

**FIRST SNOW SKI TRACKS – PROLONGING OF THE NATURAL SEASON OF
THE CROSS-COUNTRY SKIERS IN FINLAND**

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Master's Thesis
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Autumn 2018

ABSTRACT

Repo, K. 2018. First snow ski tracks – prolonging of the natural season of the cross-country skiers in Finland. Faculty of Sport and Health Sciences, Social Sciences of Sport, University of Jyväskylä, Master's thesis, 67 pages, 9 appendix pages.

Cross-country skiing is one of the national sports in Finland. It is a widely practiced sport and leisure activity that has a long history. Traditionally cross-country skiing has been practiced outdoors for free on natural tracks during winter months. One of the largest challenges to cross-country skiing is global warming. It causes challenges to winter sports such as cross-country skiing because winters are getting warmer. This means that the snow cover is thinner and cross-country skiing season shorter.

The challenges in cross-country skiing circumstances have been solved by building first snow ski tracks. First snow ski tracks are built outdoors from stored snow and skiers need to buy tickets to get to ski at these facilities. First snow ski tracks are opened before the natural tracks and prolong the skiing season for notable time at the beginning of the season.

There is not yet any published studies about the users of first snow ski tracks in Finland. Therefore, this study concentrates on the first snow ski track users in Laajavuori Jyväskylä. A total of 327 respondents filled the questionnaire. Descriptive statistics, such as mean values, frequencies and percentages were first calculated. The mean values were compared by using t-test, ANOVA and Bonferroni-test. The comparisons between the groups were analyzed by using chi-square test.

Majority of the respondents were middle-aged and older men who lived in Jyväskylä. They had a rather high income level and over half had a university degree. Respondents were physically active and practiced cross-country skiing a lot. They categorized themselves as active recreational skiers. Respondents often went skiing alone and skied on average more than thousand kilometers previous winter. Over half of them competed in some sport. Eighty percent had a season pass to the first snow ski track in Laajavuori Jyväskylä. The most common reason for purchasing the season pass was the will to have access to a longer cross-country skiing season. Skiers valued the possibility to get into good condition before moving to natural tracks. Respondents enjoyed cross-country skiing and considered that as their most important winter sport. They wanted to practice it as much as possible and they valued outdoor sports. There was also a social aspect in practicing cross-country skiing at the first snow ski track as skiing there open a possibility for interaction with like-minded cross-country skiers.

The results of this study can be used when improving current and designing new first snow ski tracks. It seems that the most enthusiastic cross-country skiers are willing to pay for the opportunity to ski. Therefore, first snow ski tracks can offer a solution for prolonging the cross-country skiing season.

Keywords: Cross-country skiing, first snow ski track, climate change, Finland

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1 INTRODUCTION

Cross-country skiing has a long and traditional history in Nordic countries. It is one of the national sports in Finland. According to different studies, cross-country skiing is among the five most practiced sports in Finland (Husu, Paronen, Suni & Vasankari 2011; Sievänen & Neuvonen 2011, 56) and even the most practiced outdoor winter sport (Sievänen & Neuvonen 2011, 44). Cross-country skiing is popular among Finns, but climate change has brought challenges in participation. Warmer temperatures have led to fewer snow-covered days and shorter winters (IPCC 2014; Tervo-Kankare, Hall & Saarinen 2013, 299).

Climate change is causing the need to change the recreational habits of many Finns. The Intergovernmental Panel on Climate Change (IPCC) has predicted that global warming will be strongest in the north of Europe during winter time. (IPCC 2014) There will be a shorter winter season and that affects to Finnish cross-country skiers. Cross-country skiing in snowy outdoor tracks is not possible as often as it used to be. Finns who still want to practice cross-country skiing need to adjust to warmer winters. They can for example use constructed ski tunnels where cross-country skiing can be practiced indoors around the year. Ski tunnels demand major investments as new facilities need to be build. Another option for prolonging the cross-country skiing season is to use first snow ski tracks. These are built outdoors of stored snow. At the moment there are at least 26 first snow ski tracks in Finland that open when the weather gets cold enough at the beginning of the winter. By constructing first snow ski tracks, cross-country skiing season can start earlier.

Usually first snow ski tracks are opened in October whereas the natural skiing tracks are more dependent of the weather. Natural tracks might be opened in December or even in January depending on the location. By using first snow ski tracks, the cross-country skiers can get a longer skiing season, but these facilities raise the costs as there is an entry fee. It might be that Finns are so used to getting to practice skiing free of charge that they are not willing to purchase tickets to first snow ski tracks. Finns also often value the nature aspects of cross-country skiing. The willingness of Finns to use technical adaptations such as ski tunnels and first snow ski tracks can be low especially among some skier types (Landauer, Sievänen & Neuvonen 2009; Landauer, Pröbstl & Haider 2012). Instead of

using ski tunnels and first snow ski tracks Finns may be willing to substitute cross-country skiing with something else. Or they might want to ski only when weather is suitable for skiing outdoors on natural tracks.

Most of the winter sport research is concentrated to alpine skiing, and there are only few studies about cross-country skiing. There is a study about Finnish ski tunnels that concentrate on engineering and building (Jordan 2010). There are also few studies about the users of ski tunnels (Leinonen & Virta 2009; Määttä 2010). Still, there is not yet any published research in Finland about the users of the first snow ski tracks. It is important to get more information about the cross-country skiers in Finland and how they adapt to changing climate conditions.

This research is directed towards the users of the first snow ski track in Jyväskylä in central Finland. The data consists of 327 questionnaires filled by the users of the first snow ski track in Laajavuori Jyväskylä. The aim is to find out who are the users of the first snow ski track and what are their motives for skiing on this track. It can be assumed that the users are very enthusiastic skiers who practice skiing often. Probably they consider cross-country skiing as their main way of sport participation during winters. It is likely that they are middle aged or older and have a rather high income. They are likely to be citizens who have the capability and willingness to invest money to their cross-country skiing hobby. It might be that the users of the first snow ski track in Jyväskylä consider their participation in cross-country skiing as a serious leisure as Stebbins (1982) has described people who take their hobbies very seriously. These presuppositions are based on the assumption that the users of the first snow ski track would be rather similar than the users of ski tunnels (Leinonen & Virta 2009; Määttä 2010).

The history and the current state of cross-country skiing in Finland are presented in chapter two as well as the skier categorizations. In previous studies cross-country skiers have been categorized according to their involvement, their motives and the frequency of participation. Chapter three concentrates on the climate change and presents effects that it has on winter sports such as cross-country skiing. There are many possible adaptation strategies that the organizers and users can utilize. These will be shortly presented in chapter three. In chapter four the attention is drawn to ski tunnels and first snow ski tracks in Finland. The first snow ski track in Jyväskylä is introduced in more detail. After these

the research questions and methodology are presented. The result section is divided into three parts. First the profiles of the users of the first snow ski track are described and then their motives for using the track. Finally, the opinions of the cross-country skiers are presented. First their opinions about this particular track in Jyväskylä and then cross-country skiing in general. After these a conclusion is drawn, and some future research needs are proposed.

2 CROSS-COUNTRY SKIING IN FINLAND

Cross-country skiing is one of the most popular forms of sport activities in Finland (Sievänen & Neuvonen 2011, 181). This chapter presents the history and current state of cross-country skiing as well as different cross-country skier types. Some of the earlier studies have categorized cross-country skiers based on their involvement, their skiing activity and their motives (Landauer et al 2009; Landauer et al 2012; Leinonen & Virta 2009; Määttä 2010). These categorizations will be presented and compared in this chapter.

2.1 History of cross-country skiing in Finland

Cross-country skiing has a long history in Finland. It started as a way of moving on the Finnish country side during snowy winters. Skis were an important equipment when hunting or fishing during winters. There is evidence that cross-country skiing was practiced already four thousand years ago. The oldest ski found is estimated to be from the year 3298 B. C. (Parviainen 2012, 42)

Skis started to develop fast when first competitions were organized at the end of the 1800s. There was a large group of Finnish craftsmen who made skis. At the beginning of the 1900s skis started to be made by machines. During that time many people worked in factories and did physically demanding work. Cross-country skiing was a very popular leisure activity and a way of moving to places such as schools and work places. Some factories even organized skiing competitions for their workers. (Parviainen 2012, 47–51) The military service also supported the role of skiing as a citizen duty because all males were taught how to ski effectively (Heikkinen 1981, 197).

Cross-country skiing was meant to be fun and good for health so Finnish people were encouraged to start collecting skiing badges at 1930s. The Finnish Ski Association released rules on how males, females and kids could obtain cross-country skiing badges. (Parviainen 2012, 51–51) At this point local and national competitions were organized in many different landscapes. Mostly on flat terrain such as fields, roads and on the ice of rivers, lakes and sea (Eljanko & Kirjavainen 1969, 9). The first Nordic cross-country skiing competitions were organized in 1901 in Stockholm (Heikkinen 1977, 162).

When people started to move from the country side to the cities their need to be physically active decreased. There was not any more an urgent need for cross-country skiing but instead it became a popular hobby. A way of exercising and promoting health. (Parviainen 2012, 51) Finns' cross-country skiing hobby was encouraged in the 1960s when municipalities provided illuminated ski tracks in many parts of the country (Hintikka 2009, 31). In the beginning of 2000s Finns were skiing on natural snow in forests, lakes and recreational areas built close to their homes (Pouta, Neuvonen & Sievänen 2009). In 2010s some people practice cross-country skiing year-around in one of the six ski tunnels located in Finland. The first one was opened in 1998 in Vuokatti. Nowadays it is also possible to use first snow ski tracks located around the country. These offer cross-country skiing possibilities before the weather permits skiing in natural environment.

2.2 The current state of cross-country skiing in Finland

Cross-country skiing is one of the national sports of Finland and has traditionally had a strong status (Kopra 2004, 11). Finnish skiers have succeeded well in international competitions and cross-country skiing gets a lot of media attention. The top cross-country skiers are treated like national heroes after successful competitions (Uusitupa 2018). According to the statistics Finland is the third most successful country after Norway and Sweden when taking into consideration placements in top ten in World Ski Championships since 1924. Finnish skiers have won 175 medals in total in these competitions. In Olympic Winter Games Finnish cross-country skiers have earned 80 medals. In Winter Olympics 2018 in South Korea Finnish cross-country skiers won four medals. (International Ski Federation 2018) Cross-country skiing was one of the most watched sports on TV during the Olympics among Finnish people. The most popular cross-country skiing competitions reached 1 986 000 tv-viewers in Finland (Finnpanel 2018). Finnish cross-country skiers are highly valued, as cross-country skier Iivo Niskanen was nominated as the best athlete of the year in 2017. This nomination was made by Finnish sport journalists. (Urheilugaala 2018)

As cross-country skiing is one of the national sports, it is also one of the basic skills that every Finn is expected to have. Cross-country skiing is taught at schools and the Finnish Ski Association organizes skiing events in schools and different locations around Finland. (Tuomaala, Huotari & Liukkonen 2009; Finnish Ski Association 2018a) According to

Pouta and Sievänen (2001) as much as 94 percent of Finns knew how to ski in 2001. Cross-country skiing was quite popular then as 40 percent of Finnish people practiced it on their leisure time. It was most popular among middle aged and older. Cross-country skiing was equally popular among males and females. Then an average Finn skied 15 times during winter. Cross-country skiing was practiced because it made it easier to relax and give participants nature experiences. It was also practiced because people felt it improved their health and endurance. Most Finns preferred to practice cross-country skiing near their homes. The distance to the nearest ski track was usually made on foot. When Finns went for active holidays including cross-country skiing, they usually travelled to Northern Finland. (Pouta & Sievänen 2001)

Even though the above referred study of Pouta and Sievänen (2001) discovered that Finns are active cross-country skiers, there are some signs of other winter sports gaining more popularity in later years. According to Sievänen and Neuvonen (2011, 181–182) many young Finns prefer downhill skiing and snowboarding instead of cross-country skiing. They discovered that in Finland downhill skiing was the second most practiced winter sport after cross-country skiing in 2010. Downhill skiing and snowboarding were practiced in ski centers where ski conditions were usually guaranteed with artificial snow. (Sievänen & Neuvonen, 181–182) These sports are not so heavily weather dependent (Sievänen et al 2005, 12).

Koski (1998, 6–7) pointed out already twenty years ago that there have been some trends that might not support cross-country skiing. Cross-country skiing is seen as a traditional sport that requires long lasting effort and endurance. According to Koski (1998) this may not go well hand in hand with the sport trends of the past twenty years that have been highlighting fast and action-packed sports. As Koski (1998, 6–7) pointed out, team sports and indoor sports have gained more popularity. Also, winters have gotten warmer and there are a lot of leisure options available. All these together make cross-country skiing a less likely choice when people decide about their leisure time activities. (Koski, 1998, 6–7)

Sievänen et al (2005, 10) claimed that the existence of attractive alternatives and the changing climate might lead to a situation where cross-country skiing loses its status as a national sport. It might be that in the future not so many Finns know how to ski anymore.

According to their study this will happen gradually so that older people will try to continue cross-country skiing. The number of people, who have no interest towards cross-country skiing is likely to increase. This leads to an overall decrease of cross-country skiing participation. Especially cross-country skiing might lose its popularity in southern Finland because of the poor snow conditions and the fact that cross-country skiing tracks are no more found near homes. Sievänen et al (2005, 26) hypothesize that the longer distances to cross-country skiing tracks will reduce the participation in skiing. Some younger generations might be left unfamiliar with cross-country skiing. Those individuals who do ski, do it on fee-based artificial snow far away from home. Sievänen et al (2005) speculate that costs caused by equipment, longer distances and entry fees will force some people to quit cross-country skiing. This might also reduce the interest and media coverage in competitive cross-country skiing, which have been high for decades. (Sievänen et al 2005, 10, 26, 32)

Still, in 2010 there were 147 000 kids (3–18 years) in Finland that named cross-country skiing as their hobby. Among this age group it was the fifth most popular sport, but its popularity had dropped from year 2006. Among adults (19–65 years) 663 000 Finns practiced cross-country skiing. In this age group it was the fourth most practiced sport even though its popularity had decreased from 2006. There were 119 000 seniors (66–79 years) who practiced cross-country skiing regularly. It was the fifth most popular sport, and this was the only category where the popularity of cross-country skiing had increased. (Husu et al 2011)

Finns can participate in cross-country skiing either on their own, by purchasing a Skipass-license from the Finnish Ski Association that includes an insurance or with a competitive license (Finnish Ski Association 2018b). According to the Finnish Ski Association's statistics, in 2016 the number of licensed skiers was 9 000. There were around three thousand competitive cross-country skiers in Finland. Most of these skiers had a membership in one of the 549 Finnish ski clubs. (Hietanen 2016)

The number of participants in cross-country skiing competitions has decreased steadily during past years. The biggest decrease has been in the boy's competitive series (Hietanen 2016). The amount of licensed competitive youth skiers has dropped from 2011 to 2016 by 27 percent. Meanwhile, the amount of non-competitive youth licenses has dropped by

nine percent. In the adult series the trend is rather similar, as the number of competitive licenses has dropped 16 percent. The number of licensed adult skiers has decreased by ten percent. These numbers only tell part of the truth since the Finnish Ski Association maintains statistics only about skiers who have purchased a license (Skipass) or the competitive license. (Finnish Ski Association 2017)

Even though the number of competitive and licensed skiers has dropped, cross-country skiing has gained popularity in recent years as a leisure activity. There are many reasons for this trend. The wellbeing and fitness trend bring more people to cross-country skiing because skiing is seen as a good training for the whole body. It is also something that people can practice together. According to Hyttinen (2013) and Rautava (2009) many people from the older population have bad memories from school classes when they were forced to ski. However, enough time has passed for them to enjoy cross-country skiing again. Part of the trend is also due to the technical advancements. Ski industry is making steps forward and makes cross-country skiing easier due to more developed equipment. This lowers the threshold to try cross-country skiing. (Hyttinen 2013; Rautava 2009)

Many Finns like to participate in mass cross-country skiing events. According to the Finnish Ski Association there were at least 291 cross-country skiing events during winter 2017–2018 that were organized in collaboration with the association. On top of these there were many more organized independently. These events were organized between November and April around the country. During winter 2017–2018 cross-country skiing events attracted usually 200 to 600 skiers, the largest ones with several thousand participants. Many of them had different categories for competitive and recreational skiers, for traditional and free style and for different age groups. Most of them offered several distances that usually varied between ten and 100 kilometers. Some events offered special categories and tracks for children. These were from 500 meters to four kilometers. Children's series were mostly free of charge, but adult participation costs varied from 15 euros to 120 euros. (Finnish Ski Association 2018c) The participation numbers of these mass cross-country skiing events prove that Finns still practice skiing enthusiastically. Finns often take part in cross-country skiing events, but usually at the non-competitive series.

