Understanding, Assessing and Conceptualising Visitor Compliance under Open Access
The case of Trail Pass Systems for Cross-Country Skiing in Sweden

Jana Brehmer

Main supervisors: Professor Peter Fredman

Co-supervisors: Associate Professor Tobias Heldt

Faculty of Human Sciences

Thesis for Licentiate degree in Tourism Studies

Mid Sweden University, Department of Economics, Geography, Law and Tourism

Östersund, 2025-11-14

Akademisk avhandling som med tillstånd av Mittuniversitetet i Östersund framläggs till offentlig granskning för avläggande av filosofie licentiatexamen Fredag, den 14 November, 2025, Mittuniversitetet Östersund. Seminariet kommer att hållas på engelska.

Understanding, Assessing and Conceptualising Visitor Compliance under Open Access
The case of Trail Pass Systems for Cross-Country Skiing in Sweden

Printed by Mid Sweden University, Sundsvall

ISSN: 1652-8948

ISBN: 978-91-90017-36-4

Cover *Abstract trails* oil on canvas by Jana Brehmer

Faculty of Human Sciences
Mid Sweden University, SE-83125 Östersund
Phone: +46 (0)10 142 80 00

Mid Sweden University Licentiate Thesis 211

Ποταμῷ οὐκ ἔστιν ἐμβῆναι δὶς τῷ *αὐτῷ*. (- Heraclitus)
…to everyone who is navigating this river with me.

Acknowledgements

There were some important people who helped me during the past 2 ½ years and showed me how to comply with the 'trail passes' of research and life. This is for you!

My sincere thanks go to my supervisors Peter and Tobias who allowed me to mature academically in my own way. Peter, despite not spending much office time together, I constantly felt your support and reliability in guiding me. Your advice and pragmatism kept me calm and confident in each step of the Licentiate process. Tobias, from the first day as a Licentiate student, I felt your deep trust in me and my skills, which allowed me to make decisions and take research directions with courage. Your advice empowered and prepared me for the future.

My heartfelt thanks to my colleagues at CETLER and in Dalarna. Your doors are always open for encouragement, feedback or a chat, which I treasure so much. I thank Beatrice as my mentor and fun office roommate who always offers appreciated advice, Eleonora as the best conference and chat companion, and Elin - most of this thesis was written by your supportive, light-hearted, and bright side!

My warmest thanks to my team at ETOUR and in Östersund. You make being a student 'between two universities' easy and enjoyable. Thank you for always having time for a check-in, fika, and afterwork during my visits to Jämtland. Maria and Lusine, many thanks for your invaluable feedback that guided me during the last months leading up to the defence.
Anke and Elena, you (and Hugo) made me look forward to every 7-hour trip up to Östersund. The support system (and giggles) we have

created is something that I will forever hold dear. I can't wait to celebrate you and all fellow PhD students at Miun and DU!

Bente, Inga, Theo, Antonia, Emma and each of my beloved friends between Deutschland, Ελλάδα, and Sverige - how lucky I am to have you! I am endlessly grateful that you laugh, suffer, and live with me. You know how much I need and adore you!

Mama, Papa, Michel, Oma, knowing that I will always have a *pinkes Zimmer* to turn to, gives me strength and confidence in everything I do. Your support is unconditional, and I am eternally thankful that you would do a 1000 *Umzüge* for me to reach my goals and dreams. Von Herzen danke!

Lastly, Vagelis, Vagi, Face mou, while I do my Licentiate, you already have a PhD in Jana-Sciences. Only you manage to be my wings and anchor at the same time, knowing when it is time to fly and when I need to ground myself. You found a way to give me space to grow while also providing a comfortable frame to fall into - a gift that I appreciate every day. You are the only person I want to travel this journey with. I owe you this and so much more. I am yours.

With love,
Jana

Östersund, November 2025

Contents

Abstract

This licentiate thesis investigates visitor compliance with funding models for recreational infrastructure in legally and geographically open access settings, where payment is requested but not enforceable. Focusing on Swedish cross-country ski trails, the thesis examines how compliance with trail pass systems can be understood and assessed in the context of public access rights and commercial service provision. By combining qualitative interviews with cross-country skiers (Paper I) about the reasons for compliance with a quantitative data-driven triangulation to assess the compliance rate (Paper II), the thesis provides a mixed-methods perspective on compliance behaviour.

The findings challenge traditional compliance theories that separate compliance in the context of private and legally enforceable goods from compliance in the context of common goods, arguing that open access products must be understood and conceptualised as a mixture of both, given that they are operating within a *legal grey zone*. A visualisation presents compliance in the context of private and common goods and where these domains intertwine. Social norms, including perceived peer behaviour, perceived transparency, trust, and fairness in the provider and personal conviction and reward, partly based on legal frameworks, emerge as critical interlinking factors that guide compliance behaviour in the study context. The assessment of a compliance rate can be complemented by focussing on enhancing the social norm of paying for groomed trails and perceived compliance of peers.

The thesis advances research on nature-based tourism and outdoor recreation management, working toward a better understanding of how tourism infrastructure that depends on visitor compliance can be sustainably financed using behavioural insights. It draws on compliance and behavioural theory to better understand request-following in contexts where legal enforcement is limited or absent.

The findings have practical relevance for trail providers, policy makers and tourism destination managers to consider for the framing of payment requests.

Summary in Swedish

Denna licentiatavhandling undersöker besökares regelefterlevnad för finansieringsmodeller inom rekreationsområdet där tillträde till infrastrukturen (spåren/lederna) är både juridiskt och geografiskt öppna, och där spårhållaren efterfrågar en betalning men saknar juridiskt stöd att genomdriva densamma. Med fallstudie på svenska längdskidspår undersöker avhandlingen hur efterlevnaden i ett spårkortssystem kan förstås samt mätas i en kontext som kännetecknas av allemansrätt och öppet tillträde men också en lagstadgad rätt för spårhållaren att sälja spårkort som en kommersiell produkt. Genom att kombinera kvalitativa intervjuer med skidåkare (artikel I) om skälen till efterlevnad, med en kvantitativ triangulering av data för att bedöma graden av efterlevnad (artikel II) bidrar avhandlingen med perspektiv på efterlevnadsbeteende.
Resultaten utmanar traditionella teorier om efterlevnad som skiljer mellan efterlevnad för varor och tjänster som är privata och juridiskt möjliga att genomdriva betalning förverkställbara och efterlevnad för så kallade common goods (gemensamma nyttigheter).Resultaten pekar på att produkter med öppen tillgång måste förstås och konceptualiseras som en blandning av båda sammanhangen, eftersom de verkar inom en *juridisk gråzon*. En visualisering presenterar efterlevnad i sammanhanget privata och gemensamma nyttigheter samt visar hur dessa domäner sammanflätas. Sociala normer, upplevt beteende hos andra i gruppen, upplevd transparens och förtroende för spårleverantören, delvis baserat på rättsliga ramar, framträder som kritiska sammanlänkande faktorer som styr

beteendet. Bedömningen av graden av efterlevnad kan kompletteras genom att fokusera på att stärka den sociala normen att betala för preparerade spår and uppfattad efterlevnaden inom gruppen.

Avhandlingen bidrar till forskningen om naturbaserad turism och förvaltning av friluftsliv, och syftar till att öka förståelsen för hur rekreationsinfrastruktur som är beroende av besökarnas efterlevnad kan finansieras på ett hållbart sätt med hjälp av insikter från beteendevetenskapen. Den bygger på teorier om efterlevnads och beteendeekonomi för att bättre förstå efterlevnaden i system och sammanhang där lagstiftningen är begränsad eller saknas. Resultaten har praktisk relevans för spårhållare *spårpassarrangörer*, beslutsfattare samt ansvariga för turismdestinationer och ger insikter för hur utformningen av krav på betalning kan formuleras.

List of papers

Paper I: Brehmer, J., Heldt, T., Fredman, P. (2025). Understanding visitor compliance with cross-country ski trail passes under open access. *Journal of Outdoor Recreation and Tourism*, 51, 100924. https://doi.org/10.1016/j.jort.2025.100924

Paper II: Heldt, T., Brehmer, J., Alnyme, O. (forthcoming). Using multiple data sources to assess compliance with a trail pass funding model under open access: A case of cross-country ski trail pass in Sweden. *Manuscript.*

List of tables

List of figures

1 Introduction

As well as providing access to nature, recreational trails are increasingly important for creating opportunities to perform outdoor activities with high-quality experiences. Research and industry observations have proven that recreational trails generate economic value to nature-based tourism destinations (Lukoseviciute et al., 2022, Bowker & Bergstrom, 2007). The fact that in the USA alone more than USD 201 billion was spent on trail sports in 2016 (Outdoor Industry Association, 2017) confirms the economic impact of trails and that they "constitute tourist attractions themselves" (Timothy & Boyd, 2015 cited by Godtman Kling, 2019, p. 50). An increase in interest in nature-based tourism and outdoor recreation, which was amplified by the COVID-19 pandemic (Skriver-Hansen et al., 2022; Thompson, 2020; Venter et al., 2020), has increased both the demand for quality trails and the strain on ecosystems. Recreational trails can steer visitors through nature, as long as sufficient funding for maintenance and nature protection is ensured (Wolf et al., 2019). In that way they further enhance the visitor experience by ensuring safety along the trail use (e.g., MacLeod, 2016). Studies have "stressed that environmental conservation and trail-related activities can be compatible if there are investments allocated for infrastructure development and accessibility control" (Lukoseviciute et al., 2022 p. 367 citing Wolf et al., 2019). Therefore, high-quality and well-maintained trails shape visitor satisfaction, influence destination choice, and contribute to the economic performance of nature-based tourism providers.

In this thesis, recreational trails are regarded as both physical infrastructure and experiential tourism products that support and shape nature-based tourism and outdoor recreation. While outdoor

recreation refers broadly to leisure activities conducted in nature, often with local participants and low demand for services, nature-based tourism involves commercial and institutional dimensions, including marketing, service provision, often included in wider destination management (e.g., Fredman & Tyrväinen, 2010; Buckley et al., 2003). The present thesis positions recreational trails at the intersection of these concepts as recreational trails are shared by highly experience orientated tourists and frequent, local visitors.

Increasing (international) tourism (Tillväxtverket, n.d.), as well as demand for outdoor recreational spaces during COVID-19, have contributed to the commodification of outdoor spaces in Sweden, alongside shifting recreation patterns. Inter alia, private businesses have picked up on the above-mentioned economic opportunities presented by recreational trails, with increasing investments in trail infrastructure and related services (Lukoseviciute et al., 2022), ultimately establishing recreational trails as a tourism product. Preparing trails involves costs related to, for example, trail blazing, cleaning of trails, supply of maps, construction of artificial barriers, grooming for cross-country ski and provision of related services and amenities (toilets, signage, etc.). To maintain their high product quality, the revenues of businesses providing trails must cover the above-mentioned expenses. In such professionally maintained and commercialised settings, a common funding model is the implementation of user-fee systems, such as **trail passes**. The purchase of a fixed-price trail pass is framed as necessary to enter the trail, often stating a detailed price list and the chance of spot checks (see Figures 11 and 12). However, open access terrain, with unrestricted entry and exit points, creates enforcement challenges. Further, when these trails are situated in areas governed by the Right of Public Access, securing user compliance with such funding models

and enforcements become complex from a legal perspective. At destinations where the Right of Public Access prevails (such as Sweden, Norway, Scotland, and Switzerland), trail pass systems face legal limits. **Trail providers find themselves caught between the demand for high-quality trails and the funding required to offer them at the requested quality. Therefore, they rely on visitors' compliance to pay a fee.**

The scientific problem upon which this thesis is grounded lies in the dilemma of how tourism infrastructure that contributes to destination appeal and visitor experience can be lastingly financed in environments where direct enforcement of payment is limited. This is both a conceptual and practical challenge. So far, few studies have investigated the management and financing of recreational trails (Godtman Kling et al., 2017), especially under geographically open access with uncertain/unregulated legal conditions. The sustainable provision, financing and management of non-exclusive goods, which are central to nature-based tourism and recreation, remains a challenge. Beyond recreational trails, similar challenges of funding open access nature-based tourism arise in contexts such as coastal access management, public park usage, and cultural heritage sites, where the enforcement of visitor fees is limited or legally constrained. These examples underscore a broader problem within tourism science: how to design effective and accepted funding strategies for open access tourism products and how to assess their success when compliance is difficult to observe (e.g., Bergseth et al., 2015). Despite its relevance, this problem has not been adequately addressed from the perspective of visitor compliance, with limited empirical research focusing on the behavioural motivations of visitors in response to non-enforceable payment requests. Most previous research has focused on compliance with requests for social and environmental

respectful trail use (e.g., Peters & Fuchs, 2025; Nowak & Heldt, 2023; Hendricks et al., 2001).

By addressing these gaps, this thesis places the visitor and their compliance behaviour at the centre of the research, offering a behavioural perspective on how individuals respond to funding requests in open access tourism settings. By doing so, it positions compliance with fixed-price payment requests as a theoretically important but underexplored phenomenon in the context of nature-based tourism and public access. Importantly, in the open access setting, compliance behaviour is not simply equivalent to purchase behaviour, as non-purchase does not necessarily imply non-use. In behavioural economics approaches, the decision not to purchase typically ends the transaction. In open access contexts, however, the product (in this case, the trail) may still be used despite the absence of payment, thus qualifying as non-compliance behaviour rather than a simple consumer choice.

This makes rational choice models that assume individuals make payment decisions based on cost–benefit calculations insufficient to investigate compliance in this context. Instead, this thesis explores additional factors that influence compliance behaviour in open access tourism settings and how compliance can be assessed. Consequently, the thesis theoretically approaches compliance not from a strictly rational perspective but by integrating insights from behavioural theory on legal rule-following and social norms.

The aim is not to disregard rational choice theory per se, but to broaden the conceptualisation of compliance by incorporating factors that can be relevant in non-enforceable tourism contexts. Rather than testing a single theory, I aim to develop a context-sensitive and holistic understanding of compliance.

Understanding why individuals follow rules or contribute financially to a shared resource in the absence of formal enforcement or punishment, and how many do this, offers valuable insights not only for managing tourism services but also for governance structures in other contexts. Such (methodological) knowledge is theoretically and practically powerful. It is crucial for designing lasting and accepted funding models that balance accessibility to recreational infrastructure with financial viability, benefiting businesses, non-profit organisations, and public entities alike and – ultimately, through having high quality – visitors themselves.

1.1 Case study

The chosen case is Swedish cross-country ski trails in a resort context. As a country with Right of Public Access (*allemansrätt*) and a focus on outdoor recreation and nature-based tourism, Sweden has seen a research gap identified in relation to winter trail use (Godtman Kling, 2019, p. 59). Groomed cross-country ski trails (hereafter, groomed trails) are mechanically groomed, require consistent upkeep, and are, in a resort context, increasingly marketed as high-quality tourism products. Groomed trails in resort areas function not only as recreational infrastructure but also as key components of a destination's tourism offering, as well as a hub for outdoor recreation for second homeowners, and locals in the surrounding areas. Trail providers must balance the high expectations of visitors with the operational costs of grooming and maintenance without a legally enforceable mechanism to ensure payment. Fencing trails to ensure fee collection is a costly exercise and further contradicts the ideas of outdoor recreation at a landscape level. In Sweden, the Right of Public Access prohibits charging for general access to nature, although it does allow voluntary payments and certain exceptions for

fixed-price requests within designated facilities and if significant investments have been made to prepare the groomed trails (Naturvårdsverket, 2024). However, what a facility is, and the consequences of non-compliance remain legally undefined (Naturvårdsverket, n.d.). Therefore, also in a resort setting, the long-term viability of trail infrastructure is dependent on visitor compliance.

Public and semi-private trails, funded by municipalities or sports associations that mainly operate on a donation or membership system, have been complemented by resort-operated groomed trails in recent years, which offer consistent quality and additional services (waxing cabins, bathroom amenities, artificial snow, etc.). This commercialisation trend has been amplified by reduced funding for trails in municipalities (Petersson-Forsberg, 2014) and recent drastic cuts of governmental funding to the Swedish Environment Protection Agency (Naturvårdsverket), that is responsible to maintain publicly operated trails (Naturvårdsverket, 2024; Naturvårdsverket, 2025a). Expenditure of the administrative boards and governmental grants for recreational trails (*leder*) was reduced from SEK 39,574,000 in 2022 to SEK 22,449,000 in 2024 (Naturvårdsverket, 2025b, p. 69). Whereas these numbers do not exclusively capture groomed trails, the availability of funds for outdoor recreation has decreased by an average of SEK 75 million per year between 2022 and 2024 (Naturvårdsverket, 2025b, p. 8). Reduced financial and human resources pose challenges for many managers to keep up with necessary maintenance and ensuring the safety of trails and outdoor facilities (Naturvårdsverket, 2025b). Therefore, safety measures are prioritised over measures aimed at improving accessibility to nature (Naturvårdsverket, 2025b, p. 8). In a resort context, the provision of groomed trails with a trail pass system might be mainly driven by

responding to visitors' demand and ultimately by business opportunities; however, the trend of commercial groomed trails interplays with the above-mentioned tendency of governmental funding cuts for nature accessibility.

