

THE DARKEST HOUR IS JUST BEFORE THE DAWN

*WHAT ARE RESIDENTIAL PREFERENCES OF INHABITANTS IN FARMING COMMUNITIES
IN ICELAND AND DO THEY DIFFER FROM THOSE IN RURAL-URBAN COMMUNITIES?*

ÖLL ÉL BIRTIR UM SÍÐIR

*HVERJAR ERU ÓSKIR FÓLKS SEM BÝR Í SVEITUM LANDSINS UM BÚSETUSKILYRÐI OG
HVERNIG SKERA ÞÆR SIG FRÁ ÞEIM SEM BÚA Í MINNI ÞÉTTBÝLUM?*

- 2020 -

Skýrsla SSV
nr. 1 2020
Janúar 2020

ISSN 1670-7923

Vífill Karlsson



SAMTÖK
SVEITARFÉLAGA
Á VESTURLANDI

CONTENTS

Figures.....	3
Tables.....	3
Ágrip.....	4
Abstract.....	4
1 Samantekt á niðurstöðum.....	5
2 Summary and concluding remarks	8
3 Introduction.....	11
4 Theoretical background and literature review.....	12
5 A short historical background and THE present situation.....	15
6 Data	20
7 Method.....	24
8 The estimating results and discussion	27
8.1 Method 1: Descriptive analysis - the conditions and importance diagrams.....	27
8.2 Other interesting comparisons and results	31
8.3 Method 2: Logit regression models.....	37
9 Appendix.....	43
10 References	45

FIGURES

FIGURE 1: THE POPULATION OF ICELAND 1911-2018.	15
FIGURE 2: THE SHARE OF AGRICULTURE, FISHERIES AND TOURISM IN TOTAL EMPLOYMENT 1870-2017.	16
FIGURE 3: NUMBER OF CHILDREN IN FCs BY REGIONS OF ICELAND 1998-2019.	17
FIGURE 4: NUMBER OF CHILDREN IN RUCs BY REGIONS OF ICELAND 1998-2019.....	17
FIGURE 5: INHABITANTS AT WORKING AGE (18-67) IN FCs BY REGIONS OF ICELAND 1998-2019.....	18
FIGURE 6: INHABITANTS AT THE WORKING AGE (18-67 YEARS) IN UC BY REGIONS OF ICELAND 1998-2019.....	19
FIGURE 7: THE 19 REGIONS OF THE REGIONAL RESIDENCE SURVEY IN ICELAND 2016 AND 2017.....	20
FIGURE 8: THE FIGURE FOR DESCRIPTIVE ANALYSIS.....	24
FIGURE 9: THE CONDITION AND IMPORTANCE DIAGRAM FOR THE FCs OF ICELAND	27
FIGURE 10: THE CONDITION AND IMPORTANCE DIAGRAM FOR THE RUCs OF ICELAND	28
FIGURE 11: COMPARISON DIAGRAM BETWEEN FCs AND RUCs.....	29
FIGURE 12: COMPARISON DIAGRAM BETWEEN FARMERS IN FCs AGAINST THE REMAINDER OF POPULATION IN FCs.....	30
FIGURE 13: COMPARISON BETWEEN COMMUNITIES CLOSER TO REYKJAVÍK AND THOSE FURTHER AWAY.....	32
FIGURE 14: COMPARISON BETWEEN YFCs (20-40 YEARS OF AGE) AGAINST THE SFCs (>40 YEARS).	33
FIGURE 15: COMPARISON BETWEEN YFCs AGAINST THE YRUCs ICELAND.	34
FIGURE 16: COMPARISON BETWEEN WOMEN IN FCs AND WOMEN IN RUCs IN ICELAND.	35
FIGURE 17: COMPARISON BETWEEN WOMEN IN FCs AND MEN IN FCs ICELAND.....	36

TABLES

TABLE 1: DESCRIPTION OF DEPENDENT AND DEMOGRAPHIC VARIABLES.	22
TABLE 2: DESCRIPTION OF QOL MEASURES.....	22
TABLE 3: THE DISTANCE (KM) BETWEEN FC RESPONDENTS' HOME AND WORKPLACE.	34
TABLE 4: THE MAIN RESULTS OF THE DESCRIPTIVE ANALYSIS.....	37
TABLE 5: ESTIMATED CUMULATIVE LOGIT REGRESSION MODEL FOR MOVING FOR ALL RESPONDENTS, FC, AND RUC.	38
TABLE 6: ESTIMATED CUMULATIVE LOGIT REGRESSION MODEL FOR MOVING FOR TWO GROUPS OF FCs.	40
TABLE 7: A LIST OF THE QUALITY OF LIFE FACTORS IN ENGLISH AND ICELANDIC AND THEIR ACRONYMS.	43

ÁGRIP

Börnum hefur fækkað hratt til sveita (Vífill Karlsson, 2015) og ungir bændur eru líklegri til að hætta búskap en þeir sem eru á miðjum aldri (Vífill Karlsson, 2018). Hluttur landbúnaðar í heildarvinnuaflí Íslands hefur farið úr um 86% árið 1870 í um 3% árið 2017. Þess utan hefur ný skoðanakönnun leitt í ljós að töluvert minna en 50% íbúa á vinnumarkaðsaldri til sveita vinni nú við landbúnað. Þess vegna hefur íbúum til sveita sem vinna við landbúnað fækkað hlutfallslega í samanburði við þá sem starfa í öðrum atvinnugreinum. Hér verður því fyrst kannað hvort íbúar til sveita séu líklegri til að flytja brott en íbúar í þéttbýli utan höfuðborgarsvæðisins. Þá munum við leita vísbendinga um hvaða þættir er tengjast lífsgæðum og skilyrðum til búsetu fá íbúana til að hugleiða brottflutning. Á þann hátt verða bornir saman íbúar í þéttbýli og íbúar í sveitum og svo íbúar í sveitum sem vinna við landbúnað og þeir sem vinna við annað. Greiningin byggir á stórrí íbúakönnun sem gerð var í öllum landshlutum nema Austurlandi, Norðurlandi eystra og höfuðborgarsvæðinu og rúmlega 6.000 svöruðu, þar af rúmlega 1.200 í dreifbýli.

ABSTRACT

The number of children has been fast declining in farming communities in Iceland (Vífill Karlsson, 2015) and young farmers there have been more likely to abandon farming than middle aged farmers (Vífill Karlsson, 2018). The employment share of agriculture in Iceland has shrunk from 86% of total employment in 1870 to 3% in 2017. The population in urban areas outside the capital area (referred to as small urban areas in this paper) has been increasing during the same period. Moreover, recent developments in Icelandic farming communities suggest that the less than 50% of the inhabitants work in agriculture; in 2016 and 2017 the ratio was close to 1/3. Thus, the number of farming community inhabitants working in agriculture has been decreasing relative to those employed in other industries. The study will investigate whether the inhabitants of farming communities in Iceland are more likely to out-migrate than people in small urban areas. It will also analyse possible links between the level of quality of life (QOL) and stated willingness to out-migrate. Consequently, the study will compare preferences regarding factors affecting the quality of life between those inhabitants of farming communities who work in agriculture and those who work in other industries. The analysis will be based on a new survey of more than 6,000 respondents from several Icelandic rural regions; 1,200 of the participants live in farming communities and the remainder in small urban communities of Iceland. 40 factors regarding quality of life were included in the study.

1 SAMANTEKT Á NIÐURSTÖÐUM

Rannsóknarspurningarnar voru:

1. Eru búferlaflutningar í sveitum ólíkir því sem gerist í þorpum og bæjum á Íslandi?
2. Hvaða búsetuskilyrði og/eða lífsgæði hafa tilhneigingu til vekja hugrenningar um að flytja frá sveitinni?
3. Er einhver munur á stöðu og mikilvægi búsetuskilyrða til sveita og þéttbýlis utan höfuðborgarsvæðisins?
4. Er einhver munur á stöðu og mikilvægi búsetuskilyrða til sveita í nágrenni við höfuðborgarsvæðið annars vegar og þeirra sem eru fjær hins vegar?

Svör við rannsóknarspurningunum voru:

1. Þegar þátttakendur voru spurðir hversu líklegir þeir væru til að flytja frá þeirra heimahéraði sögðust 16% íbúa í þéttbýli utan höfuðborgarsvæðisins vera frekar og mjög líklegir til þess en aðeins 13% úr sveitum.
2. Svörin er að finna í töflu 5 (Table 5). Eftirfarandi þættir hafa tilhneigingu til vekja hugrenningar um að flytja frá sveitinni: Almenn tölfræði, atvinnuöryggi, þjónusta við barnafjölskyldur, möguleikar til eigin atvinnureksturs, atvinnuúrval, þjónusta við eldri borgara og gæði framhaldsskóla. Samandregið má segja að þetta séu þættir sem tengjast vinnumarkaðnum og þjónustu við barnafjölskyldur og eldri borgara.
3. Svárið er að finna í mynd 11 (Figure 11). Næstum öll búsetuskilyrði voru metin verri í sveitum en þéttbýli utan höfuðborgarsvæðisins. Flestir þessara þátta voru hins vegar taldir minna mikilvægir búsetu í sveitum en í áður nefndu þéttbýli. Þættirnir kyrrð og ró, aðgengi að fjölbreyttri náttúru, möguleikar til eigin atvinnureksturs, félagsheimili og heilsugæsla voru þó metnir betri í sveitum en þéttbýli utan höfuðborgarsvæðisins. Þeir þættir sem voru taldir bæði verri og mikilvægari í sveitum voru vegakerfið, farsímasamband og nettengingar.
4. Svárið má lesa út úr mynd 13 (Figure 13). Svör þeirra sem bjuggu í sveitum var skipt upp í tvennt, þeirra sem bjuggu í nær höfuðborgarsvæðinu og þeirra sem bjuggu fjær. Þegar horft var til mesta munar á milli þessara hópa voru það samgöngu- og fjarskiptakerfi sem voru metin bæði mikilvægari og verri í sveitum fjær höfuðborgarsvæðinu en þjónusta við eldri borgara, kyrrð og ró, aðgangur að fjölbreyttri náttúru og gott mannlíf féllu í þann flokk hjá þeim sem bjuggu nær höfuðborgarsvæðinu.

Aðrar niðurstöður sem byggðar voru á tölum Hagstofu Íslands:

- Íbúum í sveitum fækkaði um 65% á tímabilinu 1911-2018 meðan þeim fjölgaði um 419% í þéttbýli utan höfuðborgarsvæðisins og rúmlega 1.200% á höfuðborgarsvæðinu (Figure 1).
- Hluttur landbúnaðar af öllu vinnuafli landsins lækkaði hratt úr um 80% í 3% á tímabilinu 1870-2017, fiskveiðar úr um 25% þegar það var hæst árið 1910 í 3% árið 2017 og hluttur ferðaþjónustu, sem er ný atvinnugrein í þessu samhengi, var 8% árið 2017 (Figure 2).

- Börnum hefur fækkað til sveita á Íslandi. Þegar horft var til einstakra landshluta hefur þeim fækkað á bilinu 30-60% á tímabilinu 1998-2019. Á tveimur landsvæðum, höfuðborgarsvæðinu og Suðurnesjum, fjölgaði hins vegar börnum til sveita (Figure 3).
- Fjöldi barna í þéttbýli utan höfuðborgarsvæðisins hefur þróast með mun hagstæðari hætti en til sveita. Tvö landsvæði voru með lang óhagstæðustu þróunina sem var 40% og 30% fækkun á tímabilinu 1998-2019 (Figure 4).
- Fjöldi fólks á vinnumarkaðsaldri (18-67 ára) þróaðist með mun hagstæðari hætti en fjöldi barna. Eftir sem áður var þróunin hagstæðari í þéttbýli en til sveita á öllum landsvæðum nema á höfuðborgarsvæðinu og Suðurnesjum (Figure 5 og Figure 6).

Aðrar niðurstöður sem byggðar eru á skoðanakönnuninni:

- Aðeins 30% af íbúum til sveita starfar við landbúnað. Þegar horft var eingöngu til sveita í 50 kílómetra radíus frá miðju Reykjavíkur störfuðu eingöngu 15% við landbúnað.
- Gerður var samanburður milli íbúa í sveitum sem störfuðu við landbúnað og hinna. Þá kom í ljós að búseta fyrri hópsins var mun viðkvæmari fyrir fjárhagsvandræðum, vöruverði og þjónustu við fatlaða (Figure 12). Búseta seinni hópsins var mun viðkvæmari fyrir húsnæði til leigu, dvalarheimili, félagsheimili, atvinnuúrvali, vöruúrvali og möguleikum á eigin atvinnurekstri.
- Búseta yngri íbúa til sveita er sérstaklega viðkvæm gagnvart húsnæðismarkaðnum (einkum leigumarkaðnum), leikskólum og samgöngukerfinu (Figure 14).
- Yngri íbúar (18-24 ára) til sveita fara lengra eftir atvinnu sinni og virðast því ferðast tvöfalt meira en eldri íbúar vegna vinnu (Table 3). Konur bera meiri ábyrgð á þessum mun en karlar. Almennt virðast konur á aldrinum 25-64 ára ferðast miklu minna en karlar vegna vinnu.
- Þegar afstaða unga fólksins til sveita var borin saman við unga fólksins í þéttbýli utan höfuðborgarsvæðisins, kom í ljós að nettengingar og farsímasamband voru þættir sem voru mest aðkallandi að laga í sveitum gagnvart þessum hópi (Figure 15). Í þessum samanburði virtust lagfæringar á vegakerfinu vera næst mest aðkallandi.
- Samanburður á milli kvenna í sveitum og þéttbýli utan höfuðborgarsvæðisins skilaði nánast sömu niðurstöðu og þegar unga fólkið var borið saman á sama hátt. Fjarskipta- og samgöngukerfi eru stærstu ógnir við framtíðarbúsetu kvenna til sveita (Figure 16).
- Að lokum voru konur til sveita bornar saman við karla í sveitum. Mesta athygli vakti þar að konum fannst nánast öll búsetuskilyrði mikilvægari en körlum (Figure 17). Þegar samskonar samanburður (en ekki sýndur í skýrslunni) var gerður á konum og körlum í þéttbýli utan höfuðborgarsvæðisins, skilaði það tilsvareandi niðurstöðu.
- Samanburður á konum og körlum til sveita leiddi einnig í ljós að launatekjur eru sá þáttur sem búseta kvenna er viðkvæmust fyrir (Figure 17). Þar á eftir koma eftirfarandi þættir í þessari röð: Leiguhúsnæði, atvinnuöryggi, umferðaröryggi, vöruverð, þjónusta við útlendinga, vöru- og þjónustuúrval, almennt öryggi og möguleikar til íþróttar- og tólmstundaiðkunar.
- Þættir sem snerta vinnumarkaðslega þætti (einkum möguleikar til eigin atvinnurekstrar og atvinnuöryggi) og þjónustu við barnafólk eru lang líklegastir til að hrekja fólk úr sveitum (Table 5). Gangvart fólki sem starfar í landbúnaði er búsetan

lang viðkvæmust fyrir atvinnuöryggi en búseta þeirra sem starfa í öðrum greinum viðkvæmust gagnvart ýmsu fleiru eins og t.d. fleiri vinnumarkaðslegum þáttum (möguleika til eigin atvinnureksturs og atvinnuúrvals) og þjónustu við barnafólk (Table 6). Þá skipta nettengingar líka máli gagnvart seinni hópnum.

Túlkun niðurstaðna gagnvart stefnu stjórnvalda

- Íbúum í sveitum má skipta upp á milli þeirra sem vinna við landbúnað og hinna sem vinna í fjölda annarra atvinnugreina. Ef dreifð búseta er eftirsóknarverð fyrir íslenskt samfélag þurfa stjórnvöld að halda áfram með stuðning við nýsköpun í landbúnaði, styðja við þjónustu sem lýtur að barnafjölskyldum og eldri borgurum og tryggja öflugar nettengingar um allt land til sjávar og sveita. Hið opinbera ætti að styðja við landbúnað því þátturinn atvinnuöryggi er lang líklegastur til að hrekja bændur af sínum jörðum. Ásamt atvinnuöryggi er búseta íbúa til sveita sem starfa ekki við landbúnað viðkvæm gagnvart þáttunum atvinnuúrvali, möguleikum til eigin atvinnurekstrar, nettengingum, góðu mannlífi og þjónustu við barnafjölskyldur og eldri borgara.
- Íbúum til sveita má skipta upp í tvo hópa eins og fyrr sagði. Báðir hópar eru framtíð sveitanna mikilvægir. Sá fyrri er frekar sáttur þegar horft er til hversu lítið næm búseta þeirra er fyrir þeim 40 búsetuskilyrðum sem voru til skoðunar. Hann er líka tenging samfélagsins við ræturnar í sveitinni, söguna, sagnaarfinn og menninguna. Búseta hins hópsins er mun næmari fyrir hinum fyrrnefndu 40 þáttum. Sá hópur starfar hins vegar gjarnan við atvinnugreinar sem eru í vexti og stuðlar að fjölbreytni mannlífs í íslenskum sveitum. Því má segja að fyrri hópurinn myndi ákveðinn stöðugleika og seiglu ef ekki grefur illa undan stoðum landbúnaðarins en sá seinni myndar brú inn í framtíðina og gefur von um að ungt fólk geti sest þar að og snúi óheppilegri fækkun barnafjölskyldna þar við. Björt framtíð er því í sveitunum ef rétt er á málum haldið.

2 SUMMARY AND CONCLUDING REMARKS

The questions presented were:

1. Is the potential out-migration of inhabitants in farming communities (FC) different from that in rural-urban communities (RUC) of Iceland?
2. Which factors of QOL tend to trigger the willingness to move in the FC?
3. Are there any differences in quality or conditions and importance of the QOL-factors between the FCs and the RUCs?
4. Are there any differences in quality or conditions and importance of the QOL-factors between the FCs close to the capital area and those that are further away?

The results are as follows:

5. When the respondents were asked how likely they were to move from their home region, 16% of the RUC respondents said this was either rather or very likely while only 13% of FC respondents answered similarly.
6. The answers are presented in Table 5. General safety, employment security, parental services, self-employment/innovation opportunities, employment diversity, services for the retired, quality of upper secondary schools. More general: labour market issues, services for parents and the elderly.
7. The answers are presented in Figure 11. Almost every QOL-factor was valued worse in the FCs than RUCs apart from tranquillity, nature, self-employment, community centres and healthcare. All of them, however, were counted as less important for the future residence in the FCs than in the RUCs. Roads, mobile, and internet were counted as both in a worse condition and of a greater importance in the FCs than in the RUCs.
8. The answers are presented in Figure 13. The FC sample was divided into two groups, closer and farther away from the capital area. When focusing on the greatest differences between the two groups, the communication and transportation systems are valued worse and more important in FCs further away than in those closer to the capital area. It is, however, much softer issues like services for the elderly, tranquillity, access to varied nature and good community that are graded as of lower quality and more important in FCs closer to the capital area than those further away. This might suggest the top priorities for the regional development in each regions.