There are number of studies about the popularity of cross-country skiing in Finland. Depending on the time of study and that year's snow situation, questions and sample, the results show that cross-country skiing is among the five most practiced sports in Finland. According to Husu et al (2011) it was the fourth practiced sport, according to Sievänen and Neuvonen (2011, 56) cross-country skiing was the third most popular sport after walking and cycling. In 2010 it was the most popular outdoor winter sport. (Sievänen & Neuvonen 2011, 44) The current trend is that even though Finns participate in cross-country skiing events, only few Finns want to practice cross-country skiing competitively. Instead many want to cross-country ski on leisure whenever they have the time. Cross-country skiing is seen now as a cool leisure time activity that is good for the whole body and still quite safe (Rautava 2009; Sievänen et al 2005, 29).

2.3 Cross-country skier types

Several categorizations have been made about Finnish cross-country skiers (Landauer et al 2009; Landauer et al 2012; Määttä 2010). Most of the categorizations divide cross-country skiers into three different categories. These categories are based on the physical and psychological involvement, skied kilometers, expectations about skiing conditions and motives. Skier types describe how important cross-country skiing is for individuals and how they might react to changing climate conditions.

The most enthusiastic cross-country skiers are usually those individuals that can be classified as traditional and conservative (Karisto 1988, 65–66). According to study by Zacheus (2008, 137–190) middle aged and elderly people valued cross-country skiing more than younger people. Middle aged and elderly highlighted its importance as a leisure activity. This study found out that over half of the Finns born between the 1920s and the 1940s informed to have practiced cross-country skiing in childhood and adolescence. During that time there were not many choices to be physically active and many people ended up cross-country skiing. On the contrary, only 11 percent of the younger generations born in the 1980s mentioned cross-country skiing as their hobby in childhood or adolescence. One of the reasons behind this is that these younger generations had many activities to choose from. (Zacheus 2008, 137–190)

Landauer et al (2009) divided Finnish cross-country skiers into social, outdoor and technical types. Social type of cross-country skiers were older and practiced skiing because of the social reasons and traditions. They often participated in cross-country skiing near their homes in company of friends and family. Outdoor type cross-country skiers on the other hand were motivated by the natural environment. They were more willing to travel outside of their home surroundings (31–100 kilometers) for a day trip of cross-country skiing. Technical type of cross-country skiers on the other hand were younger and concentrated on developing skills. They also valued health and fitness objectives. Technical type approved modern adaptation like skiing on artificial snow. They usually practiced cross-country skiing alone. Most of the studied cross-country skiers belonged to the outdoor and technical groups. In this study, the majority of cross-country skiers were male, but the most male dominant was clearly the technical type group. (Landauer et al 2009)

In another study Landauer et al (2012) divided Finnish cross-country skiers into three categories: mobile cross-country skiers, nature-oriented cross-country skiers and traditional cross-country skiers. The largest segment was mobile cross-country skiers who were very committed to cross-country skiing. They wanted to develop their technical skills and were willing to travel in search of good snow conditions. They had a positive attitude towards artificial snow and ski tunnels. They were also willing to pay user fees. Nature-oriented cross-country skiers on the other hand valued nature experiences, different landscapes and being outdoors. They did not support technical adaptation and they opposed user fees. Nature-oriented cross-country skiers were likely to give up cross country skiing if snow conditions would come less favorable. The third type, traditional skiers were used to practicing cross-country skiing. They usually took longer routes and were not willing to give up on their hobby easily. Traditional skiers demanded good skiing conditions and services but were not willing to pay for those. (Landauer et al 2012)

Määttä (2010) divided the users of two Finnish indoor ski tunnels into three groups. These were defined as serious skiers, pleasure skiers and experimenters. Serious cross-country skiers participated in competitions and expressed a need for constant practicing. These cross-country skiers took their hobby seriously and concentrated on polishing their technique. They also skied a massive number of kilometers every season. They were not willing to give up cross-country skiing even due to weak snow condition. Pleasure skiers

on the other hand enjoyed cross-country skiing but did not take it so seriously. To this type cross-country skiing was important and practiced rather often. Even so that they could reach 500 to 1000 skied kilometers per season. Among these pleasure skiers, cross-country skiing was a good workout for the whole body that can be practiced in the company of family and friends. This type valued relaxation and health, but also participation and togetherness. The third group, experimenters were either totally beginners in cross-country skiing or had skied last time many years ago. They did not have a meaningful relationship with cross-country skiing, but they were trying it because it was a trendy sport. (Määttä 2010, 46–49)

Leinonen and Virta (2009) studied the Finnish users of Vuokatti ski tunnel. They studied how much respondents skied, but also when and where. Their aim was not to categorize skiers, so their results cannot be utilized here.

Many of these categorizations include a skier type that is very into cross-country skiing and commits a lot of time for the hobby. These hobbyists can be called as dutiful performers (Vehmas 2010) or as serious leisure takers as Stebbins (1982) formulated earlier. Vehmas (2010) studied Finnish sport travelers and discovered a type called a dutiful performer. These Finns took leisure time activities seriously and practiced different sports several times a week. Dutiful performers wanted to accomplish goals and concentrated on performing well. They wanted a demanding sport participation in many different sports and took part in competitions. Participating in sport was a duty that needed to be fulfilled like work. Resting on the other hand was only allowed when sport duties were fulfilled. Dutiful performers wanted to gain better health, wellbeing and fitness by practicing sports. They practiced disciplined lifestyle where healthy food and living by the recommendations played a significant role. (Vehmas 2010)

Stebbins (1982) introduced the term serious leisure in 1982. By serious leisure he referred to amateur activity that is systematic in its nature. It leads to acquiring of special skills, experience and knowledge. Serious leisure is a way to gain personal fulfillment and a way of self-expression. (Stebbins 1982) Serious leisure is often participated in clubs and associations, and participants feel the actions rewarding. Participating in serious leisure can become a part of a person's identity and lifestyle. There can be a shared social identity for its participants if they interact with each other. (Stebbins 1997; Stebbins 2005) Some

of the above-mentioned cross-country skier groups could be labelled under the concept and idea of serious leisure.

Opposite to serious leisure, Stebbins also introduced a term casual leisure, but this term has had only a small share of attention. Casual leisure is defined as a short-lived activity that requires little or no special training. It is enjoyable, intrinsically rewarding and something that comes quite naturally. Actions such as watching tv, strolling in the park or reading can be classified as casual leisure. (Stebbins 1997) Some cross-country skier types or categories fall under this concept.

In the earlier studies skier categorizations have been based either on the motives, skiing activity or on their commitment level. Dutiful performers (Vehmas 2010), serious skiers (Määttä 2010) and mobile cross-country freaks (Landauer et al 2012) could be all put under the concept of serious leisure by Stebbins (1982). These all practiced cross-country skiing a lot. These skiers were highly committed and wanted to continue skiing. They demanded good skiing conditions and wanted to improve their skills and fitness.

On the other hand, traditional skiers (Landauer et al 2012) and pleasure skiers (Määttä 2010) had also some similarities as they skied rather often. They were committed to cross-country skiing at least on some level. The experimenters (Määttä 2010) skied only occasionally and did not have a meaningful relationship with cross-country skiing. They were looking for new experiences. Social skier type appreciated the enjoyment and skied often with some company (Landauer et al 2009). These two skier groups of experimenters and social type could be described as casual leisure (Stebbins 1997).

The categorization by Landauer et al (2009) differ most from the others as they were purely based on motives. Actually, Landauer et al (2009) named one group outdoor type and that has similarities to nature-oriented skier (Landauer et al 2012). They also found a technical type (Landauer et al 2009), and this had similarities with mobile cross-country freaks (Landauer et al 2012). These both concentrated on acquiring skills and they valued technical adaptation such as ski tunnels and artificial snow. These similarities should not come as a surprise since these categorizations were made by the same researchers and their later study in 2012 is an extension to their earlier study.

The classifications of the cross-country skiers help us to understand skiers' behavior and motives. All these categorizations divided skiers into three categories whereas Stebbins (1982 and 1997) discusses only two different forms of leisure: casual and serious. In addition, the categorizations made by Stebbins (1982 and 1997) are older and represent a more theoretical perspective.

3 CLIMATE CHANGE

Global warming is changing environmental circumstances around the globe. It has already various effects in different parts of the world. In Finland for example the winters are estimated to become warmer, which will influence traditional winter sports such as cross-country skiing (Sievänen et al 2005, 21).

In this chapter, climate change and its effects to winter sports in Finland are first estimated. Special attention is given to cross-country skiing. After that the attention is turned to the adaptation strategies.

3.1 Climate change and its effect to winter sports in Finland

The Intergovernmental Panel on Climate Change (IPCC) (2014) has evaluated the effects of climate change on a global scale. In 2014, the IPCC predicted that the warming will be significant so that temperatures will increase up to four Celsius degrees above preindustrial levels. Climate change is already increasing the amount of extreme weather events such as floods and hurricanes. The IPCC predicts that global warming will be strongest in the north of Europe during winter and strongest in the south of Europe in summer time. There will be a shorter winter season, longer summer and shoulder-seasons. (IPCC 2014) For example, the annual extent of snow cover has declined already by almost 10 percent over the Northern Hemisphere during the period of 1972-2003 (Diaz, Eischeid, Duncan & Bradley 2003).

Climate change has different impacts around the globe but in Finland warming is expected to be approximately 50 percent higher than the global average. This is because of the country's location at the northern latitudes. (Mikkonen et al 2015, 1521) The statistics show that warming has been more rapid in Finland since the late 1960s. The rate of warming has been 0.2 to 0.4 C per decade. The highest temperature increases were in November, December and January. Also, March, April and May have warmed more than the annual average. (Mikkonen et al 2015, 1521–1528) Until 2040 wintertime warming in Finland is predicted to be 1.2–5 C and summer warming 0.6–1.6 C (Finnish Meteorological Institute 2009). Another scenario goes on to year 2100 predicting that around Baltic sea, the first frost will happen 15–30 days later than in 2008. The last frost

day is predicted to occur 15–30 days earlier shortening the winter season (Jylhä, Fronzek, Tuomenvirta, Carter & Ruosteenoja 2008). Although many climate change models have their emphasis on the future decades and centuries, the effects are already observable. In 2010, almost 60 percent of Finnish cross-country skiers had noticed some changes related to climate change. (Sievänen & Neuvonen 2011, 140)

Finland is a rather small country, but still has variation in climate. As Figure 1 shows, climate is clearly different around Finland. According to the statistics from 1981 to 2010 the snow cover has usually lasted around 98 days in Southern Finland, 149 days in Jyväskylä in middle Finland and 202 days in northern Lapland. (Finnish Meteorological Institute 2018)

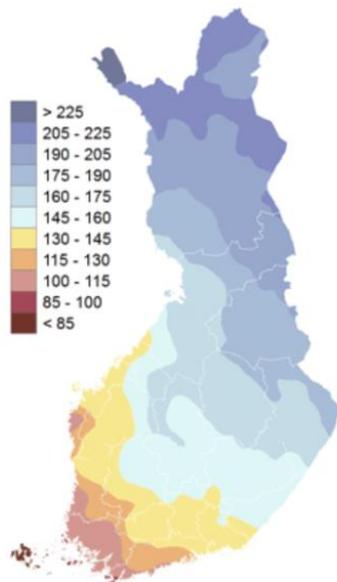


FIGURE 1. Average number of days with snow cover in Finland from 1981 to 2010 (Finnish Meteorological Institute 2018)

Climate change causes warmer winters with less snowfall, less days with snow and lower snow depth. The number of days with snow in Finland is estimated to have decreased by 40 to 60 days by the end of the twenty-first century. (Tervo-Kankare, Hall & Saarinen 2013, 299) It might be that some areas such as southwestern Finland will lose almost all snow by the late twenty-first century (Räisänen & Eklund 2012, 2589).

Climate change is a major threat to all winter sports because they are snow and ice dependent. A minimum snow depth required for example for cross-country skiing is often regarded as 10 to 30 centimeters depending on the terrain (Neuvonen et al 2015, 66). According to calculations the snow layer will be thinner in the future. In Finland the snow depth will likely be only 12.4 centimeters in December, 22.8 centimeters in January, 31 centimeters in February, and 19.2 centimeters in March by the year 2100. The biggest decrease in snow depth will be in December (59 %) and smallest in March (31 %). (Kellomäki, Maajärvi, Strandman, Kilpeläinen & Peltola 2010)

Days with snow cover will decrease also according to the Finnish Environment Institute's (2017) projections for years 2070–2099, as Figure 2 shows. The Finnish Environment Institute has made calculations using different kind of representative concentration pathways (RCP). These describe four possible climate scenarios that are possible in the future. These will be happening depending on the amount of greenhouse gases emitted and the time when the amount of greenhouse gases will peak. In the higher RCP's the change in the amount of greenhouse gases will happen later than in the more positive calculations with smaller numbers.

As Figure 2 illustrates, the number of days with snow cover will diminish in the future but the scenarios look different because of the four different RCP's. In the first map the Finnish Environment Institute has used the most positive calculations (RCP 2.6), in the second map the RCP is 4.5, in the third map it is 6.0 and in the fourth map is the most radical one (RCP 8.5). The differences in the projections can be clearly seen in the four maps of Finland, as the amount of blue decreases and the amount of green increases. In the most positive projection the amount of snow-covered days in Jyväskylä would be 90–120 and in the most radical one only 30–60. (Finnish Environment Institute 2017) If these scenarios come to live, cross-country skiing possibilities will be limited in Finland because there is not enough snow. Especially this will be the case in Southern Finland.

