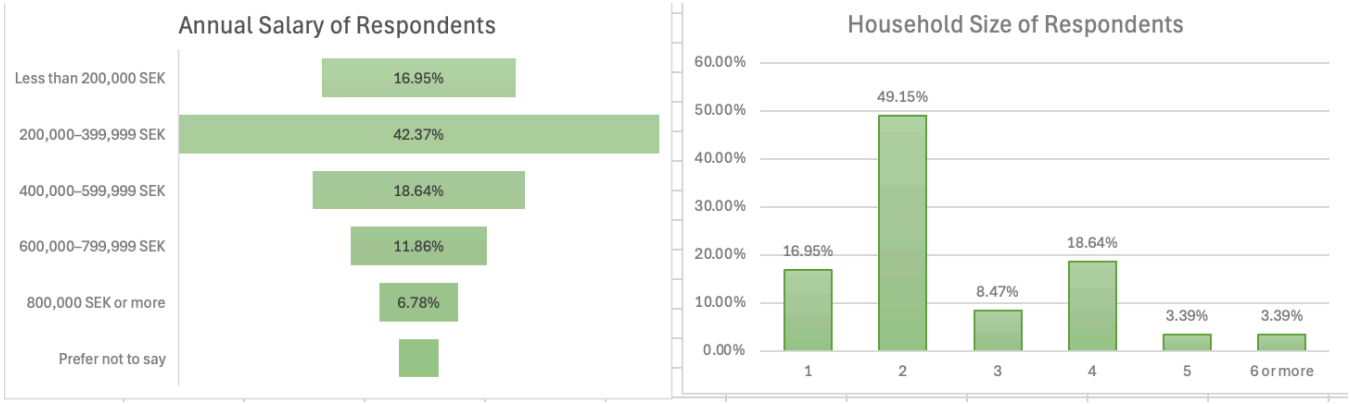


Figure 11 & 12: Two charts showing the annual salary and household size of the survey respondents.

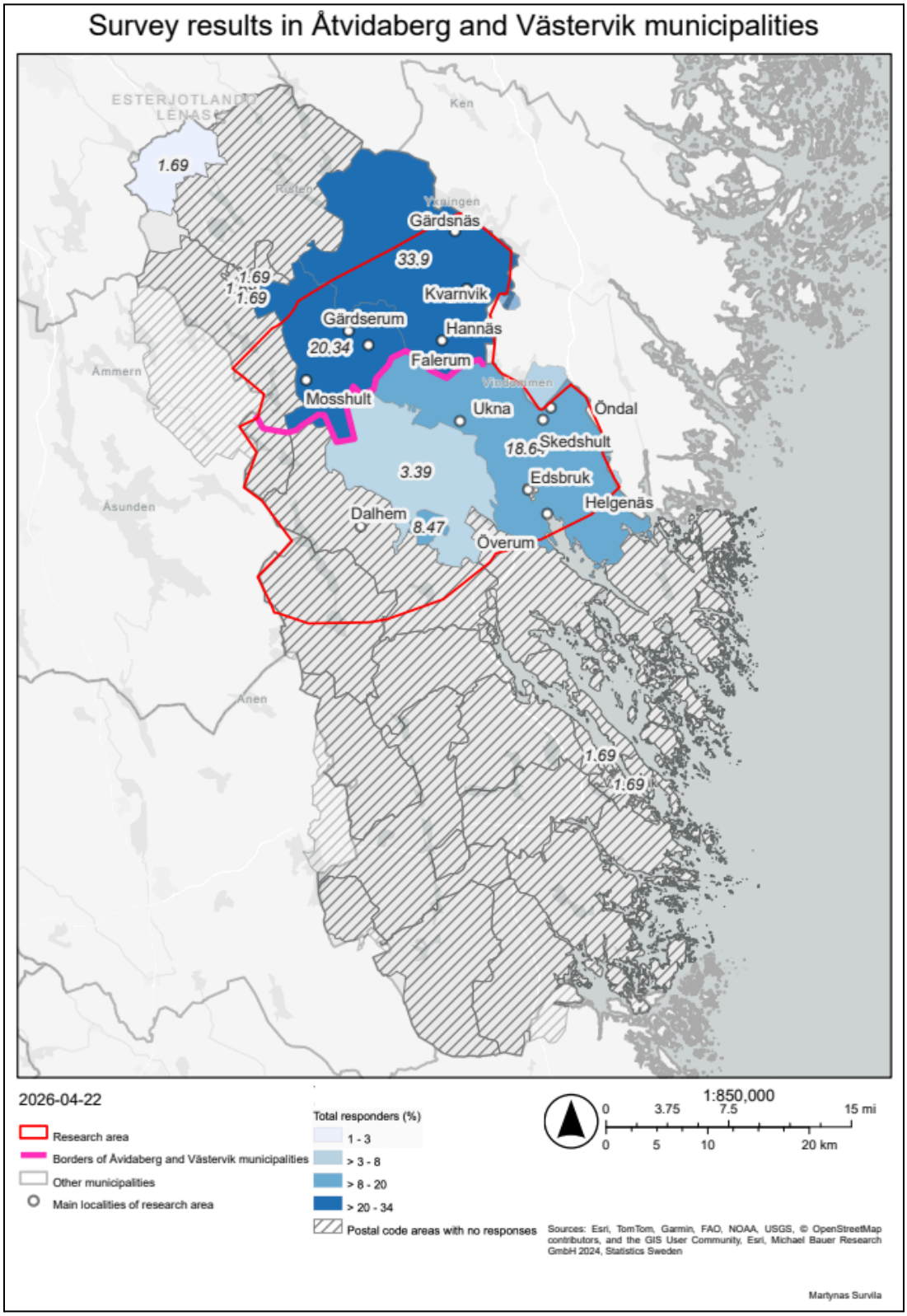


Figure 13: A map of the respondents' postal codes.

5.2.2 Education

Most respondents had secondary level education (71.19 %). About a fifth (22.03 %) had an undergraduate degree, and 1.69 % had a PhD (see Fig. 14 for distribution). In general, respondents were dissatisfied with access to educational opportunities in their home area, with a combined 72.88 % rating it as *very poor, poor,* or *moderate* (Fig. 15). A chi-square test of independence showed no significant association between level of education and satisfaction with education opportunities, $\chi^2(24, N = 59) = 30.08$, $p = .182$. However, the effect size indicated a small-to-moderate association between the variables (Cramer's $V = .357$).

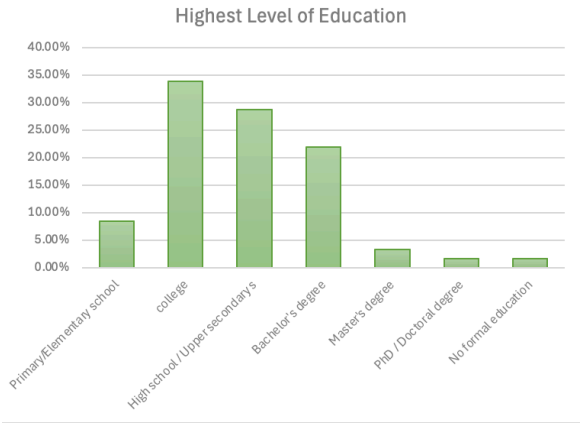


Figure 14: A chart displaying the highest level of education among respondents.

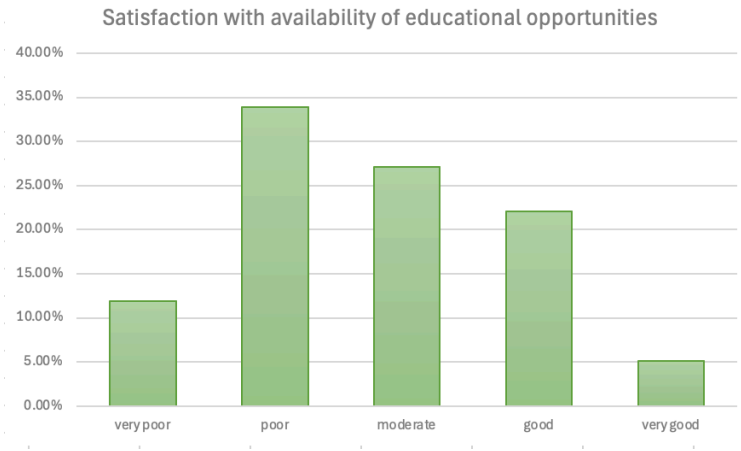


Figure 15: A chart displaying respondents' satisfaction with the availability of educational opportunities.

5.2.3 Indirect youth/children mobility

Approximately a third of the respondents indicated that they lived with and were responsible for at least one child (32.20 %). Out of these, no one was satisfied with the provision of public transportation to school for their children. More than two-thirds (69.23 %) were *very dissatisfied* or *dissatisfied*, while 30.77 % thought of the service as *okay* (Fig. 16).