Other results based on Statistics Iceland data:

- The population decreased by 65% in the FCs of Iceland in the period 1911-2018 while increasing by 419% in the RUCs and a little in excess of 1,200% in the capital area (Figure 1).
- The employment share of agriculture in Iceland fell sharply from approximately 80% to 3% in the period 1870-2017, fisheries declined from around 25% in 1910 to 3% in 2017 and tourism, a relatively new branch in Iceland, was close to 8% in 2017 (Figure 2).
- The number of children in the FCs has been decreasing in Iceland. Analysed by region, the decrease has been somewhere between 30-60% in the period 1998-2019. Two

regions, the capital area and the South, returned a positive development in this regard (Figure 3).

- The number of children in the RUCs has shown considerably more robust growth than in the FCs. Two regions returned a significantly worst development by a 40% and 30% reduction of the number of children in the period of 1998-2019 (Figure 4).
- The development of the number of adults (aged 18-67) was more favourable than that of children whose numbers, however, were relatively more favourable in the RUCs than the FCs in all regions except for the capital area and the South peninsula. (see Figure 5 and Figure 6).

Other results based on the survey:

- Only 30% of FC populations were employed in agriculture and the remainder was mixed, participating in all other industries. Out of those FC-inhabitants that lived within a 50 kilometre radius from the capital city, only 15% worked in agriculture.
- The comparison between farmers and inhabitants of FC communities who were not employed in agriculture suggested that farmers were particularly vulnerable to financial difficulties, price levels, and services for the disabled (Figure 12). However, residence of employees of all other industries than agriculture was most vulnerable to house rent, elderly homes, community centres, employment diversity, service variety, and self-employment/innovation-opportunities.
- The younger section of the FC-population is particularly vulnerable to the housing market (especially dwellings for rent), playschools and QOL-factors in relation to transportation (Figure 14).
- The youngest FC residents seem to commute more than twice as much as senior citizens, and women tend to be more responsible for the difference (Table 3).
- When the young FC-population was compared to the young RUC-population, the results suggested that internet and mobile networks were the most serious shortcomings in the FCs (Figure 15). The road network became the second most unfavourable QOL-factor weighing against young FC-inhabitants in this comparison.
- Women in FCs, compared to women in RUCs, returned results almost identical to those of young inhabitants. Transportation and telecommunication are the most serious threats to their future residency (Figure 16).
- Finally, a comparison between FC-women and FC-men was made. Women stated that most of the QOL-factors were more important to them than did men (Figure 17). When an identical comparison diagram was constructed (not presented here) for women and men in RUCs, it returned a similar pattern as well.
- The FC-women and FC-men comparison also suggested that wages and salaries are females' most unfavourable QOL-factor (Figure 17). Next in line of unfavourable factors are, almost in following order: housing for rent, employment security, road safety, price level, services for immigrants (foreigners), variety in goods and services, general safety, and sports and recreation.
- QOL-factors related to the labour market (especially self-employment/innovation opportunities and employment security) and parental service are most likely to trigger potential out-migration (Table 5). The residence of FC-inhabitants working in

agriculture is most sensitive to employment security (Table 6). The residence of other FC-inhabitants is most sensitive to a wider range of labour market factors (self-employment/innovation opportunities, employment security and employment diversity) and parental service. The internet is significant for the latter group as well.

Policy implications

- People in farming communities can be divided between those who work in agriculture and those who do not. If dispersed settlement is valuable to Icelandic society, the government will have to continue regional development programmes regarding innovations within agriculture, strengthen social services for parents and the elderly and secure a strong internet connection in all parts of the country. The government should reach out to implement a policy that supports Icelandic agriculture, because the factor called “employment security” is most likely to scare farmers off. Along with employment security, the people who do not work in agriculture, seem to be sensitive to employment variety, self-employment and innovation opportunities, internet connection, community, and services for parents and senior citizens.
- As mentioned above, the FC-inhabitants can be divided into two groups. The presence of both groups is important for the future of the FC. Agricultural employees are relatively content when it comes to how small their sensitivity of potential out-migration is to all the 40 QOL-factors included in the research. This group is the community’s link to its roots, the culture, landscape, and saga. The residency of the non-agricultural employees is, however, sensitive to more of the QOL-factors. They tend to increase the diversity of population and work in branches which are growing faster than agriculture. Accordingly, agricultural employees are more stable and resilient than other inhabitants of Icelandic FCs. The other inhabitants, however, create a bridge to the future and strengthen the hope for a growing population of young people and children again in the FC. Therefore, FCs have a bright future if we manage to support them wisely.

3 INTRODUCTION

Farming communities (FCs) in Iceland have been struggling for more than a century in terms of unfavourable population development to such an extent that several regions have been completely abandoned. The trend is notable in an even faster decline in the number of children since young farmers tend to be more likely to exit agriculture than middle aged farmers.

The unfavourable population development in rural areas is an international phenomenon. According to the United Nations (2015a), more than half the world population now lives in urban areas and the proportion of urban dwellers is projected to reach two-thirds of the world by the mid- 21st century. While the global rural population continues to grow in absolute numbers, rural areas in many western countries have experienced absolute population decline. In the first fifteen years of the 21st century, the population of rural Europe declined by -8% while the global rural population grew by 4%.

The reasons for the unfavourable development of FCs in Iceland appear to be generally known and seen as related to rapid technical development in agriculture, the attractiveness of urban communities (UCs), and increased globalization.

But the decrease of the FC population in Iceland is fast and widely regarded as undesirable and harmful for the country. Arguments such as increased homogeneity of residential locations, homogeneity of the community, decreased travellers' security, domestic food security, tourism viability and other resource based branches, and the ability to preserve unique species such as the Icelandic horse, sheep and chicken are traced all the way back to the settlement period when the country was a community of Vikings. (V. Karlsson, 2019)

So, the following questions become persistent: Is it possible to preserve some of the FC population and can we by any means slow down the negative population development of FCs in Iceland? One way to address the question, at least partly, is to know what the present inhabitants find inadequate when it comes to living conditions factors regarded as QOL. The study is in several steps and triggers the four different research questions below:

1. Is the potential out-migration of inhabitants in FCs different from that of RUCs in Iceland?
2. Which factors of QOL tend to trigger the willingness to move in the FCs?
3. Are there any differences in quality, conditions or in the importance of QOL factors between FCs and RUCs?
4. Are there any difference in the quality or the condition and the importance of the QOL-factors between the FC close to the capital area and those that are further away?

The study is constructed as follows. The research questions have been addressed. The theoretical background of migration will be presented in the next chapter with a short historical background. The population trends of FCs in Iceland will be addressed in the third chapter and a short historical background provided. Data used in the study will be presented in the fourth chapter, and in the fifth chapter, the methodology of the research will be outlined. Finally, the analysis and results will be presented and conclusions drawn.

4 THEORETICAL BACKGROUND AND LITERATURE REVIEW

Many factors motivate migration. Geographical differentials in labour market conditions, mainly wages, were among the first factors addressed by economic theory in the context of spatial economics (Hunt, 1993; McCann, 2001) and were still among the central concerns when amenities; that is, local factors of value offered free, or relatively inexpensive, to the local population, were included several years ago (Blomquist, Berger, & Hoehn, 1988; Graves, 1979; Gyourko & Tracy, 1991; Roback, 1982; Tiebout, 1956). Amenities include natural resources, public services and social activities, while negative amenities (or dis-amenities) include local phenomena, attributes, incidents or threats, such as crime and pollution, that decrease the welfare of the local population without compensation. One theory has suggested that positive amenities compensate for lower wages; since people tend to prefer locations with good weather conditions, beautiful scenery, and other desirable features. Such areas tend to generate an excess supply of labour with consequent wage decreases, while wages are higher where amenities are more limited (Roback, 1982). The New Economic Geography is the most recent theory covering interregional migration, where the core-periphery model is a central aspect (Krugman, 1991). According to this model, agglomeration economies are among the main reasons for rural-to-urban migration, through higher real wages. Moreover, lifetime earnings instead of present wages are addressed as more relevant. Uncertainty is included as well. One version of the core-periphery model includes social capital and traffic congestion (Baldwin, Forslid, Martin, Ottaviano, & Robert-Nicoud, 2003, p. 32). Accordingly, a decreased profitability in agriculture, at least relatively, can possibly explain the decrease in FC populations as well as gradually worsening services since it becomes harder to maintain varied services in small communities.

The dramatic change in the rural population of Iceland and its vulnerable state were the main themes of the current paper, as noted in the introduction and chapter 4 on the historical background of farming communities. This was also the theme of much other research world-wide, as noted in a paper by Lobao & Meyer (2001). This paper contained a comprehensive literature review in the field of study the purpose of which they stated was to “provide a retrospective account of the empirical and sociological fate of family farmers” (Lobao & Meyer, 2001, p. 103). The paper covers three distinct research traditions that address the problem at hand: research on macro-level transformation, community impacts, and household responses. This study, however, emphasizes the impact on the community globally, locally and on families of the known long-term negative development of agriculture.

This paper, however, focuses on the current views of people living in Icelandic farming communities as to what underpins their well-being or QOL. New technologies, especially telecommunication and IT related, provides a new and possibly stronger pillar in support of FCs. Therefore, the significance of profitable agriculture or any other land intensive industry as a necessary condition for a thriving rural community has perhaps become considerably lowered and this has attracted attention to the QOL in the FCs.

Studies dedicated to the well-being or the QOL of farming families are not new to academic research (Molnar, 1985). At an early stage, the reasons for explaining various farmers’ global well-being were rather traced to private issues or individual characteristics than the structure of the farming itself. Later, such studies were repeated by different authors, in another community, using a different method and confirming the previous results (Coughenour & Swanson, 1992). The study by Coughenour and Swanson was, however, divided into two interesting aspects. Firstly, the

impact of several explanatory variables on satisfaction with farming. Secondly, the impact of the same sets of explanatory variables on satisfaction with life as a whole. According to the results, the current stage of their life cycle indicated more well-being than did the present stage of their career. Furthermore, educational background had a significant positive impact on perceived well-being of both life and work. However, the results suggested that education could have a negative impact in an economic downturn. Net farm income was detected as a significant factor in explaining satisfaction with farming but not general life satisfaction. However, total family income was found to be relevant to satisfaction with the global quality of life but not farming. Therefore, the global quality of life for farming families is improved if someone in the family has a non-farming career. Many other interesting aspects are among the results.

A recent study from China (Chen, Lü, & Chen, 2016) concluded that FCs are satisfied with their social life and where they live – that is, location. They are, however, dissatisfied with their economy, the employment, and public services. Another study from USA (Arbuckle & Kast, 2012) suggested that household income and community vitality had a positive relationship to QOL for farm families in Iowa, while individual stress and economic dependence on farming had a negative relationship. Sufficient services, and labour market for farming communities (McGranahan & Beale, 2002) together with compensating natural amenities (McGranahan, 1999; McGranahan & Beale, 2002) are found to be important for FCs in more studies. Finally, one study (Deller, Tsai, Marcouiller, & English, 2001, p. 363) suggested that the “high level of key natural resource amenities endowments and overall quality of life experience” tend to have positive impacts on local growth. Other significant factors, somewhat less decisive, however, than the previous ones, were income distribution, tax-burden, education-level, and age. The study included both a FC and a RUC.

A study devoted to the impact of tourism and recreation on rural well-being (Reeder & Brown, 2005) was implemented and reported by the US Department of Agriculture. According to the report “[t]he findings imply that recreation and tourism development contributes to rural well-being, increasing local employment, wage levels, and income, reducing poverty, and improving education and health. But recreation and tourism development is not without drawbacks, including higher housing costs. Local effects also vary significantly, depending on the type of recreation area” (Reeder & Brown, 2005, p. 2).

The QOL of farm operator households in USA was investigated by Hisham Said El-Osta (2007). Their analysis was in two stages. According to the results in the first stage, the age of the farmer, marital and family status are among those factors that affect farmers’ QOL. The relationship regarding age is not linear. Unfortunately, young farmers tend to become less satisfied with their life year by year, until they are 58 years old which represents a turning point. After that they become steadily happier with increasing age. Married farmers with children are more dissatisfied than those without children, married or unmarried. Moreover, dairy farmers appear to be happier than other farmers. Other factors exercising a positive impact on QOL are those that reflect a sense of farmers’ commitment to their farms and their communities, such as the importance of taking over the operation from a family, investing in real estate, and residing in a rural area in order to be a farmer.

The results in the second stage (Hisham Said El-Osta, 2007) suggest that farmers living in communities located in farming-dependent and/or in highly rural counties, and in persistent-poverty counties, in counties with higher unemployment rates are less likely to score high on the

QOL scale than those who do not live in such circumstances. Farmers living in a high-income counties are more likely to have responded more positively on the QOL scale than others.

Socio-economic well-being is an ongoing process and was studied in the US recently. The results that were “[a] central finding, which has implications for rural development and the continuity of the family farm, shows a positive relationship between increased intensity of farm program participation and higher likelihoods of socioeconomic wellbeing, particularly among elderly farmers.” (Hisham S. El-Osta, 2014, p. 1120). Farm programs referred to in the study are federal programs specifically intended to address economic challenges in farming communities.

Living in a farming community often goes hand-in-hand with the question of the profitability of agriculture. Moreover, Misha et al. (2010, p. 134) argued that farming was more than an ordinary business since it becomes the home of the farmer/manager as well and therefore the farm can have very personal ties. Thus the profitability of farming is not as strong a motive for entering or exiting the branch as it is in other businesses, since, as mentioned above, a farm is both a home and a workplace. Furthermore, many farmers in Western-Europe, have incomes outside their farms and this has been the development for decades (Fuller, 1990; Kelly & Ilbery, 1995). Therefore, the decision for entering and exiting the branch is a joint private-household and professional business decision. So, the overall living-conditions in the FCs are significant for a successful life in the countryside. Nevertheless, profitability plays a role in the recruitment and the durability of farmers, as pointed out by Chang (2013).

Generally, a new entry in farming can be or has been quite different than in other businesses since it often runs in the family where it concerns the succession of family farms more than new entrants (L. Glover, 2014; Potter & Loblely, 1992). Thus, in many cases recruitment is a matter of inheritance, at least partly, rather than buying a farm where financial institutions play a significant role in the investment phase.

5 A SHORT HISTORICAL BACKGROUND AND THE PRESENT SITUATION

The first settlers came to Iceland close to the year 870 AD (G. Karlsson, 2011) and in 930 the population was approximately ten thousand (Teitsson & Stefánsson, 1972, p. 156). The economy was based on sustenance agriculture, sheep farming in particular, and coastal fishing. While population estimates are weak until the first census of 1703, it has been argued that Iceland was not able to feed more than fifty thousand people prior to the modernisation of its economy in the late nineteenth century (Snævarr, 1993, p. 12)

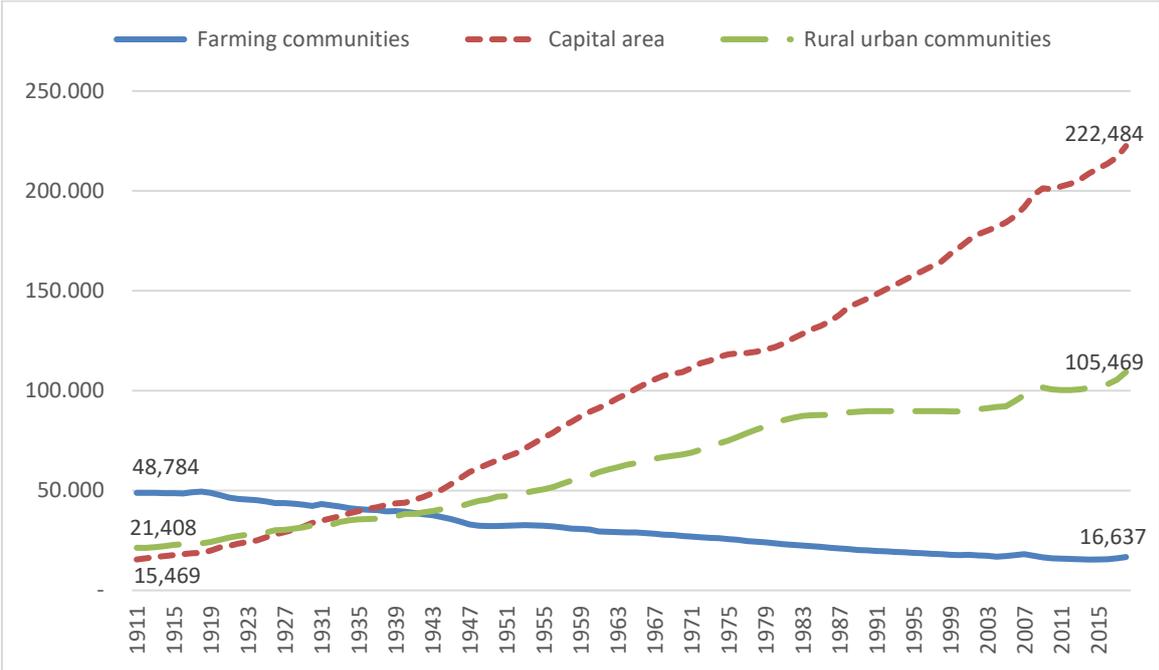


Figure 1: The population of Iceland 1911-2018. Note that numbers for 1991–1997 are simulated. Source: Statistics Iceland.

The total population of Iceland was close to fifty thousand at the beginning of the eighteenth century (V. Karlsson, 2012, p. 10), but took off in the late nineteenth and early twentieth century, which was the beginning of a period of urbanisation in Iceland (Gunnlaugsson, 1987, p. 107) and, in part, the modernisation of the Icelandic economy (Jónsson, 2002; Snævarr, 1993). The total population of Iceland reached seventy-eight thousand at the beginning of the twentieth century, and in the following century, the population has increased fourfold. The population grew most rapidly in urban areas (Figure 1), especially in the capital area, which counted fifteen thousand inhabitants in 1911 and more than two hundred thousand in 2018 which approaches a 1,200% increase. During the same period, the population outside the capital area doubled, growing from approximately 60,000 to 126,000. The FCs moved from close to 49,000 to 17,000 at the same time, or a 65% decrease in population. The RUCs, on the other hand, progressed from around 21,000 to 109,000, which is a 419% increase.