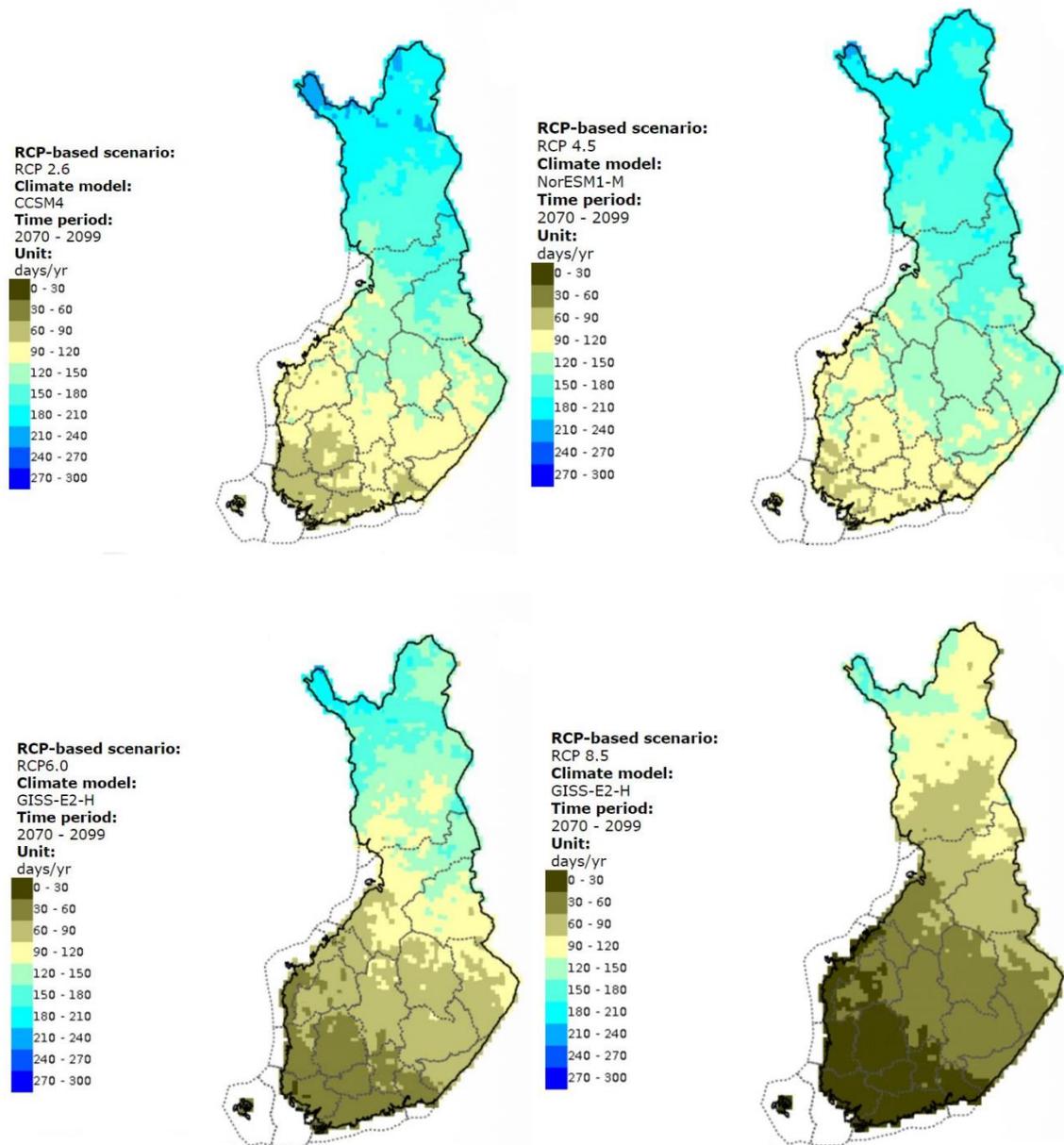


FIGURE 2. Prognoses about the amount of snow-covered days in Finland for years 2070–2099 with using representative concentration pathways 2.6, 4.5, 6.0 and 8.5. (Finnish Environment Institute 2017)

According to Tervo (2008, 327) the changes in snow cover days might not still be the biggest challenge for winter sports in Nordic countries. It might rather be the changes in the timing and quality of snow. The arrival of permanent snow in Finland has shifted towards the end of December since the late 1980s. This has forced many winter sport organizers to consider ways to cope with climate change and diminishing snow amounts (Tervo-Kankare et al 2013, 300). For example, Finnish cross-country skiing industry has

adapted to changing climate conditions by building ski tunnels, preparing artificial snow and maintaining first snow ski tracks.

There were two warm winters in Finland in 2006–2008 when the lack of snow made cross-country skiing impossible in some parts of the country. Then during winter 2009–2010 Finland received a lot of snow. Cross-country skiing became so popular during that winter that skiing equipment was sold out from many stores. (Pohjola 2010; Saavalainen 2010) According to Sievänen and Neuvonen (2011, 183), the number of cross-country skiers usually increase by 10 percent during those winters that snow conditions are good.

Climate change is a real threat to winter sports such as cross-country skiing that should be taken seriously. It will cause less days with frost, smaller snow amounts and makes cross-country skiing season shorter than before. Climate change will bring challenges to the organizers and for the people who want to practice cross-country skiing. There are several adaptation strategies, and these will be discussed next.

3.2 Winter sport organizers' ways to adjust to climate change

There are several studies about winter tourism, recreation and climate change. Most of these studies concentrate on downhill skiing and downhill ski operator's adaptation strategies. Main interests in these studies have been the effects climate change has on visitor numbers, the vulnerability of each destination and their adaptation strategies (Falk 2010; Haanpää et al 2015; Hennessy et al 2008). Some studies have even made snow and weather scenarios to predict which ski centers are most affected by climate change (Pons, Johnson, Rosas & Jover 2014).

Many winter sport activities are under threat because of the climate change. Vulnerability to climate change depends on location. Ski areas that are southern and low-lying will suffer the most. (Haanpää, Juhola & Landauer 2015, 967) Winter sport organizers have found many ways to lower vulnerability and weather dependency. Adaptation can be achieved by snow making (artificial snow) which is the most used adaptation strategy by ski industry. For example, in Finland already in 2010 approximately 80 percent of the downhill ski slopes were covered with artificial snow (Marttila et al 2005, 161). Other adaptation strategies include shortening skiing season, marketing, revenue

diversification, indoor ski areas, storing snow for next season, slope and terrain development, cloud seeding, weather derivatives and weather insurances. It is important to notice that some of these adaptation strategies are widely used whereas some are expensive and demand massive technological and economical investments. (Scott & McBoyle 2007; Scott, McBoyle & Mills 2003)

Investment cycles for the ski industry are usually ten years so there is not urgency among ski industry operators to address climate change (Bicknell & McManus 2006). Haanpää et al (2015, 976) discovered that while there is a lot of knowledge about climate change and many adaptation tools, the ski area operators in Finland usually react almost only to inter-annual weather variability. Climate change is a concern but short-term operational prospects weight more. (Haanpää et al 2015, 976) It might be that observed annual changes are just handled as they appear and not yet as a sign of a bigger change. This may lead to a situation where ski operators do not react on time and will eventually face some major challenges.

There is not yet published research about the adaptation strategies of cross-country skiing track operators. This might be because cross-country skiing is not so widely practiced outside of the Nordic countries. In Finland majority of the cross-country skiing tracks are outdoors in the forests on public land. Only a small minority of the tracks are maintained by companies seeking for profit. Some of these companies, especially the ones next to downhill ski centers in Lapland, have used adaptation strategies to make the cross-country skiing season longer. They have mostly used two different ways for making the operations less weather vulnerable. One option is to build a ski tunnel. The other one is to create a first snow ski track from stored snow. These will be discussed in chapter four.

3.3 Winter sport hobbyists' adaptation to changing climate conditions

Individuals can adapt to changing environmental circumstances in many ways. Most of the research is concentrated on downhill skiing as it is widely practiced in many countries. Alpine skiers can for example change the location or timing of the activity, or substitute with another activity (Scott & McBoyle 2007) or decrease the amount of time spent skiing (Dawson, Havitz & Scott 2011).

Dawson et al (2011) have suggested that there are three substitute options for downhill skiers: activity, temporal and spatial substitution. Activity substitution means practicing something else than skiing, temporal substitution refers to skiing less and spatial substitution traveling to another destination.

Still, there are some studies that have targeted cross-country skiing (Falk & Hagsten 2017; Landauer, Pröbstl & Haider 2012; Pouta, Neuvonen & Sievänen 2009; Sælen & Ericson 2013). These studies have found similar substitute options among Finnish cross-country skiers than downhill skiers have had in the studies. Cross-country skiers can for example continue skiing with artificial snow or travel to more distant locations (Pouta et al 2009). They can choose snow-independent activities or invest in new types of recreation equipment using high-tech solutions (Landauer et al 2009).

Landauer et al (2012) studied how Finnish and Austrian cross-country skiers would react to technical adaptation and the costs it would bring. Skiers in both countries were willing to support technical adaptation, but Finnish skiers were not ready to pay for it as user fees. Sælen and Ericson (2013) compared what kind of value Norwegian forest users give to different snow scenarios. They discovered that respondents valued most circumstances with cross-country skiing conditions compared to conditions with slush or bare ground. They also discovered that people were willing to travel longer distances for the case of good snow conditions. Sælen and Ericson concluded that climate change might reduce the recreational value of Norwegian forests as the cross-country skiing conditions cannot be guaranteed. (Sælen & Ericson 2013)

Pouta et al (2009) studied how different Finnish cross-country skier groups would react to changing skiing circumstances. According to their predictions, on the population level participation in cross-country skiing would drop by 36 percent by year 2080. The skiing days per skier would drop by 39 percent. The highest decrease in skiing days was predicted to be in the group of urban older females with lower socioeconomic status. Their skiing days were estimated to go down 54 percent. Whereas skiing days for non-urban males with high socioeconomic status would decrease by 23 percent from the year 2007 to the year 2080. Pouta et al (2009) made the conclusion that female gender, higher age, lower socioeconomic status and living in an urban area all reduce the likelihood to practice cross-country skiing. (Pouta et al 2009)

Iso-Ahola (1986) has studied the factors that influence individual's tendency and willingness to substitute leisure behavior. Substitution comes to play when the originally intended activity is no longer available because of some external reason. The activity needs to be replaced if a person wants to begin or continue leisure. (Iso-Ahola 1986) This is often the case with cross-country skiing in Finland as many people are used to skiing on natural snow during winter. Nowadays snow arrives usually later and cross-country skiing season is shorter. This might force Finnish cross-country skiers to consider other substitutive activities.

The theory about leisure substitutability (Iso-Ahola 1986) suggest that if there is an external pressure to substitute, then it causes resistance. In that case a person is less willing to substitute. It is even worse if the forced substitution is targeted only to some individuals or groups. Accepting the need for substitution is easier when the reasons seem understandable and fair. Acceptance is easier when the need for substitution does not happen suddenly or unexpectedly. According to Iso-Ahola the forced substitution of action reduces leisure satisfaction. People are usually more willing to substitute with quite similar activities. Individuals also have a sense of freedom if there are many possible alternatives available. People also weight the costs such as time, money and effort of the original activity versus the substitute activity. (Iso-Ahola 1986)

It is important to notice that Iso-Ahola's (1986) theory concentrates on the situations where a person has made the commitment to what leisure to participate and then learns that this action cannot be performed. The decisions made on the planning stage are not included in the theory. (Iso-Ahola 1986) If a skier notices that there is no snow, then the skier must think about substituting outdoor cross-country skiing with indoor skiing or skiing on a stored snow. Or he can decide to substitute skiing with something totally else. Accepting the situation might be a bit easier because the snow conditions are the same for all people living in a certain area. The lack of snow is an understandable reason preventing cross-country skiing. Snow conditions can also be forecasted so the changes in skiing conditions should not come as a surprise. Cross-country skiers can be prepared for certain conditions.

When skiers feel like they are forced to substitute cross-country skiing on natural snow to something else, they might feel less satisfied with the new action they end up selecting.

Changing skiing on a natural snow to stored snow might seem like a small change but it changes the location, the length of the route and it might cause costs. Instead of practicing cross-country skiing near own home on natural skiing tracks with changing scenery for free and almost alone, a skier might have to substitute this for a short and crowded ski track where skiing costs. It can be speculated that the skiers who value longer tracks and nature, are not so willing to practice cross-country skiing at rather short first snow ski tracks or ski tunnels. On the other hand, the skiers who value the physical part of cross-country skiing might be more willing to ski at stored or artificial snow if natural conditions do not allow cross-country skiing.

4 SKI TUNNELS AND FIRST SNOW SKI TRACKS IN FINLAND

As mentioned before, snow conditions in Finland are changing and climate is not so suitable for winter sports anymore. Climate change reduces the amount of snow-covered days which leads to a shorter winter sport season. If Finnish people still want to have a long cross-country skiing season, ski tracks must be constructed inside ski tunnels or outdoors with stored or artificial snow.

4.1 Ski tunnels and first snow ski tracks

Sport is nowadays participated more and more indoors. The shift from natural physical exercise to technical physical activity has been notable. Natural physical exercise refers to sports such as walking, running, cycling and cross-country skiing. These activities can be practiced without buildings or built environments, usually free of charge. Technical physical activities on contrary demand constructed facilities and built sport environments that often collect user fees. These indoor and built sport facilities are usually further away and demand traveling. (Zacheus 2008, 29–30) In Finland, cross-country skiing is a good example of this change from natural physical activity to technical physical activity. Until the construction of the first ski tunnel in 1998, skiing was highly weather dependent and could not be practiced all year round. In recent years practicing cross-country skiing has become possible despite the weather conditions. Ski tunnels can be kept open also during summer time and first snow ski tracks make earlier season start possible. (Hinch & Higman 2003, 169)

There are six indoor ski facilities in Finland for cross-country skiing. These are situated in Helsinki (the southernmost facility), Jämijärvi, Leppävirta, Uusikaupunki, Paimio and Vuokatti (the most northern one) (Lipas 2018). The ski tunnel in Vuokatti was built in 1998. It was the first one in the world that offered year-around cross-country skiing possibilities. On top of these six facilities, there has been several projects to build new ski tunnels but almost all have failed. This is due to the big start investments and the fact that a ski tunnel might not be profitable to maintain. For example, Vuokatti ski tunnel has faced several financial difficulties according to Finnish media. Also, in 2012 the operator of Ylläshalli in Helsinki decided to give up the maintenance of the facility as it was not financially profitable. After this he city of Helsinki bought the property. The ski tunnel in

Jämijärvi has been closed during many summers as there has not been enough users and it has been unprofitable to maintain. (Yle 2012; Korpelainen 2013; Teider 2015)

Length of cross-country skiing track varies in the Finnish ski tunnels. For example, the track in Paimio is 700 meters, Jämijärvi 1025 meters and Kivikko 1050 meters. All the ski tunnels sell different ticket options. Most of the facilities offer day tickets (adults 12–20 euros), monthly tickets (adults around 120 euros) and season tickets (adults 365 euros). (Finnfoam Paippi 2018; Jämikeskus 2018; Helsingin kaupunki 2018)

Another option for prolonging the cross-country skiing season is to use first snow ski tracks. First snow ski tracks are made outdoors of snow that is stored under sawdust or peat during summer. This stored snow can be either natural snow from previous winter or artificially made snow. Part of the snow melts away during summer but most of it is usable for the autumn term ski tracks. When the weather gets cold enough at the beginning of the winter, the stored snow will be transported to a specific area for building the first snow ski tracks.