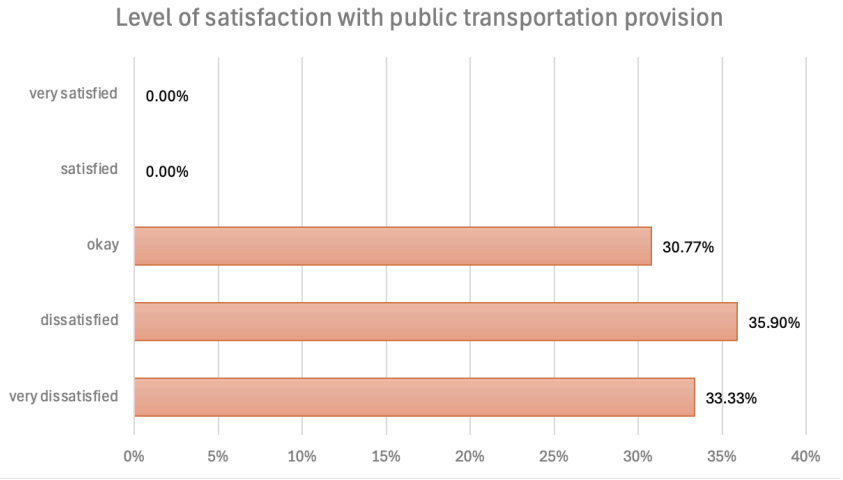


Figure 16: A chart displaying the level of satisfaction with public transport among respondents.

The most common travel time to school was 30–59 minutes (33.33%), while the remaining respondents' children's travel times were evenly distributed between shorter (0–29 minutes) and longer travel times (≥1 hour), each comprising approximately one-third of the sample (Fig. 17). Most children used a combination of car and bus to get to school (30.77 %), as shown in Fig. 18.

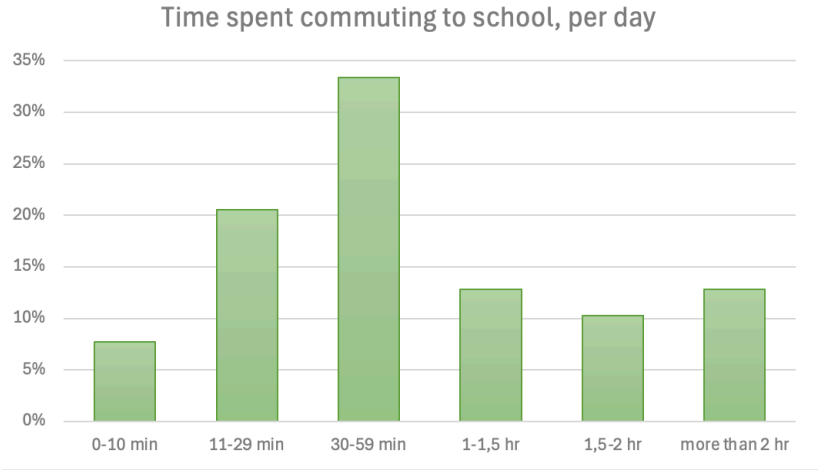


Figure 17: A chart displaying the daily time spent commuting among respondents.

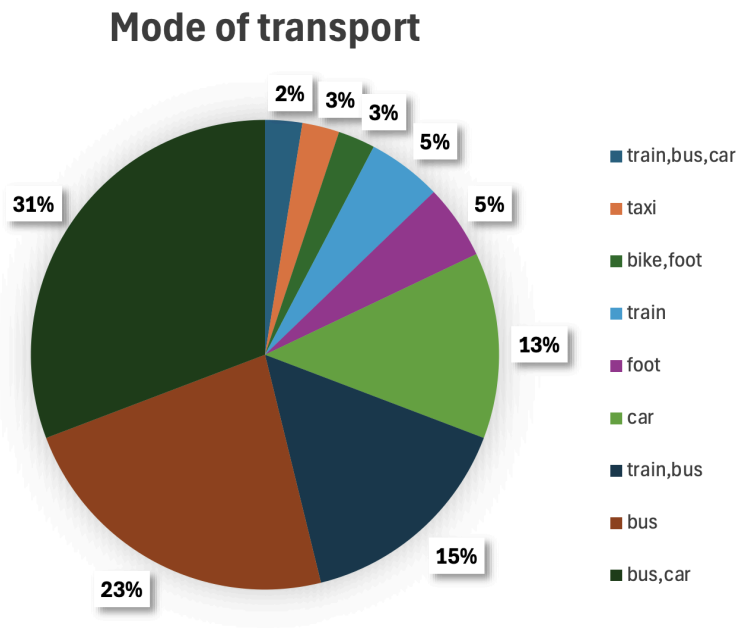


Figure 18: A pie-chart displaying the modal share of school transportation.

A chi-square test of independence showed a significant relation between mode of transportation and level of satisfaction ($\chi^2(16, N = 39) = 26.45$, $p = .048$). While there is no significant relation between level of satisfaction and duration, there is one between duration and mode of transportation ($\chi^2(40, N = 38) = 65.26$, $p = .007$), with the bus and train taking longer than the car; as well as combinations of modes often taking longer.

An examination of adjusted residuals suggested that parents whose children went to school on foot were significantly more likely to report *okay* satisfaction than expected, suggesting relatively more neutral/slightly positive evaluations within an otherwise negative distribution. In contrast, parents whose child or children commuted fully or partially to school by car were significantly less likely to report *okay* satisfaction and tended to be dissatisfied. No other transport modes showed statistically meaningful deviations from expected frequencies. However, the sample size is rather small and more detailed results should be treated with caution. What can be stated rather confidently is, however, that everyone was either neutral or dissatisfied to different extents with all modes of transport.

5.2.4 Work-related commute

The car was the most commonly used mode of transportation to get to work; 81.36 % of respondents used their car either solely (67.80 %) or in combination with the bus and/or train (13.56 %). The bus and train were each used by 11.86 % of the respondents, usually in combination with each other or a car. 3.39 % of respondents used their bike to get to work, while 8.47 % do not commute. 22.03 % did not respond, mostly because they had retired. The percentages sum to more than 100 % because this question allowed respondents to give multiple answers, which were then split for analysis.

The place of work was mostly in the office (38.98 %) or hybrid (30.51 %). Merely 5.08 % of the respondents worked fully remotely (Fig. 19).

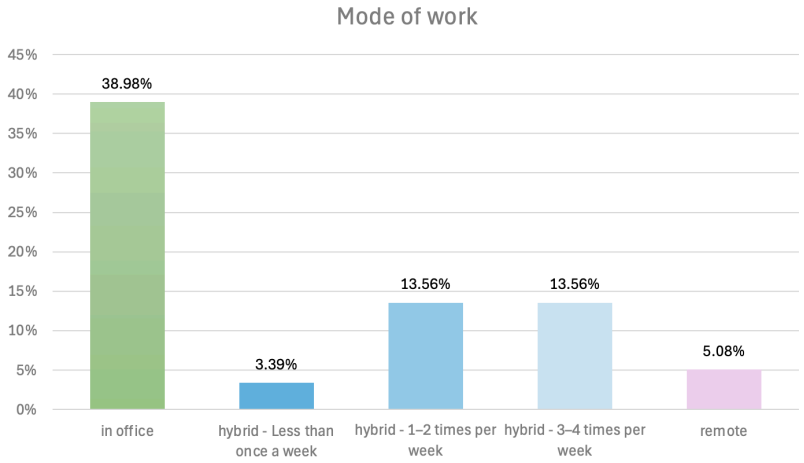


Figure 19: A chart displaying the mode of work.

5.2.5 Housing

The vast majority (81.36 %) of respondents lived in a house they owned, while 16.95 % lived in rented accommodation. Unsurprisingly, a majority indicated they were not affected by rising housing prices (72.88 %), while 20.34 % were somewhat affected, and 5.08 % were significantly affected. More than half (52.54 %) of the respondents deemed housing somewhat affordable in their area (see Fig. 20). This is similarly illustrated by the number of respondents who thought housing affordability to be a major housing-related challenge; it was the least-mentioned. In fact, limited housing availability and the limited rental market were mentioned most (26 and 19 times, specifically, followed by *availability of rural loans*, *limited access to land*, and *access to housing renovation* (see Fig. 21).

A chi-square test of independence showed a significant relation between home ownership and the impact of rising house prices, with those owning a house indicating they are not affected ($\chi^2(6, N = 59) = 19.55$, $p = .003$).

A chi-square test of independence showed no significant association between home ownership and perceived housing-related challenges ($\chi^2(5, N = 77) = 2.06$, $p = .841$), rating of affordability ($\chi^2(10, N = 59) = 8.97$, $p = .535$), and rating of accessibility ($\chi^2(10, N = 59) = 7.879$, $p = .641$).

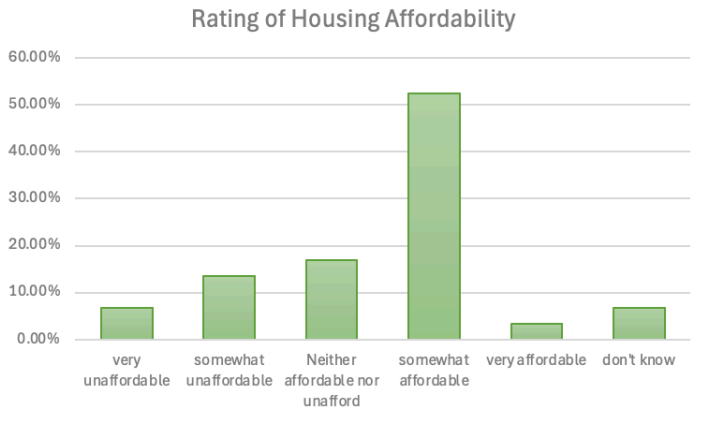


Figure 20: A chart displaying the rating of housing affordability from very unaffordable to very affordable.