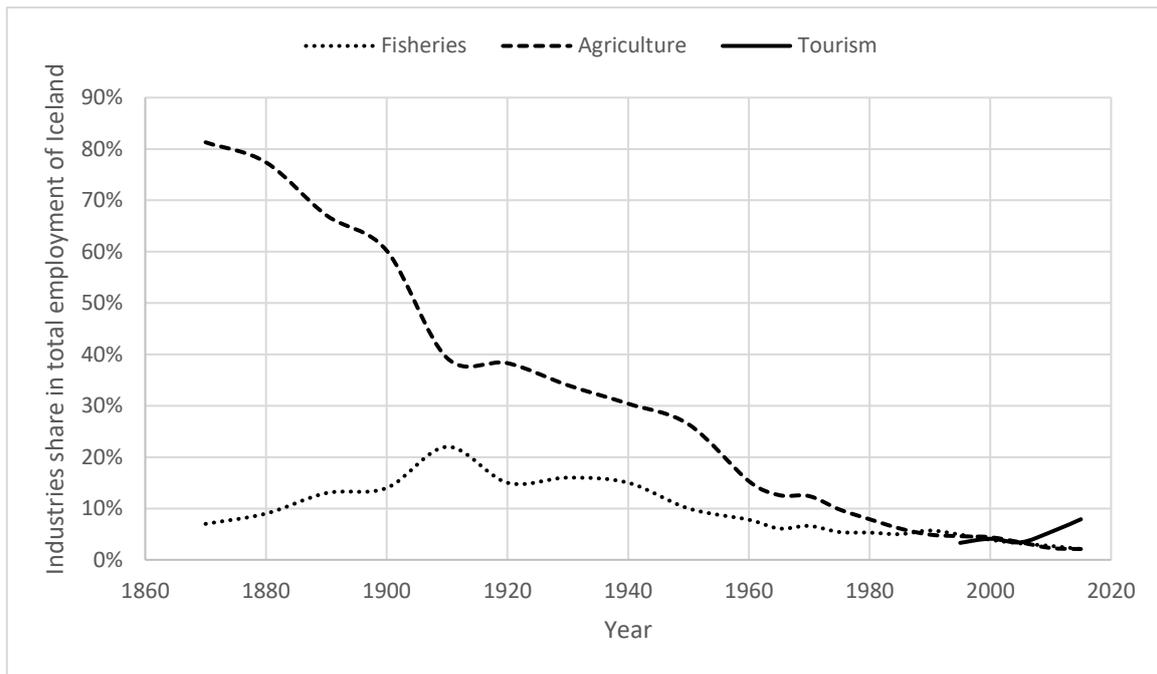


Figure 2: The share of agriculture, fisheries and tourism in total employment 1870-2017.
Source: Statistics Iceland.

One aspect of the modernisation process was the specialisation of farming. Instead of being a broad base for a wide range of economic activities, Icelandic farmers became specialised in certain agricultural products: sheep farms; dairy and cattle farms; greenhouses; pork and chicken. Different locations, different logic.

According to the Heckscher Ohlin theorem (1967), industries intensive in the use of natural resources such as fisheries, agriculture, and tourism are highly significant for the prosperity of rural areas (e.g., in terms of population development). In the late 19th. century the economy of Iceland was highly dominated by agriculture where it utilized more than 80% of the total domestic labour force. Today, the share is close to 3% in both agriculture and fisheries, while tourism keeps increasing, even though its share is far from close to that of agriculture in earlier times. (Figure 2)

The population of farming communities (FCs) in Iceland, has been declining for approximately one century while both the capital area and rural urban communities (RUCs) in the country keep growing (Figure 1). A recent study shows that the number of children in FCs in Iceland has been decreasing during the period 1998-2014 (V. Karlsson, 2015) – even though this trend has slowed down since 2014 (Figure 3). Another study suggests that young farmers are more likely to abandon agriculture than those who have reached middle age (V. Karlsson, 2018).

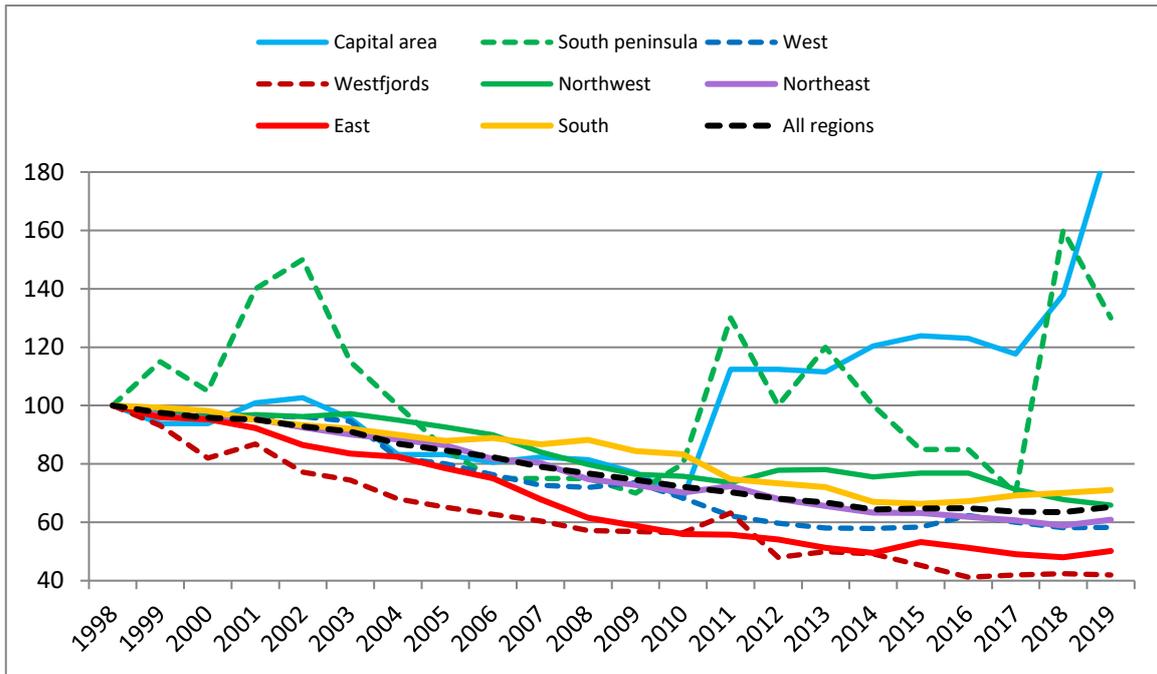


Figure 3: Number of children in FCs by regions of Iceland 1998-2019. An index. Source: Statistics Iceland.

The development in number of children in FCs varies from one region to another (Figure 3). This was most unfavourable in the Westfjords where the reduction was 60% in the period 1998-2019. Children, however, grew in number in the capital area and the South peninsula; faster in the capital area. The existence of a FC in the capital area might sound peculiar, but 0.74% of the population in the capital area did not live in an urban community in the year 2019 and that kind of a settlement has been growing relatively from the year 2000 (Figure 5).

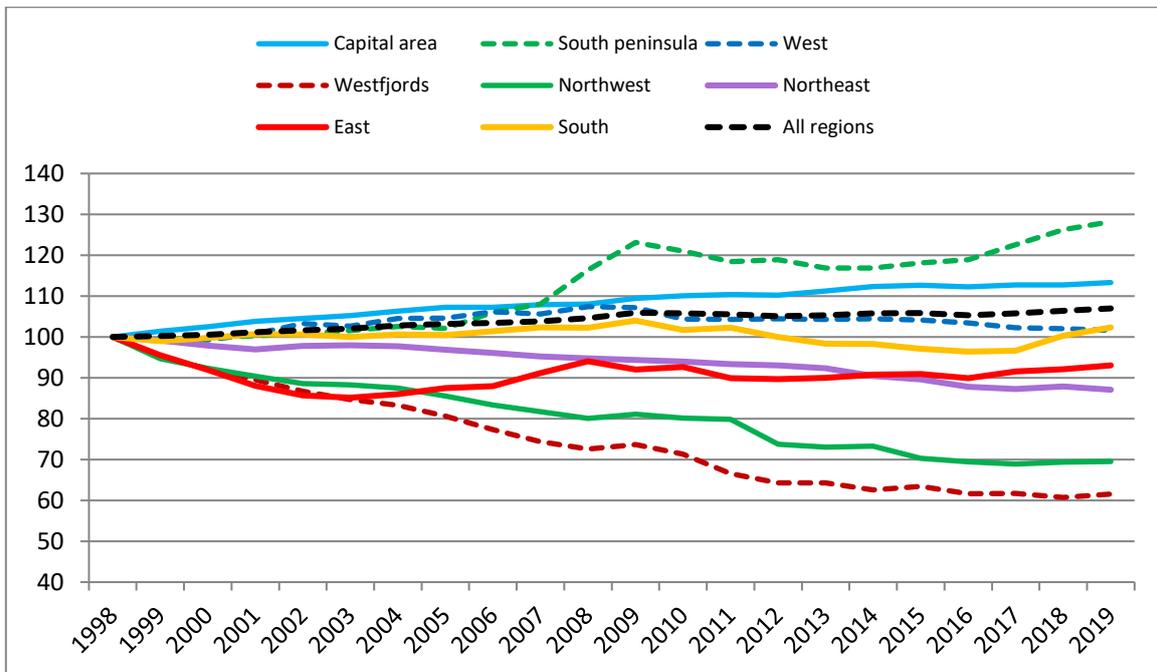


Figure 4: Number of children in RUCs by regions of Iceland 1998-2019. An index. Source: Statistics Iceland.

For comparison, the number of children in RUCs has not been decreasing as fast as in FCs (Figure 4). The most dramatic reduction has been in the Westfjords, or 40% in RUCs during the comparison period, while the corresponding figure was 60% in FCs. In the Northwest the figure was 30% in RUCs compared to 35% in FCs. It was close to 10% in the East and South compared to 50% and 30% in FCs. In other regions the development in RUCs was either stable or rising. Note that the East was on the same development path as the Westfjords and the Northwest prior the construction of their first aluminium smelter and the necessary power plant.

Another comparison of the number of children versus adults can be made; that is, those viable for the labour market (age 18-67). The most negative development has been in the Westfjords where the number of adults aged 18-67 has decreased by almost 30% in FCs (Figure 5) and by 10% in RUCs (Figure 6) while the number of children decreased by 60% in FCs (Figure 3). In all other regions, the reduction in FCs has not been lower than 10%. In most of them, a slight increase has been detected and, exceptionally, a highly significant one; that is, in the capital area where the increase has been close to 350% and 450% in the South peninsula (not shown in Figure 5).

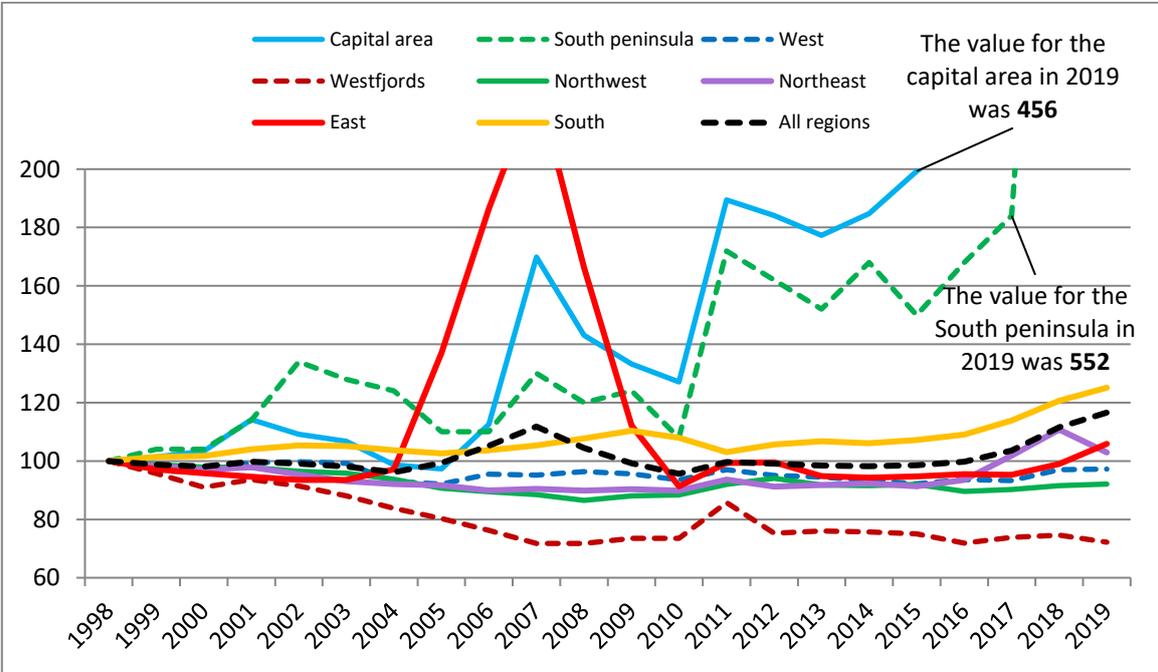


Figure 5: Inhabitants at working age (18-67) in FCs by regions of Iceland 1998-2019. An index. Source: Statistics Iceland.

Four top regions regarding favourable adult population development in urban communities (UCs) are the capital area and its three adjacent regions; West, South, and South peninsula (Figure 6). The Northeast and the East show a comparable development of a slow and stable growth, apart from the period 2005-2010 which is strongly influenced by the construction of a new aluminium smelter in the East and an accompanying power plant. The Westfjords and Northwest have a similar development pattern which differs strongly from all other regions, where the population is relatively stable during the period. This might be connected to tourism that has been favourable

to regions close to the international airports and ferry harbours¹. Both the Westfjords and the Northwest are farthest away from these. The Westfjords are, however, a popular destination for cruise ships.

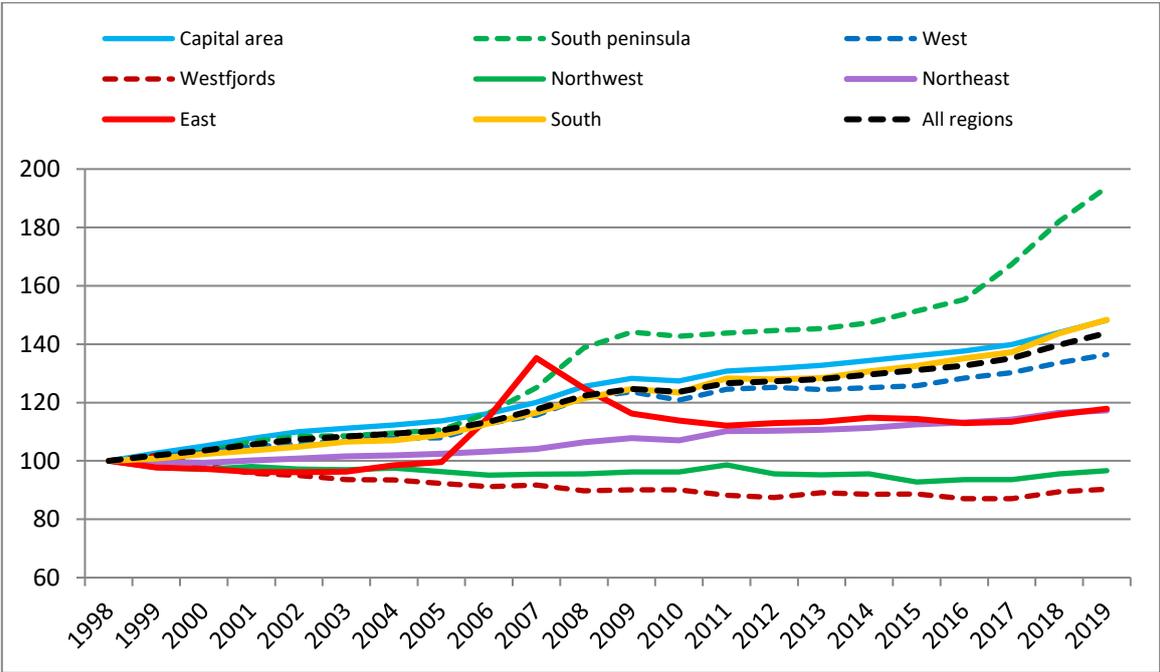


Figure 6: Inhabitants at the working age (18-67 years) in UC by regions of Iceland 1998-2019. An index. Source: Statistics Iceland.

Population development between regions has, however, generally been more favourable in the capital area and its closest regions (The South peninsula, South, and West). The decline in population, especially in the number of children, has not been that dramatic in the RUCs as in the FCs at the same time (Figure 4). Accordingly, the number of children is decreasing faster in the FCs than the RUCs.

¹ The largest international airport is in Keflavík on South peninsula another much smaller in Akureyri in the Northeast and Egilsstaðir in the East. An international passenger car ferry harbour with scheduled routes is at Seyðisfjörður in the eastern region.

6 DATA

The data used in the present analysis comes from the Regional Residence Survey in Iceland and includes five out of the eight regions of Iceland: West, Westfjords, Northwest, South and South peninsula. For analytical purposes, each region was divided into three to five sub-regions, roughly based on the map of the local labour markets published by the Icelandic Regional Development Institute (Icel. Bygðastofnun). The resulting 19 sub-regions are shown coloured in Figure 7.

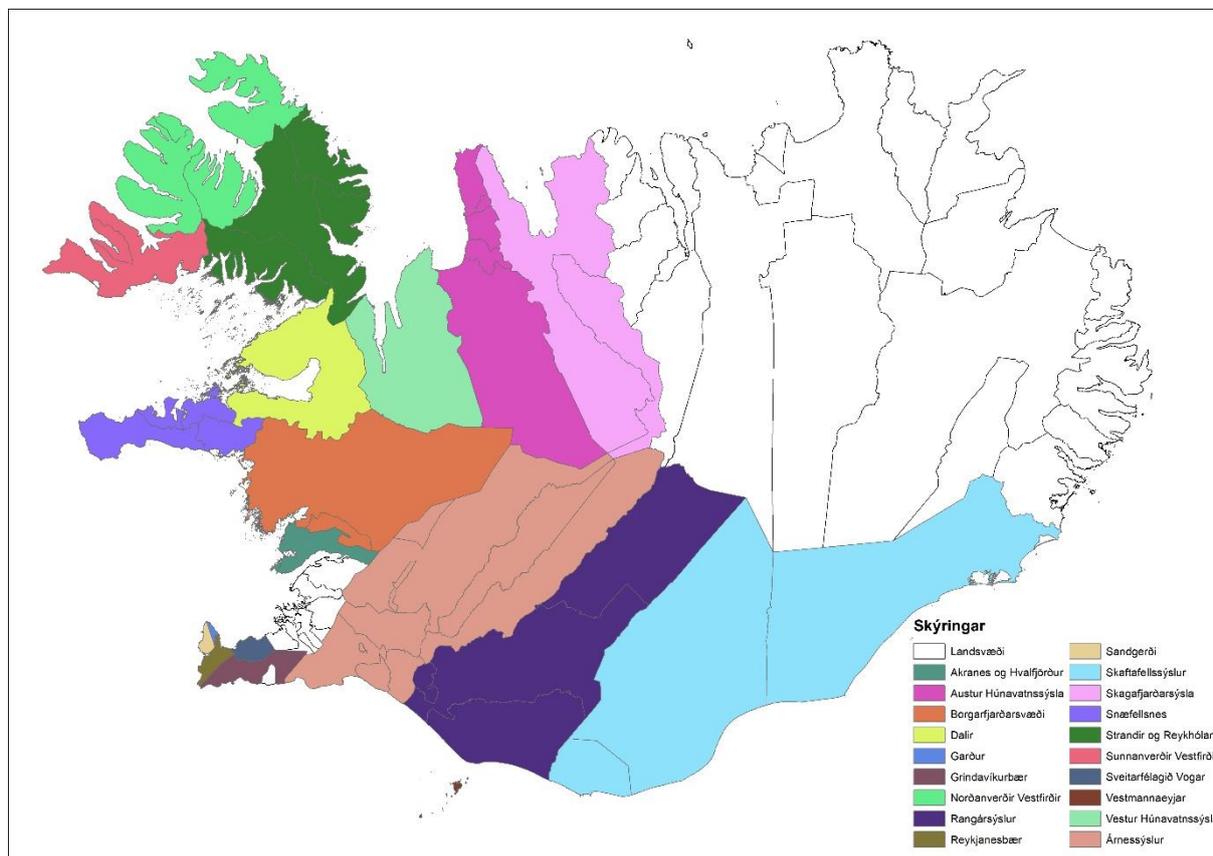


Figure 7: The 19 regions of the Regional Residence Survey in Iceland 2016 and 2017.