While prior research on trail use often has relied on self-reported data (e.g., Kubo et al., 2018; Nowak & Heldt, 2023), the discrepancy between stated and revealed behaviour is well documented, particularly in morally or ethically sensitive domains (Alem et al., 2018). The present thesis addresses this gap by combining quantitative and qualitative methods to examine not only (1) why visitors comply to a user fee when they are not legally required to, but also (2) how compliance behaviour can be assessed accurately. This dual approach allows for a more robust understanding of how compliance can be understood and measured in real-world settings and how this understanding can be used to conceptualise compliance under open access. Two ski resorts in Sweden, selected inter alia for their well-developed trail pass system, are used as a case study.
To address the challenges of understanding and measuring compliance, the following overarching research question is posed:

How can visitor compliance with trail pass systems be understood, assessed and conceptualised in a geographically and legally open access context?

The research question is approached through two separate studies that pose the following underlying research questions:

RQ1 (Paper I): Why do cross-country skiers comply with a trail pass system in a tourist resort with open access?

RQ2 (Paper I): How do cross-country skiers perceive a user fee-based trail pass system in the open access context?

RQ3 (Paper II): What is the compliance rate with a trail pass system of cross-country skiers at a ski resort?

By answering these research questions with (1) a qualitative interview study of cross-country skiers and (2) a quantitative data-driven comparison between two data sources and one complementary to assess a compliance rate, this thesis contributes at the intersection of several bodies of literature. Primarily, it advances research on nature-based tourism and outdoor recreation management, working toward a better understanding of how tourism infrastructure that depends on visitor compliance can be sustainably managed and financed. In addition, it draws on compliance theory and behavioural sciences to better understand request-following in contexts where legal enforcement is limited or absent. In a Swedish context, visitors may interpret groomed trails either as a commercial product (say, private good) or as part of the Right of Public Access (say, common good). This variation in perception reflects a spectrum of interpretations between private and common goods rather than a strict division. This conceptual distinction will be examined further in the theoretical framework.

The interdisciplinary approach allows one to understand both the motivations behind compliance and the compliance rate for a comprehensive foundation for trail providers seeking to balance economic sustainability with the principles of open access. The findings from this research offer practical implications for the framing of payment requests that encourage visitor compliance while maintaining public access rights.

The remainder of this thesis is structured as follows. First a framework for positioning compliance behaviour theoretically is established, with further focus on the challenge of assessing compliance. It then provides a contextual background on the case and study area. The methodology chapter presents the mixed-method approach, with an emphasis on methodological reflections. The two empirical papers are summarised and synthesised to highlight their respective contributions to the overarching research questions. Finally, the discussion and conclusion reflect on theoretical implications and practical relevance for funding models in the open access context.

2 Theoretical framework

This chapter provides a theoretical framework that is relevant to understanding compliance in the context of geographic and legal open access. Unlike most settings, where compliance is tied to clear legal obligations, this case presents a more ambiguous scenario: groomed trail access is governed by Sweden's Right of Public Access, yet payment is requested through what is *formally a voluntary* trail pass. However, in resort contexts, this trail pass request is often framed as mandatory, with signs and communication suggesting enforcement through reminders of spot checks (see Figures 11 and 12).

More precisely, the Swedish Right of Public Access (*allemansrätt*) prohibits the charging of visitors for access to nature but does allow voluntary payment models. However, there are legal exceptions within specific contexts: when groomed trails are part of a facility or significant investment for the provision of groomed trails have been made, a mandatory trail pass can be required, but what a facility is and consequences from non-compliance remain legally undefined (Naturvårdsverket, n.d.).

This creates a *legal grey zone* situation where visitors are requested to pay for a service that is delivered under legal open access conditions. In this thesis, the term *legal grey zone* does not refer to a clearly defined legal category but rather functions as a conceptual metaphor to describe areas of legal ambiguity where enforcement or institutional definitions are unclear, conflicting or weakly applied. Therefore, a *legal grey zone* arises when goods or services fall between established legal definitions.

It is not that everything related to public access rights constitutes a *legal grey zone*, nor does the principle *nulla poena sine lege* (no penalty without law) directly create one. In fact, the *allemansrätt* is outlined by informal outdoor access codes and handbooks developed by the

Swedish Environmental Protection agency.[1] Therefore, in the Swedish case, the *legal grey zone* is not the result of a lack of legal rules or frameworks per se, but rather of how legal authorities have handled conflicts around trail passes. While courts have acknowledged that trail providers may charge for groomed trail use, if they have incurred significant costs in the form of labour and materials and if the trails are part of a facility, they have failed to clearly define what constitutes a 'facility' or how much a 'significant investment' is, and have not specified the legal consequences of non-payment (Naturvårdsverket, n.d.). This lack of clarity produces a legal space in which obligations are presented without enforceable grounding. Importantly, the Swedish Environmental Protection Agency does refer to groomed trail facilities established by commercial same as (semi-) public providers (municipalities, sports clubs) (Naturvårdsverket, n.d.).

With groomed trails existing within this *legal grey zone*, their perceived character in the eyes of visitors can vary. A key distinction for the purposes of this thesis is whether cross-country skiers (hereafter, skiers) view the groomed trail as a **commercial product (that is, a private good)** or as a **free service under the Right of Public Access (that is, a common good).** This will depend upon many things, such as knowledge about the Right of Public Access, information provided about the trail pass, the context of the service delivery (type of ski trail, resort context, etc.) and socio-demographic background of the skiers. Rather than assuming a strict divide between private and common goods, I use these categories as

[1] https://www.naturvardsverket.se/495e3d/globalassets/vagledning/allemansratten/material/2025-handbok-engelska-latt-att-gora-allemansratt-a4-enskilda-sidor.pdf

conceptual anchors to understand how individuals interpret the offered product.

In economic terms, goods are commonly distinguished into four categories based on their excludability and rivalry: **private goods** (excludable and rival; for example, consumer products), public goods (non-excludable and non-rival, such as clean air), **common goods** (non-excludable but rival; for example fisheries or open access, groomed trails), and club goods (excludable but non-rival, for example membership-based streaming services) (Mankiw, 2012). These categories provide a framework for understanding how access and usage rights can vary across different types of goods. For the purposes of this thesis, the focus is placed on the private–common divide, as this best reflects the contrasting interpretive positions skiers may adopt in the Swedish open access context and the way resorts frame their trail pass system.
Resorts frame groomed trails as exclusive, with fixed entry prices, and the quality (and ultimately availability) of the groomed trails is affected by consumption (trails need to be regroomed); that is, they can be interpreted as private goods. Under public access rights and geographic open access, groomed trails can be interpreted as non-exclusive, but their quality and availability remain affected by consumption; that is, they are common goods.

Besides the possible interpretation by the skier, this conceptual distinction of trails as goods is also guided by existing compliance literature, which typically analyses compliance behaviour in relation to the nature of the good or service at stake. In most cases, the literature distinguishes between contexts where compliance is enforceable (for example, regulated access to enclosed nature with

entrance fees[2] at destinations without public access rights (Laarman & Gregersen, 1996)) and those relying on voluntary compliance (for example, donation-based funding for trails upkeep). These two directions serve as a structure for the theoretical framework, reflecting the broader insight that compliance is highly context sensitive.

If a skier considers the groomed trail a commercial, private, product with legitimate reasons to charge for it, compliance with legal rules and risk assessment are likely to play an important role in the decision to buy a trail pass. In this case, traditional compliance theories based on deterrence and the installation of punishment (Becker, 1968; Gibbs, 1968) serve a key function, as do theories around perceived fairness of laws and rules (Tyler, 1990). These can be complemented by theories that explain compliance behaviour based on the internalisation of the law and the alignment with one's personal values (Kelman, 1958) and previous research on fare evasion (e.g., Boyd et al., 1989; Delbosc & Currie, 2018; Su et al., 2021).
On the other hand, if the skier considers the groomed trail a non-commercial product with no, or weak, legitimate reasons to charge for, the willingness to contribute and voluntary support for a common good is likely to play a key role in the decision to pay for a trail pass. Here, theories around collective action (Ostrom, 1990), psychological rewards (Andreoni, 1990) and altruism (Bénabou & Tirole, 2006) come into play to explain voluntary compliance (Gurinskaya et al., 2024).
These two variations in perception shape how compliance behaviour unfolds, making this a useful lens through which to explore motivations and assessment of compliance.

[2] In Sweden, access to national parks is free of charge; therefore, the example of entrance fees is to be understood in an international context.

While this thesis uses the categories of private and common goods to structure the theoretical framework and discussion, it is important to clarify that these are not fixed or mutually exclusive categories. In practice, groomed trails may occupy various characteristics along a spectrum between private and common goods that could be described as a landscape of semi-private, semi-public goods (for example, trails operated by sport associations). Visitors' perceptions of the trail as either a private or common good reflect interpretive positions within this landscape, not a rigid dichotomy. Therefore, the private-common distinction is used here as a tool to showcase two dominant perspectives that skiers may adopt in this specific open access context. This framing helps unpack the different motivational drivers behind compliance behaviour in a setting where legal enforcement is minimal and other behavioural factors come into play.

With skiers' perception of the groomed trail as a private or common good providing two directions, this theoretical framework takes a broad approach that incorporates elements of theories of deterrence and compliance as well general behavioural influence theories to capture the multifaceted motivations and perceptions around compliance behaviour in the specific context of groomed trails in Sweden. The framework considers compliance behaviour to be context-sensitive, reflecting not only on (economic) rationality but also perceived fairness, personal values, and social norms. Through this lens, compliance becomes a function of both institutional and psychological variables. The following sections in this chapter approach this interplay by looking at compliance behaviour in the context of private and common goods and how compliance can be assessed.

2.1 Compliance behaviour in the context of private goods

While non-compliance with trail pass systems is legally undefined, some individuals may still perceive it as a form of wrongdoing not, least those that are not aware of the *legal grey zone* due to the Right of Public Access. The following section deals with several theories that are relevant for the research case and help explain why individuals choose to follow (or ignore) rules, regulations or payment requests (evasion). Whereas some theories emphasise the avoidance of punishment and institutional influences (Becker, 1968; Gibbs 1968; Tyler, 1990), others highlight the role of internal values (Kelman, 1958) or social influences (Nye, 1958; Cialdini & Goldstein, 2004). Additionally, in contrast to theories that consider the perspective of providers or authorities shaping compliance through policy, transparency and resource allocation, some frameworks focus on the motivations of individuals. Theories traditionally applied to criminal behaviour can help explain compliance, as they explore how people respond to perceived rules and legal expectations. These frameworks shed light on how factors like deterrence, trust in the authority, internalisation of the law and one's own values shape decisions. Therefore, crime theories remain applicable for understanding what influences skiers to buy a trail pass.

The **General Deterrence Theory** (e.g., Becker, 1968) frames compliance as a rational decision based on the perceived risks and benefits of non-compliance. The economic approach by Becker suggests that illegal activities *would not pay off* if the risk of detection and cost of punishment outweighs the potential benefits (Becker, 1968). Becker emphasised the role of authorities in determining optimal enforcement levels ultimately allocating resources (controls, law enforcement and prosecution) efficiently to deter non-compliance

(Becker, 1968). The theory assumes that individuals engage in a rational cost-benefit analysis about whether to comply or not (Becker, 1968). In the case of trail passes, while non-compliance is legally undefined, perceived deterrence plays a role. According to this theory, skiers may assess the likelihood of enforcement, such as random checks or surveillance, and choose to comply out of fear of being caught without a trail pass.

Gibbs (1968) built on the deterrence theory by agreeing that severity of punishment can act as a deterrent. Contrary to the general deterrence theory, he argued that individuals may "refrain from rule-breaking either due to the threat of enforcement or because the behaviour contradicts their personal beliefs" (p. 517). While the former aligned with general deterrence theory, the latter introduced a broader perspective on compliance, where factors beyond legal sanctions play a role. However, Gibbs does not seem to consider a combination of both to influence compliance behaviour and uses exclusive (OR) instead of inclusive (AND) phrasing in multiple occasions during his work ("Individuals may refrain from criminal act from fear punishment or because the act is contrary to their conscience or sense of values", Gibbs, 1968, p. 517). Despite his overall research and findings on relevance of deterrent for compliance behaviour, Gibbs referred to and reflected on social condemnation as a result from legal reactions to crime and to non-compliance (p. 517, 528). As one of the firsts scholars, Gibbs described how this social condemnation can become part of the value systems of individuals who then have "'internalized' the norm (in this case the law)" (Gibbs, 1968, p. 517). He reflected that the internalisation of the norm ultimately "operates to check criminality independently of legal reactions" (Gibbs, 1968, p. 517). This way however Gibbs contradicted himself if social condemnation ultimately works independently of the law (discussed further on p. 76). Kelman (1958)

described this internalisation in more detail, focusing more than Gibbs and Becker on the individual instead of the enforcing authority. Kelman argued that compliance behaviour can form the start of a possible attitude change (Kelman, 1958), which Gibbs described as a social condemnation and value system. Kelman (1958) named three different processes of influence and how an individual accepts influence on induced behaviour, which can lead to an **attitude change** from compliance over identification to internalisation. In this theory, compliance forms the behaviour where the result of a specific behaviour (for example, no punishment) brings the satisfaction, identification is when the act of complying (not the reason why) feels rewarding and motivates behaviour, compared to an internalised response, where the content of the request or rule itself is part of someone's own values and is rewarding (Kelman, 1958). A behaviour is *internalised* when "the content of induced behaviour, the reasoning, is intrinsically rewarding" (Kelman, 1958, p. 53) and matches with one's value system.

Kelman's work gave first ideas of a broader perspective on why the individual chose to comply and the "social influences which affect [these] decision-making processes" (Kelman, 1958, p. 59). *Ideally,* the processes build on each other, leading to a behavioural change from compliance to internalisation to reach high compliance without the need for surveillance or registration by the authority. From a resort perspective, the internalised process forms the *ideal situation.* Whereas a skier might have initially complied out of fear of punishment, their reasoning for compliance might have changed after using the service and internalising the idea of needed funding. The importance of identifying why individuals comply to define their ability to change and be influenced to reach high compliance becomes evident (Kelman, 1958) and forms a base of this thesis.

Other works, such as Tyler (1990), test traditional compliance theories by asking "do people comply with rules primarily because they perceive they have something to gain thereby [very much Kelman's words] or do people comply because they feel they ought to, regardless of the outcome?" (Ross, 1991, p. 1055 citing Tyler, 1990). Tyler's research shows that legitimacy – the belief that legal authorities have the right to obey and to do so in a fair way – plays a more significant role in compliance behaviour than general deterrence. According to this, individuals are more likely to accept and follow rules and laws when they perceive the legal process as fair, even if they disagree with specific outcomes (Tyler, 1990). Fair treatment by police and courts fosters (voluntary) compliance (Tyler, 1990). "Compliance with legal rules is strongly related to the perceived legitimacy and morality of the authorities [in the presented case: the trail providers] but not to [...] likelihood of punishment or peer attitudes" (Ross, 1991, p. 1056 citing Tyler, 1990).
The theory relies on the perceived fairness by the individual, which is influenced by the level of neutrality of the authorities and trust in authorities' concern for the public (Tyler, 1990).
Ultimately, Tyler's findings suggest that increasing trust in legal institutions through fair treatment of citizens can improve long-term compliance more effectively than harsh penalties. Overall, Tyler's theory on "Why People Obey the Law" shifts the focus from deterrence to legitimacy.
This theory is directly applicable to groomed trails and fixed pricing request by resorts. It relies on perceived fairness in the skiers if the resort has the right to charge a fee and is charging a fair amount for the high-quality trail product that skiers demand.

A common feature of the compliance theories developed by Becker, Gibbs, Kelman and Tyler is that the action and reaction of authorities influence an individual's compliance. However, they barely discuss

intrinsic motivation of the individual that exist independently to the authority's treatment and reaction.

Another factor that has been found to relevant to compliance behaviour is social influences (Cialdini & Goldstein, 2004). Previous research argues that, as social norms influence behaviour (Cialdini et al., 1991; Cialdini & Goldstein, 2004), they ultimately influence compliance due to the need/willingness to act socially conform based on social norms and expectations and peer behaviour. Simply put for the presented case, skiers may decide to buy a trail pass because they see others doing it (in contrast to Tyler, 1990, see p. 18). Highly relevant to the case of trail pass compliance in the open access setting is the **social control theory** (Nye, 1958) which, like Cialdini and Goldstein, discusses social norms to influence compliance. However, the social control theory starts from the assumption that criminal behaviour corresponds to the original nature of human beings and investigates why most people nevertheless behave in a (socially) conformist manner. Nye reverses the initial question of crime theories by asking '*why don't they break the law*?' and argues for the influence of parents, family and authority figures and their (dis)approval of behaviour to influence (non-)compliance. Whereas the theory has been critiqued for emphasising the control focus around the family, it provides a useful framework towards the question '*why do skiers buy a trail pass*?', especially considering the challenges of securing reliable data on the compliance rate in an open access setting.

2.1.1 Compliance in the context of financing private goods under open access

Building on the theoretical models of compliance behaviour presented above, this section examines a selection of empirical studies that offer insights into the funding of open access services through compliance. While few studies have focused directly on trail

pass compliance in nature-based tourism, relevant parallels can be drawn from literature on fare evasion in public transport systems and research on perceived fairness in user fees.