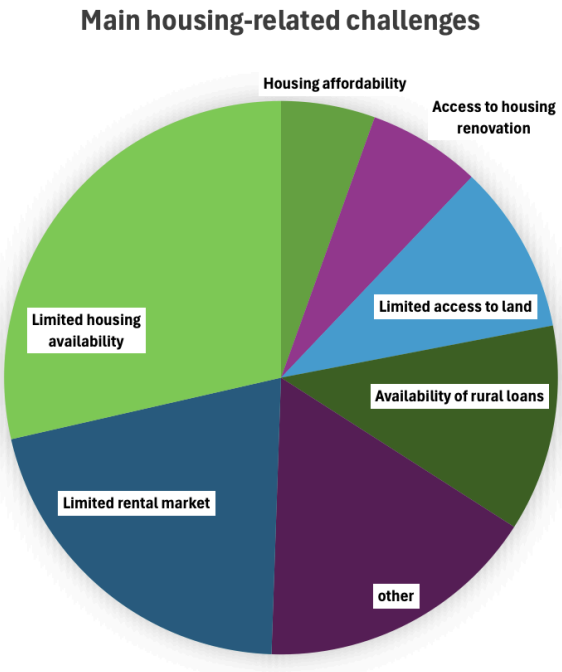


Figure 21: A pie-chart displaying respondents' main housing-related challenges.

5.2.6 Digitisation

The respondents' perception of the ease of use of digital services is balanced in that most found it "neither easy nor difficult", while approximately equal numbers found it *rather difficult* or *very difficult*; or *rather easy* or *very easy.* 10.17 % chose not to respond (Fig. 22). When asked about frequency of use, 88.14 % did not respond, rendering them invalid for this study. Merely seven respondents identified areas of improvement; most often, healthcare services and public transport services were mentioned (see Fig. 23). The generality of this, however, is not given due to the small sample size.

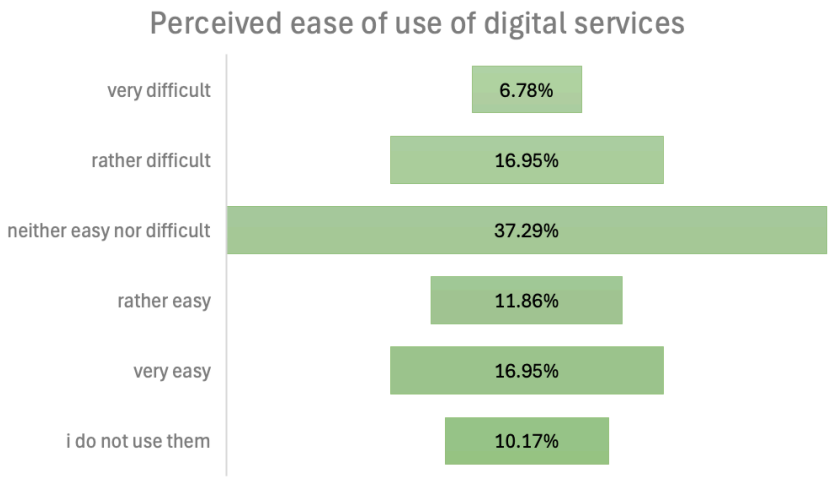


Figure 22: A chart displaying respondents' perceived ease of use of digital services.

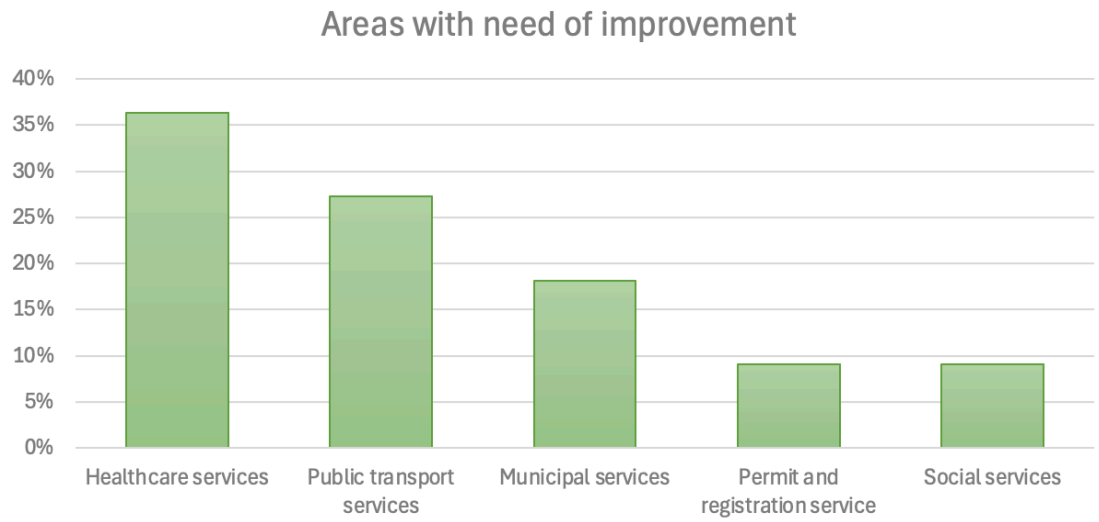


Figure 23: A chart displaying the areas most in need for improvements, based on survey responses.

6. Discussion

6.1 Transportation

6.1.1 Road quality as a major barrier to mobility and regional attractiveness

The quality of roads in the border region between Västervik and Åtvidaberg stands out as one of the most serious infrastructure weaknesses. Poor road conditions significantly hinder everyday mobility and directly influence residents' decisions about whether to stay in the area or move away. Locals frequently describe the roads as narrow, winding, and inadequately maintained, with limited visibility, frequent wildlife crossings, and hazardous conditions, especially slippery in winter and bumpy in spring. As one participant explained: "*The roads are extremely bad… In the winter, there is a big difference in how they maintain the roads in Kalmar County compared to Östergötland County. If you travel from Östergötland to Kalmar, the difference is very noticeable."* (Interview 1, Personal communication, April 2026) Another respondent specifically highlighted the challenges on the route between Överum and Åtvidaberg: "*The road from Överum to Åtvidaberg is terrible. There are a lot of wild animals, it is curvy and slippery, with bad visibility and narrow lanes. These are major obstacles that make the area less accessible and attractive to more people*." (Interview 13, Personal communication, April 2026). These resident perceptions closely reflect the broader processes of regional polarisation occurring in the area. Between 2015 and 2024, several districts experienced notable population decline. For example, Överum lost 90 inhabitants (decreasing from 1,258 to 1,168), while Västra Ed lost 59 residents (SCB, 2024). This development aligns with the concept of "structural urban shrinkage" described by Haase et al. (2014). According to this framework, inadequate infrastructure acts as a catalyst, accelerating the out-migration of younger and more highly educated residents. As a result, peripheral communities are left with an increasing demographic dependency ratio, a higher proportion of elderly residents relative to the working-age population.

These accounts are consistent with existing research on rural transport disadvantage, which shows that substandard roads not only increase travel times and safety risks but also create a sense of isolation and lower quality of life (Lucas, 2012; Farrington, 2007). In the region, the deteriorating condition of key routes such as Riksväg 35 creates a vicious circle: poor road quality discourages regular commuting and spontaneous travel, which in turn makes smaller

settlements even less appealing as places to live. As a result, many families choose to relocate to larger urban centres that offer better infrastructure and greater safety.

The problem is further compounded by the negative impact on public transport services. As one interviewee pointed out: "*There needs to be much better transportation. Even between Gamleby and Västervik. The schedules are bad - you want to have a little fun on the weekend if you're young and so on.*" (Interview 4, Personal communication, April 2026)

Another challenge in the Västervik and Åtvidaberg region is a self-reinforcing "vicious circle" that is well documented in rural transport research. Low population density makes frequent, reliable public transport services economically unviable, which in turn leads to reduced service quality and frequency. This decline discourages potential users, further lowering demand and justifying additional service cuts, a cycle that ultimately accelerates depopulation (International Transport Forum, 2015; Camarero, 2019).

Local residents clearly recognise this dynamic. As one participant explained: "*It's a lack of population, of course, then it's hard to keep a good public transport as well, if not many people are travelling. But then you can also turn it all the way around. If there would be good communications, and the trains would run all the time and be reliable, then more people would live here, actually, because you know that it's possible to travel.*" (Interview 9, Personal communications, 2026). Many describe the current situation even more starkly: "*Yeah, public transport. It's non-existent. So if you live here, you need to have a car or you cannot leave this place."* (Interview 11, Personal communications, 2026) This absolute dependency on private cars is typical of rural areas caught in what researchers call the "vicious cycle of automobile dependency", where poor public transport reinforces car use, which in turn reduces political and economic support for alternative mobility solutions (UITP, 2022; Lucas, 2012). Substandard road quality, particularly on Riksväg 35, further exacerbates the mismatch between labour-market flows and public transport provision. While daily commuting from Åtvidaberg to Linköping grew strongly to 2,568 commuters in 2022 (SCB, 2023), commuting between Åtvidaberg and Västervik declined from 193 to 135 individuals. This indicates a shift toward a monocentric functional urban region dominated by Linköping (Krugman, 1991; McCann, 2013). The problem is aggravated by a misalignment between existing services and actual labour market flows. Although many residents commute towards Linköping and Östergötland, the public transport system remains largely oriented towards Västervik. As one respondent noted: "*Most people here*

work towards Linköping… I think it would be more reasonable for the buses to go that way." (Interview 7, Personal communication, April 2026)

The vicious circle is further locked in by rigid administrative and financial structures. Public transport funding is typically tied to municipal and county tax revenues, creating invisible "stopping lines" at regional borders. Municipalities are often legally or politically reluctant to subsidise services used by residents of neighbouring jurisdictions, even when those services would be more practical. This institutional fragmentation reinforces the perception that peripheral rural areas receive lower political priority than urban centres (International Transport Forum, 2015).