There is no systematic data about the first snow ski tracks in Finland, but the Finnish Ski Association has announced that their goal is to have 40 first snow ski tracks by 2025 in Finland. In 2016 there were 26 places where snow was stored (Figure 3) so the number of tracks is around 30 (Hietanen 2016). Currently first snow ski tracks are at least located in Imatra (the most southern one), Muonio, Vuokatti, Ruka, Kuopio, Saariselkä, Ounasvaara and Jyväskylä. Some of these are free of charge while others sell tickets. For example, during winter 2017–2018 it cost 10 euros per day to use the track in Jyväskylä, 11 euros to use the one in Kuopio and 20 euros to use the track in Muonio. These all offered also season tickets that were priced from 45 euros to 150 euros. (Jyväskylän lumi 2018; Kuopion kaupunki 2018; Muonion kunta 2018)

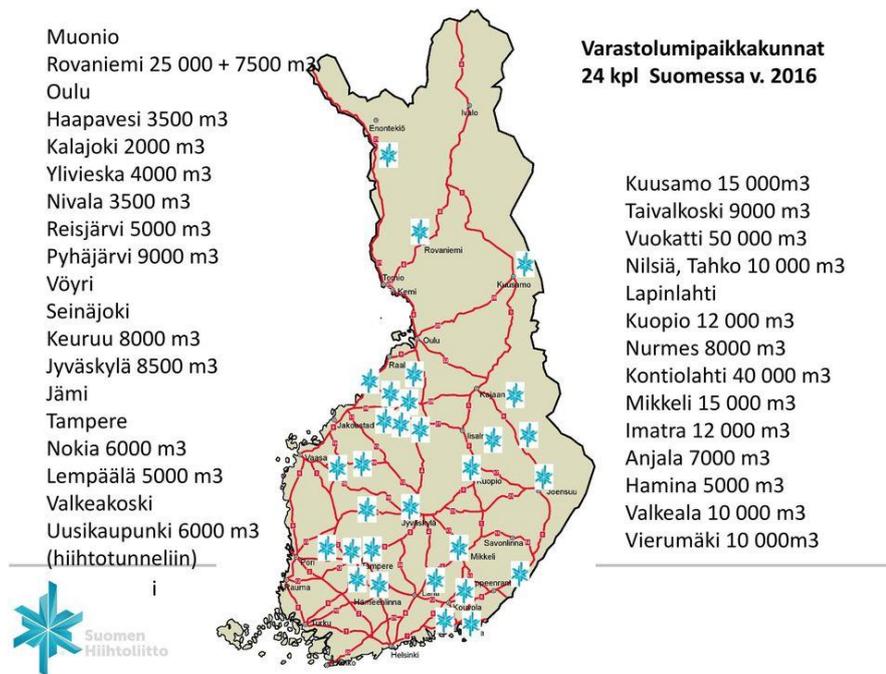


FIGURE 3. The 26 snow storing locations and the amount of stored snow in Finland in 2016 (Hietanen 2016).

The length of the first snow ski track varies from location to location, but they are usually around two or three kilometers long. These first snow ski tracks open as soon as the first frost days arrive. The track operators need to weight when it is reasonable to spread the stored snow to make the track. Usually this happens in mid-October, but this varies yearly. The location of the first snow ski track also affects as the tracks located in Northern Finland are usually able to open the track a bit earlier. The tracks usually function until the locality receives natural snow. The first snow ski tracks are then closed or opened to use freely. It would not make sense to sell tickets anymore at this point as cross-country skiers will automatically move on to free and longer tracks located in forests and on lakes.

4.2 Cross-country skiing in Jyväskylä

Climate varies every year and for cross-country skiers it is challenging to predict when the snow cover will be enough for cross-country skiing. Using first snow ski tracks and ski tunnels make cross-country skiing circumstances more predictable. There is one first snow ski track in Jyväskylä but no ski tunnel even though Jyväskylä is the seventh largest town in Finland. It is in the middle part of the country and is home to 138 850 people from which 51 percent are females and 49 percent males (Statistics Finland 2016). The

city of Jyväskylä advertises itself as the sport capital of Finland. There are around 240 sport facilities around the city of Jyväskylä that are maintained by the city, from which 87 are indoor sport facilities. There are 15 local sport parks and 500 kilometers of maintained cross-country skiing tracks during winter time in Jyväskylä. Out of the five hundred kilometers, one hundred kilometers are lighted by floodlights. (The city of Jyväskylä 2018)

The weather varies insofar that for example in Jyväskylä between years 1961 and 2017 the first snow has appeared at its earliest 19th September and at latest 28th November. Finnish Meteorological Institute's statistics from 1961 to 2014 also show that the amount of snow cover days has varied a lot in Jyväskylä area. The shortest snow cover in Jyväskylä was 47 days while the longest was 197 days. (Finnish Meteorological Institute, 2018) These varying snow circumstances make it difficult for cross-country skiers to know when skiing season is about to begin.

There are two kinds of cross-country ski tracks in Jyväskylä: firstly, the privately owned first snow ski track in Laajavuori that users must pay for and secondly the publicly maintained free tracks around the city of Jyväskylä. The first snow ski track is opened before it is possible to cross-country ski in natural tracks. The first snow ski track is closed when the other tracks open. The city of Jyväskylä maintains cross-country skiing tracks nowadays until the end of March but people can continue skiing longer if the weather permits (Jyväskylän seudun latuinfo 2018).

There were at least 24 areas in Jyväskylä with cross-country ski tracks in winter 2017–2018. The sport area in Laajavuori alone had 62,5 kilometers of cross-country skiing tracks. Most of the locations had several ski tracks with different distances. These tracks allowed cross-country skiing either with traditional or free style. The city of Jyväskylä maintained a website during winter 2017–2018 about the tracks and uploaded information about the maintenance. According to this webpage most of the cross-country skiing tracks were maintained every week during winter 2017–2018. In Laajavuori there were seven ski tracks that varied from 1,8 kilometers to eight kilometers. These tracks were open and maintained from 15th December until the end of March. (Häkkinen 2018; Jyväskylän seudun latuinfo 2018)

The city of Jyväskylä has compiled statistics from 1988 to 2018 about the opening and closing times of the cross-country skiing tracks. As Table 1 shows, snow has arrived in Jyväskylä and made cross-country skiing possible either in October (two years), November (six years) and in December (19 years). There are also gaps in the blue areas in Table 1 because during some winters the snow has arrived earlier, then it has melted away. This has caused a break to the cross-country skiing season. The information from year 2013–2014 cannot be used because some of the numbers are missing. As can be seen, there has been a lot more variation in the starting time of the cross-country skiing season compared to the ending.

The opening time of the free city maintained cross-country skiing tracks has varied a lot, as Table 1 shows. The start of the cross-country season seems to have gradually shifted from November towards December during the past thirty years. The first snow ski track on contrary has been opened during the last week of October for the past eight years. This gives cross-country skiers more predictability of the skiing season.

The green part in Table 1 shows the length of first snow ski track season and the blue shows the length of city maintained cross-country skiing season. When this information is combined the total length of the cross-country skiing season for each winter is seen. The first snow ski track was opened in 2010 so the numbers are only available for past eight years. The shortest cross-country skiing season was in 2007–2008 when the city-maintained tracks were open only for 80 days. The first snow ski track did not yet exist then. The statistics show, that the season 2013–2014 had similar length but these figures cannot be compared as some information is missing from that season. The longest cross-country skiing season before the opening of first snow ski track was in 1992–1993 when the city-maintained season lasted 154 days. Even after the opening of the first snow ski track only one winter (2011–2012) has had longer cross-country skiing season (155 days).

The average length of the first snow ski track season has been 64 days. The shortest season was the first operating year 2010–2011 when the season lasted only for 35 days. The longest were seasons 2015–2016 and 2016–2017 when the season lasted for 80 days. The average length of the city-maintained ski season has been 103 days. When combining these two track types the average length has been 120 days. The most recent season (2017–2018) lasted for 150 days so it was above the average.

As Table 1 shows, the possibility to use first snow ski track makes cross-country skiing season longer. It also gives cross-country skiers a possibility to start season earlier. During last season, winter 2017–2018, the first snow cross-country skiing season lasted only 49 days. This was because natural snow arrived already mid-December and the city-maintained free tracks were opened. The differences in the length of the first snow skiing season result from the ending time of season, as all seasons have begun at the same time. The ending of the season is highly dependent on the weather and especially of the snow situation. As soon as there is enough snow for natural tracks, the city of Jyväskylä will prepare the cross-country skiing tracks. This means that the first snow ski track does not attract paying customers anymore and the track is opened for all users free of charge.

TABLE 1. The length of cross-country skiing season on the first snow ski track and on city maintained natural cross-country skiing tracks in Jyväskylä from 1988 to 2018 (Häkkinen 2018).

Year	October	November	December	January	February	March	April	Total days first snow ski track	Total days city ski track	Total cross-country skiing days
1988-1989									140	140
1989-1990									119	119
1990-1991									126	126
1991-1992									105	105
1992-1993									154	154
1993-1994									112	112
1994-1995									119	119
1995-1996									125	125
1996-1997									98	98
1997-1998									118	118
1998-1999									114	114
1999-2000									112	112
2000-2001									98	98
2001-2002									136	136
2002-2003									140	140
2003-2004									110	110
2004-2005									115	115
2005-2006									100	100
2006-2007									85	85
2007-2008									80	80
2008-2009									100	100
2009-2010									98	98
2010-2011								35	112	147
2011-2012								75	80	155
2012-2013								55	91	146
2013-2014								60	20	80
2014-2015								75	50	125
2015-2016								80	70	150
2016-2017								80	70	150
2017-2018								49	101	150
Total cross-country skiing days 1988-2018								509	3098	3607
Average number of cross-country days 1988-2018								64	103	120

 The first snow ski track in Laajavuori Jyväskylä
 City maintained cross-country skiing tracks

4.3 The first snow ski track in Laajavuori Jyväskylä

The first snow ski track was first opened in Laajavuori Jyväskylä in winter 2010. The track is made mainly from stored snow from previous winter. At the beginning of the season in 2017 the skiing track was 1,6 kilometers (Figure 4). It was made longer as the

skiing season went on and the location received more snow. At the end of the season the distance was two kilometers.



FIGURE 4. The first snow ski track in 2017 in Laajavuori Jyväskylä. The route was first 1,6 kilometers but was later made longer (two kilometers) (Sulkula 2018).

In 2017 Laajavuori first snow ski track was opened on 25th October and it was open until 12th of December. It was open every day from 8 am to 10 pm. Tickets were sold online and on site. Single tickets cost 10 euros for adults and 5 euros for kids. Season tickets were 100 euros for adults and 50 euros for kids. Unfortunately, the exact amount of sold tickets is not known. This is because tickets were sold through many channels and no one was responsible of keeping track of the total amount. A company called Jyväslumi Oy is responsible for the first snow ski track. According to their statistics the track was used by 1 800 persons. There were around 100 cross-country skiers each day. (Sulkula 2018)

The first snow ski track in Laajavuori is located about four kilometers from Jyväskylä city center. Along with cross-country skiing Laajavuori area offers downhill skiing, ice cross downhill, snowshoeing and other winter sport activities and services. These are operated by a different company called Laajis. Laajavuori area also offers activities during summer season such as adventure parks for kids and families, disc golf and Nordic walking. (Laajis 2018)

5 RESEARCH QUESTIONS AND METHODOLOGY

The purpose of this study is to find out who are the users of the first snow ski track in Jyväskylä Finland. Another main purpose is to find out what are the cross-country skiers' motives for using the first snow ski track. First snow ski tracks are a current topic as climate change is causing changes in the skiing circumstances in Finland. As there is not yet published research in Finland about the users of first snow ski tracks, this study aims to bring new light to this topic.

The main research questions are:

1. Who are the users of the first snow ski track located in Laajavuori Jyväskylä? What is the user profile like?
2. What are the motives of the users?

One sub-task for this research is to get development ideas for the first snow ski track in Laajavuori. Another sub-task is to find out skiers' opinions about first snow ski track and cross-country skiing in general.

The presuppositions are based on earlier studies about the users of Finnish ski tunnels. It is likely that the user profile of Finnish ski tunnels is rather similar than in first snow ski tracks. This is because these both demand entry fees and attract people who want to participate in cross-country skiing when the natural tracks are not in use. It can be expected that majority of the users of the first snow ski tracks are middle aged men. They are likely to be active on their leisure time and probably have quite high income. (Leinonen & Virta 2009; Määttä 2010)

This study is a case study as the purpose is to describe and understand. The idea of studying the first snow ski track in Laajavuori Jyväskylä is to find out who are the users and why they use the facility. Finding out things about the users and their background as well as getting to know their reasons to use the facility can provide valuable information to the current organizers, municipalities and for companies who provide similar services.

The data for this study was collected by using a semi-structured questionnaire. Previous studies, especially Leinonen and Virta (2009) and Määttä (2010), were used as a

background information when forming the questions. Both studies were case studies about the users of Vuokatti ski tunnel and Määttä also studied the users of a ski tunnel located in Helsinki.

The data for this study was collected in Laajavuori Jyväskylä. The questionnaire was sent by email to those adult cross-country skiers who had purchased a season ticket to the first snow ski track. The list of emails was obtained through the organizers of Laajavuori first snow ski track. The first questionnaire was sent out in November and the reminder in mid-December. Respondents were informed that they had time to participate by the 20th of December. Another option was to answer on a paper questionnaire. These were handed to all cross-country skiers who bought a single ticket.

In total 327 questionnaires were filled, from which 242 were electronic and 85 paper questionnaires. Electronic questionnaires were filled in Webropol-system and this link was given in an email where research and its importance were shortly described. Paper questionnaires were returned to ticket office at Laajavuori and further to the University of Jyväskylä. After that the answers were entered to program called Webropol survey. This way all the data could be found from the same system.

The questionnaire consisted of three parts. The first part covered background questions. The second part dealt with questions about the first snow ski track in Jyväskylä. The third part of the questionnaire consisted of nine statements. Respondents had the option to choose from five different answers that were totally agree, somewhat agree, no opinion, somewhat disagree and totally disagree.