Much of the compliance research in open access settings has focused on fare evasion in public transportation (Boyd et al., 1989; Delbosc & Currie, 2018; Guarda et al., 2016; Fürst et al., 2018). Such research is applicable to the presented case due to the open access (or unmonitored) context but limited in its applicability because of the possibility for fine and enforcement mechanisms. Riding the bus without a valid ticket is treated as an administrative offense in most countries. Studies on this subject aim to evaluate the cost-effectiveness of inspections (Boyd et al., 1989; Boyd, 2020) and to investigate different approaches to combat fare evasion (Delbosc & Currie, 2018). Delbosc and Curie (2018) reviewed the literature on fare evasion and different methods by which transport authorities have attempted to lower fare evasion rates. The *conventional approach* within transit system is to focus on system design, which means creating physical barriers, inspections or proof-of-payment. Newer – and ethically questionable research – has used *customer profiling* from survey data to identify possible non-compliance and increase inspection and enforcement. Lately, however, the approach of identifying customers reasoning and their understanding of fare evasion has been emphasised. Delbosc and Currie (2018) found that the *customer motivations perspective* offers deeper insights into how individuals perceive fare evasion, along with the attitudes, social norms, and situations that drive such behaviour. Elements that empirical research has identified as reasons for fare evasion, such as "attitudes, social norms, dissatisfaction, justification techniques and reciprocal relationships […] can potentially be influenced by service providers in order to reduce dysfunctional customer behaviour [non-compliance]" (Delbosc & Currie, 2018, p. 382). Recognising these

contributing factors can support more effective strategies to boost fare compliance than a conventional customer profiling approach. In the context of cross-country skiing within a legally undefined open access setting, the central question shifts from understanding why individuals evade payment to examining the underlying factors that motivate individuals to *voluntarily* comply despite having no legal obligation to do so. This emphasises the consideration of the social control theory described in the previous chapter (Nye (1958). However, the need to understand the reasons, motivation and influential factors behind behaviour to potentially change or at least influence behaviour becomes clear and can also be applied to the case of cross-country skiing in an open access context.

In the context of tourism research, few studies have dealt with the aspects of ticket evasion. Su et al. (2021) explored entrance fee avoidance in the historic town of Xitang, China, where tourists and residents engage in and facilitate fee evasion. Locals justify supporting non-compliance by pointing to unequal revenue distribution and a lack of perceived benefit from tourism fees, reflecting a disconnection between individual contributions and collective gains. The study highlights how compliance is undermined when residents feel that the revenue does not visibly return to the community. Legal enforcement is minimal, as authorities prioritise social harmony, making evasion a tolerated action. This aligns with theories of compliance behaviour that emphasise perceived fairness (Tyler, 1990). Su et al.'s article (2021) introduces a tourism-specific perspective on evasion seldomly captured in compliance research. It also demonstrates how informal community dynamics and weak enforcement create a de facto *legal grey zone* where non-compliance becomes socially accepted and encouraged from certain stakeholders. This case is useful for understanding compliance in tourism contexts where private goods intersect with communal access and weak

institutional control. It offers valuable parallels to trail pass systems in open access contexts.

Perceived fairness (as identified by Su et al., 2021 see above) has been shown in previous studies to influence spending behaviour and the willingness to pay for goods without market value (Ajzen et al. 2000). This is supported by Chung et al. (2010) who "observed a positive and significant linear relationship between perceived price fairness, spending support, and willingness to pay" (p. 1044). In nature-based tourism, non-payment behaviours can often be attributed to a perceived lack of fairness or transparency, with consumers arguing that they already contribute enough through taxes and do not believe that funds will be used for natural preservation and recovery (Panwanitdumrong & Chen, 2022). In situations where consumers feel they will personally benefit from a project or when they believe the costs are being shared equitably, they are generally more willing to contribute (Ajzen et al., 2000). Further respondents of Ajzen et al.'s study (2000) judged a request to be more justified, and they were willing to pay more money "when the beneficiary was not personally responsible for the existing need" (p. 2448); this is the opposite case for commercially presented and groomed trails by a ski resort. As demonstrated in studies involving national parks and recreational services (Panwanitdumrong & Chen, 2022; Chung et al., 2010), transparent, equitable, and fair user fee policies are essential in fostering positive compliance and ensuring the longevity of these open access resources, which is closely related to some compliance theories such as Tyler's (1990).

2.2 Compliance behaviour in the context of common goods

Noticeably, all of the previously mentioned studies and most of the existing compliance theories and research have focused on the individual's own benefit when complying (avoiding punishment, saving money, maintaining social connection, etc.). In a setting in which non-compliance is legally undefined or not tested in court for punishment, and where geographic remoteness lowers the possibilities of enforcement or punishment, compliance with trail pass systems can be understood as *voluntary compliance*. This perspective shifts the focus away from enforcement mechanisms and toward understanding how individuals perceive their own role in sustaining shared systems or resources, say a common good.

To understand this behaviour, it is necessary to explore a broader set of theories that go beyond deterrence and encompass intrinsic motivations, social responsibility, and psychological rewards. While some theories emphasise compliance motivation stemming from the belongingness to a community (Ostrom, 1990) (extrinsic motivation), others focus on internal psychological benefits (Andreoni, 1990, 1988). However, models that synthesise these perspectives by showing how intrinsic and extrinsic motivations interact dynamically have already been developed (Bénabou & Tirole, 2006), identifying risks of undermining intrinsic motivation through external incentives (Frey, 1997).

Ostrom (1990) fundamentally challenged the idea that common-pool resources inevitably suffer from overuse due to selfish behaviour, known as the *tragedy of the commons*. Ostrom (1990) showed that compliance can also be driven by a concern for **collective outcomes**; specifically, when individuals recognise that their adherence to rules

is essential for the sustainable persistence of a shared resource. This perspective aligns with theories of social responsibility, where the motivation to comply stems not from personal benefit alone, but from a desire to protect and sustain common resources, which is particularly relevant in the context of recreational trails under open access. Central to Ostrom's theory is the notion that individuals can develop norms of cooperation because of an internalised understanding of long-term collective benefits. In the case of recreational trail use, this means that individuals may voluntarily comply with maintenance fees, not out of fear of legal enforcement or social condemnation but out of a desire to sustain a resource they value communally and benefit from.

In contrast to Ostrom, Andreoni focused more on individual psychological reward than on social norms or collective agreements. The concept of **warm-glow giving** (Andreoni, 1990; 1988) suggests that people derive utility from the outcome of their donation (that is, an improved common good) but also from the act of giving itself: "When people make donations to privately provided public goods, they may not only gain utility from increasing its total supply, but they may also gain utility from the act of giving" (Andreoni, 1990, p. 473). Unlike pure altruism, where the motive is solely to maximise others' welfare, warm-glow donors are partly motivated by internal feelings of satisfaction, pride, and an enhanced self-image. Applied to trail usage, the theories around collective outcome and warm-glow giving explain behaviour if individuals pay for trail passes even when they are not monitored by an authority or other skiers, because doing so affirms their self-image as a good person.

Building on this, Bénabou and Tirole (2006) introduced a comprehensive framework for understanding **prosocial behaviour** by integrating three motives: *altruism* (genuine concern for others),

self-image (the desire to see oneself as moral), and *social image* (the desire to be seen as moral by others). The authors also showed how extrinsic incentives can distort pro-social behaviour motivations. For example, if someone complies to a *voluntary* trail pass system and receives public recognition, others might interpret the act as reputation-seeking rather than genuine care, thus diminishing its social value. This introduces a paradox: while external rewards can boost compliance in some cases, they can also erode the very internal and social motivations that sustain voluntary behaviour. By distinguishing between **intrinsic and extrinsic personal motivation**, Frey (1997) warned that relying too heavily on extrinsic motivators, such as social condemnation or reward, can crowd out intrinsic ones, such as a sense of duty, self-expression or the joy of acting morally. This has profound implications for policy: if people are already complying voluntarily out of intrinsic motives, introducing extrinsic motivations may backfire and reduce overall compliance (Frey, 1997). In the context of open access trail systems, this means that introducing rewards for complying, or social punishment for non-payment may reduce people's sense of personal responsibility and community care.

Voluntary compliance has been explored in contexts like the COVID-19 pandemic, where many measures relied on self-regulation rather than legal enforcement. Gurinskaya et al. (2024) found that both mandatory (such as mask wearing) and more voluntary behaviours (such as social distancing) were shaped more by social dynamics (protecting family, peer behaviour, shame, etc.) than fear of punishment. Their findings align with Ostrom's view that individuals often comply with shared rules when they perceive them as legitimate and necessary for collective outcomes, and with Frey's argument that voluntary compliance depends strongly on intrinsic

motivation and the social environment that supports it. In this light, observing others buying a trail pass, even without enforcement, can foster similar behaviour among skiers, while non-compliance may not necessarily lead others to free-ride. Although the pandemic and recreational contexts differ, both involve geographically open settings with minimal enforcement, suggesting that compliance is often driven by social norms and observation, combined with internalised values and responsibility and concern for oneself within a collective well-being.

2.2.1 Compliance in the context of financing common goods under open access

In many contexts, such as environmental protection or public recreation, direct fees to access an area granted for public access may be legally restricted. In such cases, donations and membership schemes are often chosen funding strategies, which most commonly appeal to environmental conservation or maintaining resources (Nowak & Heldt, 2023; Reichenberger, 2023; Alpízar et al., 2014). Understanding what motivates individuals to comply with such non-mandatory requests for payment is crucial to establish accepted and effective funding systems for legally and geographically open access goods.

Field studies from Japan (Kubo et al., 2018) and Sweden (Nowak & Heldt, 2023) demonstrate how normative messages with suggested donations amount for trail use or park entrances can boost voluntary compliance with donation calls. However, in a comparative study, Kubo et al. (2018) showed that while normative messaging about peers' behaviour increased the number of donors, it decreased the average donation amount. "Announcing the seed money amount and the target significantly increased the probability of a positive

contribution and raised the average contribution" (Kubo et al., 2018, p. 124).
Such research points toward the hypothesis that when financial contributions are presented as a means of collectively contributing to a necessary amount to sustain a shared resource, rather than as a transaction between individual and provider, people are more inclined to support them. Research on conserving natural tourism attractions through membership (Reichenberger, 2023, p. 216) mentioned:

> *It begins with an altruistic motivation to positively contribute to a highly valued cause* [see also Bénabou and Tirole, 2006], *inextricably linked with the hedonic motivations representing positive on-site experiences where the positive demonstrable impact on the cause is made accessible and observable by the organization. Egoistic motivations then function as a supplementary factor in that they allow these hedonic motivations to take place through visitation*.

This way of framing of contribution and compliance invokes shared responsibility and also relates to transparency of use of donations or membership fees. It also clarifies expectations in terms of user demands regarding service quality and accountability.
When a funding model relies on voluntary compliance (donation or membership) and frames the resource as a common good, dissatisfaction with its quality or maintenance tends to direct accountability inward, toward oneself and the broader community. By contrast, when compliance is framed as mandatory, resembling a commercial transaction, accountability is typically directed outward, toward the provider or managing authority. Translated to the thesis case, by choosing how to frame the funding model, trail providers implicitly shape where visitors direct accountability.

This tension around accountability linked with pricing is illustrated in Costa Rica, where a natural park introduced an entrance fee alongside donation (Alpízar et al., 2014). Although the fee reduced donation frequency, it did not eliminate donations completely and shifted motivation for donations towards self-image concerns and the warm-glow giving (Andreoni, 1990; 1988). This suggests incomplete crowding out; visitors retained some intrinsic motivation to support conservation even with a fee in place (Alpízar et al., 2014).

Together, these studies confirm previously presented theories on collective outcome (Ostrom, 1990), warm-glow giving (Andreoni, 1990, 1988) and intrinsic conviction (Frey, 1997) highlighting that voluntary compliance may be fostered by emphasising community benefit and belonginess, transparency of the needed fund, and moral drivers toward a positive self-image.
In the context of this thesis, the question arises as to whether this sense of common ownership and community can be established in a commercial resort setting. Therefore, the key challenge for trail providers lies not only in choosing between donation or formalised models, but in understanding how each shapes visitors' compliance behaviour in context and how they may be combined in a setting where funding models for access to trails fall into a legally ambiguous setting, such as Sweden.

While the above section outlines theoretical and empirical perspectives on why individuals may choose to comply with rules or payment systems in private or common good contexts, it is also important to know *how* to assess compliance. This prompts a methodological shift in focus, from behavioural drivers to assessing its measurable occurrence.

2.3 Assessment of compliance behaviour

In relation to RQ3, measuring compliance rates in the open access context is a complex exercise as it goes beyond exclusive visitor monitoring and adds a condition as another variable to be investigated. Despite the challenges of gaining reliable data on compliance behaviour, numerous businesses operating in the open access continue to install weakly enforceable funding models. Figures 1, 2 and 3 below show some examples of open access tourism services outside of Sweden and their payment requests.

Figure 1. Vending machine to pay mandatory daily tourist tax in a spa town by the Baltic Sea in Northern Germany. Photo: my-ostsee.de

Figures 2 and 3. Payment request for a hiking trail towards a waterfall at Todtnauer Waterfalls' in the Black Forest, Germany. Photos taken by Jana Brehmer, October 2024.

Can such user-fee based systems in open access be regarded as successful *just* because sufficient funding is collected, regardless of whether all users contribute? Or are these systems, due to the lack of reliable data on compliance behaviour, constantly overcharging to compensate for non-compliant users and assessing and measuring compliance would provide a more accurate basis for setting *fair* pricing structures? A compliance rate, based on a reliable method for open access systems, would help distinguish between revealed and perceived levels of non-compliance, allowing for more balanced funding strategies that avoid overcharging compliant users while discouraging potential contributors who may be deterred by high prices, to ultimately maintain financial sustainability and fairness.

This chapter reviews existing methods and approaches used to assess, track and measure compliance in open access and unmonitored, often outdoor, settings where the possibility for enforcement is limited or non-existent. The geographic open access, rather than the legalities around compliance, poses a specific challenge to assess a compliance rate. Accordingly, scholars have employed a variety of direct and indirect methods to assess (or estimate) compliance, including observational studies, self-reported surveys and payment system data analysis. This brief review explores the strengths and limitations of these approaches and places them in the overall context of fixed-price payment requests in the open access.

To assess compliance with a funding model it is necessary to compare the number of users who should pay with those who do. Unlike tax or ticketing systems, where a "tax gap" or "ticket gap" can be calculated by comparing actual and potential revenue (Gemmell & Hasseldine, 2014), open access contexts often lack a reliable count of the total number of users. This makes it difficult to determine how

many users access the service, let alone how many comply with the funding model.

The first barrier to measuring compliance in open access setting is therefore to accurately estimate the number of users. In recreational settings, especially trails, visitor monitoring forms the base of compliance-related research. Traditional visitor monitoring tools include manual and automatic counters, complemented by indirect counting methods like estimating visitor numbers through parking lot occupancy or equipment rentals (Kajala et al., 2007). More recent methods for gaining large amounts of data on visitor numbers, movement and structures, at a low cost, are mobile phone data (Ahas et al., 2008) or social media data geotags (Barros et al., 2022). Whereas these data sets form a relevant base to assess the quantitative use of an open access area, they do not give indication about compliance rates.

To go beyond monitoring data, direct observation offers another method for assessing compliance, which is particularly effective in clearly defined or bounded spaces. For example, in a tobacco-free campus study, observers counted violators, while cigarette butt collection served as an indirect verification method (Ickes et al., 2015). Similarly, Jackson-Morris et al. (2016) examined compliance with smoke-free areas by using air quality measurements alongside visual observation. While such approaches can be effective in fixed settings like building entrances or courtyards, they are difficult to apply in dispersed and geographically extensive areas such as trail networks stretching 100 km or more. Observation in trail environments is logistically complex, costly and potentially incomplete.

By contrast, self-reported compliance through surveys is one of the most used approaches, particularly when direct observation is

impractical. In marine conservation contexts, Bergseth et al. (2015) found that most quantitative data on compliance behaviour came from direct user surveys. While these methods are useful, they are also vulnerable to biases stemming from the difference between stated and revealed behaviour, particularly when the behaviour in question involves moral or ethical judgment (Alem et al., 2018). Moreover, Fredman et al. (2009) pointed out that non-compliance with on-site survey participation itself can pose additional risks to data reliability, especially in outdoor recreation settings where visitors may be reluctant to engage or can evade easily.

Some studies rely on indirect indicators to track compliance behaviour. The tobacco-free campus study mentioned above used the number of cigarette butts as a proxy for non-compliance (Ickes et al., 2015). In marine reserve studies, enforcement records and environmental indicators have also been used (Bergseth et al., 2015). However, these proxies often lack precision and are only valid under specific assumptions or in combination with other data sources.

Most compliance studies in open access contexts rely on a single data source, with only a minority triangulating data. Bergseth et al. (2015) identified this as a weakness of past research and called for more robust, multi-method approaches that can validate findings. The limitations of traditional visitor monitoring, the biases in self-reporting, and the difficulty of observing behaviour in geographically dispersed settings all underscore the need for innovative methods. Particularly in the context of recreational trail use, combining visitor counts, trail pass sales, and survey data may offer a more reliable picture of compliance behaviour.

3 Contextual background

Understanding compliance with trail passes in Sweden requires a closer look at the broader legal, institutional, and tourism-related context in which cross-country skiing and trail activities in Sweden takes place. While the research presented in this thesis was conducted within the framework of a larger research project on *Recreational mobility and trails in mountain destinations: Understanding Behavioural insights and New technology in relation to funding systems for high quality trails in a Swedish context*, the following chapter focuses on the scientific and contextual aspects relevant to the thesis topic.