The literature suggests that breaking this cycle requires deliberate external intervention, for example, through targeted subsidies, flexible on-demand services, or improved integration with larger regional networks (Mounce et al., 2020; OECD, 2025). Several residents in the study expressed a similar view: even modest improvements, such as a reliable basic bus connection, could act as a powerful signal that "it is possible to live here" and help attract new families.

6.1.2 Financing barriers and administrative borders

One of the most persistent obstacles to improving public transport in the border region is the rigid nature of administrative and municipal boundaries. Funding for public services is closely tied to local tax revenues, which creates a strong "tax money mentality" and reluctance to finance services that primarily benefit residents from neighbouring municipalities or counties. Participants frequently described this mindset during interviews. One Interviewee explained: "*This is our tax money, this is your tax money… So that's something you really need to work on. But it's a much tougher barrier if you go to Norrköping or Valdemarsvik… There are no local traffics for us. We need to go through Linköping first, which is very stupid if you want to have a fast route."* (Interview 10, Personal communication, April 2026) This administrative fragmentation leads to inefficient service planning and artificial barriers, even when practical solutions exist. Another interviewee highlighted the economic logic behind the reluctance to cooperate: "*The economical aspect is always there because we pay the services for our inhabitants… If a cooperation with another municipality would be possible… then it has to become an agreement… one municipality will have to pay the other one… Few municipalities*

want to pay extra for services in another municipality when you have them on your own." (Interview 9, Personal communication, April 2026).

The issue becomes even more visible in cross-border ticketing. When passengers travel between Kalmar and Östergötland counties, confusion arises about which authority receives the revenue. One respondent shared a personal experience: "*When I paid with my Östergötland card, I always wondered who got paid for it… When I go with Kustpilen, I pay to Kalmar and you pay to Östergötland. Yeah. The same train. So it's an issue*." (Interview 12, Personal communication, April 2026). These financial and administrative frictions discourage the development of integrated services that would better match actual commuting patterns, particularly towards Linköping.

As a result, public transport planning often stops at municipal or county borders rather than following residents' real needs. This institutional inertia reinforces the perception that peripheral rural areas receive lower political priority compared to urban centres. While some positive examples of cooperation between Västervik and Åtvidaberg municipalities were mentioned, participants generally agreed that the current system is not designed for effective cross-border collaboration. In theoretical terms, these findings illustrate how fragmented governance structures can lock rural regions into a vicious circle of underinvestment and poor service provision (International Transport Forum, 2015; OECD, 2021). Without stronger mechanisms for joint financing and cross-border agreements, it will remain extremely difficult to develop the reliable and integrated public transport system that residents clearly need and desire.

6.1.3 Legal and financial constraints in school transport

School transport represents one of the most striking examples of how administrative boundaries create unnecessary obstacles for families in this border region. Swedish law strictly limits municipal funding for school buses to services within their own jurisdiction International Transport Forum, 2015; OECD, 2021). Even when a school in a neighbouring municipality is significantly closer and more practical, the home municipality is often prohibited from financing the transport if it would cost more than an equivalent service inside its own borders. This legal rigidity was clearly illustrated by participants during the interviews. Another participant emphasised the legal constraints: "*You're trying to go to Åtvidaberg, but you can't… There are examples that we accept. But then there will be the school bus. You haven't… you're not entitled*

to school bus for your child… because it says in law that we can provide a school bus, but it can't cost us more." (Interview 9, Personal communication, April 2026). Road and public transport deficiencies disproportionately affect families with children. In Västervik municipality, only a small share of preschool children (less than 6%) attend facilities in the border area (Överum, Edsbruk, Ukna). Enrolment at Överumskolan and Ringeltaubska skolan remains low (70 and 50 pupils respectively in 2023/2024). Strict administrative rules on school transport funding, which prohibit financing cheaper cross-border journeys, reinforce families' decisions to relocate to larger centres with better services.

These cost restrictions force families to either accept longer and less convenient journeys to schools within their own municipality or organise private transport. This situation adds considerable stress for parents, increases car dependency, and makes border-area settlements less attractive for families with school-age children. In the long term, such barriers contribute to the ongoing depopulation of smaller rural communities. The problem reflects a broader structural issue in Swedish and Nordic local governance: a strong territorial logic in public service financing that often prioritises administrative borders over the actual needs and geographical realities of residents (OECD, 2021; Leiren, 2015). While some flexibility exists and occasional exceptions are made, the current legal framework is not designed to support seamless cross-border cooperation in daily services such as education and school transport.

Participants suggested that even small policy adjustments, such as bilateral agreements between municipalities that guarantee cost neutrality, could significantly ease the situation. Without such changes, school transport will continue to act as a hidden but powerful barrier to the demographic vitality of the border region.

Our findings differed somewhat from literature. According to Berg and Ihlström's (2019) study, rural communities depend on public transport, however limited. Their findings show that some families could not live in rural areas without the school bus, which was not the case for our interviewees and those who answered the survey.

6.1.4 Impact on vulnerable populations

The sources indicate that while people move to these areas for the "peaceful" nature and quality of life, the strenuous reality of car dependency often leads to a "selective migration" where families eventually relocate to urban centers for better accessibility. Residents feel they

must "fight for everything," and the psychological habit of "just getting in the car and driving off" has become the standard response to the lack of administrative cooperation across regional borders. In the border regions of Västervik and Åtvidaberg, car ownership is consistently described as an absolute necessity for daily survival and basic mobility.Our research suggests that residents frequently characterise public transport as "non-existent" in any practical sense, emphasising that without a private vehicle it is nearly impossible to leave the area or access essential services. This dependency is so deeply ingrained that the car is viewed as the only tool that enables a "functional" and "efficient" day, as bus and train schedules rarely align with professional commitments, multi-site meetings, or standard 9-to-5 working hours. "*I always need to take the car because it's efficient for me if I have to go from one meeting to the next… Buses are not optional for me because it will take a long time for me to get to places and do my job.*" (Interview 8, Personal communication, April 2026)

The heavy reliance on private cars is driven by several interrelated factors. First, inadequate public transport alternatives. In many villages such as Ukna and Falerum, buses run only once or twice a day, while weekend services are often entirely absent. Although a train service formally exists in Falerum (but not in Ukna), it was repeatedly described as unreliable, with high cancellation rates and frequent replacement by slow bus services that tire both schoolchildren and adult commuters."*Common buses, and so on, once or twice a day. Max… It's not every 10 minutes or it's 2 or 3 hours or something*." (Interview 13, Personal communication, April 2026).

The inadequate public transport system in the region has particularly severe consequences for vulnerable population groups, most notably young people and the elderly, who often lack access to private cars. This situation contributes to social isolation, reduced quality of life, and accelerated out-migration.

For young residents, the lack of reliable and frequent public transport creates significant barriers to education, social life, and leisure activities. One participant described the situation poignantly: "*It's difficult to be a youth in this area if you don't, if you can't drive your own car, and you rely on these buses or trains… it's difficult.*" (Interview 9, Personal communication, April 2026) This limitation makes the region less attractive for families with teenagers and young adults, who often choose to move to larger towns or cities where mobility is easier. In this

way, poor transport not only restricts daily life but also weakens the demographic future of smaller settlements.

For older residents, the consequences can be even more profound. Limited mobility increases the risk of social isolation and loneliness. One respondent highlighted this as the biggest threat to the region: "*The biggest threat… is to be forgotten and left alone… They stay in their houses and then they have none. No one to turn to, no children around or relatives*." (Interview 9, Personal communication, April 2026). Many elderly people remain in their homes but become increasingly dependent on others to access services such as groceries, healthcare, or social activities. When public transport is unreliable or nonexistent, their independence and sense of dignity are seriously undermined. This aligns with broader research showing that transport disadvantage among older people significantly contributes to social exclusion and declining mental and physical wellbeing (Lucas, 2012; Shergold & Parkhurst, 2012).

The combined effect on youth and the elderly deepens regional polarization. While working-age adults may still manage with private cars, vulnerable groups are left behind, accelerating the demographic decline of rural communities. What begins as a transport problem gradually evolves into a wider social and human challenge, the gradual emptying and ageing of peripheral villages. Without targeted improvements in public transport, such as more flexible on-demand services, better coordination of school buses, or improved connections for elderly residents, the region risks losing not only its younger generation but also the social fabric that sustains community life.

Despite the structural challenges, local actors are exploring innovative solutions to overcome low demand and funding constraints. These initiatives represent a shift from traditional, rigid public transport models toward more flexible and cost-effective approaches.

One promising example is the Surum project, a pilot carpooling application that integrates with school bus services. By allowing residents to book seats on otherwise underutilised school buses, the project aims to increase efficiency and provide additional mobility options. As one participant described: "*Now we're part of a pilot project with a carpooling app… It's called the Surum project… And so they've now freed up seats on the school buses. So you can book them.*" (Interview 1, Personal communications, April 2026). This initiative demonstrates how the creative use of existing resources (school buses) can help bridge gaps in regular public transport,

especially in sparsely populated areas. However, participants also noted that such projects are still small-scale and dependent on continued external support.

Interviewees repeatedly emphasised that any future improvements must prioritise reliability. Without consistent and trustworthy services, even the best-designed projects are unlikely to attract new users. One local leader clearly articulated this vision: "*My goal… would be to strengthen the connections to south and to the north, to Linköping, and to Västervik… to make it reliable… to make people use it.*" (Interview 1, Personal communication, 2026). This statement reflects a broader understanding that occasional or experimental services are not enough. For public transport to become a real alternative to private cars, it must offer predictable, frequent, and comfortable connections that residents can rely on in their daily lives.