As the Regional Residence Survey focuses on non-metropolitan regions, the Reykjavík capital area was not included. The survey was the result of collaboration between all regional development offices, apart from those in the Northeast and East. Thus the majority of non-metropolitan regions is included, representing the full range of urban and rural communities outside the capital area.

The survey was based on a random sample drawn from the National Registry and every single individual was contacted by phone. The individuals who accepted an invitation to participate provided their e-mail addresses and received a link to the survey. The respondents received two reminders by email. They were also able to participate on paper if preferred.

The five regions, consisted of around 79,300 inhabitants in 2016 and 2017. Approximately 10,900 lived in farming communities, including homes not directly linked to farming or agriculture since the Icelandic National Registry does not count them separately. Children, at the age of 0-17 years were not included in the population survey. The number of children was approximately 19,000,

and thereof around 2,300 in FCs. The response rate can be counted as 50% where the number of respondents were close to 6,000².

The results of the study are based on two key questions. The first question was: *How good or bad do you consider the quality of the following issues in your municipality? Please mark what you find appropriate in all fields. If you do not have an opinion, please respond "Neither good nor bad"*. Then the respondents were supposed to value 40 different factors, the QOL-factors, by "very good", "rather good", "neither good nor bad", "rather bad", and "very bad". In order to make the results usable in a quantitative analysis every answer was graded in the following manner: one for "very bad", two for "rather bad", three for "neither good nor bad", four for "rather good", and five for "very good". The result or the average value of this question was called condition, where the average value of one was the worst possible condition and five was the best possible one. The 40 different factors are listed in the Appendix along with the acronyms used later in the analysis. Sample statistics and a short variable definition are also presented below (Table 1). This question, and partly the method, is similar to what we find in Filkins, Allen, and Cordes (2000).

The second question was: *How important do you consider different issues for your continuing residency in your municipality? Please mark what you find appropriate in all fields. If you do not have an opinion, please respond "Neither important nor unimportant"*. Then the respondents were supposed to value the same 40 different factors as in the first question by "very important", "rather important", "neither important nor unimportant", "rather unimportant", and "very unimportant". For quantitative purposes the remarks were given as values; one for "very bad", two for "rather bad", three for "neither good nor bad", four for "rather good", and five for "very good". In the present study the results of this question are referred to as "importance" since they reflect the importance of the relevant QOL-factors, regarding future residency. The value one was the least possible importance and five was the highest possible.

The idea was to distinguish between factors in bad shape and of no importance and those which are important. It was also informative to know the factors of good condition or at a high quality level that were either important or of much less importance.

The data was relatively well balanced regarding the gender of the respondents and age groups, apart from the group of 18-24 year-olds. 14% of the inhabitants belonged to that age group whereas only 6% of the respondents did. Moreover, inhabitants of foreign origin could have been better represented even though the survey was, for the first time, given in three languages: Icelandic, Polish, and English. According to Statistics Iceland, people of a foreign origin were approximately 13.9% of the total population in Iceland in 2017 while they were only 3.8% of the survey respondents. People of Polish origin, the largest ethnic group of immigrants in Iceland, were approximately 4% of the domestic total population in 2017.

² It is not easy to calculate a meaningful response rate because this is a web survey. First, the acceptable minimum of respondents was calculated. Then the necessary number of e-mails was estimated accordingly, on the grounds of how many of those who accepted the invitation would finalise the survey. Finally, the size of the sample was decided, based on experience of the number of rejections of a web-survey invitation. Thus, it is almost meaningless to discuss the response rate based on this sample size.

Table 1: Description of dependent and demographic variables.

Coefficients	Description	Obs	Mean	StDev
The dependent variable: "How likely do you consider that you will move from the region within the next two years?"				
Move		5,482	1.69	0.86
Demographic variables				
Gender	A dummy variable for gender, 1 if a male.	5,647	0.46	0.50
Age	Age of the respondents, by the year.	5,887	48.60	15.50
Foreigner	A dummy variable for origin, 1 if not Icelandic.	5,920	0.04	0.19
Non-single	A dummy variable for non-singles, 1 for married, engaged or in a relationship.	5,905	0.79	0.41

Table 2: Description of QOL MEASURES.

Coefficients	Description	Obs	Mean	StDev
QOL-factor variables: How good or bad do you consider the quality of the following issues in your municipality?				
Housing rent	Housing Diversity for letting	5,433	1.83	0.84
Housing buy	Housing Diversity for purchasing	5,442	2.41	1.02
Pricing	Pricing	5,381	2.58	1.03
University	Educational Opportunities for University Degrees	5,403	2.59	1.15
Roads	Road Infrastructure	5,436	2.71	1.20
Publ trans	Public Transport	5,428	2.75	1.12
Serv variety	Ware/Service Diversity	5,405	2.84	1.06
Expenses	Cost of Living	5,329	2.87	0.86
Wages	Salaries	5,401	2.91	0.93
Empl div	Employment Diversity	5,441	3.01	1.03
Finan-diff	Services regarding Financial Difficulties	5,253	3.01	0.74
Healthcare	Quality of Clinics/Hospitals	5,463	3.05	1.20
Amusement	Amusement Diversity	5,426	3.05	1.08
Planning	Planning/Urban Planning	5,324	3.09	0.94
Unemployed	Unemployment Services	5,265	3.16	0.77
Disabled	Disabled Citizen Services	5,319	3.25	0.94
Self-empl	Self-employment/Innovation Opportunities	5,404	3.27	0.94
Foreigners	Foreign Citizen Services	5,282	3.32	0.73
Youth	Quality of Youth Programmes	5,278	3.33	0.89
HSchool	Educational Opportunities for Upper Secondary Degrees	5,405	3.38	1.14
Parental	Parental Services	5,312	3.41	0.85
Retired	Senior Citizen Services	5,403	3.42	0.99
Hschool-qual	Quality of Upper Secondary Schools	5,274	3.44	0.96
Elderly homes	Elderly homes	5,379	3.53	1.12
Centres	Community centres	5,357	3.55	1.04
Empl sec	Employment Security	5,388	3.55	0.93
Culture	Culture	5,406	3.55	0.94
Internet	Internet Connection	5,424	3.64	1.23
Road Safety	Road Safety	5,420	3.73	1.05
Sports	Opportunities for Sport/Leisure/pastime	5,413	3.82	0.97
Mobile	Mobile Phone Connection	5,456	3.85	1.08
School	Quality of Elementary Schools	5,356	3.89	0.89
Playschools	Quality of Nurseries/Kindergartens	5,348	3.89	0.88

Conservatories	Conservatories	5,349	3.90	0.91
Traffic	Road Congestion	5,438	4.07	0.96
Libraries	Libraries	5,414	4.10	0.83
Community	Community	5,456	4.13	0.83
Safety	Common Safety	5,425	4.23	0.76
Tranquillity	Tranquillity	5,457	4.58	0.66
Nature	Proximity to Diverse Nature	5,468	4.64	0.61

According to the sample statistics the participants were 6,115 in total, but only 5,949 recorded their home municipality in the survey. Moreover, only somewhere between 5,200 and 5,500 out of the 5,949 respondents (Table 1) answered the condition of QOL-factors. The net sample is listed in the tables for the results and varies from 247 observations to 3,905 (Table 5 and Table 6). Note that sample statistics for answers relating to the importance of the QOL-factors are not included in the sample statistics.

The demographic variables included in the regression models later in the paper (Table 5 and Table 6) are included in the sample statistics, the dependent variable as well and the stated conditions of the QOL-factors (Table 1). The QOL-factors are sorted by the average condition, running from 1.8 to 4.6. The results suggest that respondents were most satisfied with proximity to diverse nature when all answers to the survey are included. The mean was 4.6 and the respondents answers were most identical on this issue (st. dev. 0.61). The respondents were, however, least satisfied with the housing market.

The “internet connection” had the highest standard deviation of 1.22, twice as high as the smallest standard deviation, while the mean was ranked close to the average. This reflects the excellent internet connection in some regions and poor in others. Large standard deviations were also detected in many other QOL-factors that received a low mean. This applies to universities, roads, public transport and even housing to buy, price-level, and service and goods variety.

7 METHOD

The results will be analysed and presented in three different ways. Firstly, a descriptive analysis will be used to demonstrate the twofold characteristics of the results; that is, the condition and importance of the QOL-factors for the relevant area and the area for comparison.

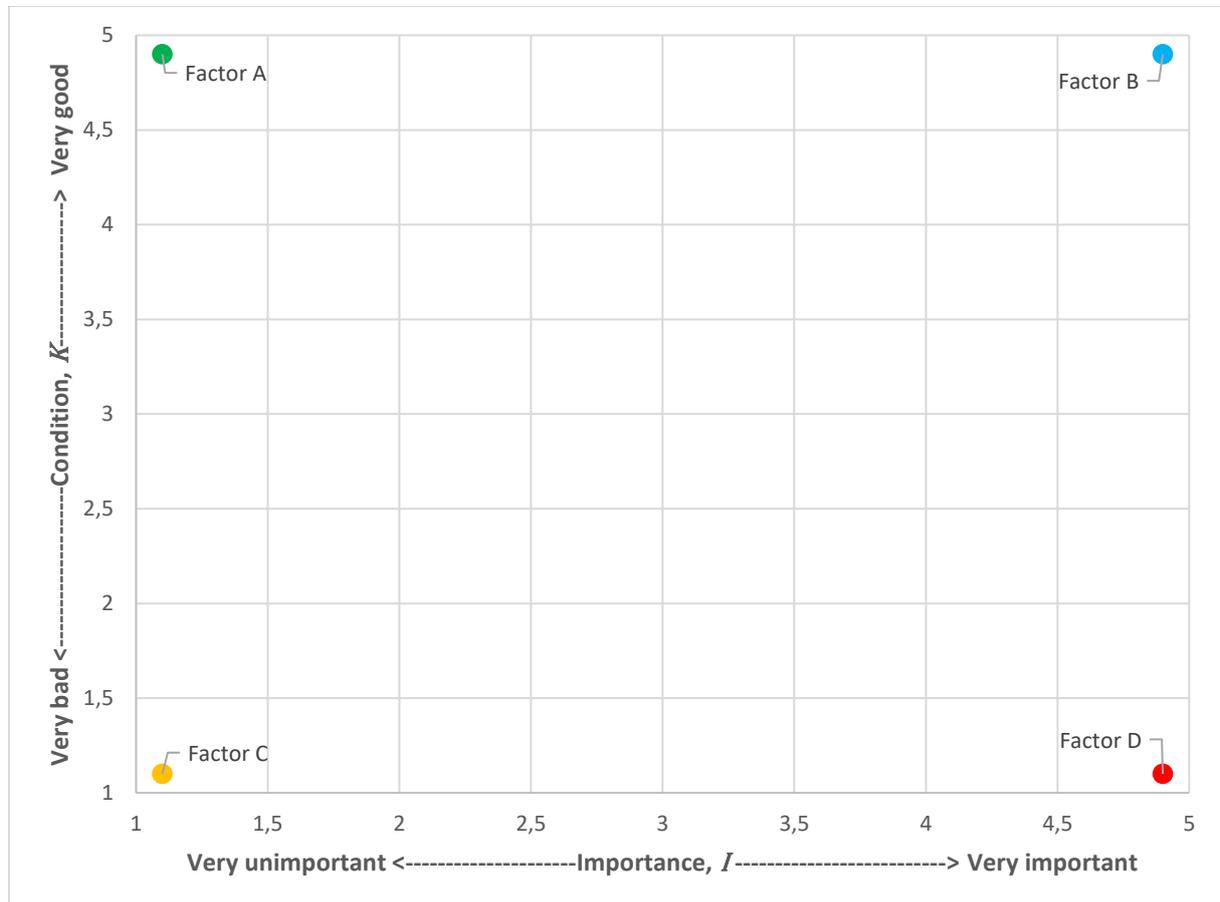


Figure 8: The figure for descriptive analysis

The factors will be presented by a two dimensional diagram presenting one axis (y-axis) for the average condition of each QOL-factor and the other (x-axis) for the average importance of the factors (Figure 8). The diagram reflects the factors in most preferred state, close to factor B, where the factor is highly important for the future residence of the population and the condition is very good. Secondly, a less preferred state, close to factor A is presented, where the condition of a factor is very good but of no importance for future residence. Thirdly, an undesirable state is demonstrated where a factor, close to C, is in a very bad condition and of no importance for the inhabitants. Fourthly, a most undesirable state is displayed where the factor, close to D, is in a very bad shape and of great importance for the future residence of the respondents.

Note, however, that the diagram can be divided into four meaningful quarters instead of single one. The factors can fall into one of them. The most preferable state is in the quarter where the condition, K , is greater than 3 and importance, I , as well and becomes more preferable the closer K and I approaches 5. It is called the blue quarter. Similar analysis goes for the other quarters where the green is less preferable (I below 3 and K greater than 3), the yellow is undesirable (Both I and K below 3) and the red most undesirable (I greater than 3 and K smaller than 3). The

closer a factor gets to each corner, the more appropriate is the definition of each quarter to that factor.

A comparison between groups (the target-, t , and the comparison group, p) was also implemented since the difference between FC- and RUC-inhabitants was one of the main subjects of the paper as well as the distinction between two groups of the FC-community; that is, those working in agriculture and those that work elsewhere. A comparison diagram was constructed and its numbers were constructed as follows: The y -value was $y = K_t - K_p$ and the x -value $x = I_t - I_p$. Next, the comparison diagrams were constructed according to the relevant y - and the x -values (Figure 11 to Figure 17). The y -value was then the difference between the average value of the target group (FC-community or FC-inhabitants working in agriculture) regarding the condition of a relevant QOL-factor and the group for comparison (RUC-community or other FC inhabitants). The x -value was, on the other hand, the difference between the average value of the target group regarding the importance of a relevant QOL-factor and the group for comparison.

The second method is a regression model with a limited dependent variable called the ordered response model (Verbeek, 2004). In order to address the potential significance of the QOL-factors additional information from the respondents was needed to complete the regression model. One of the questions in the survey was “How likely do you consider that you will move from the region within the next two years?”. The respondents were asked to choose between: Very likely (graded 4 in the regression), rather likely (graded 3), rather unlikely (graded 2), and very unlikely (graded 1). So, in order to enhance understanding, the following empirical regression model was implemented where the correlation of those who answered “likely” for leaving the region against how they valued the condition of all the 40 local factors was estimated and tested.

If several independent variables, found in the vector X' , have an effect on a latent decision of leaving the region, M_i , then the statistical presentation of the model is as follows (Verbeek, 2004, bls. 203),

$$M_i = X'_i \beta + \varepsilon_i \quad (\text{Eq.1})$$

where β is a vector of estimated coefficients and ε_i residuals or the error term denoting $\varepsilon_i \sim N(0,1)$. Variable y_i relates to M_i in the following terms, sometimes called the observability condition:

$$y_i \begin{cases} 1 & \text{if } X_i \leq \sigma_1 \\ 2 & \text{if } \sigma_1 \leq X_i \leq \sigma_2 \\ 3 & \text{if } \sigma_2 \leq X_i \leq \sigma_3, \\ \cdot & \\ M & \text{if } \sigma_{M-1} \leq X_i \end{cases}$$

The parameters $\sigma = (\sigma_1 \dots \sigma_{M-1})$ are the threshold parameters where σ_1 is equal to 1. Here, M is an integer variable equal to 4.

This model maps the “dissatisfaction” of any potential out-migrant. This could be rephrased by stating that the model will suggest what QOL-factors are triggering the thought of leaving the community. Method one is a so-called stated preferences (Tietenberg & Lewis, 2012, p. 83)

method where respondents were asked directly what factors were significant for their future residence in the region. Method three, however, is a so-called revealed preferences method (Tietenberg & Lewis, 2012, p. 90) where the respondents reveal their potential triggers for leaving their present home region.

Table 1 includes a list of the 40 QOL-factors of what is counted as the vector of independent variables, X' , in the present study. The demographic variables are listed there as well. The analysis and result of the model is presented in chapter 8.3 (Table 5 and Table 6).

8 THE ESTIMATING RESULTS AND DISCUSSION

8.1 METHOD 1: DESCRIPTIVE ANALYSIS - THE CONDITIONS AND IMPORTANCE DIAGRAMS

The condition and importance diagram for the FC inhabitants was constructed (Figure 9). Note that there are only two quarters in the diagram as it is presented since the horizontal axis runs from the value 3.1 to 4.7 and the vertical from 1.5 to 5.0. These are the most preferred quarter (the blue quarter in Figure 8) and the most undesirable one (the red quarter in Figure 8). The reason for zooming in is the expected visual clarity of the diagram, since every single QOL-factor would not be as visual if the diagram were in full scale.