Answers to most questions were analyzed by using spss-program. Descriptive statistics, such as mean values, frequencies and percentages were first calculated. The mean values were compared by using t-test, ANOVA and Bonferroni-test. Comparisons between groups were analyzed by using chi-square test. The distribution of the answers to nine statements were illustrated with two figures that will be presented in chapter 6.3.

There were a few questions where a respondent could choose from one of the alternative answers. Cross-country skiers were asked to reason their answers as well. Respondents could write openly about the first snow ski track and about the development of the track.

These written answers were analyzed through thematizing and cross-tabulation. As the answers were read through several times, some similarities were found, and groups started to emerge. The answers were then read through repeatedly to check if any new things could be noted and if the grouping still seemed justifiable. These groups or themes were marked with different colors. (see e.g. Hirsjärvi & Hurme 2009, 173; Eskola & Suoranta 2005, 179–181) Groups are presented in chapter 6.2.

Full questionnaire as appendix.

6 RESULTS

This chapter presents the profiles of the users of the first snow ski track in Laajavuori Jyväskylä. After that follows their reasoning about the tickets and usage of the track and finally their opinions related to cross-country skiing. Opinions will be presented in two sections: first opinions regarding the first snow ski track in Jyväskylä and then opinions about cross-country skiing in general.

6.1 Profiles of the cross-country skiers of the first snow ski track

The data consisted of 327 filled questionnaires. Majority of respondents were male (75 %) and 25 percent were female. Respondents age varied from nine years to 75 years. The mean age of male skiers was 48 years whereas female average was 39 years. There was a statistically significant difference between the ages of male and female skiers ($p=0.000$). Respondents were divided to six age groups (Table 2) and the largest groups were skiers aged 50 to 59 years and skiers 60 years and older.

TABLE 2. Frequencies of age groups at the first snow ski track (N=325).

Age groups	Frequency	Percent (%)
9–19	23	7,1
20–29	36	11,1
30–39	44	13,5
40–49	72	22,2
50–59	75	23,1
60+	75	23,1

The majority (80 %) of the cross-country skiers at first snow ski track lived in Jyväskylä. Other skiers came mostly from neighbor municipalities in Central Finland. Six percent came from Muurame and six percent from Laukaa. There were also few visitors from some other larger towns of Finland, such as Turku, Vantaa and Tampere.

The cross-country skiers were rather well educated, as a total of 64 percent had a university degree. Out of these 35 percent had a higher university degree (master). Twenty-nine percent had a lower university degree (bachelor). Four respondents had a

doctoral degree. The other respondents had a background in vocational school or they had finished high school.

There were 29 percent of upper clerical workers, 18 percent employees, 16 percent were retired, and 15 percent were students. A total of nine percent were entrepreneurs, eight percent lower clerical workers and four percent did not identify themselves with any of these categories. Two percent were currently unemployed.

The yearly income of the respondents ranged from under 4 999 euros to more than 100 000 euros (Table 3). The largest group was the cross-country skiers who earned 50 000 to 59 999 euros in year 2016. Seventeen percent of respondents fell into this category. The second largest group was the skiers who earned 30 000 to 39 999 euros with 16 percent. The third largest group earned 40 000 to 49 999 euros with 15 percent. In total these three groups added up to form 48 percent. The next largest income group after these was the ones earning under 4 999 euros. They were most likely students.

TABLE 3. Yearly income of cross-country skiers at the first snow ski track (N=324).

Yearly income (€)	Frequency	Percent (%)
under 4 999	42	13,0
5 000 – 9 999	7	2,2
10 000 – 14 999	7	2,2
15 000 – 19 999	10	3,1
20 000 – 24 999	15	4,6
25 000 – 29 999	24	7,4
30 000 – 39 999	52	16,0
40 000 – 49 999	49	15,1
50 000 – 59 999	56	17,3
60 000 – 79 999	20	6,2
80 000 – 99 999	18	5,6
over 100 000	24	7,4

Income categories were divided into four groups in order to make income comparisons possible. These income groups were later used to find out whether people with higher

income were participating more or less in sports compared to people with lower income. The income groups were 1. low income group (0–14 999 €), 2. median income (15 000–39 999 €), 3. high income (40 000–59 999 €) and 4. highest income (60 000 € and over).

Respondents' sport participation varied a lot (Figure 5). One percent of respondents informed participating in sport only two to three times per month. Seven percent participated once or twice per week. More than two thirds of the respondents (39 %) participated in sport three to four times a week and 34 percent five to six times per week. Some even participated in sport every day (19 %).

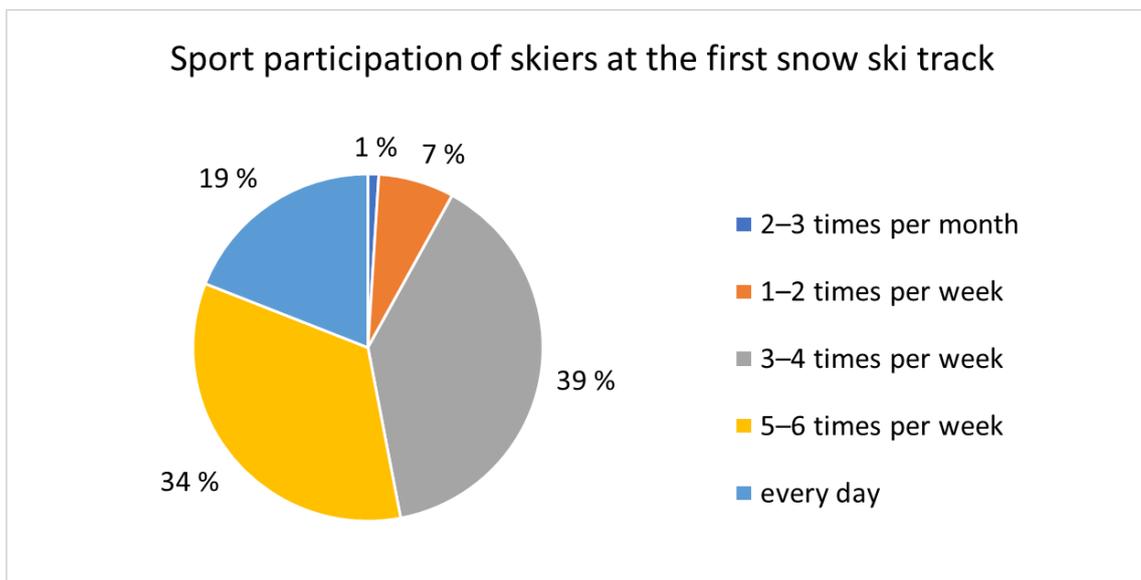


FIGURE 5. Sport participation of skiers at the first snow ski track (N=327).

Cross-country skiers who belonged to the lowest income group (0–14 999 €) had most sport participation ($p=0.000$) but all the respondents played a lot of sports. The most common answer was that they were physically active three to four or five to six times per week. These two groups formed 73 percent of the data.

Respondents were also asked to name how much they usually practiced at each time (Figure 6). The most common answer was from 60 to 90 minutes (56 %). The second most frequent was from 40 to 60 minutes (28 %). Some announced practicing 90 minutes or more usually (14 %). Only a small minority (2 %) informed practicing only 20 to 40 minutes each time. No one responded spending less time than 20 minutes in sport participation each time.

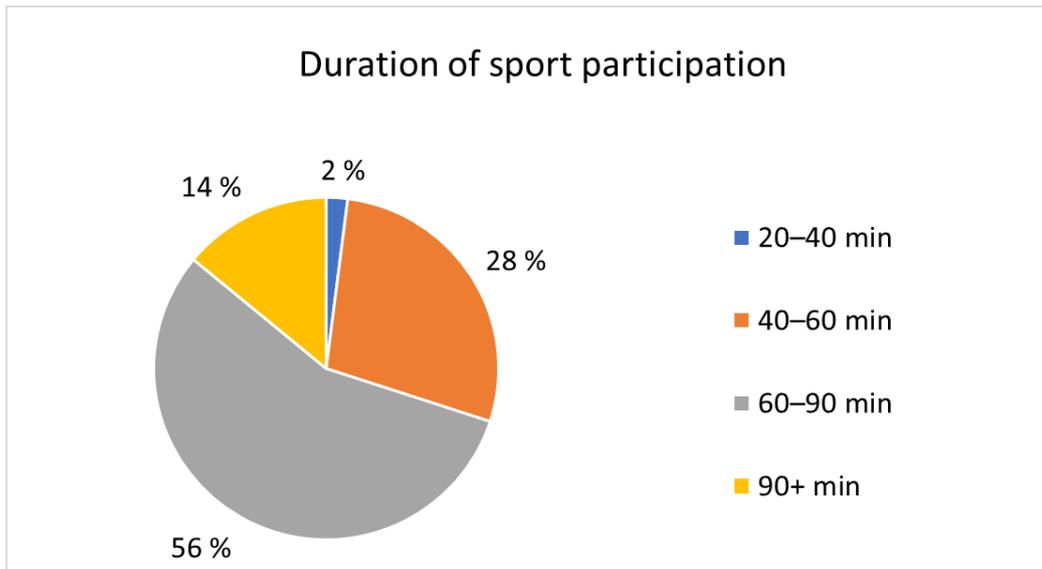


FIGURE 6. Duration of skier's sport participation on each occasion (N=327).

Most of the respondents (52 %) participated in sports on their own without attending any sport club activities or instructed sport lessons. One fifth (20 %) attended instructed sport sessions only a couple of times per month, whereas 27 percent attended several times a week. There were only one percent who attended club practices or instructed sport lessons five to seven times per week. There was a significant difference ($p=0.014$) in the sport participation between genders as females participated more to instructed sport activities.

Even though the participants were very active during their leisure, almost half of them (44 %) commuted to work in a non-active way. They used their own cars, public transportation or did not have a job to commute to (unemployed, maternity leave, seniors etc.). On the other hand, 56 percent commuted to work in a physically active way by walking or cycling. The typical amount of physically active commuting was 15 or 30 minutes per day. Only three percent spent more than one hour each day cycling or walking. There was a significant difference ($p=0.046$) between the genders as males were more likely to commute in a non-active way.

Respondents were asked to describe themselves as cross-country skiers by choosing from four different options (Figure 7). Sixteen percent categorized themselves as active competitive cross-country skiers but most of the cross-country skiers (72 %) belonged to the group of active recreational skiers. Only nine percent responded that they only ski now and then. A small number (three percent) answered that they do not fit into any of

these groups but according to their written answers, they could have been placed to the largest group of active recreational skiers.

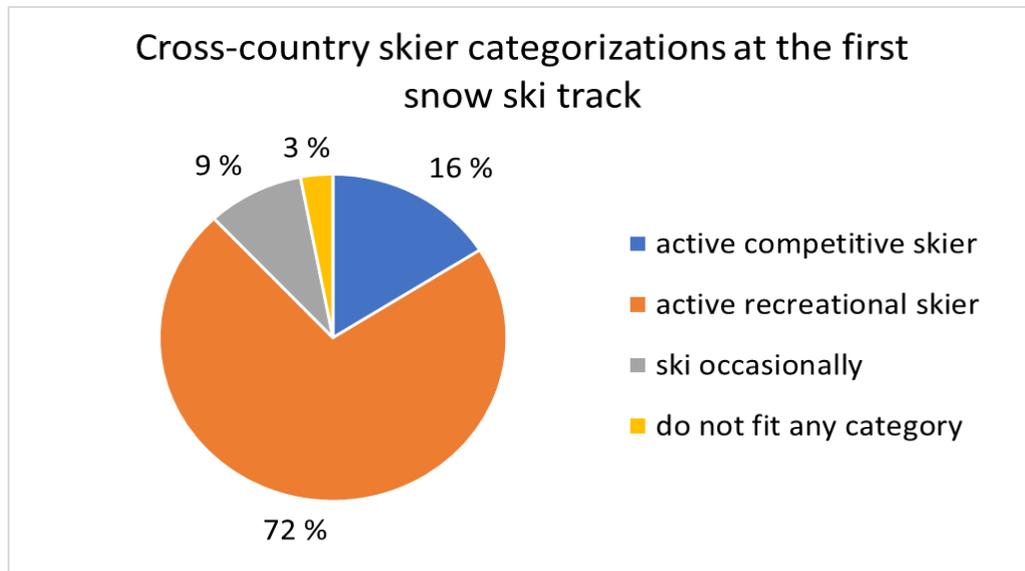


FIGURE 7. Cross-country skier categorizations at the first snow ski track (N=327).

The average kilometer amount skied during the winter 2016–2017 (which was previous winter at the time of the survey) was 1301 kilometers. Males cross-country skied on average 1342 kilometers and females 1174 kilometers. No significant difference was found between genders ($p=0.162$). The most enthusiastic cross-country skiers were 20 to 29 years old (Table 4). They skied almost two thousand kilometers. This group was significantly different from the other age groups ($p=0.000$ – 0.008). As Table 4 shows, the oldest age group (60 and over) skied the second most as their average amount was 1354 kilometers. The other age groups were rather similar since the mean kilometer amount was from 1112 to 1185. The standard deviation was rather significant in every group. This varied from 719 to 1223, which was the case in the most enthusiastic skier group aged from 20 to 29 years. The standard deviation was this large because in four out of the six age groups the minimum was zero kilometers. There were in total only four cross-country skiers whose answer was zero kilometers. This could be because they did not answer the question, or they did not want to estimate the skiing amount without knowing the exact amount. It might also be that they really did not ski at all during the previous winter. No statistically significant difference was found between the skied kilometers and person's income level ($p=0.203$).

TABLE 4. Number of skied kilometers per age group (N=325).

Age group	Mean (kilometers)	Standard deviation
9–19	1112	799
20–29	1990	1223
30–39	1157	1051
40–49	1162	719
50–59	1185	807
60+	1354	903

The active competitive cross-country skiers skied on average 2103 kilometers and active recreational skiers 1245 kilometers. The occasional skiers did 351 kilometers. The respondents who felt that they did not fall into any of these categories skied 1301 kilometers, which is rather close to the kilometer amount of active recreational skiers. This finding supports the earlier notion that these cross-country skiers could have been labelled as active recreational skiers ($p=1.000$).

Out of the 327 respondents 180 (55 %) did not compete in sports but 147 (45 %) competed at some level. They were asked to name all the sports that they competed in. The most frequently named sports were cross-country skiing, ski orienteering and biathlon. These were mentioned in total 128 times. After these came orienteering and running. People participated in competitions at various levels, such as company, club, district, national and international level. Fourteen percent competed in company level and twenty percent at club level. Twenty-seven percent competed at district level. Ninety-four percent competed at national and 14 percent at international level. These numbers add up to more than one hundred percent as respondents were able to choose a competitive level separately for each different sport.

6.2 Enthusiastic cross-country skiers aim for a longer skiing season

Eighty-four percent of the participants usually skied alone at the first snow ski track. Thirty-one percent skied most often with friends. Twenty-one percent skied with their spouse or with family members. Only two percent skied with a colleague. Four percent skied usually in some other company. These included skiing in a random company, skiing with kids and skiing with a coach. Most of these answers could have been fitted to other

groups since for example skiing with kids could be labelled as skiing with family members. Respondents were able to pick several options and it seems that they practice cross-country skiing in varying companies, as there were 327 respondents and the data had 469 answers.