While innovative pilots like the Surum carpooling project show creativity and local initiative, they also highlight the limitations of fragmented, short-term solutions. For these efforts to have a lasting impact, they need to be integrated into a broader strategy that includes infrastructure upgrades (such as ERTMS), better cross-border cooperation, and stable long-term funding. Only then can the region move from isolated experiments toward a genuinely functional multimodal transport system.

6.1.5 Traffic across the municipal and regional border between Åtvidaberg and Västervik

Like Berg and Ihlström (2019), we also found that crossing borders with buses is made rather difficult by the Swedish system, where the regions account for public transport in their own areas, seemingly without co-operation, at least in our research area: *"Collective traffic is something that's very like border focussed. Um, and our collective traffic, joint traffic, whatever it's called, it's, it's thought from Kalmar. Yeah. And it's not very good. It's very hard to, like, cross the line to Östergötland.* [...] *but it is hard to, like, travel over the border because we are very "Oh, this is our tax money, this is your tax money.""* (Interview 10, Personal communication; April, 2026.).

There also, according to our interviews, appears to be perceived tensions between the regions and other actors when it comes to arranging public transit. Interview ten specifically focused on train connections, and the difficulties within: *"So the big threat is that Linköping is, is cutting off Northern Kalmar County. That's a very big threat threat for the municipality, all of municipality Västervik, but of course, to Överum, which has a train to Linköping with like one*

hour. [...] that would be something that's very, very hard with the train, and that's a very big issue, lots of money and also national, regional, and local levels wanting different things." (Interview 10, Personal communication, April, 2026.).

All in all, it seems that crossing the municipal and regional border between Åtvidaberg and Västervik for work, school, or other activities is inconvenient. A personal car, according to our findings from the survey, is required most of the time. The biggest problem seems to be that the buses don't cross the border, which could cause for example financial issues for users, when two tickets are needed (Berg & Ihlström, 2019).

6.1.6 The railway

The railway is important to those living in the border region. One interviewee brought up that many people in the area travel by train: *"And the fact that there are no transport links. And the train is important. Because many people do travel by train – not everyone, but there are certainly some who do. They drive down to Falerum and then take the train into town."* (Interview 2, Personal communication; 16th of April, 2026.). Indeed people do use the train, according to our surveys findings the bus and train were each used by 11.86 % of the respondents on their way to work, but the travel is often combined with either a bus or a car.

The future of the railway is uncertain. Linköping's planned new station will not, according to the plans, connect to the railway line to Västervik. This has caused some worries in our interviewees: "*And it's not even certain whether there'll be trains. Or buses through Falerum or Ukna in the future. The East Link will change the station layout in Linköping"* (interview two, Personal communication; 16th of April, 2026) and *"Yeah, it's, uh... Västervik to Linköping, that's a train, that's a big question from an ambient for a long time, and now when they are trying to build a new station in Linköping, this line should not access that. [...]"* (Interview 4, Personal communication; April, 2026).

Even today the railway is not without its problems. One interviewee brought up poor infrastructure, and the unreliability of the train because of it: *"Trains that stop when there are leaves on the tracks, or when it's slippery, or when it's too windy, and they don't run. They have to be replaced by buses and so on. The infrastructure is a weakness in the area. [...]"* (Interview two, Personal communication, 16th of April, 2026).

All in all, the railway system is used by some people in the area, but it has its problems, mainly unreliability. Still the locals seem to think of the railway as a positive thing for the area, when it is working, and hope for the railway to Linköping to remain in use in the future.

6.2 Housing

The findings suggest that the question of housing, while not perceived as a primary problem in rural areas differs significantly from a more urban context, even though if long-term demographic and social developments are deeply tied to the topic. While only a small share of the interviewees and survey respondents expressed negative views on the affordability of housing, other issues regarding availability of different types of housing, mobility and an imbalance between young and old people as well as the issues about non-permanent residents buying second homes were more apparent in the answers.

The survey concluded that the vast majority of the respondents were not affected by rising housing prices and a slight majority considered housing to be affordable in the area they live in. This also aligns with the interviewees statements that one “gets more for the same money” in rural areas compared to cities. The relative affordability of housing is not only a necessarily positive thing, as it is often a core characteristic of shrinking localities and weak price development. Weak price development can be problematic because it has over time made the owners of the houses relatively poorer compared to their suburban house-owning counterparts as well as made it harder for residents to sell their houses (Syssner, 2015). So while cheaper housing prices might make it more accessible for outsiders to move there, it also means limited investment potential which was clear in the interviewees' responses about the difficulty of receiving bank loans for house construction. If a public service or supermarket shuts down, this can further make a house lose value and just the uncertainty of the future will make banks wary and less willing to give out loans. At the same time the results show that availability, not always price is a housing challenge. Housing can be more affordable but if no houses are up for sale at the moment a person needs them they are not available. This can make it harder for the youth to stay or move back to the area where their parents live in and where they grew up, and instead leading them to move to cities. Related to this is the issue that the older generation due to an unwillingness to move to a rental apartment chooses to stay in their houses, ultimately taking up useful space that the younger generation with children might need more. That the older

generation is therefore stuck in houses that are larger than they need while the younger families struggle to find housing that is comfortable for a whole family is a structural problem for the society.

Digitalisation can be a counterbalance to these structural constraints. Interviewees highlighted that fiber connectivity is now accessible in the rural areas, enabling easier remote work and increasing the attractiveness of rural living. This supports arguments by Schmidt-Thomé & Lilius (2023) who emphasize the role of digitalisation in making multilocal living and increasing the time people spend in their rural households.

However, from some of the interviewee responses, we found that there are different local attitudes toward multilocality, particularly regarding outsiders buying summerhouses in the rural areas. While interviewees in Gamleby had positive views of non-permanent residents buying second homes, interviewees in more rural and peripheral areas viewed second homes as a loss of permanent population, with negative effects on local services, undermining demographic stability for the society to properly function.

Overall, our findings resonate with those of Krisjane (2022) who shows that families with children are less likely to settle in peripheral areas. Therefore, the patterns of demographic development reflect the widespread rural ageing and depopulation seen elsewhere.

6.3 Youth and Education

One of the biggest concerns highlighted in the interviews regarding education was difficulties in access to education. This issue was mentioned 37 times in stakeholder interviews and 59 times in residents interviews. In addition, the need to improve young people's access to education was identified in 19 coded segments, the majority of which came from local residents. One of the main worries raised by both the interviewees and the residents was that limited educational opportunities may threaten the long-term sustainability of the area's population. Furthermore, access to education includes travel times to school. Some interviewees mentioned the risk of further school closures, which would lead to even longer school journeys. The relationship between school closures, longer travel distances to school in rural areas, and population decline has also been highlighted in studies conducted in the Nordic countries (Lehtonen, 2021; Sørensen et al., 2021).

The relevance of this concern in Sweden was also confirmed by the study of Olsson and Lindberg (2024), which analysed changes that took place between 1997 and 2017 regarding school closures in Sweden and their locations. They found that during this period, 414 rural schools were closed, accounting for approximately one quarter of all closed schools, while only nine schools were closed in urban areas. During the same years, the number of children aged 0–9 declined in 87.8 % of rural municipalities in the first period (with an average decrease of 13.8 %). Amongst the even more sparsely populated communities, 96.8 % were affected by a decline in children aged 0-9. Furthermore, for the 175 schools identified as being at risk of closure, the article highlighted a continuing decline in the number of children and a worsening of problems related to increasing transport distances. (Olsson and Lindberg, 2024)

The survey also showed that respondents were mainly dissatisfied with educational opportunities in their home area, with 72.88 % rating them from below average to very poor (Fig. 15). As it remains unclear to what extent this dissatisfaction is related to transport-related barriers or to concerns regarding the functioning of local schools, these factors should therefore be examined in more detail in future research.

None of the survey respondents who had at least one child for whom they were responsible (32.20 %) reported being satisfied or very satisfied with the public transport arrangements for their children's school journeys. The most commonly used transport mode was a combination of bus and car, used by slightly less than one third of respondents (Fig. 18).

An examination of adjusted residuals suggested that parents whose children went to school on foot were significantly more likely to report okay satisfaction than expected, suggesting relatively more neutral/slightly positive evaluations within an otherwise negative distribution. In contrast, car users were significantly less likely to report okay satisfaction and tended to be dissatisfied. No other transport modes showed statistically meaningful deviations from expected frequencies. A similar finding that car drivers in rural areas were the least satisfied among different transport user groups, was also reported by Abenoza et al. (2017), who analysed travel satisfaction records in Sweden over a fourteen-year period. However, the sample size in our study was rather small, and the more detailed results should therefore be interpreted with caution. To identify more robust relationships, future surveys should include a larger sample of respondents.

In the survey results, no clear relationship was found between time spent on transport and satisfaction, which may be related to the limited sample size. To get more precise conclusions, one would require a larger sample of respondents responsible for children.

The interviews also revealed a shortage of qualified staff in schools and the presence of combined classes as notable challenges. In addition, at present (2025/2026), both border area schools examined in the Västervik municipality share one principal. On the positive side, it was pointed out that in smaller schools teachers have greater opportunities to use a more personalized approach. Forfang and Paulsen (2021) conducted a study in Norway comparing better-performing and less successful rural schools. One of the factors that emerged was that schools performed better when the principal was responsible for only one school building and could focus on improving school life on site. Lund and Karlberg-Granlund (2023) highlighted in their article that rural school staff require a different kind of preparation, including training on how to manage combined classes and how to make this form of teaching beneficial for students. They also recommended encouraging more students of teaching to complete their practicum placements in rural areas and developing distance-learning formats for continuing professional development to attract teachers to the countryside (Lund & Karlberg-Granlund, 2023).