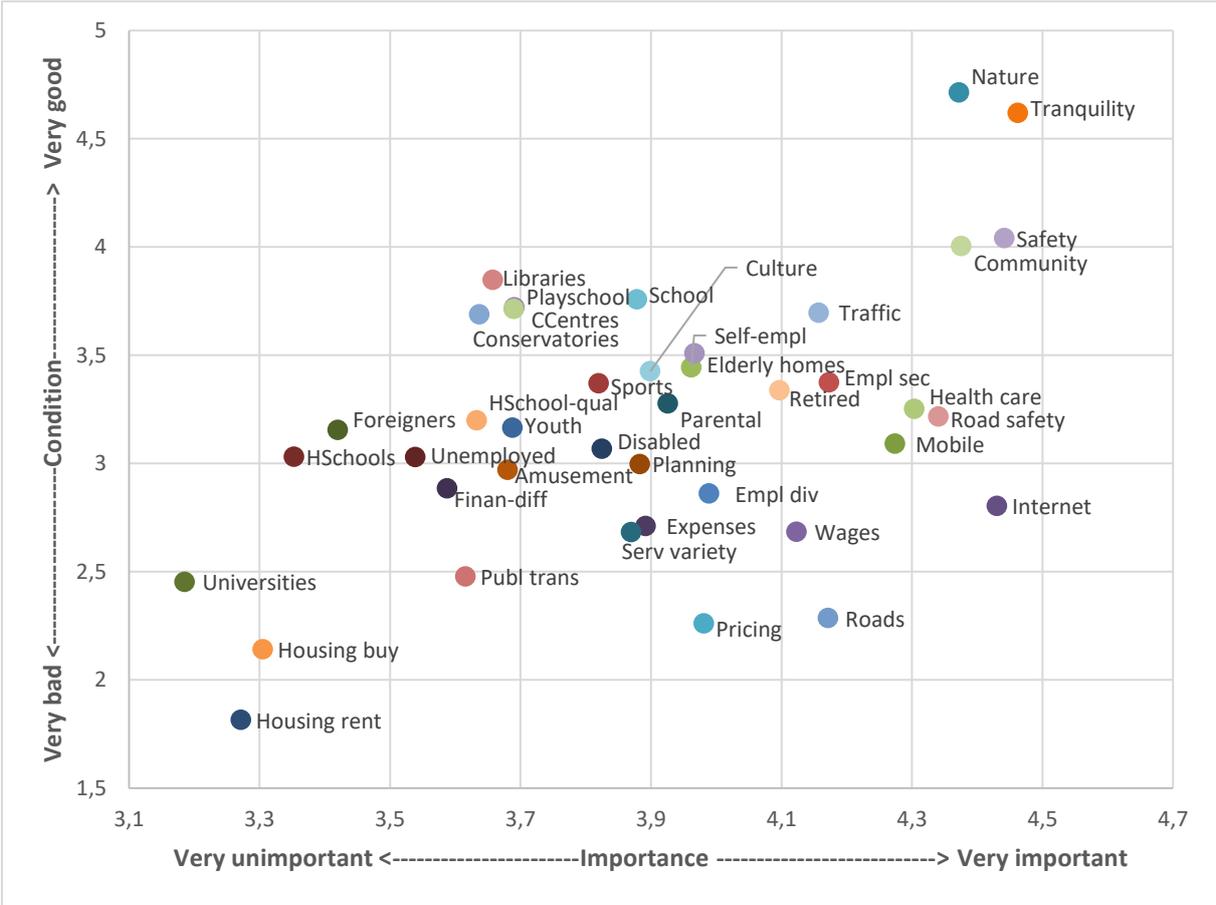


Figure 9: The condition and importance diagram for the FCs of Iceland

The diagram (Figure 9) suggests that roads, price-levels, internet, and wages are closest to being in the most undesirable corner, while nature, tranquillity, safety, and the community are, in that regard, the most desirable factors. Note that community stands for the general atmosphere in the community such as cohesion, and whether it is socially supportive or destructive. Not far behind the most undesirable factors are road safety, mobile phone coverage, and service and goods variety. According to the results (Figure 9) the factors that can be called transport and communication network, and those having to do with household income and services (variety and price-level) dominate the most undesirable issues and the results suggest they are among the priorities in FC-rural-development programmes for the coming years.

Do the results, however, differ from the RUCs (Figure 10)? Note that the diagram has comparable first and the last values on the y- and x-axis as in the previous figure for the FCs in order to keep the visual comparison as clear as possible.

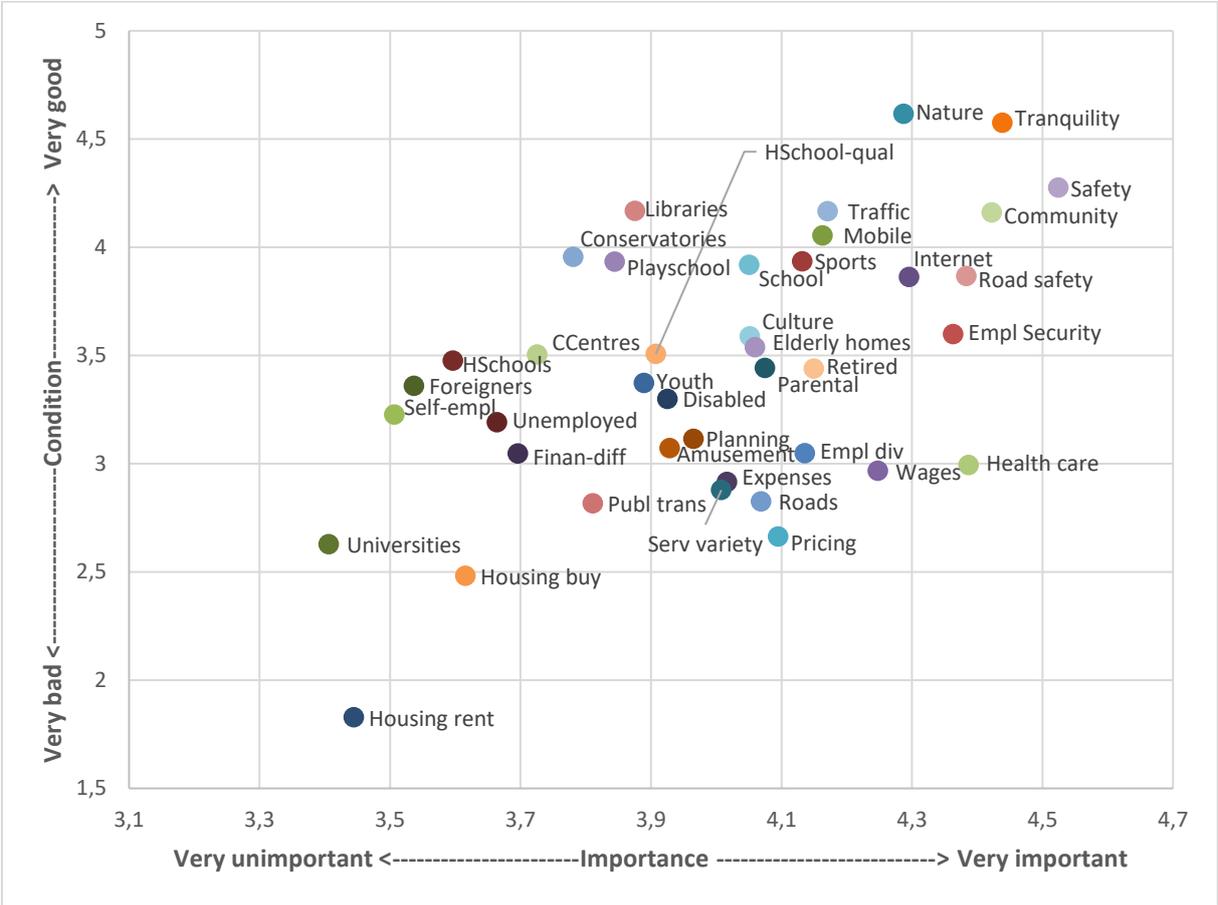


Figure 10: The condition and importance diagram for the RUCs of Iceland

The comparison of the figures does not easily show any significant difference between the FCs and the RUCs. Nature, tranquillity, safety, and the community are still closest to the most desirable corner of the diagram and there are relatively similar factors in the undesirable one. Accordingly, the list of top-priority projects for rural development should be quite comparable for all rural communities – which makes the use of resources more efficient.

If the list of priority projects was the same for all rural communities, it would still be interesting to see whether there were any detectable differences between the two types of community. This would reflect the degree of need for reactions and, moreover, the degree of the factors’ state. In order to achieve this we constructed a visual comparison of the two diagrams (Figure 9 and Figure 10) in Figure 11 by a simple a subtraction as explained in the chapter on methodology (Figure 13).

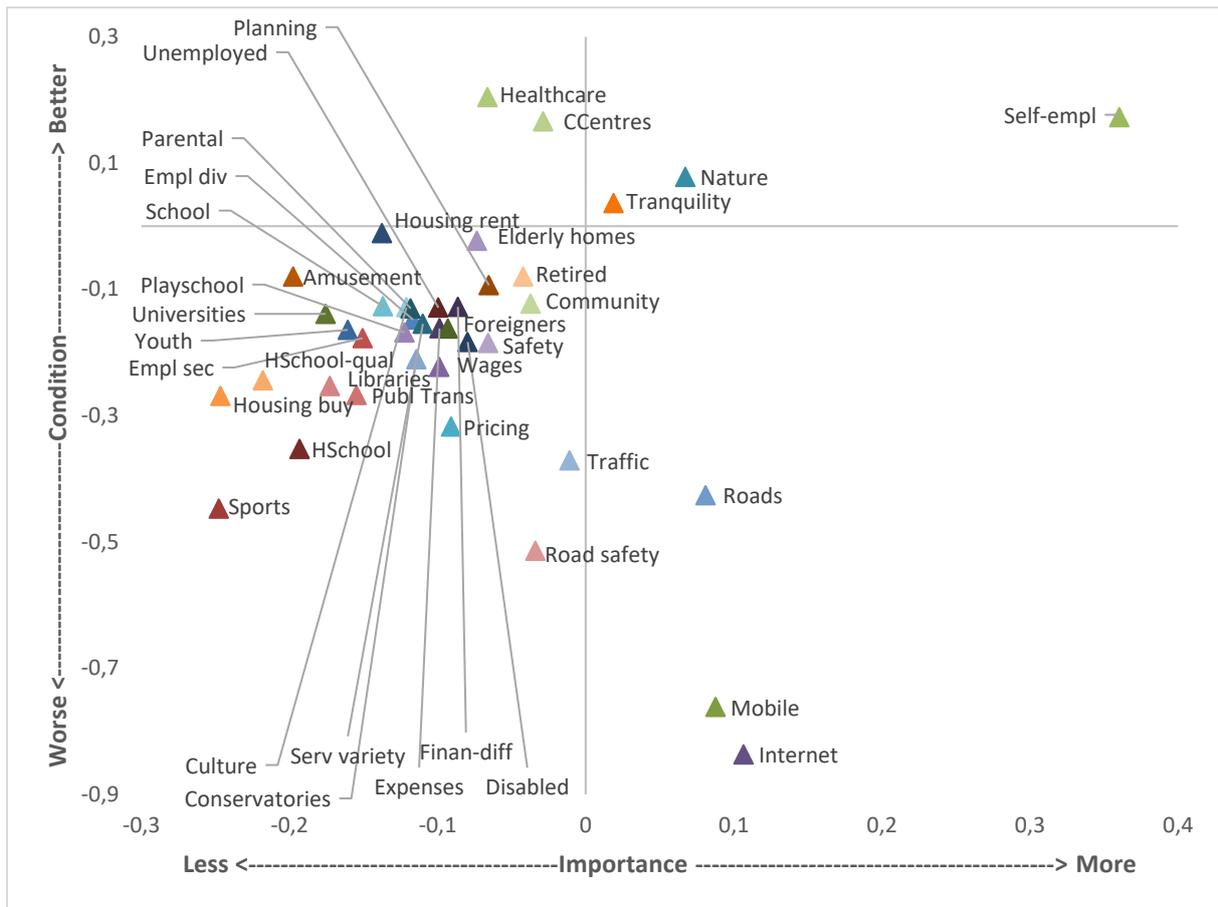


Figure 11: Comparison diagram between FCs and RUCs

According to the comparison diagram (Figure 11) most of the QOL-factors are assessed as worse in the FCs in Iceland than in the RUCs. Fortunately, most of them are simultaneously regarded as less important in the FCs than in the RUCs. Transportation, communication and road infrastructure (Internet, mobile, and roads) are, however, seen as both in a worse state and more important by the FC inhabitants and should, therefore, represent the objectives of the programmes of first priority in FC regional development: They should be regarded as “the low hanging fruits” on the to-do list of authorities of regional development in FCs.

Three factors fell into the FCs’ most feasible quarter; that is, the upper-right quarter, including the factors stated by the respondents as being both more important and in a better condition in the FCs than in the RUCs. The possibilities for self-employment, proximity to diverse nature and tranquillity all fell into to the most feasible quarter. This is quite understandable when the basic differences between FCs and RUCs are kept in mind – especially proximity to diverse nature and tranquillity.

Surprisingly, healthcare centres (service) gave better results in the FCs than in the RUCs. The reasons are not known, but when the FC population was divided by proximity to the capital city the inhabitants closer to Reykjavík were less satisfied than those living further away (Figure 13). Accordingly, three hypothetical explanations occur. Firstly, the population in the neighbourhood of Reykjavík is implicitly supposed to rely on the services there; thus, the operation of healthcare in the adjacent regions can be neglected by the authorities. Secondly, the waiting for general healthcare service, such as an appointment with a family doctor (GP), is longer in Reykjavík than

in many central business districts in rural Iceland. Thirdly, the need for healthcare might be greater in FCs close to Reykjavík than in those that are further away. This might be the case if the population that enjoy country life have chosen to live, due to their bad health, close to a good but over-exploited healthcare sector in Reykjavík. These results are, however, based on a small sample, since only 147 FC respondents were classified as close to Reykjavík.

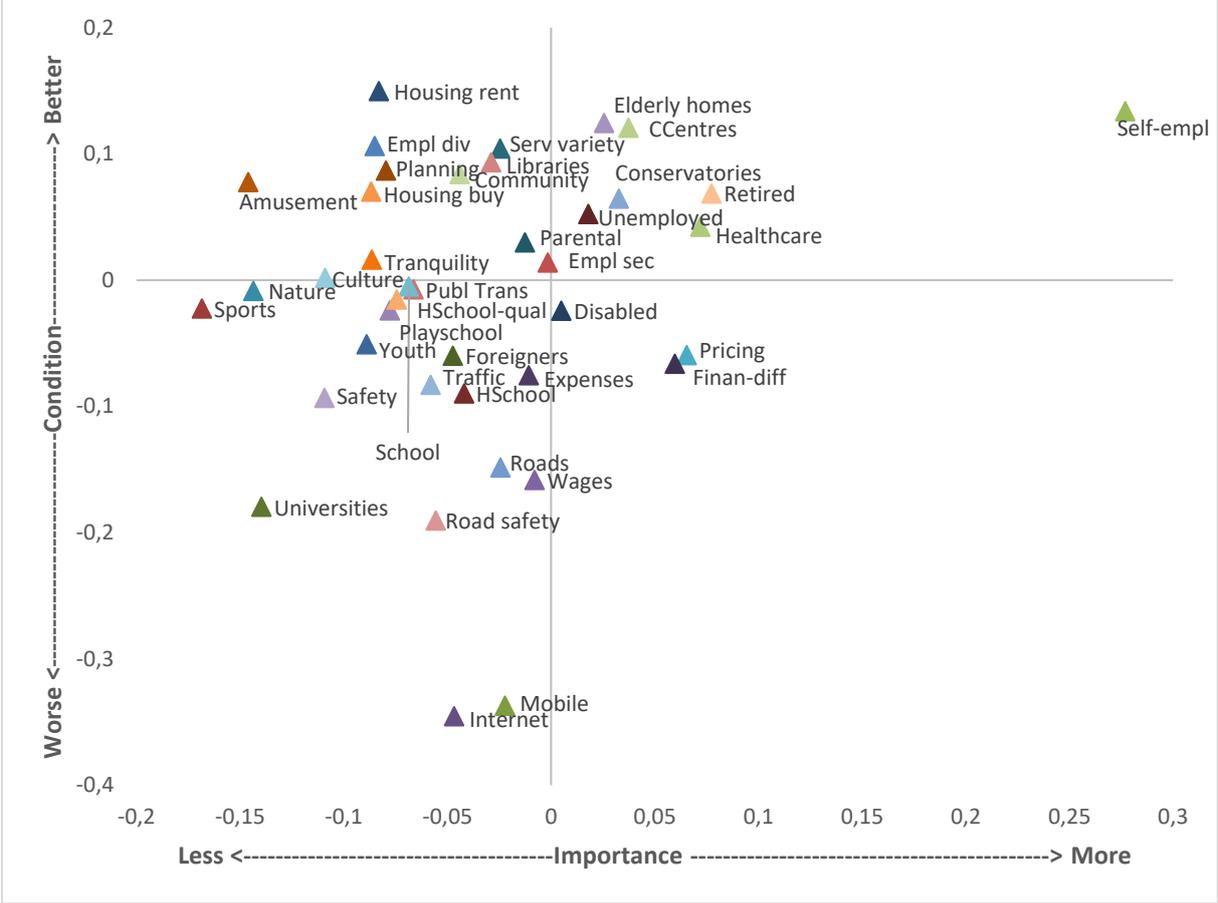


Figure 12: Comparison diagram between farmers in FCs against the remainder of population in FCs

It came as a surprise, when the results showed that only 30% of FC populations were employed in agriculture and the rest was mixed in all other industries. This shifted the attention of the paper towards the possible difference between those groups. If the population mix of a community is changing questions regarding the homogeneity of their preferences are likely to arise. Homogeneity can be preferable, as argued later, but heterogeneity can also bring opportunities. It has been suggested that new types of inhabitants, such as second home owners, have different perspectives on the development of the community than the “locals” (Farstad & Rye, 2013). We, are, however, not suggesting that 70% of FC populations are second home owners, but they might bring different needs to the community. The needs of FC communities have commonly been defined from the perspective of farmers, at least in Iceland. If other inhabitants share their view, the emphasis of the rural development remains the same, but it complicates the matter if they do not.

The answers of respondents who had their main occupation within agriculture (farmers) and lived in FCs were now compared to those FC residents who worked in other industries or

businesses ('hipsters') (Figure 12). Here, the farmers are the target group regarding how the diagram is constructed. Three QOL-factors fell into the least-feasible quarter; that is, financial difficulties, price-levels, services for the disabled. Financial difficulties can be traced to the large investment that some farmers, especially in dairies, made in the period prior to the bank-crisis in Iceland. Many of them were financed by loans in a foreign currency that became extremely expensive following the depreciation of the Icelandic krona. Some of the borrowers were compensated by court, but not all of them.

Price-levels are higher in the rural areas than in the capital area which hurts low-income groups more than high-income groups. Since, farmers and their personnel tend to be classified as low-income workers their vulnerability to price-levels becomes understandable. Services for the disabled are close to the margin (where the axis crosses) and, accordingly, do not have to be interpreted.

Internet connection and mobile coverage were classified in a poorer state by 'farmers' than 'hipsters' but farmers saw it as less important for residence than did the latter. Road safety, universities, wages, roads, high-schools, general safety, road congestion, and expenses were also marked as worse in this comparison. However, housing rent, elderly homes, community centres, employment diversity, service variety, and self-employment/innovation-opportunities were assumed to be in a poorer state by employees of all other industries than agriculture and more significant for their future residency (hipsters).