The vast majority (80 %) of the cross-country skiers at the first snow ski track had purchased a season ticket. Only 20 percent skied with a single ticket. Male cross-country skiers had more often purchased the season pass (82 %) compared to females (74 %) but there was no statistically significant difference ($p=0.119$). Out of the season pass buyers 22 percent had purchased the ticket for the first time. Out of these three percent noted that they had used single tickets before. Seventy-eight percent had bought it already for the second time or had an even longer buyer history.

Eighty-four percent of the cross-country skiers had the aim of buying the season pass again whereas 16 percent were not planning to re-purchase the ticket. The intention to re-purchase a season ticket was higher among males than females. Eighty-seven percent of the male cross-country skiers intended to buy it again whereas 76 percent of females had the same intention. There was a significant difference between males and females ($p=0.023$).

The reasons for buying a season pass to the first snow ski track again varied a lot. Out of the 257 answers many had two or even three reasons listed. The answers were categorized to five groups (Table 5). The most common reason for purchasing a season ticket was the will to have a longer cross-country skiing season. The first snow ski track was seen as the only place near Jyväskylä where cross-country skiing season could be launched already in October. Getting used to snow and cross-country skiing before going to the city-maintained cross-country skiing tracks later in the winter were also mentioned as reasons to buy the season pass.

Many respondents also mentioned a set of financial reasons for purchasing the season pass. Inexpensive or reasonable pricing was the most often mentioned in this category. Respondents felt that they were ready to pay because of the good maintenance of the first snow ski track. It was also considered less expensive, faster and more convenient to buy

the season pass instead of individual tickets. Some cross-country skiers explained that buying a season pass motivated them to use the track more often.

The third category consisted of cross-country skiers who were enthusiastic skiers. They considered cross-country skiing as their number one hobby. They enjoyed skiing and had a strong will to do so. If they could choose one form of sport participation, it would be cross-country skiing as they described it as the best form of exercise. They also highlighted the fact that they enjoyed cross-country skiing because it was an outdoor activity.

The fourth category included people that were interested in cross-country skiing on a practical level. Buying a season pass was a way to practice skiing, and to be active and exercise. These statements were short and succinct. Respondents reasoned that a season pass was essential for their training and physical activity. The willingness to support the local entrepreneur and the maintenance of the track was the fifth category. It was also mentioned that it is great that this kind of entrepreneur is working in Jyväskylä. Some even mentioned that they wanted to support the entrepreneur's company Jyväskylä even though they would not use the track that much. It seemed that these cross-country skiers had a personal contact with the entrepreneur as they used his first name in the answers.

TABLE 5. Reasons to purchase a season pass to the first snow ski track.

The will to have a longer cross-country skiing season
Reasonable pricing
Strong will to ski
Season pass as essential to training
Support for entrepreneur and track maintenance

Only 48 (16 %) cross-country skiers responded that they are not planning to re-purchase a season pass to first snow ski track. Their reasons were categorized to four groups (Table 6). The most common reason for not planning to re-purchase a season ticket was the fact that it was not financially profitable. The price of the season pass has been 100 euros. Single tickets have been ten euros so many respondents had counted that it comes cheaper for them if they use single tickets as they use the track under ten times per season. They

informed that they did not want to commit to using the track. Purchasing a season pass had caused them stress as they felt they were obligated to use the track often.

The second most common reason was the distance to the track. Many mentioned living too far away in a different city or planning to move on to another city before the next cross-country skiing season. The third group were the skiers who did not need a ticket. Some respondents said that they had access to the track without purchasing a ticket. These respondents were part of the Sport Academy of Jyväskylä and had a free entry to the track. They were part of the group aiming for competitive sport career. They practiced sports in a very goal-oriented way. In addition, one respondent confessed that he had been using the track without a ticket when no one was watching.

The fourth group said they are not planning to buy the season ticket again as they have some concerns related to the condition and profile of the track. They perceived that the track was too narrow and too short. They also stated that the quality of the snow is not good enough as it gets dirty rather fast.

TABLE 6. Reasons not planning to re-purchase a season pass to the first snow ski track.

Not financially profitable
Distance to the first snow ski track
No need for ticket
Condition and profile of the track

Respondents were also asked about their reasons to begin the cross-country skiing season at the first snow ski track. These reasons were very similar to the reasons given about the intention to re-purchase a season pass. Answers were categorized to three groups (Table 7). The most common reason was the will to have a longer cross-country skiing season. The first snow ski track was a place where cross-country skiing was possible earlier as one could not predict the opening time of natural ski tracks. The first snow ski track was used before the actual winter season for gaining good physical condition. It was also used as a platform where cross-country skiers could get ready for their competitions later in the season.

Another main reason was the enjoyment skiing brought and its suitability for different people. Cross-country skiing was seen as a good sport especially for older people as it is gentle enough for the knees. Cross-country skiing was thought to be the best sport for the whole body. It was also mentioned as a good way to develop endurance. Cross-country skiing brought some versatility to their sports agenda as they practiced several different sports depending on the time of the year. Cross-country skiing at the first snow ski track motivated them to even larger sport participation as it was a good combination with some other sports.

The third main reason to start the cross-country skiing season at the first snow ski track was that cross-country skiing was seen as a social sport. This was the case especially at the first snow ski track where other like-minded individuals could be met. Some cross-country skiers mentioned that the track was so short that they met the same people many times. This offered possibilities for interaction. They also met many people at the track that they knew beforehand. It was mentioned that practicing cross-country skiing totally alone could be boring. Some respondents wondered that cross-country skiers could lose their interest in skiing if it would be practiced totally alone. Seeing other cross-country skiers provided support and motivated them to continue cross-country skiing.

TABLE 7. Reasons for starting cross-country skiing season at the first snow ski track.

The will to prolong the cross-country skiing season
The enjoyment cross-country skiing brings
Social reasons

6.3 Opinions of the cross-country skiers

Cross-country skiers at the first snow ski track were presented nine statements. Five statements were about the ski track in Jyväskylä. Four statements were not related directly to the track but instead addressed cross-country skiing on a more general level. The opinions related to the first snow ski track are presented first.

6.3.1 Track condition and ticket prices are valued high

As Figure 8 shows, the largest agreement among the users of the first snow ski track was found in the statement regarding the condition of the track. Ninety-three percent either

totally or somewhat agreed that they were satisfied with the condition of the track. Only five percent somewhat disagreed, and no one totally disagreed. This was in contradiction with some of the answers to the open questions as there skiers expressed some critique about the condition of the track. In the open questions some respondents stated that the condition of the track varied too much. They mentioned that the track was dirty very quickly. There were arguments supporting the current track profile, but some cross-country skiers felt that the profile should be changed. The largest hopes for improvement were the wishes that the track could be longer and wider. Some asked for a flatter route while some requested for a more challenging track with more hills.

Cross-country skiers agreed that the price of the season pass of Laajavuori first snow ski track was reasonable. In total 88 percent totally or somewhat agreed. Only nine percent somewhat or totally disagreed. Income level did not have a significant effect to the skier's agreement or disagreement with this statement. This statement and its answers did not point out whether the price of the season pass was considered too high or low according to the people who disagreed. It can be assumed that the nine percent who disagreed thought the price was too expensive. In the open questions some cross-country skiers mentioned that they felt that the season pass was overpriced. This was probably because the length of the cross-country skiing season at the first snow ski track is always uncertain. It seems that respondents did not want to invest 100 euros to the season pass as the length of the cross-country skiing season on this particular track could be very short. Some skiers expressed that they would be willing to pay more if the track was made longer and wider. On the other hand, some noted that this kind of track was enough for them and they were not willing to pay for the improved track.

The third most agreed statement handled the cross-country skiing possibilities at the first snow ski track and its fit to the current day needs. Eighty-three percent of the respondents totally or somewhat agreed that the skiing opportunities fit to current needs. Seven percent had no opinion and ten percent disagreed. In the open questions, many respondents proposed that in the future cross-country skiing opportunities could be improved by inserting cooling pipes under the track. Another suggestion was to build a ski tunnel. Some offered the idea that the whole track should be located elsewhere in Jyväskylä.

The price of the single ticket was appropriate according to many users as 70 percent totally or somewhat agreed. However, 21 percent either somewhat or totally disagreed. Only small differences were found between the income groups. The biggest difference was found between the income groups of median income (15 000–39 999 €) and highest income group (60 000 € and over). Cross-country skiers who earned more than 60 000 euros per year agreed most but there was no statistically significant difference ($p=0.511$). In the first version of the questionnaire the single ticket was marked to be eight euros, but the real price was 10 euros. Cross-country skiers seemed to be very aware of the prices as many had crossed over the wrong price and had replaced it with a correct one.

In the open questions a few respondents proposed a ticket that would allow cross-country skiing for example ten times during the season. Also, a company ticket was one suggestion so that a company could buy a season ticket and all the staff members could use this shared ticket. Respondents pointed out that a company ticket should not have user's name written on it unlike the personal season pass.

Out of the five first snow ski track related statements, the satisfaction with the services near the track was the lowest. Only 53 percent agreed on some level and 13 percent disagreed. Thirty-four percent did not have an opinion. This might imply that the users of the first snow ski track did not have knowledge about the provided services. Many respondents replied with a long story to the open question about the development ideas for the track and its services. People were for example hoping for a cafeteria near the entrance. They also had several other ideas about the services that could be provided. According to the respondents there could be companies that teach cross-country skiing, rent cross-country skiing equipment and wax skis. An area for equipment storing could be useful so that users could store their equipment in lockers next to the entrance.

The need for dressing rooms, toilets and showers were also often mentioned. Many cross-country skiers also noted the need for better lighting. More lights would make the place feel safer. According to the respondents' lights would be needed both for the track and the parking space. The condition of the parking space received a lot of negative comments. Many people felt it was too dark, dirty and bumpy.

One often mentioned development idea was related to the involvement of the city of Jyväskylä. According to the skiers, issues such as the condition of the track, other services and lower ticket prices could not be solved and implemented without the city of Jyväskylä. Respondents suggested that the first snow ski track should be subsidized from the city budget as the track is widely used by the city residents. The funding could either come from the city of Jyväskylä, from the neighborhood municipalities, from the Finnish government or even from the European Union. Cross-country skiers thought that this funding would make many improvements possible.

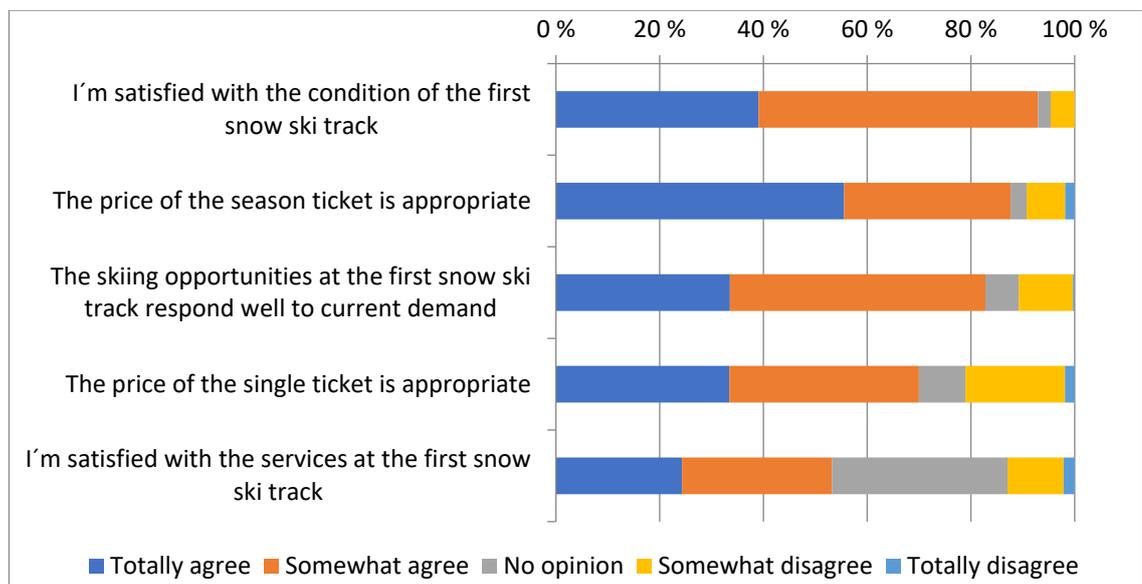


FIGURE 8. Respondents' opinions about the first snow ski track in Laajavuori Jyväskylä.

6.3.2 Cross-country skiing will remain as a national sport

Four out of the nine statements were not related directly to the track in Jyväskylä but instead addressed cross-country skiing on a more general level. As Figure 9 illustrates, cross-country skiers agreed most that cross-country skiing will remain as a national sport in the future. Eighty-two percent of the respondents totally or somewhat agreed. Twelve percent had no opinion. Six percent somewhat disagreed, and no one totally disagreed.

Most of the skiers agreed that cross-country skiing should be practiced in a snowy natural environment. Sixty eight percent either totally or somewhat agreed. Eleven percent had no opinion and 20 percent either totally or somewhat disagreed. In the open question many skiers wrote that they would rather practice cross-country skiing in some other place

but because of the weak snow situation it was not possible. They felt that if they wanted to ski, it had to be done on the first snow track.

There is a public right of access to natural areas in Finland. Thus, Finnish people are used to moving outdoors for free in the nature areas. This might be why only 55 percent of cross-country skiers were willing to pay a user fee for the maintenance of the natural cross-country skiing tracks for the whole winter if the snow conditions would be minimal. Eleven percent had no opinion and 34 percent disagreed on some level. It can be presumed that people with higher income could have a higher willingness to pay. No such statistical difference was found. Still, the cross-country skiers who earned more than 60 000 euros previous year were most willing to pay. Sixty-seven percent of these cross-country skiers totally agreed or somewhat agreed with this statement.

The cross-country skiers disagreed that all kinds of outdoor sports including cross-country skiing should be free of charge. Thirty-five percent disagreed with this claim which suggests that they were willing to pay for cross-country skiing. This number is not a surprise as these cross-country skiers were already users of the track that demand an entry fee. Still, 53 percent either totally or somewhat agreed that all outdoor sports should be free of charge. In the open questions about the development of the track, many respondents replied that the city of Jyväskylä should be involved in the funding. That way the user fees could be lower. They also thought that the track could be made longer if city would be involved.