3.1 Trail passes within open access

Sweden's Public Right of Access (*allemansrätt*) grants both residents and visitors broad freedoms to move through and use natural landscapes in an unmotorised way. While this principle is well established for general recreation, it presents legal uncertainties in cases involving private or commercial investments that require maintenance and a return of investment (here: groomed trails). The question of whether trail pass fees are enforceable remains untested in Swedish courts. As a result, providers rely on voluntary payment systems, which face legal challenges in ensuring compliance, besides the practical challenges due to the open access environment.

The *allemansrätt* was socially established and legally discussed well before mass tourism developed and was not originally intended for the commercial use of nature that began emerging in the mid-to-late 20th century (Sténs & Sandström, 2014). In recent decades, there has been a significant rise in the popularity of recreational trail activities, with another clear increase during the COVID-19 pandemic (Skriver-

Hansen et al., 2022; Thompson, 2020; Outdoor Foundation, 2021; Venter et al., 2020). This growing interest has increased demand for well-maintained trails and accompanying facilities (e.g., Fredman, 2018). As a result, outdoor spaces have become increasingly commodified, with Destination Marketing Organisations (DMOs) and businesses basing their offerings on natural landscapes, transforming nature into a marketable recreational product (Curry, 2004). Curry (2004) and Ravenscroft (1993) noted that, even in countries with open access traditions, outdoor recreation has increasingly shifted from traditional public rights to a more market-oriented model. In Sweden, Sandell and Fredman (2010) highlighted how the *allemansrätt* can be a success factor for tourism businesses that rely on nature-based activities and accommodation.

In recent years, municipal or sport association-funded trails that are usually free to use or based on donations have been increasingly supplemented by resort-managed trails that offer consistent grooming and added services such as waxing cabins and bathroom facilities. This trend towards commercialisation has been accelerated by reduced governmental trail funding (Petersson-Forsberg, 2014) and recent substantial cuts to the Swedish Environmental Protection Agency (Naturvårdsverket), the authority responsible for supporting public trail infrastructure (Naturvårdsverket, 2024; Naturvårdsverket, 2025b). Actions to make nature accessible for residents and visitors are seen as being especially affected by these cuts (Naturvårdsverket, 2025a).

While the *allemansrätt* prohibits charging for access to nature, voluntary payment models are permitted. Legal exceptions also exist: when trails are part of a facility, mandatory trail passes at a fixed price may be required. According to Naturvårdsverket, “such a facility is characterised by major investments being made, such as

artificial snow production. These facilities are mostly for competition and training activities. They are often fenced or cordoned off areas" (Naturvårdsverket, n.d., n.p.). However, this definition is open to interpretation and does not clearly include or exclude open, unfenced areas used for leisure skiing. Since the legal boundaries have never been tested in court, the facility definition remains unclear, leaving the consequences of non-compliance undefined (Naturvårdsverket, n.d.).
Public opinion strongly favours the freedom of *allemansrätten* (Sandell & Fredman, 2010). Therefore, it is likely that commercial trail operators are reluctant to pursue legal action against non-compliant users, fearing that a court ruling could jeopardise the foundation of their fixed-price framed funding model. Therefore, the current *legal grey zone* around trail pass requirements is expected to persist. This means that trail providing businesses will likely have to continue relying on skiers voluntarily complying with payment requests. If compliance is low, this could reduce the willingness of private actors and landowners to invest in trail infrastructure and nature-based tourism services (Vail & Hultkrantz, 2000).

Overall, the Swedish context points to the need for better understanding of compliance behaviours in open access recreational settings, particularly in regions where traditional access rights interplay with legal frameworks and business opportunities.

3.2 Study area

Dalarna is a historical province located in central Sweden known for its picturesque landscapes, cultural heritage, and outdoor activities. With more than 15.5 million overnight stays in 2019, Dalarna has proved its touristic relevance and accounted for approximately 8 per cent of Sweden's commercial overnights in 2018 (Visit Dalarna,

n.d.b). Domestic visitors comprise 86 per cent of these overnights, with guests coming mainly from the Stockholms, Västra Götaland and Skåne Counties (Visit Dalarna, n.d.b). Rising international markets for Dalarna's tourism industry are other Scandinavian countries (especially Denmark), the Netherlands and Germany, as well as Austria and Switzerland (Visit Dalarna, n.d.a; Visit Dalarna, 2025).

The geographical features of the region, characterised by hills and mountain ranges, especially towards the Norwegian border, as well as extensive forests combined with numerous lakes, contribute to a distinct transformation of Dalarna during the winter season, marked by a cold climate and frequent snowfall. It is therefore not surprising, that Dalarna hosts one of the most popular winter sport destinations in Sweden: Sälen.

Figure 4. Dalarna County, marked red within Sweden (Sverige), from openstreetmap.org, designed by Jana Brehmer using Canva

With the world's oldest cross-country ski race having its roots in Dalarna, the county is famous for this kind of trail activity. Held annually since 1922, the race (*Vasaloppet*) attracts thousands of cross-country skiers from up to 70 different countries (Vasaloppsföreningen Sälen-Mora, n.d.). The county offers hundreds of cross-country trails, for race preparation and other activities,

provided mainly by sport associations and businesses, and skiers rely on the trail provision to train for the race.

Two trail providers in the region of Dalarna were chosen as the research area for this thesis. The selected Swedish ski resorts offer groomed trails and were chosen because they hold a leading position in Sweden (especially Orsa Grönklitt) and have well-developed trail pass systems with a sizeable price. In addition, the resorts share common features of mid-sized, snow-reliable Swedish ski areas that attract both domestic and international visitors. Both resorts also suspect that there is a gap between the number of skiers using the trails and the number of trail passes sold.
Both companies are located in the Northern parts of the county and offer cross-country ski trails as a recreational product as part of their service bundle. However, the trail providers differ in respect to aspects such as ownership, the framing of their funding models and the establishment of their product. They are located approximately 100 km distance from one another.

Kläppen is a family-owned ski resort within the municipality of Sälen. The resort can be seen as a typical winter destination that offers the classic winter activities within a service bundle of accommodation (including camping), food and beverage infrastructure and events. Kläppen is known for being family-friendly, with dedicated areas for children and ski schools.
Alpine skiing is Kläppen's main product (38 slopes, 21 lifts), but cross-country ski trails of 37 km are also offered as an activity. The most famous trail is the *Älvspåret* (marked blue in Figure 5), of 13 km, of which 8 km are opened early in the season due to artificial snow. Trail passes are the chosen funding model for maintaining and developing the trails. Visitors are prompted to buy a trail pass in one of two locations on Kläppen's premises to receive a physical badge as

a prove of payment, which is to be worn visibly during activity on the trail. However, there is the option to buy a trail pass via Swish mobile payment directly at the trails without receiving the badge. Kläppen conducts spot checks on skiers at scheduled times twice a week. The resort also provides free (or heavily discounted) annual trail passes to a limited number of local inhabitants to conduct irregular spot checks on skiers without a badge.
Kläppen registers increased demand for accommodation during the week of Vasaloppet, given that it located less than 10 km from the starting point of the race.

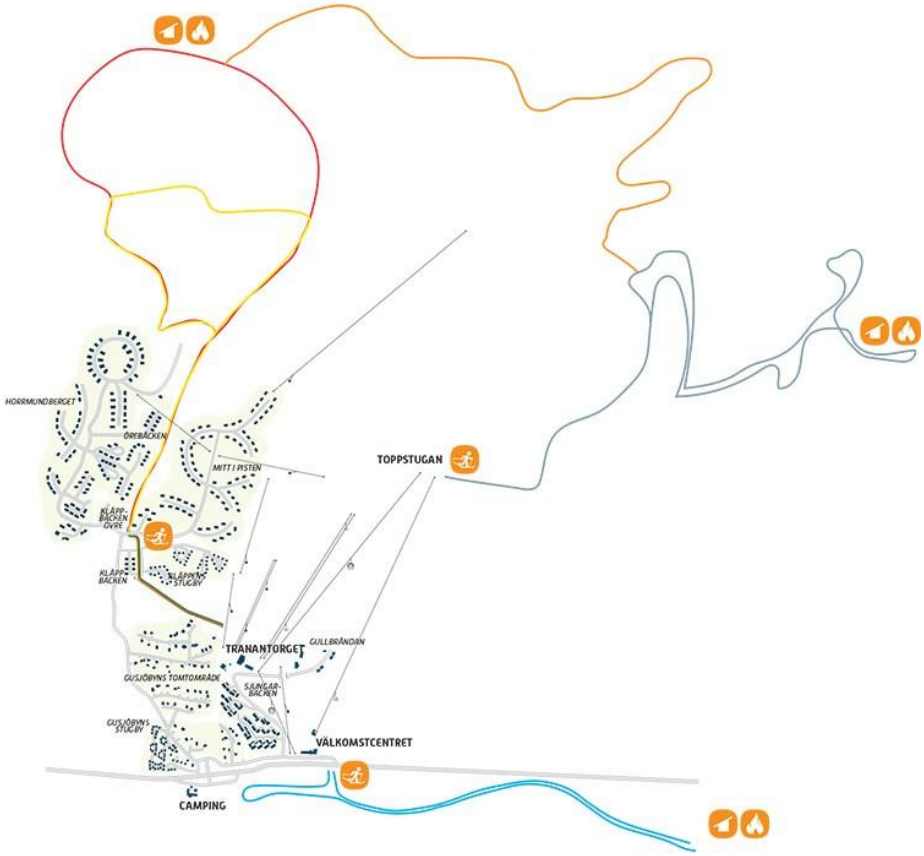

Figure 5. Cross-country ski trail network in Kläppen season 2024/25 (Kläppen, n.d., n.p.)

Orsa Grönklitt is part of the public limited company Valit Activities (named as such since 2022) and offers winter sport activities within a setting of accommodation, food and beverages and rental services. Within Sweden, Orsa Grönklitt was long known for being a wildlife park. However, the park has been dissolved and been replaced by a high ropes course.
In contrast to Kläppen, cross-country skiing is the main product of Orsa Grönklitt, being complemented by alpine skiing (22 slopes, 10 lifts). Orsa Grönklitt's cross-country trails total up to 130 km on different skill levels. A cross-country ski centre provides a shop as well as bathroom facilities with showers directly at the trails. Artificial snow (or, more often, conserved snow from the previous season) are used to ensure the quality and early opening of the trails.

Trail passes are the chosen funding model by Orsa Grönklitt. Skiers can purchase the pass in the cross-country ski centre via the Orsa Grönklitt mobile application or pay directly on the trails via mobile payment (Outby).

Random spot checks are conducted by staff of Orsa Grönklitt but are considered cumbersome from an economic perspective due to the excessive length of the trails.

Orsa Grönklitt is classified as an official Vasalopp centre and is seen as one of the best training centres for the race. The finish line of the

race in Mora is located approximately 26 km from Orsa Grönklitt.

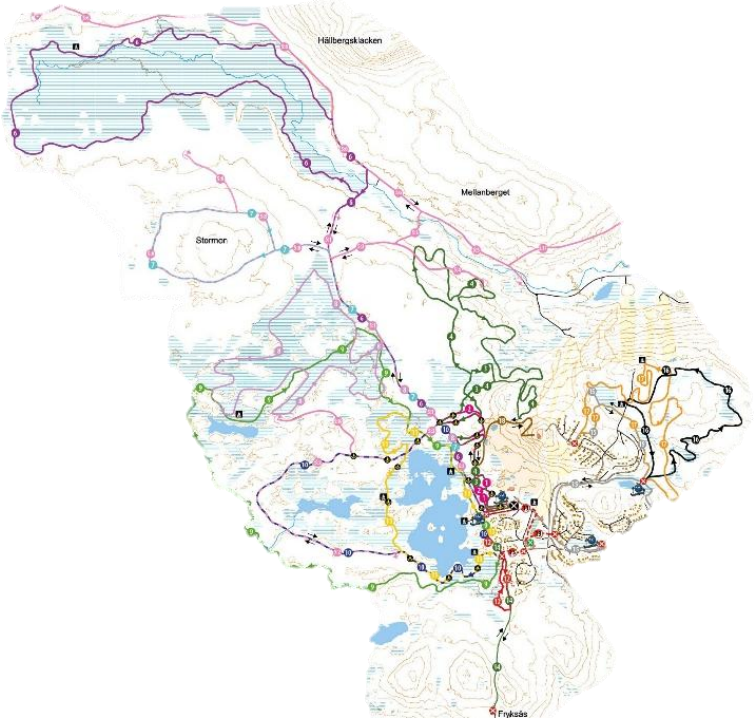

Figure 6. Cross-country ski trail network in Orsa Grönklitt season 2024/25 (Orsa Grönklitt, n.d., n.p.)

4 Methodology

The research question of this thesis was investigated in two separate papers. Data were collected in the resorts of Kläppen and Orsa Grönklitt in the 2024/25 winter season. Based on a pragmatic research philosophy, the thesis applied a mixed-methods approach to generate both qualitative and quantitative. This philosophical approach enabled the research design to be influenced and shaped by a real-world problem of funding open access tourism products, leading to two separate studies and research papers.

The first paper used a qualitative approach to investigate skiers' compliance with a trail pass system under Sweden's open access framework (*allemansrätt*). Seventeen semi-structured interviews were conducted with cross-country skiers at two Swedish ski resorts to understand why they comply and to explore their perceptions of a user-fee based system within the *allemansrätt* context. Interview participants were recruited via a two-stage process, beginning with a broader visitor survey followed by voluntary sign-up for interviews. Data were analysed using NVivo14 according to thematic analysis.

The second study aimed to find the compliance rate of cross-country skiers with a trail pass system at one of the presented ski resorts, using three quantitative data sources. The primary comparison was between automated trail counters and trail pass sales data to approach the compliance rate, while on-site visitor surveys provided supporting context by capturing demographic and behavioural information. As the methodology of this paper formed an essential part of the findings, potential data limitations, such as users bypassing all three measurement techniques, are discussed.

In the following, I present the choice of methods, describing the chosen research philosophy and approach, the sampling strategies, and the data collection methods. This is followed by an extensive section with reasoning and reflections on each methodological choice, as well as with limitations caused by the chosen philosophies and approaches. The chapter ends with information on research ethics that were considered for this thesis.

4.1 Pragmatism and mixed-method approach

The need for a problem-centred approach (Leavy, 2017) became evident early in the thesis process, considering that the ontology of it relies on trail providers doubting that their trail pass sales sufficiently reflect the quantitative use of their trails, and further presumes that there are factors influencing visitors' compliance that exist independently of external influences. Therefore, from an ontological perspective, a pragmatic approach highlights the need to investigate a phenomenon in relation to its contexts and real-life relevance (Creswell & Plano Clark, 2017; Feilzer, 2010), which in this case entails exploring what factors shape trail visitors' compliance and the link between pass sales and actual trail use.

In terms of epistemology, pragmatism recognises that the creation of knowledge around compliance goes beyond numerical counts, also requiring interpretation of qualitative findings. Therefore, as well as aiming to prove or disprove the trail providers assumption about non-compliance, I also seek deep knowledge about the motivators that influence visitors' decision to comply in the absence of direct legal enforcements. This allows reflections on general societal problems of contributing and benefitting to a shared resource, which

is relevant to study from several perspectives, whereof this thesis took the perspective of cross-country skiers.

The pragmatic approach fed into the outcome-orientated research questions formulated for this thesis and the included research papers. In constant engagement with stakeholder concerns and destination managers, the pragmatic approach allowed my research to focus not only on the theories around understanding visitor compliance behaviour, but also in using the insights to suggest practical implications towards more effective and accepted funding strategies for groomed trails.

The choice of a pragmatic approach supported the integration of multiple methods to address the problem at hand. Whereas the research questions of the papers call both for quantitative and qualitative data, they are united by their practical and problem-solving approach due to observed funding and compliance conflicts in the cross-country ski industry. Previously, mixed-method research has contributed to robust and relevant findings on compliance behaviour in open access settings, especially regarding the topic of fishing and compliance with maritime environmental legislation (Freese et al., 2019).
Given that my aim was to test a hypothesis and also develop new insights about reasons for compliance based on deep inductive knowledge, this mixed method approach was inevitable (Zou & Xu, 2023). While each method addressed specific aspects of the research questions, their combination allowed for a more nuanced and complete understanding of compliance behaviour under open access than either approach alone. The strength of this design lies in its ability to integrate different types of data and to reflect across them in the synthesis of the thesis (Chapter 6). This enables the thesis to move beyond single-method limitations and more fully capture the

complexity of compliance behaviour in open access contexts and to generate theoretical and practical useful and applicable knowledge that enhances previous research on compliance and, at the same time, can lead to effective funding solutions. Ultimately, I aimed for a methodology with which I can develop the most knowledge around this particular problem. Therefore, the mixed-method design was not only methodologically complementary, but philosophically coherent with the pragmatic perspective that truth and knowledge are contextual and contingent.