It is, however, interesting to note, when looking at the importance-axis only, that the future residency of the farmers (or agricultural employees in general) is not as dependent on most of the QOL-factors as it is for the rest of the FC-population (or hipsters).

8.2 OTHER INTERESTING COMPARISONS AND RESULTS

Some other comparisons were made. First, we wanted to examine differences of populations with regard to proximity to the capital city. Farming communities closer to strong urban areas are less dominated by traditional farming than FCs further away and more dominated by metropolitan inhabitants maintaining second homes in the FCs and "surfing" the rural-idyll. This was partly suggested in the results of a recent paper that examined the renewal of farmers and/or new farming recruits in Iceland (V. Karlsson, 2018), especially involved in animal husbandry such as sheep and cow-farming, the most traditional types of farming in Iceland. The results show that likelihood of new recruits falls the closer one gets to the capital area. This suggests that the land prices are out-bidding traditional branches of Icelandic farming. Currently agriculture competes on the land-market against other land users in Iceland, such as sports fishers, owners of summer houses and second homes, Airb&b-traders, and other kinds of leisure-industry or wealth-related demand. The numbers from the survey support this notion; out of all respondents that lived in the FCs, 15% worked in agriculture if they lived within a radius of approximately 50 kilometres from Reykjavík. However, 32% of the respondents worked in agriculture if the radius was enlarged to approximately 50-100 kilometres from the centre of Reykjavík. In the rest of the country, more than 100 kilometres from Reykjavík, the share of agriculture was 34%.

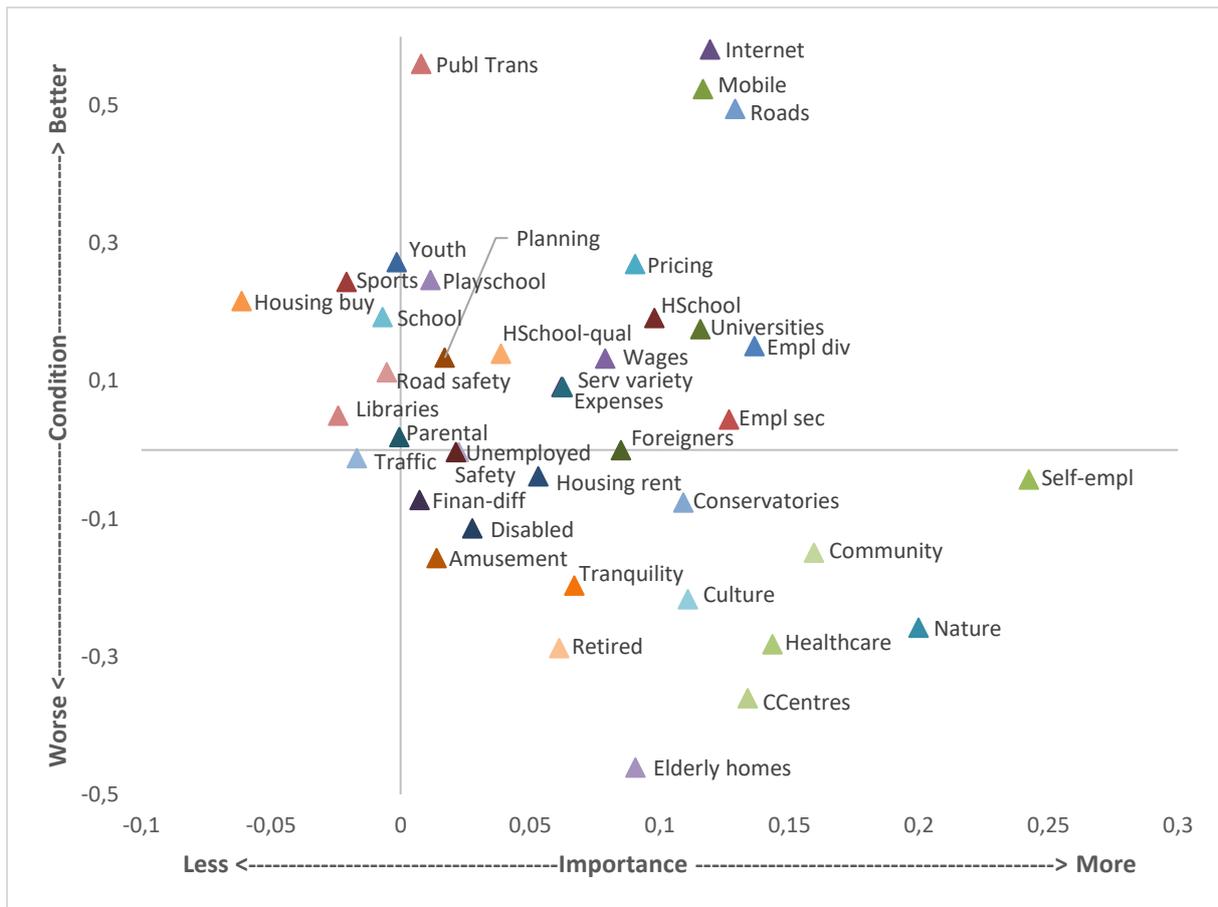


Figure 13: Comparison between communities closer to Reykjavík and those further away.

Firstly, the inhabitants of FCs adjacent to the capital area are much more demanding than those that are further away since most of the dots lie to the right of the vertical axis in the comparison diagram (Figure 13). Apart from that, when focusing on the main differences, the communication and transportation systems seem to be in a better shape the closer you come to the capital area while much softer issues like services for the elderly, tranquillity, access to varied nature and a congenial community improve the further you get from the capital area. That means the inhabitants of FCs closer to Reykjavík are much worse off when it comes to the healthcare service and access to beautiful natural landscape, tranquillity, and the like. The inhabitants of FCs further from Reykjavík are worst off in the comparison regarding transportation and telecommunication services. This can both relate to the actual status of the respective QOL-factor, the age structure of the populations or even an essential difference in preferences of the two groups. Consumers have different needs and preferences. FC populations close to the capital area are more dominated by city people seeking amenities such as enjoyable nature, scenic vistas, and the like. Nevertheless, they are more likely to want a reliable and relevant service than many of the other groups of FC populations. FC populations further away from Reykjavík are closer to their rural origin, where the preferences focus on efficient land use such as tourism, agriculture, and fisheries. The share of respondents working in agriculture supports this notion. For them, bad roads, and inadequate mobile coverage are seen as serious obstacles.

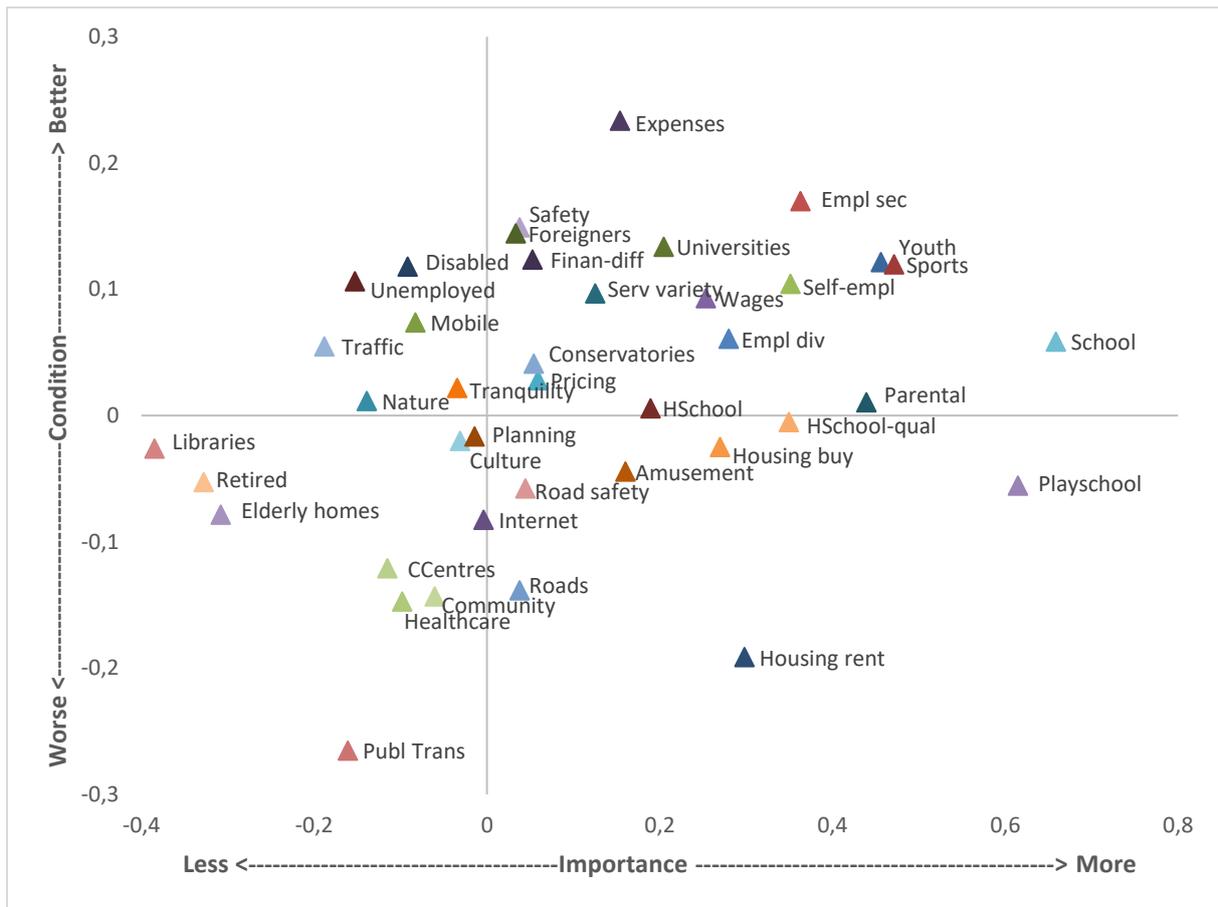


Figure 14: Comparison between YFCs (20-40 years of age) against the SFCs (>40 years).

The next step in the analysis was to compare differences in the average classification of the younger and older inhabitants of the FCs. The reason for this relates to the fast decrease of children in the FCs of Iceland (V. Karlsson, 2015) and worries regarding fading possibilities of the return of young people to the FCs (V. Karlsson, 2018). The respondents were defined young if they were at the age of 20-40 years and senior if older. The results (Figure 14) suggest that housing for rent is the largest and the most unfavourable factor for young people in the FCs compared to senior inhabitants. Playschools are critical as well. Playschools are significant for obvious reasons and housing for rent for similar reasons since housing cost is the single largest cost triggered when one becomes a parent. Furthermore, young people are more likely to be looking for housing than the older generation. Housing for rent is also significant for young people when they are considering where to live and not ready to buy a dwelling – especially in regions that are not doing well, as is the case in many rural areas. There are some other factors that are critical to young FC-inhabitants, although not much less favourable to them than to older residents. These are roads, road safety, amusements, and housing to buy. Factors relating to housing are of more sensitivity to parents (younger people) than others such as road safety. The transport factors are also important, probably because younger people commute more than their elders. This is logical since younger people have less experience and a shorter record on the labour market and are therefore likely to be expanding their possibilities for work by enlarging the size of the market. This is suggested in the survey for the FC-populations. The youngest inhabitants (18-24 years old) of the FCs seem to be commuting more than twice as much as their seniors (Table 3). It is noteworthy, however, that females contribute more to the reduction in commuting difference between juniors

and seniors. This probably relates to parenting since it concerns mostly people between 25-54 and rises again when older.

Table 3: The distance (km) between FC respondents' home and workplace.

Gender/age	18-24	25-34	35-44	45-54	55-64	>64
Female	60	16	15	15	22	42
Male	57	39	33	26	36	41

However, to some extent the comparison sometimes appears illogical (Figure 14). Factors in the upper right quarter suggests that older inhabitants are more dissatisfied than the younger generation. It is almost odd to see senior citizens more dissatisfied than younger people with sports and recreation, wages, employment security, youth, universities, self-employment, and employment diversity. One would think that those were the complaints of a younger and less experienced section of the population. The young people are, however, much more educated than their elders and that must, at least partly, compensate them regarding wages, employment security, need for the presence of universities and employment diversity.

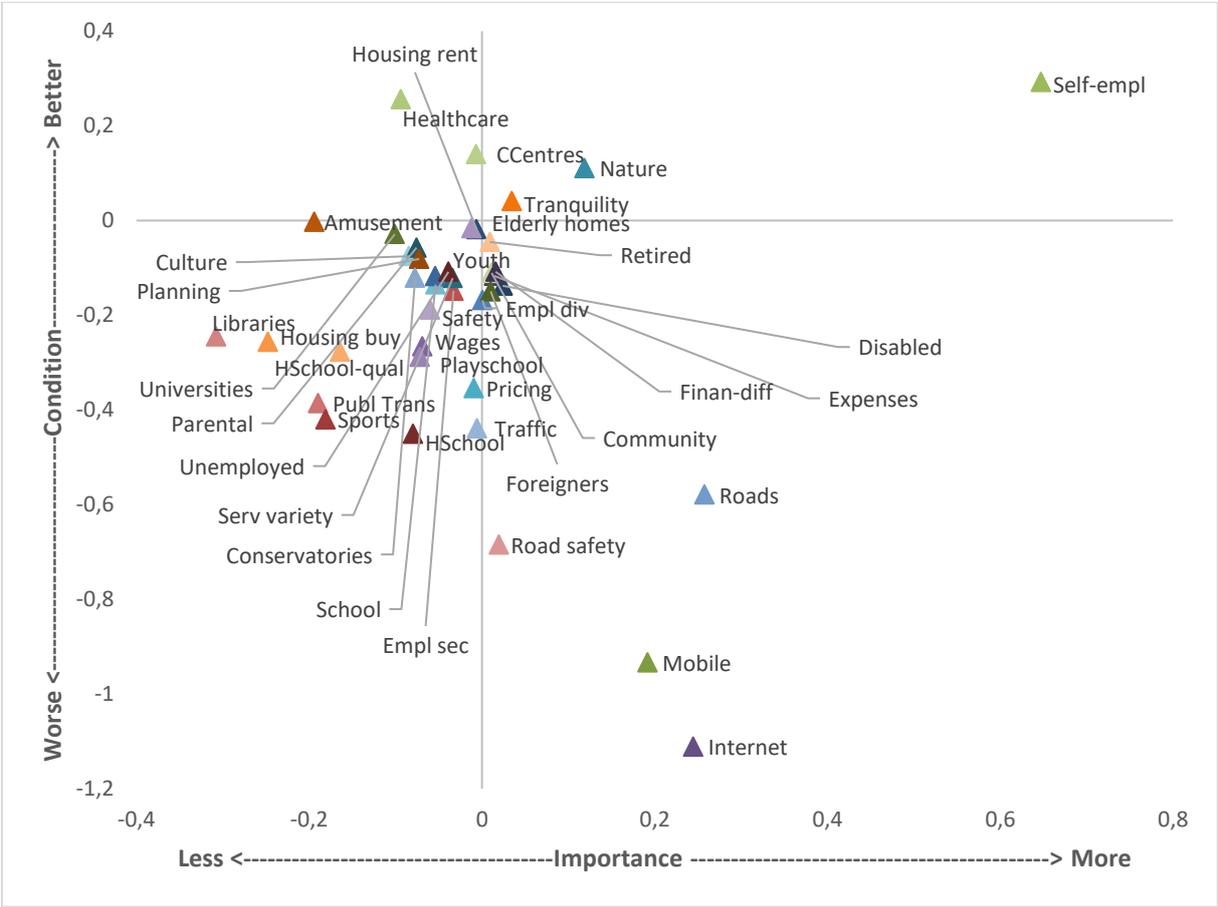


Figure 15: Comparison between YFCs against the YRUCs Iceland.

Sometimes, family, are dissatisfied on behalf of close relatives, based on rumours or the local community image regarding a certain service. It has been noted, for example, that satisfaction regarding care homes and other services for the elderly is higher among elderly respondents than younger ones. This is probably due to the worries that relatives have for their elderly parents and, possibly, a conscience issue as well. Children of elderly parents feel guilty because of spending too

little time visiting or assisting them, and would feel better if they knew that the service was of outstanding quality. So, it is possible that older parents (not necessarily elderly, though) have more worries regarding services that suit their children's young families than those young families themselves. This may be due to the fear of losing them to another community, far away, causing reduced contact with the grandchildren; or not getting them back home and blaming the services offered or the environment.

For young people the comparison may become more relevant to spatial issues when they are compared to young people elsewhere. Instead of comparing young and older people in the FCs we compare now them to young people in the RUCs. Here we probably see a reflection of the competition regarding young citizens. They either locate in urban or rural areas. Here young people (20-40 years) in the FCs are compared to the same age group in the RUCs (Figure 15). The comparison suggested that internet and mobile networks were the most serious shortcomings in the FCs. Then the road network becomes the second most unfavourable QOL-factor against young inhabitants in this comparison.

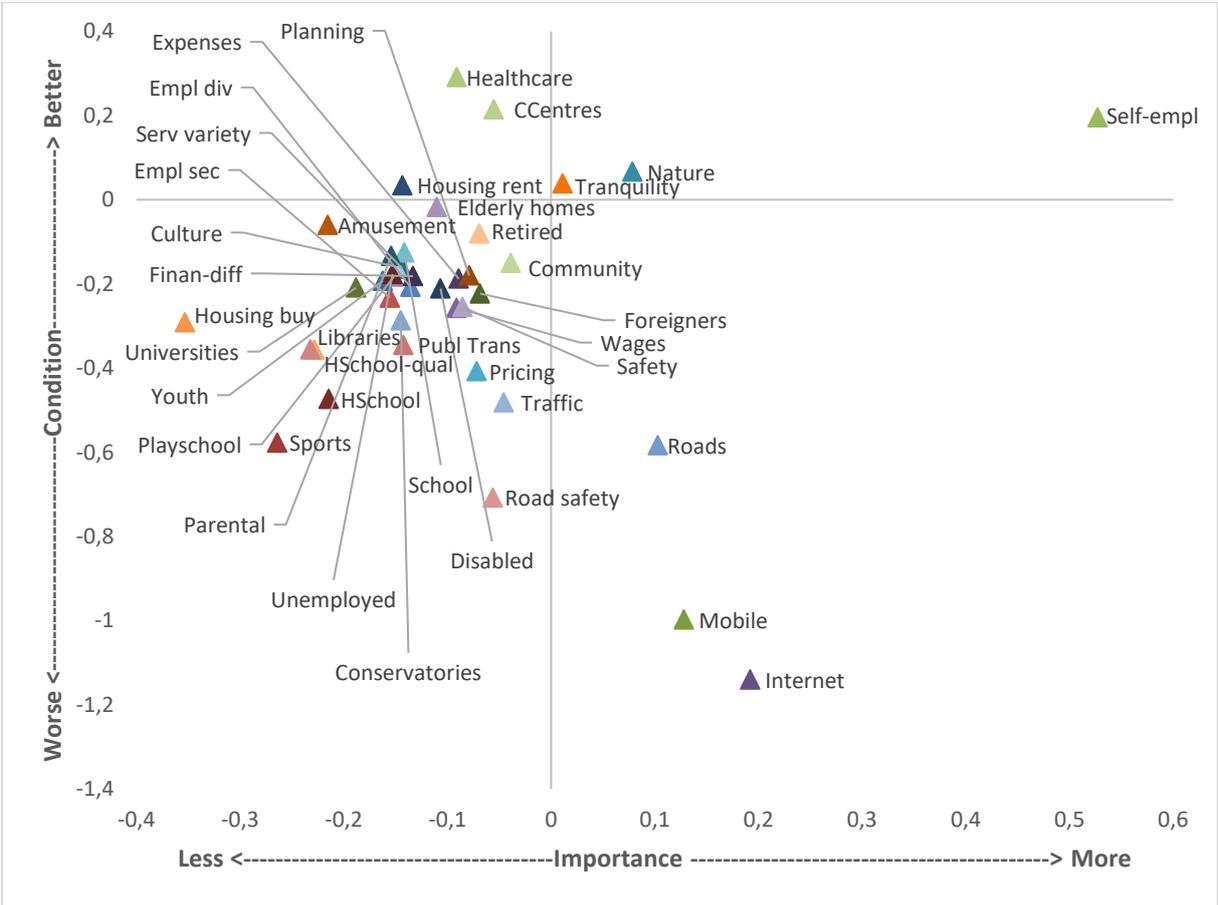


Figure 16: Comparison between women in FCs and women in RUCs in Iceland.