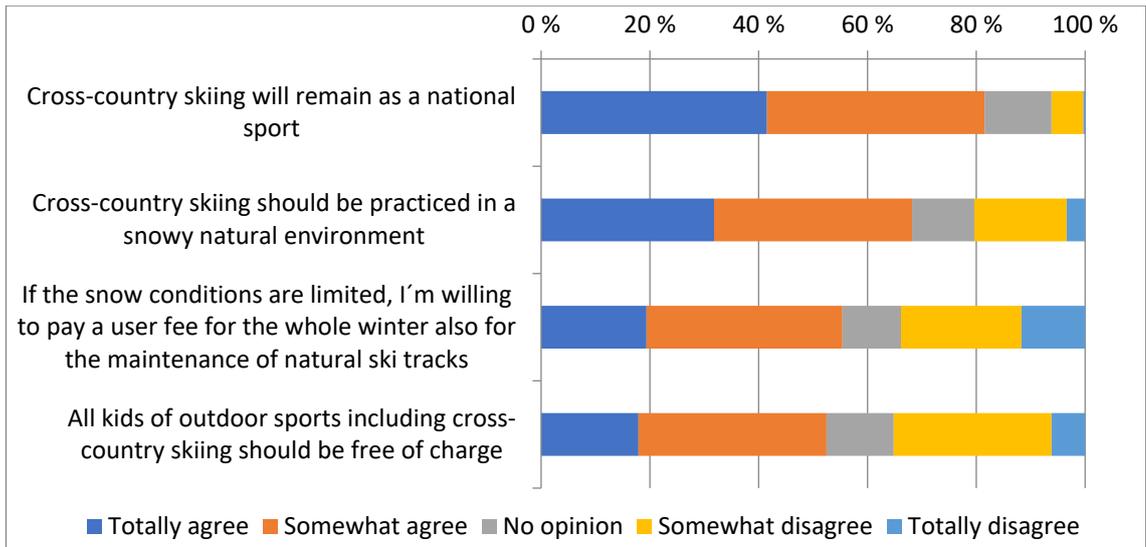


FIGURE 9. Respondents' opinions about cross-country skiing on a general level.

7 CONCLUSIONS

This section draws together the results and compares the results to earlier studies and concepts. After these an evaluation of the study and future study needs are presented.

7.1 Summary of the results

The aim of this study was to find out who are the users of the first snow ski track located in Laajavuori Jyväskylä. It turned out that the majority of the users were middle aged and older males who live in Jyväskylä. Over half of the respondents had a university degree and they had a quite high income level. Cross-country skiers were active during their leisure as three quarters participated in sport three to six times per week. They usually practiced sports on their own without instructor or a sport club. Almost three quarters of the respondents described themselves as active recreational skiers. They skied on average 1245 kilometers during previous winter. Respondents usually practiced cross-country skiing alone at the first snow ski track. A bit less than half of the respondents competed in some sport, mostly in cross-country skiing, ski orienteering and biathlon. Eighty percent of the respondents had purchased a season pass to the first snow ski track. Almost all of them had bought it also before. They had the plan to purchase the season pass again, males more than females.

The second research question was about the motives of the cross-country skiers. Why do they use the first snow ski track? Why do they pay to get to practice cross-country skiing? The most common reason for purchasing the season pass was to have access to a longer cross-country skiing season. The first snow ski track offered the only cross-country skiing possibility in Jyväskylä in October and November 2017. Purchasing a season pass to the first snow ski track was essential to their training. Cross-country skiing was the number one winter sport for many respondents and they wanted to practice it as much as possible. According to respondents, cross-country skiing brought them joy. They felt it was a good form of physical activity that improved endurance. Respondents highlighted that cross-country skiing was especially good for older people with knee problems. They also stated that they preferred practicing sports outdoors. In addition, some motives were financial as the ticket prices seemed reasonable. Respondents also mentioned that by buying a season pass they can support the local entrepreneur.

There was also a social aspect in practicing cross-country skiing at the first snow ski track. The track was so short that same people were encountered many times during one practice. In addition, same cross-country skiers were met many times during the same week. These facts opened a possibility for interaction with like-minded cross-country skiers. Seeing familiar faces made the skiers feel like they were not practicing cross-country skiing alone. This motivated them to ski even more.

These findings go well hand in hand with the presuppositions that the most enthusiastic cross-country skiers would be physically active middle-aged males. Leinonen and Virta (2009, 43) studied the users of Vuokatti ski tunnel and the user profile was rather similar as most of the skiers were 45 to 64 years old males. Määttä (2010, 28) got similar results related to the skier profile from Vuokatti ski tunnel and Ylläshalli ski tunnel.

As assumed, the users of the first snow ski track in Jyväskylä turned out to be more physically active than Finns in general. According to Finriski study (Borodulin et al 2013) 51 percent of Finns participated in sport more than three times per week. In this study, seventy four percent of the respondents practiced sports more than three times per week.

One interesting question is whether these enthusiastic cross-country skiers reach the recommended physical activity levels. The World Health Organization (2010) has published recommendations about physical activity. Adults should engage muscle-strengthening activity at least twice a week. Adults should also perform 75 minutes vigorous or 150 minutes of moderate-intensity physical activity. (WHO 2010) In 2016, only 18 percent of Finnish adults met the recommendations (Murto et al 2017). However, this current study made no division between different kind of physical activity. It might be that the studied cross-country skiers reach the recommended activity levels with aerobic activity but not with muscle-strengthening activity.

Another interesting finding is that the users of the first snow ski track were very active during their leisure but still commuted to work in a non-active way. Forty-four percent of the respondents commuted in a non-active way. In 2012 the percentage was 54 for the whole population (Borodulin et al 2013). There are several Finnish studies (Borodulin & Jousilahti 2012, Borodulin et al 2013) that have discovered that females are more likely

than males to use physically active commuting. Similar gender difference was found in this study.

7.2 Financial aspects

There has been discussion in the Finnish media about the costs of sport participation. Special attention is given to the concern about families with lower income not able to afford to practice sport. (Toivonen 2017) A study by Puronaho (2014) discovered that the costs have been rising in the past years and that the concern is a serious one. Cross-country skiing for example has traditionally been practiced outdoors with the largest costs created by the equipment. Nowadays cross-country skiing can be also practiced indoors but the tracks demand an entry fee. It is still possible to practice cross-country skiing outdoors but the ones who are able and willing to pay, can have longer skiing season and better circumstances. People who have higher income or are wealthier have access to modern indoor facilities and cross-country skiing equipment. These facilities and equipment are mostly out of the reach of some lower socio-economic groups. Will cross-country skiing become a sport only for the very enthusiastic and wealthy and not the widely practiced low threshold sport?

Respondents did not seem to think that the costs for cross-country skiing were too high. Most of the cross-country skiers (88 %) thought that the pricing of the tickets was reasonable. It could be expected that skiers with higher income would be readier to pay for cross-country skiing and would have a more positive opinion towards the prices of the tickets. No such difference was found in this study.

Respondents had varying opinions about the funding of the track. Many cross-country skiers stated that the city of Jyväskylä should be involved in the future. In Finland cities and municipalities have traditionally funded many sport facilities such as swimming halls and ice rinks. Some of the cross-country skiers seemed to think that cross-country skiing should be put to the same category with swimming, running and ice skating and cities should provide year-around facilities. These facilities could benefit both the competitive skiers as well as the recreational skiers. The city and municipality sport facility budgets are limited and tight. If the city officials would decide to invest in cross-country skiing facilities, then they would probably have to give up something else. One solution could

be that cities and private companies could cooperate to create cross-country skiing possibilities.

In earlier studies, the residents of Jyväskylä have named high prices and the lack of free sporting facilities as an obstacle for sport participation. Lower prices, better local facilities and better maintenance were mentioned as things that would make them more physically active. (Nyholm 2016, 40, 47–49) Other Finnish studies have found similar reasons for residents not practicing sports. High user fees (Huovinen & Karimäki 2010, 25) and distance to sport facilities (Karimäki 2001, 122) were named in previous studies. The residents of Jyväskylä pointed out that the total lack of, poor quality and distance to sport facilities keep them away from sport participation (Puttonen 2011, 72). In this current study, the cross-country skiers responded that the location of the first snow ski track is quite convenient. It makes sense that these respondents did not mention prices as an obstacle as they already had purchased either a single ticket or a season pass. There are still some practical issues that could be fixed to make the facility more usable. These are mostly issues related to the condition of the track and its surroundings. Also, cheaper entry fees could make the first snow ski track more accessible.

Many studies have aimed to clarify whether wealthier people practice more sports. For example, Suomi (2012, 63–68) studied Finns and Nyholm (2016, 45) people who lived in Jyväskylä and both found out that those who earned more were more active on their leisure. The results of this case study about Laajavuori first snow ski track do not support the findings of Suomi (2012) and Nyholm (2016). Cross-country skiers who belonged to the lowest income group (0–14 999 €) participated in sport most ($p=0.000$). No statistically significant difference was found between income level and skied kilometers ($p=0.203$).

Comparing results from earlier studies of Suomi (2012) and Nyholm (2016) to the current study is challenging as some studies take into consideration only personal income and some take incomes by household. Physical activity can also be measured and categorized in many ways. It can mean active commuting, physical activity, exercise or sport. For example, in the current study respondents were asked how much they do physical activity. Active commuting to work was left outside as there was another question concerning that.

One explanation for the results that differ from the earlier findings, is the fact that the respondents were not random residents of Jyväskylä, but all the respondents were users of the first snow ski track. So, the sample consisted of physically active people. This did not come as a surprise since all the skiers were contacted because of their connections to the first snow ski track. They had either purchased a season pass earlier or were using the track with a single ticket.

There were some interesting differences and similarities in the opinions of the cross-country skiers about skiing circumstances and their willingness to pay compared to earlier findings. These will be discussed next.

Sixty-eight percent of the respondents thought that cross-country skiing should be practiced in a snowy natural environment. In an earlier study (Määttä 2010, 60) the amount was 75 percent. It might be the case that this number has gotten smaller because Finns are getting more and more used to the warmer winters with less snow. It can be speculated if Finnish cross-country skiers are nowadays more willing to accept other kind of circumstances and surroundings, maybe first snow ski tracks or ski tunnels. It is also good to notice that this question was on an ideal level. In ideal world cross-country skiing should be practiced in snowy natural environment but that kind of circumstances are getting less common. This makes cross-country skiers think more of the “could” side. They are probably thinking where and when cross-country skiing can be practiced and where the proper circumstances for cross-country skiing lie.

Traditionally many outdoor sports have been free in Finland. Natural areas have been accessible to all Finns who want to be active outdoors. In this study, 35 seemed willing to pay for outdoor sports. Earlier in 2010, 29 percent of the users of two ski tunnels seemed ready to pay. (Määttä 2010, 69) Now fewer cross-country skiers think that all kinds of outdoor sports should be practiced for free. It might be that the winters with limited snow cover have caused a slight change in the attitudes of the skiers. Skiers are now more willing to pay for outdoor sports such as cross-country skiing.

Also, one thing to consider is the fact that the wording of this statement could be described as ideological and general. Respondents might have answered thinking football, swimming or disc golf instead of cross-country skiing. It might also be that the general

opinion of the Finns would be different. This means, that these results cannot be generalized to the whole of Finns but cautiously only to the users of chargeable cross-country skiing facilities.

Fifty-five percent of the respondents seemed ready to pay for the maintenance of the natural cross-country skiing tracks for the whole winter if the snow conditions would be minimal. No statistically significant difference was found between willingness to pay and persons income level. In Määttä's study (2010, 70) 61 percent of the users of the two Finnish ski tunnels seemed willing to pay.

It is interesting to note the conflicting results with two statements related to paying for practicing sports outdoors and paying for cross-country skiing on natural tracks. It seems that the willingness to pay for outdoor sports is higher but the willingness to pay for outdoor ski tracks is smaller than in 2010. Differences in both cases are only six percentage points so all interpretation needs to be cautious. It can still be concluded that the willingness to pay is clearly higher when it comes to natural ski tracks (61 % and 55 %) rather than outdoor sports in general (29 % and 35 %).

Going even more back in time, Huhtala (2004, 7) discovered that 65 percent on Finnish sample thought that they were not willing to pay for the opportunity to use cross-country ski tracks in the forests. It must be pointed out that in this study there was a random sample of over 12 000 Finns and the question was about natural ski tracks without any services. It might be that, as Huhtala (2004) pointed out, people could be more willing to pay if these areas would include services (Huhtala 2004, 8). A cautious conclusion could be drawn from these three studies that the readiness to pay for the maintenance of the natural cross-country skiing tracks is higher among the users of the cross-country skiing facilities that demand an entry fee. Readiness to pay is likely to be lower among the general population.

Landauer et al (2009) concluded that Finnish cross-country skiers in general were not willing to pay for cross-country skiing. Still, they found some differences when they categorized skiers to types and found out that the technical type was willing to pay a fee to get to use the cross-country skiing tracks. Technical type skiers had a positive attitude towards artificial snow and ski tunnels. The social type on the other hand was willing to

pay for parking and services but not an entry fee. Many skiers thought that ski tunnels and artificial tracks could be financed through the combination of taxes and track fees. (Landauer et al 2009)

If Finnish people would have to pay to use the natural cross-country skiing tracks, probably many people would think again whether they want to practice cross-country skiing or substitute this hobby with something else. Finnish cross-country skiers can use activity substitution (practice something else), temporal substitution (ski less) or spatial substitution (skiing in other places) (Dawson et al 2011). These are related to the theory of leisure substitutability (Iso-Ahola 1986) discussed in chapter 3.3. It is also related to research made by Landauer et al (2009), as different skier groups react differently to changes in the environment. Cross-country skiers who belong to the technical and outdoor types are most likely to accept technical adaptation strategies such as artificial snow or ski tunnels (Landauer et al 2009). Cross-country skiers that belong to these two categories might be potential customers of first snow ski tracks and ski tunnels.

7.3 Cross-country skier categorizations

Respondents can be categorized as very active skiers. Many of them skied over thousand kilometers previous winter (active recreational skiers) and some even over two thousand kilometers (active competitive skiers). These kilometer amounts go well in hand with the categorization Määttä (2010, 46–49) formed about the users of two Finnish ski tunnels. At the first snow ski track active competitive cross-country skiers skied over two thousand kilometers as did the serious cross-country skiers in Määttä's study. Active recreational skiers on the other hand skied more than the pleasure skiers but the difference was not that significant. Both groups practiced skiing regularly. Määttä named the third group as experimenters and it consisted of people who were cross-country skiing for the first time. People who skied occasionally were also categorized as experimenters. At the first snow ski track the occasional skiers were not mostly first timers but people who go cross-country skiing occasionally as their average was 351 kilometers.

The categories are somewhat similar in this study and in Määttä's (2010) study but there are also differences. The comparison of these categorizations is not simple as the current study is based on given answer options. Määttä (2010, 46–49) formed the groups on a

different way based on skied kilometers and motives. Still, similarities can be found. Other Finnish studies have been about cross-country skiers on natural ski tracks, so these results are not directly comparable. For example, one of the categories in the study of Landauer et al (2012) was mobile cross-country skiers. They were really into cross-country skiing and wanted to develop their skills. They also valued good conditions, were open to technical adaptation and willing to pay user fees. (Landauer et al 2012) This group of mobile cross-country skiers reminds a lot the users of the first snow ski track in Laajavuori Jyväskylä.