4.2 Case study approach

My thesis is bound in a specific case, not least due to the fact that it is part of a research project with high collaboration with groomed trail providing resorts. Often associated with purely qualitative studies, the defining factor of a case study is the nature of the subject under investigation, rather than the use of a quantitative or qualitative research method (Flyvbjerg, 2011). "The key to the case identification is that it can be […] described within certain parameters" (Creswell & Poth, 2018, p. 97). Here, the activity (cross-country skiing), geographic location (Dalarna, Sweden) and trail type (resort setting) form the parameters of the case unit. Case studies are used to gain an in-depth understanding about a certain case unit or situation and therefore require "multiple sources of information" (Creswell & Poth, 2018, p. 96). The mixed-methods approach allowed multiple information sources, so that also the exchange and evaluation with the trail providers within and outside of the research project informed the case.

Researchers distinguish between different types of case studies (Creswell, 2013), with my studies most closely fitting into the collective case study category. In this approach, a single issue (here, the question about visitor compliance) is examined through multiple

cases to provide a broader understanding. For Paper I, two ski resorts offering cross-country skiing were selected. Differing in the aspects of resort ownership, establishment and focus of the service, the resorts could be interpreted as different cases that possibly offer a multiplied and broad perspectives on visitor compliance behaviour.
A pragmatist approach often incorporates case studies as a means of capturing nuanced insights and research questions resulting from real-world – in my case, industry and wider societal – problems and I therefore believe my research design matches well with the overall approach (Yin, 2009).

4.3 Qualitative material (Paper I)

My thesis employed a qualitative approach for Paper I to explore why visitors comply to a trail pass system and identify visitors' perception of trail pass systems in an open access context. Understanding compliance in recreational trail settings requires more than numerical data; it demands insights into motivations, perceptions, and contextual factors influencing compliance behaviour. Interviews provided a deep understanding of how skiers perceive the coexistence of trail passes and the principle of *allemansrätten*. With only a few previous studies on compliance behaviour at a destination where non-compliance is legally undefined (e.g., Gurinskaya et al., 2024), I could not revert to previous research to inform, say, a survey study to quantitively identify reasons for compliance and perception about trail pass systems at a large scale. Studies that investigated donation behaviour for publicly funded or volunteer-based trails (e.g., Nowak & Heldt, 2023; Kubo et al., 2018) form a relevant base for expanding such behavioural research on a more commercialised and fixed-payment request setting. Only a qualitative study would contribute to a deeper understanding of how

and under what perception a user-fee system coexists with open access traditions, offering possible interpretation for policy design, nudging strategies, and skier engagement.
The positively framed first research question ("*Why do skiers comply?"*) derives, inter alia, from field observations within the research project, with the majority of skiers stating compliant behaviour (see also Paper II) in contrast to the resorts' belief that their trail pass sales do not reflect the quantitative use of their trails. Basing these insights on standard compliance theories that define punishment and enforcement as influential factors for compliance behaviour (Becker, 1968; Gibbs, 1968) leads to the positively framed research question, neglecting questions around non-compliance, not least due to ethical considerations.

Interview participants were recruited by a preceding survey in the resorts that covered general visitor demographics, skiing habits and trail pass purchase decisions, with an option for participants to leave their email address to participate in a follow-up interview.
Integrating the interview recruitment into a broader survey process with Paper II ensured that interviewees were drawn from the actual visitor population of the resorts and further allowed for efficient use of time and resources. More details of the survey will be discussed in the section on quantitative data.
When approached for the survey, skiers were briefed about the option to participate in a follow-up interview (and receive a 400 SEK gift voucher upon completion) to share more details of their experience. If they were interested, they were asked to leave their email address at the end of the survey. It was explicitly stated, both orally and in written form, that the email address is collected for interview scheduling purposes only and no further personal data would be collected.
Due to the large number of volunteers who showed initial interest in

a follow-up interview (379 of 888), a judgmental sampling (Creswell & Poth, 2018) was applied to select who to contact for an interview. This sampling method ensured a heterogenous sample according to gender (m/f), age, nationality, and resort. I acknowledge that the judgemental holds risk in terms of the establishment of causal relationships. While it provides a rich understanding of diverse experiences, it may not be the ideal approach if causation needs to be explored (Creswell & Poth, 2018). Further, the emphasis on variation can partly lead to a focus on differences rather than commonalities. Despite focusing on creating a heterogeneous sample to capture variation, I made sure not to ignore recurring patterns or common themes across interviews and clearly defined the sampling criteria (including resort, gender, age and nationality). A judgmental sampling did not reflect the visitor structure of the resorts statistically, but I saw it as highly relevant because it allowed insights from each market segment of the resorts.

Based on a thorough analysis of the study area, including the trail pass system, layout of groomed trails, and relevant literature on compliance and purchase behaviour, an interview guide was developed (Appendix A). The first section explored if and how product quality and pricing are viewed by skiers. Additional questions examined the perceived effectiveness of the trail pass system, experiences with spot checks, and skiers' perceptions of the system in relation to *allemansrätten* and trail ownership.

Because it could potentially affect the freshness and accuracy of interviewees' reflections, the aim was to keep the gap between skiing season and interview period as short as possible, continuing interviews only as long as new themes and insights emerged. Interview data was analysed using Thematic Analysis (Braun & Clarke, 2006), supported by NVivo14 software. Two overarching

themes – (1) reasons for compliance and (2) perceptions of user-fee systems within open access – provided a general deductive frame for interpretation, although the coding process itself followed an inductive approach. Initial sub-themes were generated through close reading and line-by-line analysis of transcripts. Rather than merely categorising responses by topic, the analysis aimed to interpret underlying patterns in how participants reasoned about and explained their compliance-related behaviour. Accordingly, sub-themes were iteratively grouped and defined by codes to then fit into broader themes.

Theme development was shaped through repeated cycles of coding, review, and reflection, ensuring interpretative depth, with the formulation of sub-themes, codes, and themes aiming towards conceptual clarity. Rather than testing predefined hypotheses, the analysis allowed themes to emerge organically, highlighting patterns in reasonings for compliance and perceptions of the trail pass system. The resulting themes were not treated as findings in isolation but were instead assessed in terms of their relevance, resonance, and contribution to the research questions, and presented in such order in Paper I.

A large proportion of themes and subthemes were developed after 12 interviews (five of Kläppen, seven of Orsa Grönklitt), leading to a robust code book. Five further interviews did not open any new themes, at least none that were relevant for the main themes and research questions, but did affirm the existing code book. These insights align with research on data saturation in thematic analysis (e.g., Ando et al., 2014) and the fact that "a qualitative dataset is generated early in the process, and generally follows an asymptotic curve, with a relatively sharp decline in new information occurring after just a small number of data collection/analysis events" (Guest et al., 2020, p. 6). Data saturation (Silverman, 1993), judged by the

richness and recurrence of meanings across the interviews, rather than by frequency, was observed in May 2024, one month after the groomed trails closed and after 17 conducted interviews.

4.4 Quantitative material (Paper II)

My thesis employed a quantitative approach for Paper II to assess the compliance rate with a trail pass system in one of the presented ski resorts. With the majority of compliance assessment research being based on a single data source (see Chapter 2.3), the paper took a novel approach by triangulating the following quantitative data sources:

- (1) The weekly trail pass sales at the ski resort
- (2) Counter data, positioned along the trail, capturing the quantitative use of the trails, and
- (3) On-site surveys that captures visitors' demographics and skiing behaviour, as well as the stated compliance behaviour with the trail pass system.

Comparison of the data sources delivers information about inaccuracies and conspicuous features, which are used make conclusions about the rate of compliance (and ultimately also non-compliance). Whereas the comparable focus lies on data sources (1) and (2), the survey data (3) works as a complementary source, adding context of the inaccuracies while also providing information about the perceived compliance of other skiers.

Whereas sales and counter data collection were collected throughout the entire 2024/25 season, survey data were collected between Weeks five and 13 in both years (excluding week nine due to *Vasaloppet* race).

A prerequisite of this paper was the resort's willingness to share sales data of trail passes for 2024 and 2025. Therefore, Kläppen Ski Resort was selected as a case for this paper.

Trail pass sales data

The resort offers multiple type of trail passes and several purchase options. The resort uses the *Winpos* system for sales of trail passes, with options of one to five days or weekly pass. The record divides sales further between adults and youths and the "combi-card" option, which allows to both alpine and cross-country skiing in the resort. A total of 9278 trail passes were sold in 2024 and 2025 combined.

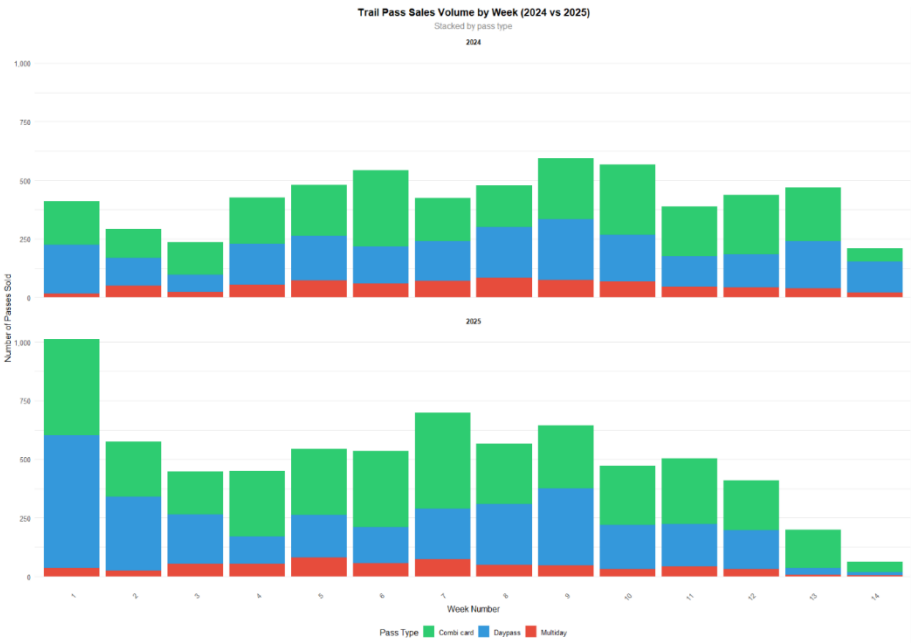

Figure 7. Weekly trail pass sales (youth and adult combined) in 2024 and 2025, Weeks 1–14, divided by trail pass type

The sales data are reported on a weekly basis. A comparison of the weekly sales data with counter data is provided within Paper II but is considered inaccurate due to (combi) multi-day trail passes being

used multiple days of the week. As described in Chapter 2.3, the first barrier to measuring compliance was to estimate the number of trail passes (= number of trail users) on the trails during a week to define the potential amount of sold trail passes compared to the actual number of sold trail passes. Therefore, multi-day and combi-trail passes needed to be distributed over the week to estimate the number of trail passes on the trail within a week based on the sales data to make it comparable to the counter data. Certain assumptions had to be made when estimating the weekly number of skiers on the trail, to avoid overestimating the total:

- Day pass holders ski once a day
- Multi-day pass holders ski once on every day their pass is valid
- Combi card holders ski once a day if they purchased it as a day pass
- Combi card holders ski once every second day if they purchased it as a multiday pass

This distribution step was necessary before the weekly sales data could be practically comparable to the counter data.
Table 1 uses example numbers to maintain research secrecy but showcases the calculation and estimation of the number of trail users in an example week based on the trail pass sales data. Swish is the Swedish system for mobile phone payment. This option was only available for purchasing one-day passes for adults.

Table 1. Example of how to estimate number of skiers within a week on a trail in Kläppen based on trail pass purchases

		adults	youths	combi (A)	combi (Y)	est.no skiers/week
Pass type	**days**					
Swish day	**1**	113				113
Winpos 1	1	70		23	5	98
Winpos 2	2	7	11	10	7	53
Winpos 3	3	19	5	39	13	176
Winpos 4	4			10	6	32
Winpos 5	5	7	4	7	3	85
Winpos week	6	17	10	115	42	633
				total		1 190

Counter data

A counter[3] was installed at a suitable position of Kläppen's most popular trail (Älvspåret) (Figures 8 and 9). The counter was installed at a lamppost after the official entry spot of the trail (Figure 12) that works as a certain *acceleration lane* before entering the actual trail (which runs in a circle). That enabled skiers to go several rounds in the trail (ideally) without passing the counter again. The position was the same for the 2024/25 season.

Figures 8 & 9. Eco-counter installed at Älvspåret in Kläppen, photo taken by Jana Brehmer in January 2024

[3] https://www.eco-counter.com/

The counter captures entry and exit movements on an hourly basis.

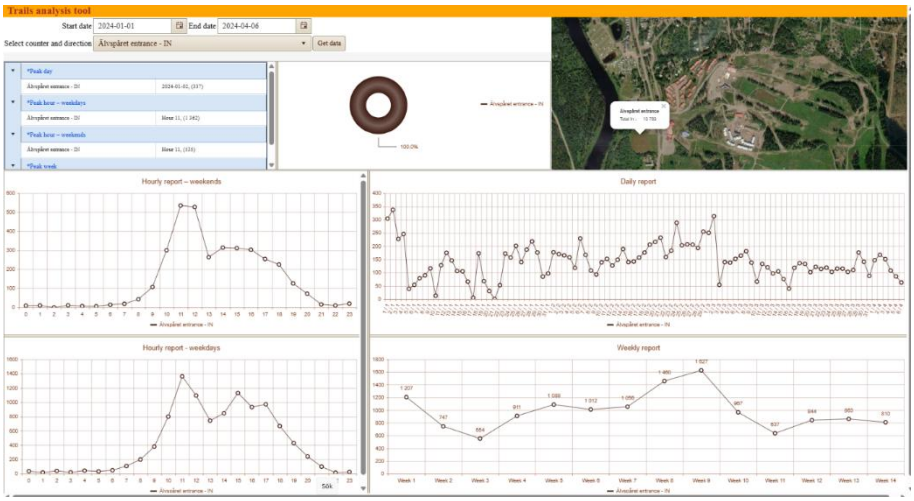

Figure 10. Entry movements on groomed trail Älvspåret of Kläppen, season 2024, average hourly (weekends and weekdays), daily and weekly (week one-14) report

A visual comparison of the 2024 and 2025 counter data shows similar hourly skiing patterns, with only slight weekend-weekday differences. However, total movement counts differ significantly: approximately 13,800 in 2024 versus ca. 65,900 in 2025 (discussed on p. 64).

On-site survey

The survey aimed to capture skiers' experiences, behaviours, and attitudes related to trail usage and trail pass system in Kläppen and was built around two crucial questions: #9 *What type of trail pass did you buy?* (with the first answering options *I did not buy/ I do not want to say* followed by a listing with all available trail pass – daily/multi-day, etc.) and #10 *What percentage (%) of cross-country skiers in Kläppen do you think buys a trail pass?* These questions were encompassed by demographical inquiries, questions about the service satisfaction and

description of the latest trail use. The starting page of the survey informed the skiers about the purpose of the data collection, that the information would be used for academic research and for which specific research project and contact information. Participation was voluntary, anonymous, and skiers could opt out at any time. Ethical considerations and concerns about social desirability bias (Leggett et al., 2003) precluded the single answering option of '*I did not buy*'.

The questionnaire was pilot-tested in December 2023, with all questions proven to be understandable and manageable in less than five minutes (Appendix B). As a result of the pilot test, the survey was administered using tablets rather than in paper form, as the latter presented issues with font readability and practical difficulties during adverse weather conditions such as snowfall, rain and wind. Additionally, tablet use allowed respondents to directly enter their answers into the digital survey platform, eliminating potential manual data transfer errors. The digital survey tool used was by ATO Survey Technology AB, developed at the Centre for Tourism and Leisure Research (CETLER) at Dalarna University.

Data collection took place between week five and 13 for three consecutive days of each week, either Wednesday to Friday or Thursday to Saturday, at what is considered the main access point to Kläppen's popular trail (Älvspåret). This area (Figures 11 and 12) is characterised by a parking area, a warming hut, a waxing station, a large trail map, and posted signage regarding trail pass payments. Two data collectors were positioned at this location during each session and were clearly marked as Dalarna University staff. They further emphasised their disconnection to the resort when motivating skiers to answer the survey.

Figure 11. Entrance to groomed trail Älvspåret provided by Kläppen.
Sign translated: "Trail badge is bought at the ski centre or at the reception of Hotel Kurbits (specific opening hours). Scan the QR code to go directly to the price list and the Swish app. Swish number 123 1204***" Photo by Jana Brehmer, December 2023

Figure 12. Entrance to groomed trail Älvspåret by Kläppen. Hot spot for survey data collection. Eco-counter installed at one of the lampposts on the right-hand side in background. Photo by Diana Ayala, February 2025

Skiers were approached after completing their skiing session, and the survey was offered in both Swedish and English. More specifically, a systematic sampling was implemented, and individuals were chosen at regular intervals, depending on the overall visitor flow. Respondents were encouraged to complete the survey themselves on the tablets provided, although assistance was provided by the data collectors when needed. Underaged participants are excluded from the sample as it was assumed they do not carry the financial responsibility of the household and are not decision makers when it comes to buying a trail pass. The length and intensity of the cross-country session the skiers concluded is irrelevant. This diversifies the

different market segments of skier types (beginner, advanced, elite, etc.).

Within the eight-week data collection period in 2024, a total of 502 skiers were approached. In 2024, 396 respondents completed the survey. Using the same research design and sampling method, 337 respondents completed the survey in 2025.
The basic descriptive statistics for standard sample characteristics (age, gender, income) indicate similar patterns across the two years. Table 2 presents the stated purchased trail pass types and, importantly, the stated rate of non-compliance. If the answer about the purchased trail pass was left blank it was grouped with the response '*Did not buy/ Do not want to answer'* as non-compliance. The sample averages for non-compliance were 5.4 and 6.0 per cent, respectively, for the years 2024 and 2025.