Since it has been suggested that women residents in rural areas are more volatile and more mobile than men (V. Karlsson, 2013) and the presence of women can be seen as a more significant condition for a community's fertility, the shortcomings regarding the QOL-factors against women were examined. We began by detecting the largest differences in responses between women who lived in the FCs and women that lived in the RUCs (Figure 16). The comparison was surprisingly similar to the comparison between young people of FCs and RUCs. Transportation and

telecommunication are the most unfavourable factors of QOL as far as women in the FCs are concerned.

When females in the FCs were compared to males in the FCs an interesting pattern appeared. Women stated that most of the QOL-factors were important to them than to men (Figure 17). When an identical comparison diagram was constructed (not presented here) for women in the RUCs and men in RUCs, it also returned a similar pattern. Wages are women’s most unfavourable QOL-factor. Note that women are sensitive to spatial wage differentials (V. Karlsson, 2013) and the gender difference in wages have been larger in rural Iceland than in the capital area (Ólafsson & Gíslason, 2005). Next in line of unfavourable factors are, almost in following order: housing for rent, employment security, road safety, price-levels, services for immigrants (foreigners), goods and service variety, general safety, and sports and recreations.

Price related factors (Pricing, expenses, housing rent) can be explained by wage differentials. High prices hurt low income workers more than high income ones. But what if women have high-income spouses? A low income worker married or in a relationship with a high income worker may be more likely to complain because of a high prices than is his high income partner, because of a different perspective. Women also tend to have more responsibility for the household than men have (Freedman & Kern, 1997; Turner & Niemeier, 1997) which can make them more preoccupied with factors that affect their household economy than men are.

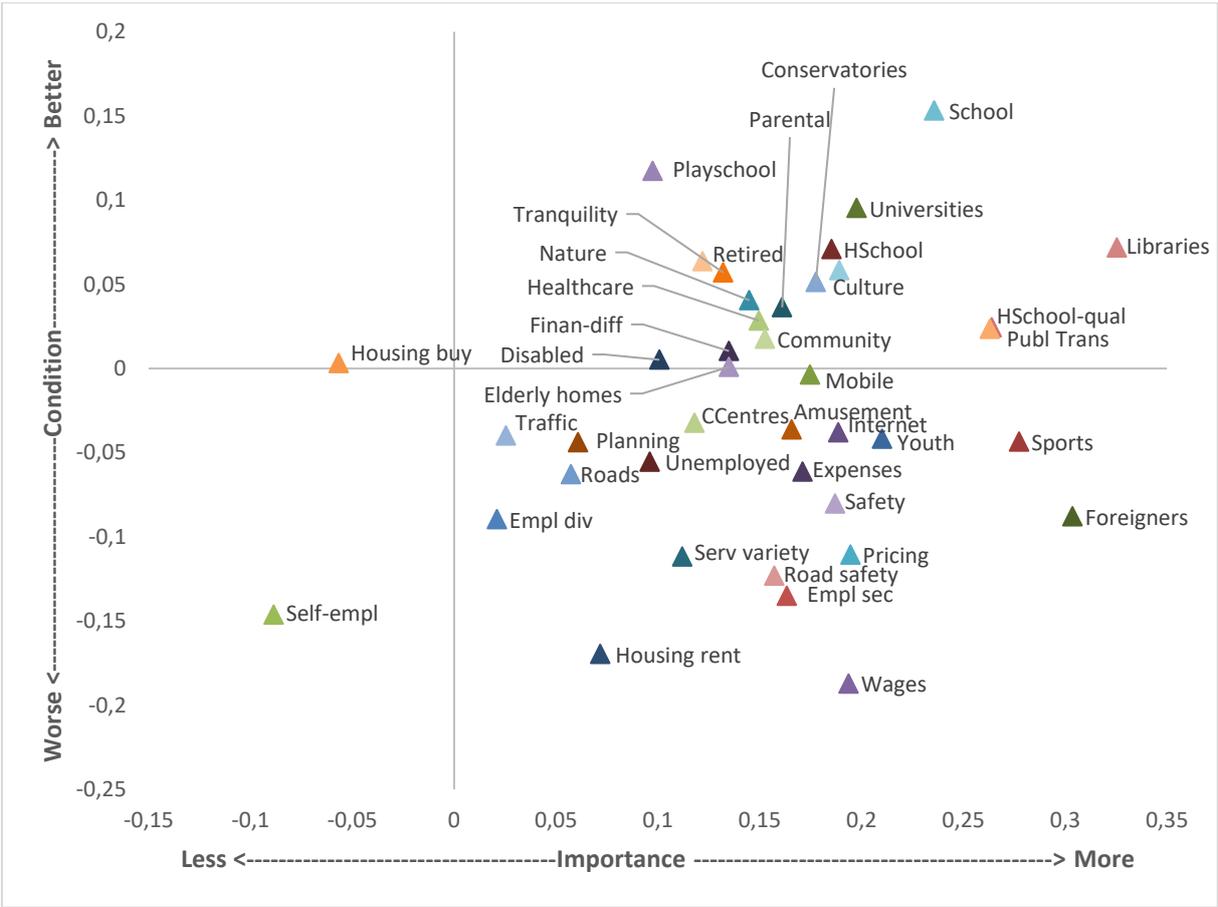


Figure 17: Comparison between women in FCs and men in FCs Iceland

Note that women are worse off than men regarding road safety and roads. This is surprising since men seem to commute more than women, as mentioned earlier and has been documented abroad (Freedman & Kern, 1997; Turner & Niemeier, 1997). Maybe this difference is more related to safety since general safety is close by and roads much closer to be comparable to men (in Figure 17) and some studies have suggested that women are more risk averse than men (Lampert & Yassour, 1992; Palsson, 1996; Powell & Ansic, 1997; Prince, 1993; Schubert, Brown, Gysler, & Brachinger, 1999). It is, however, not easy to explain the gender difference regarding services for foreigners. This might be traced to the fact that more women work in different kinds of services (schools, hospitals, shops, etc.). Accordingly, Icelandic women might have a better insight to foreigners' needs and demands than Icelandic men have.

Table 4: The main results of the descriptive analysis.

	Figure 6. FCs vs. RUCs	Figure 7. FCs farmers vs. others	Figure 8. FCs far from Reykjavík and closer	Figure 9. FCs young and old	Figure 10. FCs young and RUCs young	Figure 11. FCs women and RUCs women	Figure 12. FCs women and men
Most unfavourable QOL-factors of the former	Mobile, Internet, Roads	Pricing, finance-diff, (mobile, internet)	Internet, mobile, roads	Housing rent, play-school	Internet, mobile, roads	Internet, mobile, roads	Wages, housing rent, empl security.

The overall results suggest that the projects of first priority for FC rural development should focus on transportation and telecommunication networks in the districts (Table 4). Then housing for rent, employment security, price-levels, and playschool should be of concern as well.

8.3 METHOD 2: LOGIT REGRESSION MODELS

The question that generates the dependent variable was: How likely do you consider that you will move from your home region (and the region's name was noted) of Iceland? The respondents could choose between four outcomes: 1) Very unlikely, 2) rather unlikely, 3) rather likely, 4) very likely. The answers suggested that 16% of the RUC respondents felt that it was either rather or very likely, while only 13% of FC respondents did.

The regression of Eq. 1 was implemented and it should capture which of the 40 different explanatory variables listed above (Table 2) were significant predictors in the cumulative logit regression model against the dependent variable: Respondents willingness to move their residence from the present residency (Table 5 and Table 6). Here, a negative relationship between the dependent and the independent variables was expected: If local factors for QOL get better, the variables' value increases and the residences' willingness to move should decrease. We are, however, trying to detect which factors of local QOL are of poor conditions for those inhabitants who expect to move away from their present home region within a two-year period of time. It does not necessarily have to mean that the poor condition is fuelling the willingness to migrate, but it is possible – especially if it is a repeated relationship. That is why this is called a revealed preferences method (Table 5), while the previous one (Figure 10 - Figure 17) is a stated preferences method.

Table 5: Estimated cumulative logit regression model for moving for all respondents, FC, and RUC.

Coefficients	All respondents	FC respondents	RUC respondents
Safety	-0.21679330 (-4.07)***	-0.28702680 (-4.16)***	-0.20442950 (-2.97)**
Parental	-0.01482460 (-0.30)	-0.26972850 (-2.65)**	0.04603040 (0.70)
Self-empl	-0.08486420 (-1.83)*	-0.25367130 (-2.62)**	-0.01899130 (-0.35)
Empl sec	-0.14430820 (-2.25)**	-0.24390160 (-3.19)**	-0.11953110 (-1.71)
Retired	0.04806750 (0.96)	-0.22488580 (-2.22)**	0.11363520 (2.28)**
Planning	-0.14105380 (-3.13)**	-0.20071340 (-1.56)	-0.12393170 (-2.08)*
Empl div	-0.16122210 (-3.90)***	-0.18955630 (-2.61)**	-0.16518780 (-3.53)**
Community	-0.20240420 (-3.21)**	-0.16596340 (-1.32)	-0.22470040 (-3.49)**
HSchool-qual	0.02428570 (0.45)	-0.16178440 (-1.80)*	0.05955860 (0.95)
Libraries	-0.08123970 (-1.95)*	-0.16079540 (-1.12)	-0.08696210 (-1.93)*
Expenses	-0.11901250 (-2.07)*	-0.14550650 (-1.19)	-0.11580680 (-1.80)*
Serv variety	-0.08237550 (-2.81)**	-0.14139050 (-1.71)	-0.05319460 (-1.74)*
Nature	0.07875950 (0.91)	-0.11437650 (-0.54)	0.16604470 (1.88)*
School	-0.08332450 (-1.37)	-0.09789010 (-0.84)	-0.07521360 (-1.13)
Unemployed	-0.06026840 (-1.04)	-0.09259840 (-0.80)	-0.03455920 (-0.46)
Internet	-0.00698460 (-0.17)	-0.09226090 (-1.45)	0.00235350 (0.04)
HSchool	-0.02866560 (-0.70)	-0.07114530 (-0.92)	-0.03475130 (-0.83)
Publ trans	-0.06593230 (-2.31)**	-0.07058810 (-0.91)	-0.06332490 (-1.62)
Playschools	-0.15540500 (-3.27)**	-0.05602110 (-0.50)	-0.17248280 (-3.93)***
Amusement	-0.09093120 (-2.66)**	-0.04271030 (-0.60)	-0.09940320 (-1.98)*
Tranquillity	-0.17247620 (-2.23)**	-0.01392600 (-0.08)	-0.14726540 (-1.89)*
Sports	0.00452980 (0.13)	-0.01033770 (-0.13)	-0.02086400 (-0.45)
Healthcare	0.00283140 (0.08)	-0.00934910 (-0.13)	0.01136050 (0.29)
Pricing	0.01125150 (0.22)	-0.00451380 (-0.04)	-0.01272250 (-0.23)
Foreigners	-0.03836330 (-0.58)	-0.00230330 (-0.01)	-0.07325340 (-0.97)
Culture	0.02769420 (0.52)	0.00061380 (0.01)	0.01537150 (0.25)
Housing buy	0.00359150 (0.07)	0.00576840 (0.05)	0.00085040 (0.02)
Disabled	-0.00567360 (-0.11)	0.05149270 (0.28)	-0.03814060 (-0.67)
Conservatories	-0.03018860 (-0.73)	0.05826070 (0.65)	-0.04595270 (-0.84)
Traffic	0.01394760 (0.27)	0.05979370 (0.80)	-0.05164600 (-0.75)
Wages	-0.02925640 (-0.66)	0.06096050 (0.55)	-0.06867960 (-1.31)
Roads	0.00683100 (0.23)	0.08807740 (1.01)	-0.01128750 (-0.35)
Elderly homes	-0.04080100 (-1.03)	0.12418820 (1.24)	-0.06129910 (-1.11)
Housing rent	0.10754390 (2.49)**	0.13012410 (1.13)	0.12662460 (2.93)**
University	0.02696280 (0.72)	0.14379680 (1.37)	0.00316810 (0.10)
CCentres	0.06325360 (1.76)*	0.16879600 (1.68)	0.06401200 (1.49)
Finan-diff	0.09575190 (1.86)*	0.18317530 (1.25)	0.04743120 (0.68)
Road Safety	0.10462870 (1.95)*	0.19543350 (2.12)**	0.06485080 (1.14)
Mobile	0.08993860 (2.24)**	0.25512020 (2.93)**	-0.01297960 (-0.27)
Youth	0.00387300 (0.09)	0.28262960 (2.04)*	-0.02235050 (-0.50)
Gender	0.03185700 (0.53)	-0.06089230 (-0.57)	0.04281280 (0.59)
Age	-0.05959080 (-4.68)***	-0.06920170 (-3.62)**	-0.06747840 (-4.29)***
Age, square	0.00038370 (2.83)**	0.00040930 (2.01)*	0.00048220 (2.90)**
Foreigner	0.32668950 (1.96)*	-0.30851450 (-1.36)	0.68310890 (3.15)**
Single	-0.54460790 (-5.95)***	-0.64775590 (-2.84)**	-0.52451560 (-4.86)***
Observations, n	3,905	776	3,094
Linktest, t-value	0.27	1.19	0.17

Dependent variable the willingness to move . * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level.

The size of the coefficients indicates the sensitivity – the significance level as well but closer to being a sufficient condition for the existence of the coefficients. The table above (Table 5) was sorted by the coefficients of the FC-respondents, from smallest to the largest. Accordingly, safety, parental service, and self-employment were the three most sensitive factors of QOL when the data for FC respondents was investigated. Then, in the following order: employment security, service for the retired, employment diversity, and quality of the upper-secondary schools.

For comparison, the quality of the upper-secondary schools, general safety, services for retired, and parental services were sensitive issues for the FC respondents while the RUC respondents were sensitive to expenses, service variety, amusement, playschool, tranquillity, community, general safety, planning and libraries.

Interestingly, labour market factors seem to be more significant for the FCs than the RUCs and parental issues in general as well. The factor playschools, however, was detected in the RUCs but not the FCs and quality of upper-secondary schools in the FCs but not in the RUCs. These results suggest that labour market issues should be of first priority in the FCs. Then the condition regarding parents and elderly should be addressed as well.

For all respondents, identical results occurred regarding sensitivity to the same three factors relating to the labour market, weaker effects but more significant than for the FC respondents. Other negatively significant QOL-factors against all respondents' willingness to move were expenses, amusement, service variety, public transport, playschool, tranquillity, community, safety, planning, and libraries.

Safety, community, and tranquillity were the three most sensitive factors of QOL when the data for all respondents was investigated. Then, in the following order: general employment diversity, playschools, employment security, planning, expenses, amusement, self-employment, service variety, libraries, and public transport.

Let us address the factors that were stronger and significant against the willingness to move in the RUCs and not in the FCs. Firstly, the factor amusement diversity. The FC population ('wildlings') is not significantly sensitive against amusement at all. However, the RUC-inhabitants (the village people) were generally more satisfied with the amusement variety than the wildlings. This might reflect different preferences between the two population groups. Village people might have greater preferences or higher expectations regarding amusement variety than people in farming communities. The factors playschool, tranquillity, and community returned a similar comparison in the RUC and the FC communities. The sensitivity against the RUC community might be due to the need of good harmony between inhabitants because of the population density. It is easier to turn a blind eye against an annoying or a bullying neighbour if the likelihood of meeting him is lower as it can be in the comparison between the FC and the RUC communities. That might explain the different sensitivity against community between the village people and the wildlings. A notable sensitivity against tranquillity for the RUC and not the FC-inhabitants might reflect a related confrontation: Proximity between inhabitants makes the factor more effective, if harmful (or joyful). Note that the village people were more satisfied than the wildlings with the factor community while the wildlings were more satisfied with tranquillity (Figure 11). The greater sensitivity of the village people regarding playschool can be traced to a less flexible (a more rigid) labour market regarding household duties in the villages compared to the FCs. Many FC-

inhabitants work on their farm and it might be easier for them to adjust to a scarce playschool service by keeping the children at home.

When it came to the demographic variables no differences were detected in the attitude towards potential out-migration between genders that were not traced by the 40 QOL-factors. Foreigners seemed unlikely to move beyond the 40 variables of QOL in FCs while in RUCs. It is also notable that singles are more vulnerable in FCs than in RUCs. The relationship between age and the dependent variable is non-linear and suggests that young respondents are more likely to move than seniors: The young inhabitants are likely to move but increasingly less the older they get. The minimum values were at the age of 85 for FCs and of 70 for RUCs. So, when retiring the “village people” are more likely to move elsewhere when they leave the labour market and still have their good health while inhabitants of FCs stay until their health is close to ruined and they are “fit” for elderly homes. This is the interpretation since it is common to use at least two groups for the retired in migration studies. One group is younger and has better health and their residency is dependent on local amenities for the quality of life while the other group is older and of poorer health and needs intensive health care and elderly homes. This is interesting since it has often been suggested that new recruitment in farming in Iceland, which is poor, is because the old farmers do not quit, in order to sell or hand the farm down to future generations (V. Karlsson, 2018).

The estimation for all communities included 3,905 observations, 776 for the FCs, and 3,094 for the RUCs. According to the linktest all the models (in Table 5) seem well specified. No multicollinearity was present either. So, the results are robust.