The concepts of serious leisure (Stebbins 1982) and dutiful performer (Vehmas 2010) can be used when describing majority of the users of the first snow ski track. Many of the skiers wanted to become even better in cross-country skiing and spent a lot of time skiing. They searched for challenges and participated in competitions. They also identified themselves as part of the group that practiced cross-country skiing at this first snow ski track. Though, unlike in the Stebbins' (1982) concept of serious leisure, these skiers did not practice skiing in clubs but rather often skied on their own. They seemed to know each other and interacted on the track. This might imply that these skiers did not have the need to be members of an official club, but they instead had this vaguer group of cross-country skiers that they identified with.

7.4 Evaluation of the study and future study needs

It seems that the respondents were happy to answer the questionnaire. This might be because the questionnaire was quite fast to fill, dealt a topic close to them and did not include any sensitive questions. Respondents seemed to be keen on developing the first snow ski track as they had filled the questionnaire with great care. They also seemed to know details well as many of them noticed the mistake in the original questionnaire about the price of the individual ticket. This mistake was corrected to the internet form and to the printed questionnaire as soon as it was noticed. In addition, the questionnaire could have been more functional in some parts. For example, one question addressed how the climate change has affected respondents cross-country skiing hobby. Many respondents only stated that it has changed or that it has not changed but offered no arguments. With a bit differently formulated question people could have also written about their reasoning.

Majority of the respondents were adults but there were also some underaged cross-country skiers. In the future this kind of questionnaire could be targeted only to adults. In this study the aim was to have a picture about the users, so the only criterion was that the respondent had purchased either a single ticket or a season pass. It must be pointed out that if underaged respondents are included in the study the researcher needs to pay additional attention to the fact that parents should give a permission for their kids' attendance. It seemed at this study that the underaged respondents were at the first snow ski track with their parents, mostly with their fathers and filled the questionnaire together.

The paper questionnaire had a cover page explaining the basic purpose of the study. The emailed questionnaire link also had an introductory text about the purpose of the questionnaire. It had an explanation how their contact information was received and how the data would be handled. There was also a list of responsible researchers with their contact information. The idea of this text was to inform the respondents about the facts, to encourage them to answer and give them a chance to influence on the development of the track. The total number of 327 filled questionnaires was up to the mark as the original goal was to get around three hundred filled questionnaires. The number of filled questionnaires gives an insight of the users of the first snow ski track in Laajavuori Jyväskylä. Unfortunately, the total number of users is unknown, but it is estimated to be around 1800. Even more respondents could have been reached if the first round of questionnaires would have been sent earlier. Now the first questionnaires were sent at the beginning of November and the track was opened mid-October.

This study has brought some valuable new information about the profiles and motives of the Finnish first snow ski track users. As this is the first study about the users of the first snow ski tracks in Finland, more research is needed about the topic. Is the profile of the users similar in other parts of the country? Is the user profile different in Northern Finland where majority of the ski centers are situated? The first snow ski track season could start earlier in Northern Finland because of the colder climate. There are also challenges as majority of the people travel there for downhill skiing and are maybe not as interested in cross-country skiing. A first snow ski track could function as an addition to other outdoor sport services and could attract different kind of users. For example, if skiing on the track was free of charge for the people who have purchased a ticket to the ski resort. An easy

start would be to create a first snow ski track and weigh if it is financially profitable. After that a decision about investing to a ski tunnel could be made.

It is also possible that first snow ski track or ski tunnel would not attract enough users and it could cause some economical challenges. This was the case with the ski tunnel in Helsinki and the owners had to close the property. It was sold to the city of Helsinki. It could be that instead of building ski tunnels, the future of cross-country skiing in Finland will be best secured by building first snow ski tracks.

It seems that Finns still consider cross-country skiing as an attractive winter sport and there is a need for cross-country skiing facilities. In 2010, 85 percent of skiers at two Finnish ski tunnels agreed that cross-country skiing will remain as one of the national sports of Finland (Määttä 2010, 72). In this current study the share was 82 percent. These numbers tell that at least the most active Finnish skiers still value cross-country skiing and think that it will maintain its status. In the near future, probably majority of the Finns who ski will participate in cross-country skiing at natural ski tracks when weather permits. The more enthusiastic cross-country skiers will most likely be found from the many first snow ski tracks around Finland. The most enthusiastic ones will probably use ski tunnels and take the advantage of their year-around services.

An interesting topic for future research would be to study what kind of leisure substitution Finnish cross-country skiers use. Would they substitute cross-country skiing with something as similar as possible? Would they give up cross-country skiing totally (activity substitution) or practice it in Northern Finland (spatial substitution)? How tightly would they hold on to cross-country skiing? Would the users of Laajavuori first snow ski track use ski tunnels even though those are not located close to Jyväskylä? It is also possible that they would substitute cross-country skiing with something very different, like reading a book or playing a musical instrument. It must be also noted that for majority of the people cross-country skiing is only a winter time hobby that is practiced only during the three or four coldest months. This means that cross-country skiers would have to substitute their cross-country skiing hobby only part of the year. They might substitute cross-country skiing with something they practice already during other times of the year.

The results offer valuable information especially to the company that operates the first snow ski track in Laajavuori. These results can also be used by other companies and cities that already have a first snow ski track or plan on building one. Results can be used as a background information for marketing material and can help targeting right audiences. For example, different skier types might want to ski on a different track. These results also help when considering the ticket prices and the needed services. The results of this study show that cross-country skiing is still an enthusiastically practiced sport in Finland and that there are users for this kind of sport facility.

These results might also help when weighting the pros and cons of first snow ski tracks compared to ski tunnels. Ski tunnels can be used year around but many of the ski tunnels in Finland have been economically in trouble. There have been less skiers during summer months which has caused economical difficulties. It seems that Finns still consider cross-country skiing as a winter sport. Leinonen and Virta (2009, 45) found out that majority of the skiers at Vuokatti ski tunnel were using the tunnel during September, October and November. This is the same time of the year that first snow ski tracks are open. This means that ski tunnels and first snow ski tracks are used for the same purpose: to start the cross-country skiing season earlier at the beginning of the winter.

The challenge lies in the fact that ski tunnels demand massive start investments for the construction. In addition, the maintenance demand cooling systems and employees. Their down side is also that they are not so enjoyable to use. Grey walls are usually near the track and the scenery does not change when skiing. The benefit of ski tunnels is that they are not weather dependent. Ski tunnels can be kept open every single day of the year. With ski tunnels cross-country skiing can become a year-around sport for some Finns.

First snow ski tracks are a competitive choice when offering cross-country skiing possibilities. The risks for the operator are not so high as the investments are smaller. However, the weather brings uncertainty. The operators cannot know when the first snow ski track can be opened and how long it will stay open. This makes marketing and ticket pricing challenging. This also affects the users as they can never know when the facility will be opened and how long the season will continue.

Apparently the first snow ski track in Laajavuori Jyväskylä has been an attractive facility to many cross-country skiers. Some days the track has been so full that skiers have given negative feedback to the organizers about overcrowding. Some of these overcrowding issues could be solved by making the ski track longer in the future. One option would also be to reserve certain weekly times for competitive cross-country skiers and leave the other times for open use.

One interesting point is that it is likely that the snow situation during the past couple of winters have affected peoples' expectations. During two previous winters 2015–2016 and 2016–2017 the snow cover was quite limited. In Jyväskylä, the natural cross-country ski tracks were opened only in late January. This could have caused the cross-country skiers to anticipate that winter 2017–2018 would be similar and snow would arrive quite late. Maybe this caused skiers to purchase the season pass to the first snow ski track more enthusiastically. Maybe previous winters had made them value cross-country skiing opportunities at the first snow ski track even more. As it turned out, winter 2017–2018 offered good snow cover and good cross-country skiing conditions in Jyväskylä. It would be interesting to know how this affects to people's expectations towards winter 2018–2019. If people expect a snowy winter with long cross-country skiing season, it could also impact how enthusiastically cross-country skiers will purchase season tickets to the first snow ski track.

A good question is whether there are enough customers for all the cross-country skiing facilities. The first snow ski track in Laajavuori Jyväskylä is in a good situation because it has no real competition in the area. There is no other first snow ski track or ski tunnel within one-hour drive from Jyväskylä. It seems that the first snow ski track in Laajavuori Jyväskylä is on a solid base and it has a regular customer base. It has been in place for the past eight seasons, it has a webpage and a Facebook page. Organizers of the track informed already at the beginning of year 2018 that the aim is to construct an even longer track for winter 2018–2019. Some cross-country skiers are even so into cross-country skiing that they wanted to purchase a season pass for the next winter already eight months before the beginning of the season.

There have been first snow ski tracks in Finland for about the past ten years. If the global warming continues and the predicted scenarios come to reality, then these facilities can

offer a solution for the future decades. One of the problems is that it might be too warm already during the winters in the 2100s so that first snow ski tracks cannot be used. Then the one option for Finnish cross-country skiers will be to travel to Northern Finland or to practice cross-country skiing indoors in ski tunnels. This might cause some people to give up cross-country skiing because of the costs or because they have valued nature aspects that are not there anymore. It might be that the younger generations will not be familiar with cross-country skiing and cross-country skiing loses part of its popularity. Luckily these changes are in the future and at the moment first snow ski tracks offer a suitable option for prolonging the cross-country skiing season.

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APPENDIX



Jyväskylän ensilumenlatu

1. Sukupuoli

- mies
 nainen

2. Ikä

3. Asuinpaikkakunta:

4. Korkein koulutustaso

- peruskoulu
 ylioppilas
 ammattikoulu
 alempi korkeakoulututkinto/amk
 ylempi korkeakoulututkinto
 muu, mikä?

5. Ammatinimike

6. Henkilökohtaiset bruttotulot vuonna 2016

- 4 999 € 80 000 - 99 999 €
- 5 000 - 9 999 € 100 000 €
- 10 000 - 14 999 €
- 15 000 - 19 999 €
- 20 000 - 24 999 €
- 25 000 - 29 999 €
- 30 000 - 39 999 €
- 40 000 - 49 999 €
- 50 000 - 59 999 €
- 60 000 - 79 999 €

7.

Sosioekonominen asemasi?

- opiskelija
- työntekijä
- alempi toimihenkilö
- ylempi toimihenkilö
- itsenäinen ammatin harjoittaja/yrittäjä
- eläkeläinen
- työtön
- jokin muu ryhmä, mikä?
-

8.

Kuinka usein harrastat liikuntaa vähintään 20 minuuttia niin että ainakin lievästi hikoilet tai hengästyit? (älä laske mukaan työmatkaliikuntaa)

- En lainkaan
- Kerran kuukaudessa
- 2-3 kertaa kuukaudessa
- 1-2 kertaa viikossa
- 3-4 kertaa viikossa
- 5-6 kertaa viikossa
- Joka päivä

9. Kuinka kauan yleensä harrastat liikuntaa yhdellä kerralla?

- Alle 10 minuuttia
- 10-20 minuuttia
- 20-40 minuuttia
- 40-60 minuuttia
- 60-90 minuuttia
- 1.5 tuntia tai enemmän

10.

Kuinka monta minuuttia kävelet, pyöräilet tai kuljet muulla ruumiillista liikuntaa vaativalla tavalla työmatkallasi? (Huom! tarkoitetaan yhteensä meno- ja tulomatkaan käyttämäsi aikaa)

- En ole työssä tai kuljen työmatkat kokonaan moottoriajoneuvolla
- alle 15 min päivässä
- alle 15-29 min päivässä
- alle 30-44 min päivässä
- alle 45-51 min päivässä
- yli 1 tunnin päivässä

11. Kuinka usein osallistut urheiluseuran harjoituksiin tai muuhun ohjattuun liikuntaan?

- En ollenkaan
- Kerran kuukaudessa
- 2-3 kertaa kuukaudessa
- 1-2 kertaa viikossa
- 3-4 kertaa viikossa
- 5-6 kertaa viikossa
- Joka päivä

12. Kuinka paljon arviolta hiihdit viime talvena (2016-2017)?

km	<input type="text"/>
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13. Miten kuvailisit itseäsi maastohiihdon harrastajana?

- Aktiivinen kilpahihtäjä
 - Aktiivinen harrastehihtäjä
 - Harrastan hiihtoa silloin tällöin
 - jokin muu, mikä?
-

14. Osallistutko kilpaurheiluun?

- En
- Kyllä

15. Missä lajeissa ja millä tasolla?

	Lajin nimi	Taso				
		puulaaki	seura	piiri	kansallinen	kansainvälinen
Laji 1		<input type="radio"/>				
Laji 2		<input type="radio"/>				
Laji 3		<input type="radio"/>				
Laji 4		<input type="radio"/>				
Laji 5		<input type="radio"/>				

16. Onko sinulla on Jyväskylän ensilumenladun kausikortti

- Ei
- Kyllä, ensimmäistä kertaa
- Kyllä, toista kertaa tai useammin
- Kyllä, ensimmäistä kertaa, mutta olen hiihtänyt ensilumenladulla aiemmin kerralipuilla

17. Aiotko hankkia Jyväskylän ensilumen kausikortin myös jatkossa?

- Kyllä, miksi?

- En, miksi?

18. Kenen kanssa hiihdät ensilumenladulla yleensä (voit valita useamman vastausvaihtoehdon)?

- yksin
- puolison ja/tai perheen kanssa
- ystävien/kavereiden kanssa
- työkavereiden kanssa
- jonkun muun, kenen?

19. Minkä vuoksi haluat aloittaa hiihtokautesi ensilumenladulta?

20. Ovatko ilmastonmuutos ja vähälumiset talvet vaikuttaneet maastohiihtoharrastukseesi?

21. Miten arvioit erilaisten palveluiden, kuten ensilumenlatujen lisääntymisen tulevaisuudessa vaikuttavan maastohiihdon harrastamiseen?

22.

Rastita sopivin vaihtoehto

	täysin samaa mieltä	jokseenkin samaa mieltä	En osaa sanoa	jokseenkin eri mieltä	täysin eri mieltä
Jyväskylän ensilumenladun kausikortin hinta (100€) on sopiva	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jyväskylän ensilumenladun päivälipun hinta (10 €) on sopiva	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kaikenlainen ulkoliikunta, kuten maastohiihto, tulisi olla ilmaista käyttäjille.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Olen tyytyväinen Jyväskylän ensilumenladun latujen kuntoon.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Olen tyytyväinen Jyväskylän ensilumenladun muihin palveluihin.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensilumen hiihtomahdollisuudet vastaavat hyvin tämän päivän kysyntään.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maastohiihto säilyy kansallisurheiluna myös tulevaisuudessa.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jos lumiolosuhteet ovat rajoitetut, olen valmis maksamaan käyttömaksun koko talvelta, myös luonnonlumilatuja kunnostamisesta.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maastohiihtoa kuuluisi harrastaa lumisessa luonnonympäristössä.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23.

Miten kehittäisit lasten ja nuorten hiihdon harrastusolosuhteita Jyväskylän ensilumenladulla?

24. Miten kehittäisit hiihdon harrastusolosuhteita ja palveluita muuten Jyväskylän ensilumenladulla?