7. Conclusion and Suggestions

7.1 Conclusion

This study has examined how mobility, youth's access to education, and housing interact to shape the sustainability of community development in the cross-border rural area between Åtvidaberg and Västervik. The empirical analyses based on survey and interview data shows that the region is characterised by increasing functional dependence on nearby urban centres, particularly Linköping, alongside a weakening of internal cohesion and lack of cross-border integration within the border area.

From a geographical perspective, the area reflects a clear inland–coastal transition zone, where natural conditions supported resource-based economies such as forestry, shipping, mining, and later industrial production in both municipalities. However, as these traditional economic structures have declined, demographic patterns have increasingly aligned with broader European rural trends of depopulation, ageing, and a move to urban areas. The findings support theories of agglomeration and regional polarization (Krugman, 1991; McCann, 2013), where economic activity, labour markets, and human capital concentrate in urban centres, while peripheral areas experience structural shrinkage (Haase et al., 2014).

This structural imbalance is particularly visible in mobility systems. Despite formal integration between transport providers and the existence of the railways and regional bus networks, the survey and interview results show that transport provision remains insufficient, or in fact worsen, to support everyday life. Our results confirm that car ownership is effectively a prerequisite for living in the border area. Public transport is widely perceived as unreliable, infrequent, and poorly adapted to actual commuting patterns, particularly those oriented towards Linköping rather than between Västervik and Åtvidaberg. Furthermore, the border translates to administrative and financial divides between municipalities and regions, which in turn causes inefficiencies, limited cross-border cooperation, and contribution to a public transport system unable to adapt as much as needed.

Education is an important topic of discussion in the border area. While local schools and preschools may serve as places for the community to gather, they face declining enrolment numbers, staffing shortages, and long travel distances. This finding aligns with previous studies in the Nordics showing that rural school closures accelerate population decline and weaken

community cohesion (Lehtonen, 2021; Sørensen et al., 2021). Our survey results further indicate widespread dissatisfaction with youth's access to education, particularly regarding transport to schools. Importantly, education is not only an institutional issue but also a mobility issue, as access depends heavily on transport infrastructure and administrative flexibility (e. g., bus stops) across municipal borders.

Housing is perceived less as an affordability issue and more as a structural problem. This includes limited housing supply, an ageing population remaining in large single-family homes, and challenges in attracting younger families. At the same time, increased digitalisation and remote work opportunities have introduced new forms of multilocality, but their impact on broader demographic decline, so far, is very small in the border area of Västervik and Åtvidaberg.

Overall, the findings demonstrate that the region is influenced by a shrinkage, institutional division, and transportation patterns that increasingly link rural areas to urban centres such as Linköping, rather than to each other.

In conclusion, the border region between Åtvidaberg and Västervik illustrates a broader rural development dilemma in contemporary Sweden: despite physical proximity and shared historical development, administrative division, transport challenges, and the centralisation of the labour market contribute to growing disconnection. Without coordinated intervention, the area is likely to face continued demographic decline. However, improvements in transport cooperation, educational accessibility, and housing could partially reverse or stabilise these trends.

7.2 Suggestions for future methodology

We found that getting a sufficient number of answers on a survey can be difficult. Even after our efforts of distributing the survey to people's mailboxes, we did not get a large number of answers. Time was of course a concern here too; the citizens of Åtvidaberg and Västervik had just one to two days to answer our survey after it was distributed to the mailboxes and the distribution was done on the weekend, when they usually do not expect mail to be delivered. If the study was replicated, and distributed a survey to mailboxes, this should be done early in the week, preferably on a day when other mail is delivered. When distributing surveys, based on our experiences, the best practice is to have three people in the car. Some incentive to answer could be introduced, and more time should be given to answer the survey.

Our interview experiences were overall positive. Time was a constraint as some potential interviewees could not give us interviews. If our study was to be replicated, more time would need to be given for interviews. Interviews should be booked well in advance. Additionally, we found out that companies are less willing to answer emails and agree to interviews than public institutions, hence, companies' representatives should be approached in person. Furthermore, while the majority of the interviewees were willing to have interviews in English, some information such as cultural and Swedish context could be best gathered in Swedish. We also recommend conducting a practice interview, so that interview questions can be refined for clarity. Depending on one's research aims, one can consider creating a stakeholder map to get a broad understanding of networks and identify key stakeholders prior to contacting interviewees.

7.3 Suggestions for the Municipalities

7.3.1. Housing

It would be beneficial for municipalities to increase the number of owner-occupied (not rented) apartments for people older than 60 inside the municipality. Allowing, older population to be able to move out of larger homes, thus increasing the number of houses available for families looking to move to rural areas. This would help keep the number of children living in rural areas high enough for schools not to close down. The municipalities should monitor change and impact on increased summer homes in the border region.

7.3.2. Transportation

We recommended that priority be assigned to the comprehensive modernisation of Riksväg 35 and main border-connecting roads. This initiative should encompass systematic road surface renewal, safety-oriented curve realignment, and the strategic installation of wildlife mitigation barriers. Furthermore, the establishment of harmonized winter maintenance standards across the county border is essential. Such technical interventions would substantially mitigate existing barriers to daily mobility, thereby enhancing the region's overall attractiveness for residential and economic activities.

Our second transportation related suggestion is institutionalizing cross-border governance mechanisms. To ensure long-term regional stability, the establishment of a formal cross-border cooperation framework is critical. This should involve a bilateral agreement between the

municipalities of Västervik and Åtvidaberg regarding the joint financing of public and school transportation, underpinned by the principle of fiscal cost-neutrality. Additionally, a permanent mobility working group, including Kalmar Länstrafik (KLT) and Östgötatrafiken, is proposed. This institutional shift would effectively address the limitations of "tax-territorial" fragmentation, facilitating more integrated,passenger-centric service delivery, and particularly within the educational transport sector.

Finally, our suggestion is optimising rail investment through multimodal integration. To maximize the socioeconomic returns on the planned Tjustbanan railway investments, it is advisable to transition the Surum carpooling pilot project (or other carpooling startup) into a permanent regional mobility solution. This system should be strategically integrated with existing school transport networks and demand-responsive transport (DRT) services. By creating a unified multimodal ecosystem, the region can achieve a more resilient transport infrastructure that supports "smart shrinkage" strategies and ensures equitable accessibility for peripheral communities.

7.3.3. Services for the Elders

Västervik's municipality could, in our view, learn from the best practice of Åtvidaberg: in rural areas they could compensate for the lack of local grocery stores by delivering food to elderly people once a week. This gives elderly people the opportunity to order groceries once a week for free and to live more independently while having a contact to check on them and provide social support.The municipalities should monitor the duration of home visits from nurses to the elderly, so that it is ensured that continued attention is paid to elderly living in rural settings and ensure that the social dimension of care is not lost.

7.3.4. Education

Local schools are known to be vital to the rural areas they are located in. Our suggestion is to recognize and prioritise smaller schools in the area, especially the preschools in Hannäs and Ukna, as important pillars of their communities. Specifically, we recommend providing financial support to the school district, this will help improve the quality of schoolhouses, both in daily maintenance and long term care. Additionally, financial support is crucial in helping districts receive the academic resources they lack, both providing longer term stability. We would also

recommend that the Västervik's municipality hire a new school director, so that the schools in Överum and Edsbruk could have their own, fully committed directors.

We encourage the municipalities to ensure school stability in five to ten year increments for the area. Ensuring families can make planned decisions about moving to the border region without fear of schools closing down. School buses should be arranged in cooperation between the municipalities, so they can cross municipal lines. Then children could always go to the nearest school to them, even if it is located beyond a municipal border. This would hopefully reduce commuting times and burden on parents. This should be a priority topic, should a cross regional mobility working group be formed.

7.3.5. Communications

An overall goal of residence and organizations was to increase communication between municipalities, between regions and within the government to the community. They should also increase communication with residents in remote areas to prioritize funding. It is also important to ensure that funding is accessible. Municipalities should be aware of additional burdens put on local residents in rural areas to use start-up funding to solve municipal and regional responsibilities, such as transportation and education. As there is currently a large gap in resident priorities and government level concern. It is encouraged that regional and municipal governments prioritise communication with residence.

Transportation working groups could be implemented to increase mobility in the areas. The focus should be on the railway and road infrastructure, prioritizing winter maintenance, continuity of road services and stability in transportation services provided. It should be emphasized that government level communication is needed to reduce the financial and physical burden that currently is placed on residence.

7.3.6. Other services

We have also suggested that certain areas in the cross-border region become designated for sustainable tourism as a way to make these areas more vigorous. Our proposal to these areas can be seen in Figure 7.Additionally, we have designated certain areas for certain functions for the future. We have designated Edsbruk as a social infrastructure center, Överum as a every day

services node, Falerum as a mobility nod and Ukna as a family and community support point. These designations should be taken into account when planning the land use of these areas.

The municipalities of Västervik and Åtvidaberg should increase communication about available funding options in rural regionsThey should also decrease added bureaucracy on cross-border LEADER applications, which currently require 2x the number of applications and reporting.