Table 2. Stated compliance (trail pass purchase) for 2024 and 2025 in Kläppen.

Answer	**2024** **(n=396)**	**2025** **(n=337)**
Did not buy/no answer/blank	6.0 %	5.4 %
Combi card – alpine	11.7 %	18.8 %
Multiday	27.6 %	22.4 %
Season pass	19.7 %	23.1 %
Day pass	35.0 %	30.3 %
Total	100 %	100 %

4.5 Reflections and limitations of chosen methodology

Pragmatism with a mixed-method approach

As mentioned above, from the beginning of my Licentiate studies, I regarded the phenomenon around visitor compliance through a pragmatist lens not least due to close collaboration and exchange with the trail providing resorts within the research project. Therefore, it was clear to me that, to develop knowledge about compliance behaviour, I would need to research the problem with different approaches to understand the whole picture. Whereas the industry was concentrated on developing methods to assess the compliance rate, a complementary qualitative perspective was introduced that would generate deeper insights into the dynamics of *voluntary* compliance behaviour relevant for other contexts than trail pass compliance. As I aimed to test a hypothesis but also develop new hypotheses about reasons for compliance based on deep inductive insights on compliance behaviour, this mixed-methods research approach allowing a cross-sectional perspective was inevitable (Zou & Xu, 2023). In this context, cross-sectional refers to an approach that examines data at one or more points in time to provide larger data sets, rather than over an extended period, with the goal of tracking changes over time. Data for the papers were gathered within an overlapping timeframe (season), partly sourcing from the same participant group.

Whereas I gathered and analysed qualitative and quantitative data using separate methods, I integrated, compared and reflected on them in the synthesis of this thesis (Chapter 6) to offer a deeper and more comprehensive understanding of visitors' compliance behaviour. The approach follows the opinion of some researchers that mixed-methods research is a methodological choice (Prayag, 2018)

instead of *just* a combination of methods (Prayag, 2018; Teddlie & Tashakkori, 2009). I felt that a mixed-method approach represented a possibility to put the findings of each study into perspective and mitigate the possible limitation of the individual method (see also Prayag, 2018). I considered it as a kind of quality assurance strategy, as the findings of the qualitative study informed parts of the layout of the quantitative study and the quantitative findings allowed to put the qualitative findings into perspective. Specifically, the identified reason for compliance of the qualitative study helped to interpret quantitative insights on compliance rates. Moreover, integrating both strands of data revealed that some instances of apparent non-compliance from the quantitative data may in fact stem from differing expectations, dissatisfaction with the service, or alternative contributions. Without qualitative insights, these nuances would remain hidden, potentially leading to management responses focused narrowly on increased reminders or enforcement (for example, spot checks). Instead, the qualitative findings suggest that addressing underlying perceptions, improving communication, or reinforcing shared norms may offer more effective and sustainable ways to encourage compliance in open access settings.
I believe that a holistic understanding and interpretation of visitor compliance behaviour in the studied resorts was only possible by choosing a mixed-methods approach.

A key debate among researchers concerns the issue of quality of mixed-methods studies. Because I was mixing methods as part of this thesis' synthesis rather than within the papers, I ensured that qualitative and quantitative data were collected and analysed according to the respective methodological standards, keeping

research integrity strictly according to the relevant research questions (Creswell & Plano Clark, 2018).

Mixed-methods research is often accused of focusing on applicability while ignoring theoretical relevance – a criticism amplified by the absence of universally agreed-upon standards (Hall, 2013; Fàbregues & Molina-Azorín, 2017; Sandelowski, 2013). Unsurprisingly, during my Licentiate studies, I often found myself confronted with the question of *why such a hands-on industry problem needs to be researched scientifically*. I believe that understanding compliance with funding models in an open access context, particularly trail pass systems, extends the concerns of individual businesses. While the issue is undoubtedly relevant to the involved resorts, it also holds significance for less commercial trail providers such as sport associations, volunteer organisations and municipalities that rely on voluntary contributions or compliance with informal rules. Knowledge that can ultimately be used to gain reliable insights on compliance rates and interpreted on how to enhance compliance should be available for any kind of (trail) service provider.
In parallel to following a pragmatist approach, resulting from a real-life case, the theoretical contributions on compliance behaviour in response to non-enforceable payment requests guided my research and ensured coherence and depth in both methodology, analysis and discussion.

Case study

I reflected on whether my case study can be categorised as a collective case. Including two resorts in Paper I highlighted different themes, but the findings from the resorts largely overlapped, so a comparison was not meaningful. The question arises as to whether

my case provides the different perspectives required by a collective case study, as defined by Creswell and Poth (2018). However, Yin (2009) argued that a collective case study mainly serves the purpose of replication and ultimately increasing the generalisability of the case study. As the results of a case study shall describe *patterns* (Yin, 2009), replication may allow general projection that is useable for similar locations, spaces or, in my case, trail-providing companies. This connects to the usual criticism of case studies and mixed-method research overall: limited generalisability (=external validity). My thesis does not aim for external validity as the results are mainly being used for the selected case. However, trail providers that operate in a similar (*legal grey zone)* setting might learn from the presented case. I follow Yin's (2009) perspective that my results "shall expand […] theories" (p. 15). As (compliance) behaviour is defined to inter alia be influenced by external factors (e.g., Becker, 1968; Delbsoc & Currie, 2018), studies on it need to describe the surrounding and settings of the research, as a study at a different destination may lead to different results. Therefore, I firmly believe that case studies, especially when studying human behaviour, form the base of new knowledge and hypotheses that can later on be tested in a broader and less case-specific way, but can probably never be fully generalised. The fact that the findings of Paper I were consistent across the two resorts shows a certain transferability and generalisability of the results to resorts in similar settings.
Also Paper II was initially intended as a two-case study drawing on sales data from both ski resorts. However, since access to one dataset could not be obtained, the analysis is limited to a single case.
Throughout my Licentiate studies I was able to connect and network with trail providers and other relevant stakeholders within and outside the research project (such as DMO VisitDalarna), as well as

with (inter)national scholars. I learned how prevalent the topic of funding open access services in nature-based tourism is at other destinations, regardless of whether open access rights prevail, and understand this as a certain validation of the research problem and the pragmatist approach.

Qualitative data

A key component of qualitative research is the attempt to confirm the data and research findings to enhance validity.
Respondent validation (Silverman, 1993) was considered impossible due to the limited time frame of the skiers being in the resort and the lack of further participation incentive. This is a common difficulty in tourism studies, in comparison to, say, qualitative medical research, where participants show high willingness to participate. I therefore did not aim to use participants as a validation strategy. Creswell and Poth (2018) emphasised that a "prolonged engagement and persistent observation in the field", "building rapport with gatekeepers" (p. 262), forms a validation strategy. The research project allowed me to immerse myself into the resort and trail environment over a continuous period of two and a half years and therefore enabled an in-depth familiarisation with involved stakeholders. Although these ongoing exchanges and meetings with stakeholders regarding visitor structure, booking and sales data, as well as feedback from their own visitor satisfaction surveys, were not part of the formal data collection methods, they played a valuable role in contextualising the research and I perceive them as an informal validation of my findings.

The findings of qualitative studies can be put into perspective and validated by "clarifying researcher bias or engaging in reflexivity" (Creswell & Poth, 2018, p. 261). Not being native to Sweden allowed

me to take an objective standpoint towards the case of cross-country skiing and the specific resorts. I practice cross-country skiing irregularly but did not grow up with the sport surrounding me, in contrast to many of the involved stakeholders, project partners and interview participants. The perceived change in quality of trail services, funding models and need for artificial snow overall in Sweden is not influenced by my own experience. Therefore, combined with my pragmatist approach, constantly aiming for solution-oriented focus, I believe that my *foreign* view enhanced the objectivity of the findings. The lack of fluent language skills in Swedish and the need to speak English in interviews and stakeholder meetings might have affected the communication and possibly led to misinterpretations. The fact that my mother tongue is German may have mitigated some of these influences: being able to follow a conversation fairly easy in another Germanic language and many overlapping words in German and Swedish – especially in the skiing and business vocabulary – allowed me to offer participants and stakeholders the chance to switch to Swedish or mention *missing words* in Swedish. This usually solved the language barrier.

Quantitative data

Each data source included in Paper II is subject to limitations that must be recognised individually.

As the resort reports the sales data on a weekly basis, and to make the sales data comparable to the counter data, behavioural assumptions had to be made about how often a (multi-day/combi card) trail pass is used. In particular, skiers who ski multiple times per day are being ignored in the calculation. In hindsight, the assumption presented on Page 52 could have been made more accurate or reconfirmed if the

survey included a question about how often multi-day and one-day passes are usually used.

The installed counters present a limitation because they count any movements. Despite being placed at most advantageous locations along the trails, movement from, for example, wild animals is inevitably captured and double-counting of skiers that ski multiple laps via the acceleration lane cannot be excluded.
It is suspected that the quantitative trail use based on the counter data varied between the years due to weather conditions. The 2024/25 winter season began with substantial snowfall in Dalarna in November and December 2024. However, the early months of 2025 (when high season starts) were marked by unseasonably high temperatures and rainfall, leading to poor snow conditions and a shortened ski season on natural snow. Kläppen is the only option in the Sälen mountain area with groomed trails on artificial snow and it is assumed the resort attracted more skiers that usual in the 2025 season.

The survey exclusively captured the stated compliance behaviour and therefore serves as a contextual data source for the other two data sources. It is unknown whether higher skier density or limited length of the useable groomed trails (8 km out of 13 km are provided with artificial snow) and possible service dissatisfaction influenced compliance behaviour in 2025.

Paper II reviews a single case, Kläppen Ski Resort, showcasing willingness to share sales information. To enrich the data and offer comparison within the one case, counter, sales and survey data of two winter seasons (2024 and 2025) were integrated and analysed. The seasons showed similar results in terms of stated compliance and

distribution of quantitative trail use, which can be understood as a validation and reliability of the results.

The data of the quantitative paper is further limited by skiers who evade detection across all three data collection techniques.

4.6 Ethics

The studies included in this thesis were conducted with close consideration of the European Code of Conduct for Research Integrity established by ALLEA (All European Academics). Especially during the qualitative study, in terms of the creation of the interview guideline and the information given to the participants before and after the interview, but also throughout the entire study, I followed the principles of research integrity, ensuring reliability, honesty, respect and accountability in steady discussion with my co-authors. Because my research was based in Sweden, the studies did not require approval by an ethical committee according to Swedish Ethical Review Authority, as my papers did not process sensitive personal data, such as ethnic origin, political views, religious beliefs, union membership, health data or sexual orientation.
Ethical integrity was central to the studies' design, especially of the interview process for Paper I. Participants were informed about voluntary participation and anonymity, ensuring open and honest discussions during the interviews via video call on Zoom. Due to the close collaboration between interviewer and interviewee that qualitative research requires (Merriam & Grenier, 2019), the commercial disconnection of the interviewer to the involved companies was emphasised in the initial e-mail and off the record before the interview. Consent to record the interview was received off the record and during the recording. Interviewees were not

addressed by name on the recording. Directly after the interview, once the recording was stopped, participants were given the chance to revise or withdraw parts of their responses. None of the participants exercised their right to do this, which I see as a sign of comfort of the interviewees regarding the content of the answers they gave. Recognising the potential for ethical concerns and social desirability bias (Leggett et al., 2003), questions were framed to explore perceptions and experience about compliance of others rather than direct questions about personal behaviour.
Paper II did not gather any personal information. Survey, counter and sales data do not allow tracing back to individuals. The survey was self-administrated on a tablet with information about the study, the collected data, and project partners serving as a starting page. Before filling in the survey, the data collector identified themselves as an employee at Dalarna University and disconnected from the resort. The data collector moved away to give the participant sufficient privacy while filling in the survey. Questions about personal compliance were framed within questions around the type of trail pass purchased and the method of payment with one option to answer being "*I did not buy/ I do not want to answer*. As in Paper I, ethical considerations and concerns about social desirability bias (Leggett et al., 2003) precluded questions about personal compliance, aiming for *honest* answers. Being aware that this survey exclusively captured stated behaviour, this data set acts as a complement for the two additional data sets from counters and sales, allowing careful explanations and context.

Accordingly, my thesis adhered to the guidelines for academic integrity and ethical considerations, ensuring transparency and respect for interview participant.

5 Summary of Papers

5.1 Paper I. Understanding visitor compliance with cross-country ski trail passes under open access

Authors: Brehmer, J., Heldt, T. & Fredman, P.

Status: Published in *Journal of Outdoor Recreation and Tourism* (51)

This study examines visitor compliance with funding models in open access settings by investigating why cross-country skiers purchase trail passes at two Swedish ski resorts, despite being legally entitled to access nature freely under the *allemansrätt* (Right of Public Access). Professionally groomed trails for cross-country skiing, which require significant maintenance to provide constant quality throughout the season, are increasingly treated as commercial tourism products. Especially in a resort setting, which this paper studies, groomed trails are financed through trail pass systems. However, these systems operate in a *legal grey zone* without enforceable obligations, relying instead on voluntary visitor compliance, which presents a challenge, particularly in geographically remote environments.

Using 17 semi-structured interviews with skiers, the study explores two key research questions: (1) Why do cross-country skiers comply with a trail pass system in a tourist resort with open access? and (2) How do cross-country skiers perceive a user-fee-based trail pass system in the open access context? Standard compliance theories that define punishment and enforcement as influential factors for compliance behaviour (Becker, 1968; Gibbs, 1968) lead to the positively framed research question, neglecting questions around non-compliance.

Findings derived from a thematic analysis in NVivo 14 reveal that

compliance is largely driven by emotional motivations, such as the desire to avoid (social) discomfort, conflict, embarrassment, or negative emotions by a confrontation during spot checks, rather than fear of formal penalties. It appears that the encounter with a spot check is understood as a penalty, regardless of whether one is actually in place. The findings suggest that visitors, particularly international ones, tend to comply due to their holiday mindset, due to established norms of paying for groomed trails in their home countries, or a general higher spending behaviour while travelling. Lastly, personal interactions with trail providers (such as during trail pass purchase) emerged as a possible motivator, fostering trust, transparency, and a sense of accountability.
Skiers perceive the groomed trails studied as a commercial service rather than part of the *allemansrätt*, legitimising the trail pass as payment for enhanced infrastructure rather than for nature access. However, some interviewees have expressed concerns that trail passes, especially at a sizeable price, could limit access and promote exclusivity. Interviewees perceived a shift in norms, with growing acceptance of paying for high-quality trails, particularly among frequent users and second homeowners who see their payment as an investment in future trail improvements.

The study underscores the need for tailored communication strategies that emphasise the service provision and maintenance of groomed trails, transparency on pricing structures, and a focus on shared responsibility to ensure the service provision to ultimately encourage compliance without undermining public access values. The study acknowledges its limitations, including its sole focus on compliant skiers and a corporate trail setting, suggesting future research should explore non-compliant behaviour.

5.2 Paper II. Using multiple data sources to assess compliance with a trail pass funding model under open access: A case of cross-country ski trail pass in Sweden

Authors: Heldt, T., Brehmer, J. & Alnyme O.

Status: manuscript

High-quality recreational trails for activities like cross-country skiing are often the main attraction driving people to visit a winter destination. The ability to provide trails of high quality is the key component in attracting visitors, and the selling of trail passes is seen as the major source of income for maintenance and development and is an increasingly common funding system. Visitors' compliance with the trail pass system is key to the long-term economic sustainability of the trail product but difficult to assess due to geographic remoteness. In countries such as Sweden, Norway, Scotland and Switzerland, where open access to recreational landscapes (Right of Public Access) applies, ensuring compliance becomes increasingly complex from a legal perspective and trail providers rely on trail users to comply to their trail pass system.

Practically, trail providers struggle to obtain knowledge about the number of users on their trails and ultimately to define the success of their funding model. Monitoring of visitors in vast geographic and open access areas is one of the major challenges in nature-based tourism, and also in recreational trail operation. While traditional visitor monitoring methods primarily quantify visitation (Kajala et al., 2007; Ahas et al., 2008; Barros et al., 2022), the present study introduces compliance behaviour as a crucial dimension. Thus, this paper extends beyond traditional visitor monitoring by incorporating compliance behaviour with funding models into the assessment of

recreational trail use. This paper is the first to triangulate visitor monitoring data (counters) and actual trail pass sales data to explore compliance with trail pass system; these findings are further related to survey data on self-reported compliance. By comparing and relating these different data sources to one another, the study offers an innovative approach for assessing compliance with funding models, contributing to the expansion of comprehensive visitor monitoring strategies. The aim of this study is to assess the compliance rate with a trail pass system in a ski resort over two consecutive seasons.
The comparing method reveals a gap between counter data and trail pass sales, especially evident for season 2025, and a significant gap between self-stated compliance and perceived compliance of others.