Table 6: Estimated cumulative logit regression model for moving for two groups of FCs.

Coefficients	Agricultural employee	Non-agricultural employee
Retired	0.30230080 (1.21)	-0.34231920 (-2.40)**
Safety	-0.35263320 (-1.93)*	-0.33406440 (-2.84)**
Community	0.10351500 (0.46)	-0.32334490 (-2.04)*
Self-empl	-0.18255040 (-0.81)	-0.29129650 (-2.97)**
Parental	-0.30360040 (-1.64)	-0.28510880 (-2.08)*
Planning	-0.08442670 (-0.47)	-0.22725700 (-1.31)
Serv variety	0.18316340 (0.75)	-0.20247690 (-1.20)
Libraries	-0.11582700 (-0.83)	-0.18881970 (-1.01)
Empl sec	-0.47690910 (-2.06)*	-0.17652670 (-2.41)**
Empl div	0.06096200 (0.21)	-0.16674210 (-1.78)*
Internet	-0.03122500 (-0.19)	-0.13874310 (-2.36)**
Expenses	-0.24196070 (-0.88)	-0.13378360 (-0.88)
HSchool	0.18178570 (0.73)	-0.12994150 (-1.06)
Unemployed	-0.02776930 (-0.13)	-0.10803410 (-0.76)
HSchool-qual	-0.37001330 (-1.28)	-0.10523590 (-0.92)
Playschools	-0.05763070 (-0.31)	-0.09840010 (-0.76)
Housing buy	0.30851900 (1.05)	-0.09807470 (-0.73)
Sports	0.40619790 (1.86)*	-0.07833710 (-0.77)
Amusement	-0.13312590 (-0.49)	-0.06796950 (-0.71)
Nature	-0.36307830 (-1.08)	-0.05426230 (-0.21)
School	-0.16408430 (-0.45)	-0.05232580 (-0.50)
Publ trans	-0.31836700 (-1.94)*	-0.02326850 (-0.22)
Healthcare	-0.18018730 (-1.08)	0.00307900 (0.05)
Foreigners	-0.08137210 (-0.38)	0.00624170 (0.03)

Tranquillity	0.08420120 (0.31)	0.02440330 (0.12)
Culture	-0.32731820 (-1.20)	0.03387000 (0.27)
University	0.21955290 (1.43)	0.04252290 (0.30)
Pricing	-0.14711810 (-0.43)	0.07450290 (0.41)
Wages	-0.35288160 (-1.31)	0.10681610 (0.64)
Conservatories	-0.11378280 (-0.51)	0.11316860 (0.90)
Traffic	0.10256780 (0.41)	0.12954640 (0.89)
Roads	-0.06241410 (-0.30)	0.13407130 (1.17)
Finan-diff	0.19377840 (0.76)	0.14707810 (0.81)
Disabled	-0.17814520 (-0.49)	0.16108370 (0.78)
Elderly homes	-0.12898140 (-0.50)	0.18648950 (1.93)*
Road Safety	0.08184670 (0.46)	0.19151250 (1.85)*
Mobile	0.44080820 (1.96)*	0.21632610 (2.14)**
Housing rent	-0.27830750 (-1.25)	0.23884630 (1.38)
CCentres	0.01311020 (0.05)	0.26314930 (1.80)*
Youth	0.26428580 (0.83)	0.29962090 (1.85)*
Gender	-0.21539570 (-0.53)	0.19397590 (1.43)
Age	0.04902260 (0.64)	-0.08964820 (-5.39)***
Age, square	-0.00062910 (-0.80)	0.00057710 (3.22)**
Foreigner	-1.78964900 (-2.75)**	-0.01490090 (-0.05)
Single	-0.78384810 (-1.10)	-0.44701790 (-1.50)
Observations, n	247	519
Linktest (t-value)	1.37	0.99
Dependent variable, the willingness to move . * significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level.		

Now, the attention shifted towards differences in the FC-population between agriculture employees and all others (Table 6). The table above was sorted by the coefficients of the FC-respondents that are not working in the agriculture, from the smallest to the largest coefficient. According to the results, the two groups differ when it comes to the correlation of dissatisfaction of QOL-factors and the likelihood of moving. Farmers and/or agriculture employees who are likely to move significantly dislike employment security, public transport, and general safety whereas other FC-inhabitants dislike employment security and safety as the agricultural people did (not public transport, though) and the following factors as well: Employment variety, self-employment and innovation opportunities, internet connection, community, senior citizen service, and parental service. Accordingly, the fastest growing population in FCs, that is not related to agriculture, is more sensitive to traditional factors of QOL while the traditional population (farmers) is less sensitive to them. So, in that regard, agricultural employees are more resilient than other inhabitants of Icelandic FCs. If the government want to support the FC-population they will have to continue regional development programmes regarding innovations within agriculture, strengthen social services for parents and the elderly and secure a strong internet connection in all parts of the country. If a dispersed settlement is valuable for the Icelandic community, the degree of resilience suggests that the government should be willing to go to some lengths to implement a policy that protects Icelandic agriculture, because the factor called “employment security” is most likely to scare off present inhabitants. The new FC settlers are a significant and possibly the bright future trend of those communities and they fuel the hope regarding a disperse settlement of Iceland, but their existence seems more sensitive to external conditions, than that of the traditional FC-settler, such as those represented by the QOL-factors.

The residence of new FC settlers seems to be volatile where the stability and the resilience of the traditional settlers gives them better conditions to flourish in the rural Iceland.

The analysis relating to agriculture employees as part of the FC population covered 247 observations, while the non-agricultural employees generated 519 observations. According to the linktest, both models (in Table 6) seem to be well specified. No multicollinearity was present either. So, the results are robust.

It was, however, unusual to see the analysis return positive and significant coefficients in all the five models for some QOL-factors. How can we explain that? Is it possible that if those factors of QOL improve this drives the inhabitants away? It is not likely. Thus the models show weaknesses that have not been solved yet. It is, however, unlikely that any improvements would change rank among the coefficients even though the sign changes.

9 APPENDIX

Table 7: A list of the quality of life factors in English and Icelandic and their acronyms.

Quality of life factors	Acronym	Quality of life factors in Icelandic	Icelandic acronym
Amusement Diversity	Amusement	Tækifæri til afþreyingar	Afþreying
Common Safety	Safety	Almennt öryggi	Öryggi
Community	Community	Gott mannlíf	Mannlíf
Community centres	CCentres	Félagsheimili	Félagsheimili
Conservatories	Conservatories	Tónlistarskóli	Tónlistarskóli
Cost of Living	Expences	Framfærslukostnaður	Framfærsla
Culture	Culture	Menningarlíf	Menning
Disabled Citizen Services	Disabled	Þjónusta við fatlaða	Fatlaðir
Educational Opportunities to University Degrees	University	Námsmöguleikar háskólastigi á	Háskóli
Educational Opportunities to Upper Secondary Qualifications	HSchool	Námsmöguleikar framhaldsskólastigi á	Framhsk
Elderly homes/care homes	Elderly homes	Dvalarheimili aldraðra	Elliheimili
Employment Diversity	Empl div	Fjölbreytni atvinnulífs	Atvinnuúrval
Employment Security	Empl sec	Atvinnuöryggi	Atvinnuöryggi
Foreign Citizen Services	Foreigners	Þjónusta við fólk af erlendum uppruna	Útlendingar
Housing Diversity for letting	Housing rent	Framboð á íbúðarhúsnæði til leigu	Leiguíbúðir
Housing Diversity for purchasing	Housing buy	Framboð á íbúðarhúsnæði til kaups	Íbúðir
Internet Connection	Internet	Nettengingar	Internet
Libraries	Libraries	Bókasöfn	Bókasöfn
Mobile Phone Connection	Mobile	Farsímasamband	Farsími
Opportunities for Sport/Leisure/pastime	Sports	Tækifæri til íþróttatómstundaiðkunar	Íþróttir
Parental Services	Parental	Þjónusta við barnafólk	Barnafólk
Planning/Urban Planning	Planning	Skipulagsmál	Skipulagsmál
Pricing	Pricing	Vöruverð	Vöruverð
Proximity to Diverse Nature	Nature	Nálægð við fjölbreytta náttúru	Náttúra
Public Transport	Publ trans	Almenningssamgöngur	Almsamg
Quality of Clinics/Hospitals	Healthcare	Gæði heilsugæslu/sjúkrastofn-ana	Heilsugæsla
Quality of Elementary Schools	School	Gæði grunnskóla	Grunnskóli
Quality of Nurseries/Kindergartens	Playschools	Gæði leikskóla	Leikskóli
Quality of Upper Secondary Schools	HSchool-qual	Gæði framhaldsskóla	Framhsk gæði
Quality of Youth Programmes	Youth	Gæði unglíngastarfs	Unglíngastarf

Road Congestion	Traffic	Greið bílaumferð	Umferð
Road Infrastructure	Roads	Vegakerfi	Vegakerfi
Road Safety	Road Safety	Umferðaröryggi	Örugg umferð
Salaries	Wages	Launatekjur	Laun
Self-employment/Innovation Opportunities	Self-empl	Möguleiki á eigin atvinnurekstri	Atvinnurekstur
Senior Citizen Services	Retired	Þjónusta við aldraða	Aldraðir
Services regarding Financial Difficulties	Finan-diff	Aðstoð við fólk í fjárhagsvanda	Fjárhagsvandi
Tranquillity	Tranquillity	Friðsæld	Friðsæld
Unemployment Services	Unemployed	Þjónusta við atvinnulausa	Atvinnulausir
Ware/Service Diversity	Serv variety	Vöruúrval/þjónustuúrval	Vöruúrval

Acknowledgements and funding

The author is grateful for the financial support from Regional Development Institute. On behalf of West-Iceland Regional Development, the author received a grant of approximately 16,000 \$ (2,000,000 ISK) from the Regional Development Institute.

10 REFERENCES

- Arbuckle, J. G. J. R., & Kast, C. (2012). Quality of life on the agricultural treadmill: individual and community determinants of farm family well-being. *Journal of Rural Social Sciences*, 27(1), 84-113.
- Baldwin, R. E., Forslid, R., Martin, P., Ottaviano, G., & Robert-Nicoud, F. (2003). *Economic geography and public policy*. Princeton: Princeton University Press.
- Blomquist, G. C., Berger, M. C., & Hoehn, J. P. (1988). New estimates of quality of life in urban areas. *The American Economic Review*, 78(1), 89-107.
- Chang, H.-H. (2013). Old Farmer Pension Program and Farm Succession: Evidence from a Population-Based Survey of Farm Households in Taiwan. *American Journal of Agricultural Economics*, 95(4), 976-991.
- Chen, Y., Lü, B., & Chen, R. (2016). Evaluating the life satisfaction of peasants in concentrated residential areas of Nanjing, China: A fuzzy approach. *Habitat International*, 53, 556-568. doi:<https://doi.org/10.1016/j.habitatint.2016.01.002>
- Coughenour, C. M., & Swanson, L. (1992). Determinants of farmers' satisfactions with farming and with life: a replication and extension. *Southern Rural Sociology*, 9(1), 45-70.
- Deller, S. C., Tsai, T.-H., Marcouiller, D. W., & English, D. B. K. (2001). The Role of Amenities and Quality of Life In Rural Economic Growth. *American Journal of Agricultural Economics*, 83(2), 352-365. doi:10.1111/0002-9092.00161
- El-Osta, H. S. (2007). The Determinants of a Quality of Life Indicator for Farm Operator Households: Application of Zero-Inflated Count-Data Models. *Applied Research in Quality of Life*, 2(3), 145-163. doi:10.1007/s11482-007-9035-1
- El-Osta, H. S. (2014). An Index of Socio-Economic Well-Being of U.S. Farm Households. *Modern Economy*, Vol.05 No.12, 12. doi:10.4236/me.2014.512104
- Farstad, M., & Rye, J. F. (2013). Second home owners, locals and their perspectives on rural development. *Journal of Rural Studies*, 30, 41-51. doi:<http://dx.doi.org/10.1016/j.jrurstud.2012.11.007>
- Filkins, R., Allen, J. C., & Cordes, S. (2000). Predicting Community Satisfaction among Rural Residents: an Integrative Model*. *Rural Sociology*, 65(1), 72-86. doi:doi:10.1111/j.1549-0831.2000.tb00343.x
- Freedman, O., & Kern, C. R. (1997). A model of workplace and residence choice in two-worker households. *Regional Science and Urban Economics*, 27(3), 241-260.
- Fuller, A. M. (1990). From part-time farming to pluriactivity: a decade of change in Rural Europe. *Journal of Rural Studies*, 6(4), 361-373. doi:[https://doi.org/10.1016/0743-0167\(90\)90049-E](https://doi.org/10.1016/0743-0167(90)90049-E)
- Graves, P. E. (1979). A life-cycle empirical analysis of migration and climate, by race. *Journal of Urban Economics*, 6(2), 135-147.
- Gunnlaugsson, G. Á. (1987). *Saga Ólafsvíkur: Skráð í tilefni 300 ára verslunarafmælis Ólafsvíkur 26. mars 1987. 1, Fram um 1911* Akranes: Ólafsvíkurkaupstaður.
- Gyourko, J., & Tracy, J. (1991). The Structure of Local Public Finance and the Quality of Life. *The Journal of Political Economy*, 99(4), 774-806.
- Hunt, G. L. (1993). Equilibrium and disequilibrium in migration modelling. *Regional Studies*, 27(4), 341-349.
- Jónsson, G. (2002). Hagþróun og hagnætur á Íslandi 1914-1960. In J. H. Haralz (Ed.), *Frá kreppu til viðreisnar: Þættir um hagstjórn á Íslandi á árunum 1930 til 1960* (pp. 9-39). Reykjavík: Hið íslenska bókmenntafélag.

- Karlsson, G. (2011). Upphaf mannaferða á Íslandi. *Skírnir*, 185(1), 5-32.
- Karlsson, V. (2012). *Transportation improvement and interregional migration*. (Ph.D.), University of Iceland, Reykjavík.
- Karlsson, V. (2013). Interregional Migration and Transportation Improvements in Iceland. *International Regional Science Review*, 0(0), 1-24.
- Karlsson, V. (2015). Börn í sveitum á Vesturlandi. *Hagvísir Vesturlands*, 15(1), 1-21. Retrieved from ssv.is website: http://ssv.is/Files/Skra_0073188.pdf
- Karlsson, V. (2018). Nýliðun í landbúnaði á Íslandi og áhrif fjarlægðar frá Reykjavík. *Íslenska þjóðfélagið*, 9(1), 5-21.
- Karlsson, V. (2019). *Landfræðilegt og efnahagslegt litróf garðyrkju á Íslandi*. Retrieved from Borgarbyggð: <http://ssv.is/wp-content/uploads/2019/10/UmsvifGardraektarLandshlutarLOKAEINTAK.pdf>
- Kelly, C. E., & Ilbery, B. W. (1995). Defining and examining rural diversification: a framework for analysis. *Tijdschrift voor economische en sociale geografie*, 86(2), 177-185. doi:doi:10.1111/j.1467-9663.1995.tb01356.x
- Krugman, P. (1991). *Geography and trade*. Cambridge: The MIT Press.
- L. Glover, J. (2014). Gender, power and succession in family farm business. *International Journal of Gender and Entrepreneurship*, 6(3), 276-295.
- Lampert, A., & Yassour, J. (1992). Parental investment and risk taking in simulated family situations. *Journal of Economic Psychology*, 13(3), 499-507.
- Lobao, L., & Meyer, K. (2001). The Great Agricultural Transition: Crisis, Change, and Social Consequences of Twentieth Century US Farming. *Annual Review of Sociology*, 27(1), 103-124. doi:10.1146/annurev.soc.27.1.103
- McCann, P. (2001). *Urban and regional economics*. Oxford: Oxford University Press.
- McGranahan, D. A. (1999). Natural Amenities Drive Rural Population Change. *Agricultural Economic Report*. Retrieved from https://www.ers.usda.gov/webdocs/publications/41047/13201_aer781.pdf?v=42061
- McGranahan, D. A., & Beale, C. L. (2002). Understanding Rural Population Loss. *Rural America*, 17, 2-11. Retrieved from <http://www2.econ.iastate.edu/classes/crp274/swenson/CRP523/Readings/RuralPopLoss.pdf>
- Mishra, A. K., Hisham, S. E.-O., & Saleem, S. (2010). Succession Decisions in U.S. Family Farm Businesses. *Journal of Agricultural and Resource Economics*, 35(1), 133-152.
- Molnar, J. J. (1985). Determinants of Subjective Well-Being among Farm Operators: Characteristics of the Individual and the Firm. *Rural Sociology*, 50(2), 141-162.
- Ólafsson, K., & Gíslason, I. V. (2005). *Gendered patterns of internal migration in Iceland*. Paper presented at the Nordic-Scottish University Network for Rural and Regional Development Akureyri.
- Palsson, A.-M. (1996). Does the degree of relative risk aversion vary with household characteristics? *Journal of Economic Psychology*, 17(6), 771-787.
- Potter, C., & Loble, M. (1992). Aging and Succession on Family Farms: The Impact of Decision Making and Land Use. *Sociologia Ruralis*, 32(2-3), 317-334. doi:10.1111/j.1467-9523.1992.tb00935.x
- Powell, M., & Ansic, D. (1997). Gender differences in risk behaviour in financial decision-making: An experimental analysis. *Journal of Economic Psychology*, 18(6), 605-628.
- Prince, M. (1993). Women, men and money styles. *Journal of Economic Psychology*, 14(1), 175-182.

- Reeder, R. J., & Brown, D. M. (2005). *Recreation, tourism, and rural well-being*. Retrieved from <https://ageconsearch.umn.edu/bitstream/7220/2/er050007.pdf>
- Roback, J. (1982). Wages, rents, and the quality of life. *The Journal of Political Economy*, 90(6), 1257-1278.
- Schubert, R., Brown, M., Gysler, M., & Brachinger, H. W. (1999). Financial Decision-Making: Are Women Really More Risk-Averse? *The American Economic Review*, 89(2), 381-385.
- Snævarr, S. (1993). *Haglýsing Íslands*. Reykjavík: Heimskringla.
- Teitsson, B., & Stefánsson, M. (1972). Um rannsóknir á íslenskri byggðarsögu tímabilsins fyrir 1700. *Saga: Tímarit sögufélags*, 10(1), 134-178.
- Tiebout, C. M. (1956). A pure theory of local expenditures. *The Journal of Political Economy*, 64(5), 416-424.
- Tietenberg, T., & Lewis, L. (2012). *Environmental & natural resource economics* (9 ed.). Boston: Pearson.
- Turner, T., & Niemeier, D. (1997). Travel to work and household responsibility: New evidence. *Transportation*, 24(4), 397-419.
- Verbeek, M. (2004). *A guide to modern econometrics* (2nd ed.). West Sussex: John Wiley & Sons, Ltd.