The municipalities should really seek out what the people living in these areas actually want. For example it would be beneficial to negotiate time and place for a book bus in Helgenäs. The same goes for street lighting in Hannäs; if it is too expensive to operate fully, negotiate with the citizens of the area on where to reduce it, and where it should be kept.

7.4 Suggestions for stakeholders

LEADER-projects can take a long time for the applicant to receive the funding, and the process includes much paperwork. Therefore we suggest for stakeholders to consider LEADER-funding more suitable for larger projects than smaller projects. For example, locals in Helgenäs had a bad experience seeking funding for a single handicap toilet at the beach while the locals in Kvarnvik had a good experience with the funding of their football pitch. It is important for the stakeholders to build personal connections with representatives of the municipalities, and to demand frequent meetings (be persistent until it's set in the municipality's calendar). The number of meetings should be increased.

Municipalities often wait to fulfill their responsibilities for rural areas until enough voices want them to do so. So our suggestion is for the stakeholders to be loud, demand more and voice their opinions.Stakeholders should try to seek out and negotiate with the municipality or government agencies regarding shutdowns of services.

The Municipal and Regional government must start prioritizing people who live in the border region. There is an overall lack of coordination and communication, in prioritizing needs and services. Many people feel as if they have been forgotten, and are falling between the cracks of the border region. Whilst the government is scared to put money into schools and communities with decreasing populations this is necessary in order to prevent further decrease, and potentially provide stability for new families to move to the area.

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Appendix 1: Interview Questions

Municipality Interview questions

1. What's your relationship to the area? And how long has it been?
2. Why do you think people choose to move to or stay in periphery areas?
3. How would you define the cross-border area between the municipalities *(potentially have them map it)*? Is there any collaboration or tension in this area?
4. What do you think are the most prevalent barriers in the border area/ peripheries?
5. What do you perceive to be the strengths and weaknesses of the border region?
    a. Follow up about the community if not mentioned.
6. What do you perceive to be the biggest threat to communities in the border region?
    a. Are there any additional threats/challenges pertaining to youth or the aging population?
7. What do you think the municipality does to support the community in peripheries? **Education, tech, housing, infrastructure, services, land use conflicts** *(follow-up)*
8. Do you think there are any differences in **mobility, education, and housing, land conflict, and services** between urban centers and the border region?
9. Does the municipality collaborate with _____ municipality? If so, what is this working relationship like?
10. Because _____ municipality is in a different region, are there different challenges or opportunities for collaboration compared to municipal borders within the same region? As it pertains to transportation, health care.
11. What is the municipality's working relationship with the LEADER areas of Folkungaland or Kustlandet?
12. Is there any difference between municipal definitions of the border region and how laypeople define this region ?
13. What goals does the municipality have in the next decade to support the border region?

Stakeholder Interview Questions

1. What's your relationship to the area? And how long has it been?
2. Where do you work/ go to school? How do you get there every day?
3. What drew you to this area, or what makes you stay within the area?

4. What do you perceive to be the strengths and weaknesses of the area?
5. What are the strengths and weaknesses of the community?
6. What do you think are common obstacles or barriers to living in the area?

7. What do you think the municipality does to support the community? **Education, tech, housing, infrastructure**
8. Do you experience any collaboration or tension in this relationship?
9. What urban centers are important to the community and what is the relationship, for instance, access to groceries, health care, education services or home goods?
10. Do you think there are any differences in **mobility, education, and housing** between urban centers and the border region?
11. Living/ working in this region, what do you perceive to be the biggest (infrastructure) threat?
12. What do you think would make this a more attractive area to live in? youth, elderly
13. If you had one goal for the community/ this area in the next decade, what would you do?

Swedish translated stakeholder interview questions

1. Vad har du för relation till området? Hur länge har du haft den?
2. Var arbetar eller studerar du? Hur tar du dig dit varje dag?
3. Vad fick dig att flytta hit, eller vad får dig att stanna kvar?
4. Vilka styrkor och svagheter tycker du att området har?
5. Vilka styrkor och svagheter har gemenskapen?
6. Vilka hinder eller svårigheter tycker du är vanliga för att bo i området?
7. Vad gör kommunen för att stödja invånarna? (t.ex. utbildning, teknik, bostäder, infrastruktur)
8. Kan du visa eller rita gränsområdet mellan kommunerna?
9. Upplever du samarbete eller spänningar i relationen mellan regionerna områdena?
10. Vilka stadskärnor är viktiga för området, och hur ser relationen ut? (t.ex. tillgång till matbutiker, sjukvård, utbildning eller andra tjänster)
11. Tycker du att det finns skillnader mellan städer och orter och gränsområdena när det gäller mobilitet, utbildning och boende?
12. När du bor eller arbetar i detta område, vad upplever du som det största hotet (t.ex. kopplat till infrastruktur)?
13. Vad tror du skulle göra området mer attraktivt att bo i för yngre och äldre?
14. Om du fick sätta ett mål för området eller samhället de kommande tio åren – vad skulle det vara?
15. Är bostäder i området överkomliga och tillgängliga för lokalbefolkningen?
16. Är du medveten om stigande bostadspriser, eller har du påverkats av dem?
17. Var skulle du placera/definiera gränsområdet mellan kommunerna?

Appendix 2: Survey Questions

Survey Questions in English

Section 1: Draw on a map!

Please mark the area you would consider the border area.

Section 2: Mobility and Transport

How do you commute to your place of work or study?

train, bus, car, foot, bike, e-bike, carshare, other

How much time per day do you spend commuting BOTH ways, on average?

- 0-30 min
- 30-60 min
- 1 - 1.5 hrs
- 1.5 - 2 hrs
- > 2 hrs

If you cross a municipal border, is that a smooth process?

- (free text)

Which words come to your mind when you think of your commute?

- (free text)

Do you have a bus pass?

- if yes: bought yourself or provided by work/school?

How often per week do you use public transport services? (scale)

How satisfied are you with the public transport and road services?

- very dissatisfied, dissatisfied, okay, satisfied, very satisfied

Do you live with and have the responsibility for one or more children? If so, how many?

single select: 0, 1, 2, 3, 4, 5

Depending on number, new questions pop up (the same group of questions, but once for 1 child, twice for two children etc.):

Child 1: Please rate their daily 'commutes' to kindergarten/school in the following questions.

Which mode of transport does the child use? Please select all that apply.

multiple select

- Train
- bus
- car
- bike
- foot
- other

Child 1: How long does their daily commute take, BOTH ways?

single select

- 0-29 min
- 30-59 min
- 1 - 1.5 hrs
- 1.5 - 2 hrs
- > 2 hrs

Child 1: How satisfied are you with the provision of public transportation for your child?

single select/Likert

- very dissatisfied, dissatisfied, okay, satisfied, very satisfied

(Same for additional children)

Section 3: Internet/Digitalisation

- Are you satisfied with the quality of the internet connection in your area?
    - Likert scale 1, not very satisfied, 5 very satisfied
- What is your work arrangement?

    - remote
    - hybrid
    - in office
- If you answered hybrid to the question before, how often do you go to the office?
    - Less than once a month, 1-2 times a week, 3-4 times a week
- To what extent are you satisfied with digital public services?
    - Very dissatisfied
    - Dissatisfied
    - Neither satisfied nor dissatisfied
    - Satisfied
    - Very satisfied
    - Don’t know / Not applicable
- Which digital public services, in your opinion, require further improvement?
    - Healthcare services
    - Social services
    - Tax services
    - Education services
    - Employment services
    - Municipal services
    - Public transport services
    - Permit and registration services
    - E-government websites / portals
- How often do you need to access public services in person rather than digitally?
    - Less than once a month
    - 1–2 times a month
    - 3–4 times a month
    - More than 4 times a month

Section 4: Education

- What is your highest level of education
    - No formal education

  - Primary/Elementary school
  - High school / Upper secondary school
  - College
  - Bachelor's degree
  - Master's degree
  - PhD / Doctoral degree

- How would you rate the availability of educational opportunities in your place of residence?
  - Very good
  - Good
  - Moderate
  - Poor
  - Very poor

- Would you (or your children) plan to move to a larger city to get higher education?
  - Yes
  - No
  - Maybe

Section 5: Housing

- What are the main housing-related challenges in this area?
  - affordability of houses
  - availability of loans for rural areas
  - limited housing availability
  - limited rental market
  - limited land access
  - access to renovating houses
  - Other: _____
- What is your current housing situation?
  - owned

  - rented
  - shared
  - other (please describe)
- Is housing in this area affordable and accessible for local residents?
- Are you aware of or impacted by rising housing prices?

Section 6: Background info on person for statistical purposes

- postal code
- age group (9 year steps)
- gender
- highest level of education
- current occupation or employment status
- annual income range
- What is your housing situation? (rented, own property; apartment, house, shared house)
- How many people live in your household?

Survey Questions in Swedish

Denna enkät genomförs som en del av programmet *Sustainable practices and development for depopulating and peripheral localities in the European North*, som organiseras inom GEONORDBALT-nätverket och samordnas av University of Eastern Finland.

Genom denna enkät samlar vi in åsikter och erfarenheter från invånare i Åtvidabergs och Västerviks kommuner. Syftet är att bättre förstå lokala perspektiv på samhällsutveckling, nuvarande utmaningar och framtida ambitioner i detta område som sträcker sig över flera kommuner.

Enkäten är anonym och alla svar kommer endast att användas för akademisk analys inom kursen.

Avsnitt 1

Mobilitet och transport

Hur tar du dig vanligtvis till arbete eller studier?

Tåg

Buss

Bil

Cykel

Elcykel

Bilpool

Annat

Hur mycket tid per dag lägger du i genomsnitt på pendling (tur och retur)?