The results of this study are twofold. While the research question targeted the compliance rate, the findings show that a clear answer is difficult due to various complicating factors, both in measurement and knowledge about skier behaviour (*how often is a multi-day passed used?*). From a policy perspective, a key takeaway is the importance of perceived peer behaviour (average compliance estimate of other skiers in 2024 was 60.6 per cent and in 2025 was 64.6 per cent) compared to one's own behaviour (stated own compliance in 2024 was 94 per cent, and in 2025 was 94.6 per cent). Since compliance is crucial for the trail system's financial longevity, it may be more valuable to understand how users perceive peer behaviour and how it feeds into the social norm of paying for groomed trail access than to pinpoint exact compliance rates. This study shows that this perception can be measured and offers a useful direction for future compliance and behaviour monitoring.

6 Synthesis and conceptualisation

This thesis highlights the dilemma of open access tourism products for which payment is requested but cannot be legally enforced. It provides a multidimensional approach for a better understanding of visitor compliance with trail pass systems in a legally unclear and geographically unmonitored setting, where commercialised services are provided within the Right of Public Access. Established compliance theories analyse compliance behaviour in relation to the context in which the good is presented and define these contexts as either enforceable or voluntary. **However, tourism products that operate under open access conditions represent a *legal grey zone* between public access and private provision,** and little is known about compliance in such unclear and undefined settings.
Based on the findings, the question arises as to whether the theoretically suggested distinction between (enforceable) compliance in the context of private goods and voluntary compliance in the context of common goods is practically relevant and applicable under open access; that is, the study context. This thesis shows that, in open access, nature-based tourism settings, compliance cannot be separated into legal (=enforceable) versus voluntary categories. The dissolution of the boundaries between the two compliance domains is visualised in Figure 13.

The figure shows two intersecting domains – **compliance in the context of private goods and compliance in the context of common goods –** whose intersection and combined areas together form the third domain of **compliance under open access** (in a cross-country ski context in Sweden). Based on the thesis' findings, Figure 13 visualises the extent to which compliance in open access contexts is (inter)related and/or based on to compliance in the context of private

and common goods. This thesis identified key motivators of compliance within the *legal grey zone* which, compared with existing theories, are also found to be central in private and common good contexts. This suggests that the study context brings together compliance drivers that are traditionally seen as separate, highlighting their overlap and mutual relevance in the context of open access. The grey centre is where the two compliance domains (voluntary and enforceable), intersect and it holds many psychological and social mechanisms that are not inherently tied to legal enforcement nor purely voluntary behaviour.

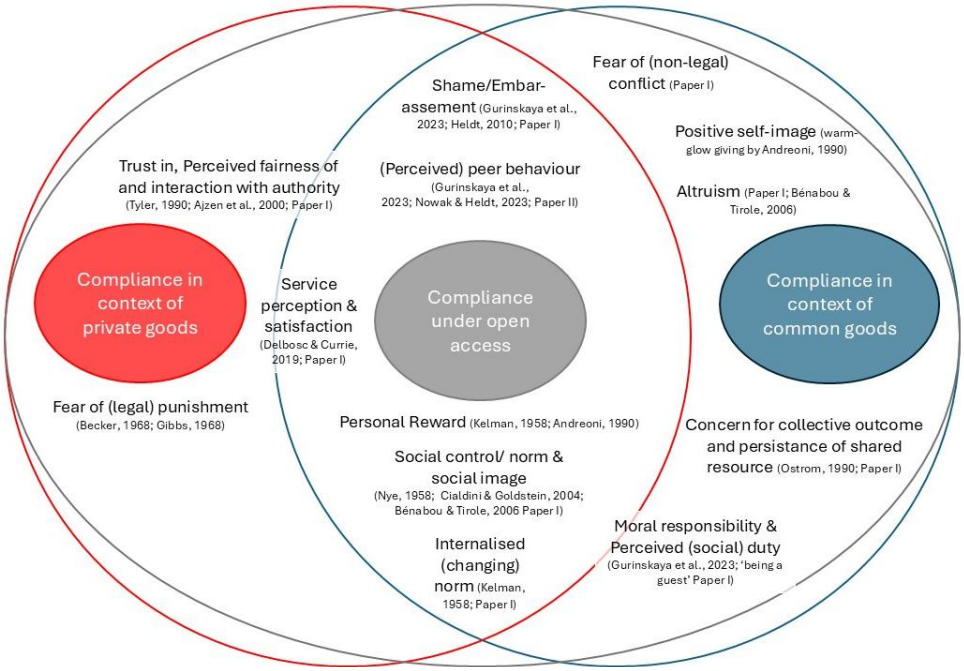

Figure 13. Different compliance domains in the context of private goods and in the context of common goods, intersected and combined within compliance under open access in a cross-country ski context in Sweden. Design Jana Brehmer

Paper I and earlier research have found that compliance is driven by anticipated emotional consequences such as shame or guilt, regardless of whether legal enforcement is in place (Gurinskaya et al., 2024; Heldt, 2010). This emotion is identified as a powerful internal regulator in open access contexts. In avoidance of these emotions, even voluntary actions can feel (socially) obligatory, and instead of a legal conflict, other (social) conflicts or negative encounters can be feared (Paper I).

Such avoidance behaviour of certain emotions is based on individuals' desire to fit in or avoid judgment from peers, which reflects a perceived social norm (Cialdini & Goldstein, 2004) and social control (Nye, 1958). These mechanisms are present in both private and common good contexts (e.g., Cialdini & Goldstein, 2004; Frey, 1997) and are highly relevant to the present study's context of groomed ski trails within a legally and geographically open access setting. People might internalise perceived expectations based on social norms, which then work as a control mechanism independently of legal obligations (see also Gibbs, 1968; Kelman, 1958) and play a significant role in the study context. These social norms feed into internalised expectations about how to behave morally proper and socially responsible (Paper I; Gurinskaya et al., 2024; Ostrom, 1990). In the thesis context therefore, social norms operate as a regulator that complements legal deterrents.

While social norms play a role in both enforced and voluntary compliance, their relative strength and underlying reasoning may differ. In private good contexts, where payment is presented as a legal requirement, social norms often derive from and are reinforced by the law, creating expectations that align with formal obligations (Gibbs, 1968). Here, compliance can be partly explained by a desire to

avoid legal sanctions while also maintaining a socially approved image (Kelman, 1958). In common good contexts, where contributions are voluntary, social norms are more likely to be rooted in individual values and/or collective identity. Here, the development of social norms that guide compliance may stem less from the fear of legal consequences and more from moral reasoning or community responsibility. This suggests that although the behavioural outcome (compliance with payment request) and influencing factor (social norm) can appear similar, the origins of those norms may differ. Recognising these differences is essential for understanding how to design effective compliance strategies in legally ambiguous, open access settings. While this thesis focuses on compliance behaviour, the findings raise the question of whether, in an open access context, legal frameworks shape social norms and end in the internalisation process (as of Kelman, 1958) or whether values and conviction of individuals pressure social norms that are ultimately translated into (legal) rule frameworks. In clearly defined legal spaces, research claims that laws "generate or at least reinforce" social norms (Gibbs, 1975, p. 528). While it is unclear whether that is the case in the open access context, the present thesis opens the discussion for this to be investigated. However, it is clear that social norms are subject to constant change (e.g., Sandholtz, 2017; Cialdini & Goldstein, 2004) and skiers appear to perceive a change in the social norm to pay for groomed trails (Paper I).

In addition, a key takeaway from Paper II is that perceived peer behaviour is an important measurable factor in understanding compliance influencing the social norm of paying for groomed trails. This positions social norms as central mechanisms for ensuring the lasting funding of nature-based tourism in areas granted for public access.

Furthermore, service satisfaction and positive feedback loops, such as constant development and expansion of groomed trails, appear to trigger compliant behaviour and, over time, lead to the internalisation of a behavioural expectation to contribute financially (Paper I; Delbosc & Currie, 2019). In the presented case, such product enhancement is partly perceived as a degree of transparency and fairness of the trail provider regarding how trail pass income is used (Paper I). Whether the authority is legal (for example, police) or informal (say, a trail provider), compliance seems to be an outcome of perceived fairness and transparency (Tyler, 1990; Ajzen et al., 2000) in terms of access, price and enforcement; in a touristic trail context, these can be made visible by constant investment into the service. User fee systems based on transparency of funds could potentially enhance compliant behaviour complemented by personal interaction between the visitor and the trail provider (Paper I). Clarifying the purpose of the user fees and transparently or visibly communicating how the income from trail passes is used can help build trust among users and strengthen their willingness to support a user-fee system (Depondt & Green, 2006; Chung et al., 2010). "The efforts to clearly deliver the purposes and spending procedures of user fees should be made on information and communication channel to tourists (e.g., brochure, visitor guide, website, and/or newsletter)" (Chung et al., 2011, p. 1045) or via personal encounters (Paper I). By experiencing the quality improvements in the product as a visible result of funding, and receiving continuous feedback loops through this, skiers see themselves as playing an active role in shaping the future availability and quality of the service ("If nobody pays anymore, then they don't do it anymore." Interview 1, Kläppen as part of Paper I). Their behaviour aligns with established theories on collective outcomes and prosocial behaviour (Ostrom, 1990; Bénabou and

Tirole, 2006). Skiers may choose to comply because they want to feel and be seen as contributors to the collective good (see also Frey, 1997). However, it remains a challenge to distinguish whether such behaviour is primarily driven by internalised social norms or by the personal rewards of complying. As Andreoni's (1990) concept of warm-glow giving noted, not all contributions are purely altruistic; people may derive emotional satisfaction or moral pride from contributing, independently of the collective outcome. This makes it difficult to determine whether someone pays because they genuinely endorse the norm or because they value the external and/or internal recognition that comes with following the norm and forms a relevant base for future research.

That being said, the displayed factors for compliance do not operate in isolation; rather, they interact (and possibly reinforce) one another through shared understandings of externally and internally perceived appropriate behaviour. This interconnectedness helps explain why the boundaries between compliance in context of private versus common goods are blurred in practice, particularly in open access settings where social norms, individual values and conviction, and perceived fairness and trust based on legal uncertainties, form the guiding principle. This illustrates how, in open access contexts, motivators for voluntary and enforced compliance significantly overlap, explaining what drives compliance in a *legal grey zone* context, as visualised in Figure 13.

In doing so, the findings challenge traditional compliance theories that tend to frame compliance drivers as exclusive, suggesting individuals refrain from wrongdoing either due to fear of punishment **or** internalised norms and values (Gibbs, 1968, p. 517). This neglects the possibility that legal deterrents and moral/social

motivations might act simultaneously or interreact with each other. Further, this thesis contests that compliance with legal rules is more strongly related to perceived legitimacy of and trust in authorities than to peer attitudes or fear of punishment (Tyler, 1990). The findings in this thesis complicate that view by showing that peer behaviour, social norms, personal reward and perceived fairness interact as drivers of compliance, leaning towards an inclusive rather than exclusive perspective on compliance behaviour under open access.

7 Discussion

This thesis contributes to conceptualising visitor compliance in open access settings by examining how and why individuals adhere to payment requests for recreational infrastructure supporting nature-based tourism and outdoor recreation, even when such contributions are legally unenforceable. The thesis extends previous research into donation-based trail funding (e.g., Nowak & Heldt, 2023) by focusing on fixed-price requests. In doing so, it opens up the discussion on how formal yet unenforced systems function and persist and why people comply. Such insights are not only relevant for tourism but for broader governance and funding strategies in open access settings. These contexts often lack enforceable regulation yet still need (and often manage) to initiate user compliance. This thesis shows that compliance in such settings is not solely the outcome of individual decision-making under formal rules but is socially embedded. While legal frameworks continue to define the formal boundaries of behaviour, compliance in practice is often shaped by additional factors. It appears to be strongly influenced by social norms, including perceived peer behaviour, perceived transparency, trust, and fairness in the provider and personal conviction and reward. Thus, this thesis contributes to tourism science by illustrating that compliance within publicly accessible tourism products is not simply a legal matter, but a multi-layered process grounded in legal frameworks, social norm pressure, individuals' values, perceived fairness and institutional trust, as well as collective responsibility. In so doing, it clarifies a knowledge gap in the management of nature-based tourism, where traditional business models rely on entrance fees or fines. By framing groomed trails as a *legal grey zone*, the thesis offers a conceptual lens through which to understand how visitors

interpret trail access, not simply as a consumer transaction (private good) or an unrestricted right (common good), but as something shaped by dynamic interactions between different influencing factors.

In Sweden, the commodification of outdoor spaces has evolved alongside changing recreation patterns. The growing interest in nature-based recreation, intensified during the COVID-19 pandemic (Skriver-Hansen et al., 2022; Thompson, 2020; Venter et al., 2020), has not only increased expectations for well-maintained trails but also heightened environmental pressures. As Wolf et al. (2019, as cited in Lukoseviciute et al., 2022, p. 367) note, such pressures can be mitigated when investments in infrastructure and access management ensure that recreation and conservation remain compatible. In the face of the increased demand and potential increased tourism numbers (see further p. 80-82), user-fee systems will potentially play a considerable role, including in combating overtourism (e.g., Nepal & Nepal, 2021; Su et al., 2021).
However, this raises the question of how much environmental conservation and channelling of visitors through natural areas should cost, without excluding certain (income) groups, emphasising the social sustainability of trails and trail passes. Previous research on visitors in national parks is split: individuals with low income are affected by user fee, but it has also been argued that "moderate fees do not influence low-income peoples' visitation as they are already under-represented (Burns & Graefe, 2006; Cockrell & Wellman, 1985; Ostergren, Solop & Hagen, 2005)" (Chung et al., 2010, p. 1039). Unfortunately, this is also indicated for the case of cross-country skiing in a resort context by the demographic skier data collected for

Paper II.[4] It has been suggested that the effects of user fees should be evaluated in relation to additional factors, including visitor demographics, perceived crowding, the presence of alternative recreational sites and payment methods (Chung et al., 2010).
The way in which fees are paid is an interesting aspect that was present throughout the case. The involved resorts strongly promote digital payment and aim to lower in-shop purchase of trail passes. This opens up discussion about decreased user experience (as described in Paper I) and also about the decreased e-inclusion for technically non-skilled visitors (Schreder et al., 2009) or insufficiently equipped visitors (mobile payment for groomed trails require a Swedish bank account), which may ultimately affect compliance. Therefore, the discussion around inclusion and compliance of all marginalised groups not only surrounds the topic of income, but has multiple aspects to consider, such as the inclusion of differently abled people in outdoor recreation. Inclusiveness interplays with fairness as a factor to consider for compliance behaviour, as has also been suggested in theory (Tyler, 1990).

As social norms appear as an interlinking factor in influencing compliance behaviour, addressing social norms will be especially relevant under the prediction of rising (international) visitor numbers in Sweden and Dalarna (Visit Dalarna, 2024; Visit Dalarna, n.d.a; Visit Dalarna, 2025). In the context of cross-country skiing, these predictions rely on snow coverage and snow conditions being the most important winter destination pull factor for winter sport visitors (Steiger et al., 2020) and how, based on this, Central Europe's attractiveness as a winter sport destination is in danger. In 2013,

[4] Unpublished demographic data within Paper II of Kläppen Ski Resort's skiers of 2024/25 show an average annual gross income of ca. SEK 580,000 per person.

"without snowmaking only 69% of Austrian ski destinations were snow reliable" (Steiger & Abegg, 2013, p. 2). "As long as other ski areas for substitution exist - destinations with lower snow reliability will probably be severely affected, while total demand remains quite stable" (Steiger et al., 2020, p. 8). While exact predictions are difficult, continuously increasing tourism numbers in Sweden and Dalarna, especially from international markets such as United Kingdom, Germany and the Netherlands (Visit Dalarna, 2024; Visit Dalarna, n.d.a; Visit Dalarna, 2025), allow careful predictions. These developments suggest that Sweden could see an increase in international cross-country ski tourism, especially from markets unfamiliar with public access rights and the Nordic model of trail fee systems (Sandell & Fredman, 2010). The possible effects of climate change call for an intelligent cross-country ski trail product with a funding model that proves resilient to the above-mentioned changes. Understanding compliance behaviour in trail pass purchase and monitoring of trail usage and visitors is crucial to establish lasting trail products with a robust funding models that can compete against those in other destinations, for example Finland (Demiroglu et al., 2020), as "more favourable climates in northern regions may also divert tourist flows, further increasing competition between tourist destinations" (World Trade Organization, 2022, p. 33). As Paper I concludes, it is unclear whether compliance behaviour patterns persist in other market groups; some of the interviews in Paper I suggest compliance reasons specific to international skiers ('being a guest in a host country', 'used to paying for groomed trails in home country', 'higher spending behaviour on holidays'). Such reasonings differ from Swedish interviewees, who showed that compliance was influenced by the need to maintain the product and avoid (any kind of) conflict if non-compliant.

Therefore, the dimension of increased international visitors opens the discussion about cross-cultural behaviour differences in compliance behaviour and groomed trail use. Visitor expectations shaped by exclusive fee-based or completely free systems abroad may differ from the Swedish way of contributing and pose new challenges for compliance and trail providers. Social norms, request of fairness and transparency may differ in such *new* skier market segments. Studies have shown different compliance behaviour based on the country-of-origin showcasing elements of collectivism versus individualism (Cialdini et al., 1999). Initial studies on cross-cultural cross-country skier preferences and their acceptance user fee systems have been conducted. Landauer et al. (2012) found that, in contrast to Finnish skiers, "in Austria the notion that user fees are a must for the quality maintenance of ski areas is well accepted" (p. 105). Whether such stated acceptance translates into compliant behaviour is subject to relevant future research.