10–30 min

30–60 min

1–1,5 tim

1,5–2 tim

2 tim

Om du passerar en kommungräns, upplever du att det fungerar smidigt?

Vilka ord tänker du på när du tänker på din pendling?

Har du busskort?

Ja

Nej

Hur ofta per vecka använder du kollektivtrafik?

Aldrig

Mindre än en gång i veckan

1–2 gånger i veckan

3–4 gånger i veckan

5–6 gånger i veckan

7 eller fler gånger i veckan

Hur nöjd är du med kollektivtrafiken?

Mycket missnöjd

Missnöjd

Varken nöjd eller missnöjd

Nöjd

Mycket nöjd

Hur nöjd är du med vägnät och vägunderhåll?

Mycket missnöjd

Missnöjd

Varken nöjd eller missnöjd

Nöjd

Mycket nöjd

Avsnitt 2

Internet/Digitalisering

Arbetar eller studerar du?

Ja

Nej

Hur nöjd är du med digitaliseringen av offentliga tjänster?

Mycket missnöjd

Missnöjd

Varken nöjd eller missnöjd

Nöjd

Mycket nöjd

Vet ej/Ej relevant

Vilka digitala offentliga tjänster behöver enligt dig förbättras?

Hälso- och sjukvård

Socialtjänst

Skattetjänster

Utbildningstjänster

Arbetsförmedlingstjänster

Kommunala tjänster

Kollektivtrafiktjänster

Tillstånds- och registreringstjänster

E-förvaltningswebbplatser/portaler

Annat

Hur ofta behöver du besöka offentliga tjänster fysiskt istället för digitalt?

Aldrig

Mindre än en gång i månaden

1–2 gånger i månaden

3–4 gånger i månaden

Mer än 4 gånger i månaden

Avsnitt 3

Utbildning

Bor du med och har ansvar för ett eller flera barn? Om ja, hur många?

- 0, 1, 2, 3, 4, 5

Vilken är din högsta utbildningsnivå?

Ingen formell utbildning

Grundskola

Gymnasium

Yrkeshögskola/Högskola

Kandidatexamen

Masterexamen

Doktorsexamen

Hur bedömer du tillgången till utbildningsmöjligheter där du bor?

Mycket bra

Bra

Medel

Dålig

Mycket dålig

Har du någon gång flyttat till en större stad för att studera vidare?

Ja

Nej

Avsnitt 4

Boende

Vilka är de största bostadsrelaterade utmaningarna i området?

Bostadspriser

Tillgång till lån på landsbygden

Begränsat bostadsutbud

Begränsad hyresmarknad

Begränsad tillgång till mark

Svårigheter att renovera bostäder

Annat

Hur ser din nuvarande boendesituation ut?

Äger bostad

Hyr bostad

Delat boende

Annat

Är bostäder i området ekonomiskt överkomliga för lokalbefolkningen?

Mycket oöverkomliga

Ganska oöverkomliga

Varken överkomliga eller oöverkomliga

Ganska överkomliga

Mycket överkomliga

Vet ej

Är bostäder i området tillgängliga för lokalbefolkningen?

Mycket otillgängliga

Ganska otillgängliga

Varken tillgängliga eller otillgängliga

Ganska tillgängliga

Mycket tillgängliga

Vet ej

Är du medveten om stigande bostadspriser i området?

Ja

Nej

Inte säker

Har stigande bostadspriser påverkat dig personligen?

Ja, i hög grad

Ja, i viss mån

Nej

Inte säker / Vill inte svara

Rita på kartan!

Ring in det område på kartan som du anser vara "gränsområdet" mellan Åtvidaberg och Västervik. Rita även in ett område som du uppfattar som landsbygd.

För att rita, använd frihandsverktyget uppe till höger på kartan.

Det finns inga rätt eller fel svar – vi är intresserade av din uppfattning.

Avsnitt 6

Bakgrundsinformation

All data samlas in och används anonymt endast för forskning och analys.

Postnummer

Din åldersgrupp
18–29
30–39
40–49
50-59
60–69
70 och äldre

Kön
Man
Kvinna
Annat
Vill inte ange

Vad är din nuvarande sysselsättning?
Heltidsanställd
Deltidsanställd
Egenföretagare
Student
Arbetslös och söker arbete
Arbetslös och söker inte arbete
Pensionär
Föräldraledig
Arbetsförhindrad
Annat
Vill inte ange

Vad är din ungefärliga årsinkomst före skatt (i SEK)?
Mindre än 200 000 SEK
200 000–399 999 SEK
400 000–599 999 SEK
600 000–799 999 SEK
800 000 SEK eller mer
Vill inte ange

Hur många personer bor i ditt hushåll (inklusive dig själv)?
1
2
3
4
5
6 eller fler

Appendix 3: Tables

Table 1. Population changes in selected districts of Västervik and Åtvidaberg municipalities from 2015 to 2024. Data illustrates diverse trends of localized growth and structural shrinkage.

District (Municipality)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Gamleby (Västervik)	3277	3324	3317	3353	3347	3333	3351	3279	3271	3288
Gärdserum (Åtvidaberg)	678	663	667	670	663	656	666	663	660	683
Ukna (Västervik)	481	465	452	444	438	458	461	473	463	466
Hannäs (Åtvidaberg)	466	472	465	466	457	457	460	477	464	454
Dalhem (Västervik)	176	181	192	182	187	198	201	189	186	183
Överum (Västervik)	1258	1240	1278	1267	1260	1240	1224	1235	1180	1168
Västra Ed (Västervik)	821	846	868	884	860	809	793	813	790	762
Lofta (Västervik)	440	423	426	419	415	410	414	421	419	421
Loftahammar (Västervik)	755	753	769	763	753	767	751	755	728	732

Data illustrates diverse trends of localized growth and structural shrinkage. Adapted from Befolkningsstatistik efter region, ålder och kön. År 2015 - 2024, by Statistics Sweden (SCB), 2024 (https://www.statistikdatabasen.scb.se/).

Table 2 ***Amount of daily commuters between Linköping, Åtvidaberg, and Västervik municipalities (2005–2022)***

Year	Åtvidaberg – Linköping	Linköping – Västervik	Åtvidaberg – Västervik
2022	2,568	302	135
2021	2,519	275	160
2020	2,527	274	160
2019	2,527	272	171
2015	2,349	253	193
2010	2,127	243	161
2005	1,975	220	151

The data illustrates a strong and growing functional integration between Åtvidaberg and Linköping, while commuting ties between Åtvidaberg and Västervik show a recent decline. Adapted from *Arbetspendling mellan kommuner (RAMS)*, by Statistics Sweden (SCB) and processed by Region Östergötland, 2023.

Appendix 4: Qualitative codebook

Code	Sub code	Code definition	Type of code
Future goals		Used to code segments of transcribed interviews focusing on future goals or aspirations within border communities.	Inductive
	Other	Used to code segments of transcripted interviews that talked about future aspirations for the community, that were not specific to housing, mobility or youth access to education, but were still valuable insights.	Inductive
	Housing	Used to code segments related to housing aspirations, either for interviewee personally, or overarching trends within the study localities.	Inductive
	Mobility	Used to code segments of transcription related to goals of improving mobility in the border area, including road conditions, public transportation, personal and community barriers to transit.	Inductive
	Youth/education	Used to code segments of transcriptions that have goals or aspirations for improving youth (preschool to grade school) education, including quality, access and commute.	Inductive
Negative perception		Used to code segments of transcribed interviews segments that negatively discuss current condition of the study area.	
	Other	Used to code segments of transcripted interviews that talked about as negatively of how border communities are currently, that were not specific to housing, mobility or youth access to education, but were still valuable insights.	Inductive

	Other: Community	Used to code segments under negative perception; other, as an emerging theme that many people specifically mentioned community.	Deductive
	Other: Border	Used to code segments under negative perception; other, as an emerging theme that many people specifically mentioned the border as negative impact, or barrier to living in the study area.	Deductive
	Other: Population decline	Used to code segments under negative perception; other, as an emerging theme, this was only used when interviewees specifically state a decrease in population in a negative aspect, often in relation to losing funding or services.	Deductive
	Housing	Used to code segments related to housing, either for interviewee personally, or overarching trends within the study localities.	Inductive
	Mobility	Used to code segments of transcription related to transportation concerns, including road conditions, public transportation, personal and community barriers to transit.	Inductive
	Youth/education	Used to code segments of transcriptions that negatively talked about youth (preschool to grade school) education, including quality, access and commute.	Inductive
Positive perception		Used to code segments of transcribed interviews segments that negatively discuss current condition of the study area.	
	Other	Used to code segments of transcripted interviews that talked about as positively of how border communities are currently, that were not specific to	Inductive

		housing, mobility or youth access to education, but were still valuable insights.	
	Other: Community	Used to code segments under positive perception; other, as an emerging theme that many people specifically mentioned community being a main draw to live in the border region.	Deductive
	Other: geopolitical	Used to code segments under positive perception; other, as an emerging theme that many people specifically mentioned geopolitical tensions, being a main draw to live in the border region.	Deductive
	Housing	Used to code segments related to positive housing aspects, either for interviewee personally, or overarching trends within the study localities.	Inductive
	Mobility	Used to code segments of transcription related to positive transportation aspects, including road conditions, public transportation, personal and community barriers to transit.	Inductive
	Youth/education	Used to code segments of transcriptions that positively discussed youth (preschool to grade school) education, including quality, access and commute.	Inductive