It becomes evident that a change in visitor structure – whether or not it is caused by snow decrease in Central Europe – will accelerate the above-mentioned compliance dynamics within the Swedish trail industry in the future (Landauer et al., 2012; Orr & Schneider, 2018; Gössling & Hall, 2006; Godtman Kling, 2019; Larneby et al., 2025). As visitor profiles shift, not only economic sustainability but also ecological impacts and management strategies around trails may need more attention. "It can be assumed that research on trails will increasingly have to address issues such as new recreational activities, crowding and the channeling of visitors as such issues will likely affect the visitor experience to a greater extent than presently" (Godtman Kling, 2019, p. 51).

In summary, and to answer the research question of how visitor compliance with trail pass systems can be conceptualised, in a geographically and legally open access context, as nature-based tourism settings, it is not possible for compliance to be separated into legal (=enforceable) versus voluntary categories. Instead, it should be understood as a dynamic mixture, shaped by a blend of legal, social, and psychological factors, with social norms emerging as a unifying force that is seemingly influenced by and influencing many other factors across. This conceptualisation advances the field's understanding of compliance in the tourism context and offers practical implications for managing and sustaining trail products in public access areas under conditions of legal uncertainty.

These insights are powerful and crucial for indicating, predicting and influencing behaviour in *legal grey zone* contexts where legal consequences are unclear or not alone form the guiding principle of behaviour, either because they are done in an open access setting or in a closed but unmonitored context.

7.1 Management and policy implications

Based on discussions with the involved ski resorts, the product of cross-country skiing currently seems to be treated as a *standard* product, relying on similar pricing and payment request policies as for geographically and legally excludable products (for example, alpine skiing with lift service). In summarising the implications of this thesis, resorts might want to revise this approach and alter their communication and payment request strategies specifically for open access products, understanding the influences of social norms, perceived peer behaviour and transparent trail management, and,

further, if and how visitor expectations rise when payment is requested.

Based on the above, rather than relying on regulation and enforcement (see Figure 11 and 12), trail providers should seek to design systems aiming at compliance based on perceived social norms and peer behaviour, demonstrated fairness of the system and a reinforced a sense of shared responsibility to sustain the service and foster a conviction in the visitor to pay for the use of groomed trails. This way in case of visitors' dissatisfaction with its quality or maintenance of groomed trails, accountability can possibly be directed inward, toward oneself and the broader community. In Sweden's trail pass case, despite the lack of legal obligation, skiers then might ultimately comply *as if* there is such an obligation, disregarding the fact that it might be a social or moral obligation. This becomes especially relevant for trail providers under the realisation of Paper II that assessing a compliance rate requires a lot of effort and might continuously be biased. The question arises as to which extent it is at all possible to assess a compliance rate in an open access context, or whether approaching methods are merely attempts *to come as close as possible*. In the presented setting, assessing compliance might not mean finding a specific rate, but be more of an overall estimation of whether user numbers align with incoming payments. Summarising the findings of Paper II, assessing an exact compliance rate should be complemented by a focus on establishing the perception of others paying and that contributing signals belongingness to a community that will ultimately feed into the social norm of paying for groomed trails. Assessing the perceived peer behaviour and social norm in advance (Paper II) could possibly inform messaging and communication strategies. Badge systems, where the purchased trail pass needs to be worn visible during

skiing, are a way of showcasing peer behaviour. Installed in Kläppen, such systems have not yet been implemented strategically or consistently.

If social norms are seen as influencing compliance in open access contexts, behavioural requests can be designed to highlight these norms rather than to stress legal punishment. In the nature-based tourism context, such behaviour request messaging has been shown to be partly ineffective so far "with persuasion attempts often informed by the intuition and experience of others (e.g., park managers) rather than the beliefs relevant to the target audience (Ballantyne & Hughes, 2006; Ham & Krumpe, 1996; Ham, et al., 2008)" (Curtis et al., 2010, p. 582–583). Translated into the context of groomed trails, this point emphasises that resorts need to assess the social norm of the desired target group to reach a high compliance and Paper II points towards the possibility of this. Therefore, policy designs should focus on reinforcing motivations that are aligned with social norms, both intrinsic (internalised norms) and extrinsic (social approval), rather than over-relying on instrumental external motivators (for example rewards or punishments). Designing systems that nurture compliance by making contributions visible and promoting collective identity may be far more effective than any formal enforcement could ever be in such contexts. Besides groomed trails for cross-country skiing, such open access settings also include mountain biking, hiking, horseback riding, kayaking, and similar activities. In these contexts, the insights of this thesis are relevant for compliance with funding models and also for other behavioural requests such as environmentally sustainable conduct (for example, staying on the path, no dogs allowed) (also suggested by Nowak & Heldt, 2023). In that way, recreational trails with a trail pass system make it possible to steer and monitor visitors through nature while

ensuring sufficient funding for maintenance and nature protection (Wolf et al., 2019) if used correctly by management.

The policies and definitions currently implemented by the Swedish Environmental Protection Agency (Naturvårdsverket) guide the need for research and discussion on compliance behaviour with trail pass systems. Therefore, apart from the above-mentioned management implications, policy implications can be drawn from this thesis. As mandatory trail passes may be legally fragile according to Naturvårdsverket's own policy (Naturvårdsverket, n.d.), and as voluntary systems are often economically unsustainable (e.g., Heldt, 2010), a framework for semi-voluntary fee systems could be introduced. Institutions like Naturvårdsverket could possibly promote semi-voluntary trail pass systems with clear communication standards (for example, transparency of costs, signage, justification of fees). This involves visitors being encouraged to comply through perceived fairness and trust in the system and authority without overstepping legal limits.

For now, Naturvårdsverket communicates only the right to charge for trail passes within a facility, without further defining the legalities around a facility it. This legal uncertainty may discourage investment in trail infrastructure (e.g., Vail & Hultkrantz, 2000). A legal inquiry to explore whether the current regulations should be adapted to better reflect today's diverse trail infrastructure (commercial versus public versus sports association, mixed activity trails, etc.) could be recommended. This could open dialogue about modernising the legal framework in line with current practices, user expectations, and economic, social and environmental sustainability goals.
By combining clarification of legal frameworks with behaviourally informed policy tools, institutions like Naturvårdsverket can help

enable a more sustainable and legally secure future for groomed trails in Sweden without undermining the core values of the *allemansrätt*.

7.2 Future research

The above discussion opens the door for future research to contextualise the complex legal situation around trail pass system within public access rights. Clarifying and reflecting on the legal status would have been beyond the scope of this thesis, but it does form a relevant aspect for future research. This could be embedded into the review of different but similar products and services (sport association-operated groomed trails, golf courses, etc.) and how different types of products relate to the legal framework and ultimately to compliance behaviour and research. More broadly, trails themselves could also be examined within the economic framework of good types, since some type of trails might reasonably be classified as club goods or even public goods rather than as common or private goods.

The success of nudging strategies has been measured and researched in the context of trails, although mainly in the context of donation requests and in less commercialised settings (Nowak & Heldt, 2023; Heldt 2010). Additional research to test the effectiveness of message framing for a trail pass purchase based on motivating compliance through social norms, perceived peer behaviour, transparency and fairness, would be relevant to test the findings of this thesis in a quantitative way.

It must be noted that this thesis, and especially Paper II, capture compliance behaviour at a static measurement, researching visitors' self-reported or inferred behaviour at a single point in time. Whereas Paper I allows contextualisation of what influences this behaviour at

a specific point of time, the snapshot approach limits the ability to explore how compliance decisions specifically evolve in response to feedback mechanisms such as continuous social influence, repeated visits, or changing trust in management. Future research may need a longitudinal or repeating design to capture the changes of compliance behaviour.

Whereas the findings of Paper I and II allow assumptions about non-compliance rate and motivators for non-compliance, this thesis first and foremost researched the compliance behaviour. The Swedish *legal grey zone* case proved to be highly applicable to research on reasons and behaviour on compliance where non-compliance is not legally defined. Especially the research design of Paper I with a SEK 400 gift voucher motivating interview participation is not suitable to research non-compliance. However, same as in behavioural economics, the under-researched phenomenon around non-purchase, research on non-compliance would form a relevant but challenging field for future research.

8 Conclusion

By examining how compliance is to be understood and conceptualised between public access rights and commercial service provision, it became evident that traditional frameworks distinguishing between compliance behaviour in the context of enforceable (here: private good) versus voluntary (here: common good) contexts are insufficient for explaining behaviour in open access recreational settings. In such contexts, conventional compliance theories struggle to fully account for the behaviours observed in the two separate studies of this thesis.
Ultimately, the mixed-method approach of this thesis advances current knowledge by challenging exclusivist compliance theories and emphasising the relevance of inclusive, context-specific understanding that embeds compliance behaviour in both social and legal structures.

This thesis contributes to compliance research in tourism by conceptualising visitor compliance, not as a response to a specific funding model, but as a response to social, personal and institutional norms which can be shaped by – but not depreciable to – legal structures. The thesis showcases how compliance behaviour emerges in a *legal grey zone* where traditionally identified motivators of enforceable and voluntary compliance intersect. Visitors interpret the legitimacy and purpose of trail funding systems beyond binary categories of e.g. private versus common goods. Rather than being defined by these categories, visitors' compliance behaviour is shaped by how trail pass systems are framed and by the interplay of legal ambiguity, trust in the provider, and social and personal norms.

This novel way of conceptualising compliance behaviour has broader theoretical implications. It suggests **that social norm including perceived peer behaviour, perceived transparency, trust, and fairness in the provider and personal conviction may form the regulators in tourism settings where formal enforcement is weak or absent, and that legal framings themselves are often interpreted through these social norms.** Therefore, the findings offer a nuanced understanding of compliance that bridges legal context, behavioural economics, and funding management for tourism services.

Additionally, the thesis responds to real-world concerns in destination and outdoor recreation management, where legal restrictions limit pricing and enforcement but funding needs persist. Through its analysis of how compliance emerges, the thesis informs more context-sensitive approaches to funding open access tourism infrastructure. These include leveraging social norms, transparent communication, and fostering collective responsibility, which are approaches that are often overlooked in traditional, monitored funding models. Strengthening this understanding is essential for designing sustainable, adaptive funding models for recreational trails, especially in legally ambiguous, open access contexts like Sweden's.

9 References

Ahas, R., Aasa, A., Roose, A., Mark, Ü., & Silm, S. (2008). Evaluating passive mobile positioning data for tourism surveys: An Estonian case study. *Tourism Management*, *29*(3), 469–486. https://doi.org/10.1016/j.tourman.2007.05.014

Ajzen, I., Rosenthal, L. H., & Brown, T. C. (2000). Effects of perceived fairness on willingness to pay. *Journal of Applied Social Psychology*, 30(12), 2439–2450 https://doi.org/10.1111/j.1559-1816.2000.tb02444.x

Alem, Y., Eggert, H., Kocher, M. G., and Ruhinduka, R. (2018). Why (field) experiments on unethical behavior are important: Comparing stated and revealed behavior. *Journal of Economic Behavior and Organization*, 156, 71–85. https://doi.org/10.1016/j.jebo.2018.08.026

Alpízar, F., Martinsson, P., & Nordén, A. (2014). Do entrance fees crowd out donations for public goods? Evidence from a protected area in Costa Rica. *Environment and Development Economics*, 20(3), 311–326. https://doi.org/10.1017/s1355770x14000485

Ando, H., Cousins, R., & Young, C. (2014). Achieving saturation in thematic analysis: Development and refinement of a codebook. *Comprehensive Psychology* (Missoula, MT), 3, 3. https://doi.org/10.2466/03.CP.3.4

Andreoni, J. (1988). Privately provided public goods in a large economy: The limits of altruism. *Journal of Public Economics*, *35*(1), 57–73. https://doi.org/10.1016/0047-2727(88)90061-8

Andreoni, J. (1990). Impure altruism and donations to public goods:A theory of warm-glow giving. *The Economic Journal (London)*, 100(401), 464–477. https://doi.org/10.2307/2234133

Barros, C., Gutiérrez, J., & García-Palomares, J. (2022). Geotagged data from social media in visitor monitoring of protected areas; a scoping review. *Current Issues in Tourism*, *25*(9), 1399–1415. https://doi.org/10.1080/13683500.2021.1931053

Becker, G. S. (1968). Crime and punishment: An economic approach. *The Journal of Political Economy*, 76(2), 169–217. https://doi.org/10.1086/259394

Bénabou, R., & Tirole, J. (2006). Incentives and prosocial behavior.*The American Economic Review*, 96(5), 1652–1678. https://doi.org/10.1257/aer.96.5.1652

Bergseth, B. J., Russ, G. R., & Cinner, J. E. (2015). Measuring and monitoring compliance in no-take marine reserves. *Fish and Fisheries*, *16*(2), 240–258. https://doi.org/10.1111/faf.12051

Bowker, J. M., Bergstrom, J. C., & Gill, J. (2007). Estimating the economic value and impacts of recreational trails: A case study of the Virginia creeper rail trail. *Tourism Economics*, 13(2), 241–260. https://doi.org/10.5367/000000007780823203

Boyd, C., Rickard, J., Martini, C., & Russell, A. (1989). Fare evasion and non-compliance. A simple model. *Journal of Transport Economics and Policy*, 23(May 89), 189–197. Retrievable via https://www.jstor.org/stable/20052881

Boyd, C. (2020). Revisiting the foundations of fare evasion research. *Transportation Research*. Part A, Policy and Practice, 137, 313–324. https://doi.org/10.1016/j.tra.2020.05.004

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Buckley R., Pickering C. and Weaver D. B. (2003) (Eds.), Nature-based tourism, environment and land management. *C.A.B. International*. https://doi.org/10.1079/9780851997322.0000

Chung, J. Y., Kyle, G. T., Petrick, J. F., & Absher, J. D. (2010). Fairness of prices, user fee policy and willingness to pay among visitors to a national forest. *Tourism Management*, 32(5), 1038–1046. https://doi.org/10.1016/j.tourman.2010.08.016

Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A Focus Theory of Normative Conduct: A theoretical refinement and reevaluation of the role of norms in human behavior. *Advances in Experimental Social Psychology*, 24, 201–234. https://doi.org/10.1016/s0065-2601(08)60330-5

Cialdini, R. B., Wosinska, W., Barrett, D. W., Butner, J., & Gornik-Durose, M. (1999). Compliance with a request in two cultures: The differential influence of social proof and Commitment/Consistency on collectivists and individualists. *Personality & Social Psychology Bulletin*, *25*(10), 1242–1253. https://doi.org/10.1177/0146167299258006

Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology*, 55(1), 591–621. https://doi.org/10.1146/annurev.psych.55.090902.142015

Creswell, J. W. (2013*). Qualitative Inquiry & Research Design – Choosing Among Five Approaches*. Thousand Oaks: SAGE

Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research* (Third ed.). SAGE.

Creswell, J. W., & Poth, C. N. (2018*). Qualitative Inquiry & Research Design: Choosing Among Five Approaches* (4th ed.). SAGE Publications.

Curry, N. (2004). The divergence and coalescence of public outdoor recreation values in New Zealand and England: an interplay between rights and markets. *Leisure Studies*, 23(3), 205–223. https://doi.org/10.1080/0261436042000251978

Curtis, J., Ham, S. H., & Weiler, B. (2010). Identifying beliefs underlying visitor behaviour: A comparative elicitation study based on the theory of planned behaviour. *Annals of Leisure Research*, 13(4), 564–589. https://doi.org/10.1080/11745398.2010.9686865

Delbosc, A., & Currie, G. (2018). Why do people fare evade? A global shift in fare evasion research. *Transport Reviews*, 39(3), 376–391. https://doi.org/10.1080/01441647.2018.1482382

Demiroglu, O. C., Lundmark, L., Saarinen, J., & Müller, D. K. (2020). The last resort? Ski tourism and climate change in arctic Sweden. *Journal of Tourism Futures*, 6(1), 91-101. https://doi.org/10.1108/JTF-05-2019-0046

Depondt, F., & Green, E. (2006). Diving user fees and the financial sustainability of marine protected areas: Opportunities and

impediments. *Ocean & Coastal Management*, 49(3), 188–202. https://doi.org/10.1016/j.ocecoaman.2006.02.003

Fàbregues, S., & Molina-Azorín, J. F. (2017). Addressing quality in mixed methods research: A review and recommendations for a future agenda. *Quality & Quantity: International Journal of Methodology, 51*(6), 2847–2863. https://doi.org/10.1007/s11135-016-0449-4

Feilzer, M. Y. (2010). Doing mixed methods research pragmatically: Implications for the rediscovery of pragmatism as a research paradigm. *Journal of Mixed Methods Research, 4*(1), 6–16. https://doi.org/10.1177/1558689809349691

Flyvbjerg, B. (2011). Case study. In Denzin, N. K., Lincoln, Y.S (Eds.). *The SAGE Handbook of Qualitative Research* (p. 301–316). Thousand Oaks: SAGE

Fredman, P. Romild, U. Emmelin, L. & Yuan, M. 2009. Non-compliance with on-site data collection in outdoor recreation monitoring. *Visitor Studies*, 12(2):164–181. https://doi.org/10.1080/10645570903203471

Fredman, P., & Tyrväinen, L. (2010). Frontiers in nature-based tourism. *Scandinavian Journal of Hospitality and Tourism, 10*(3), 177–189. https://doi.org/10.1080/15022250.2010.502365

Freese, T., Gille, M., & Struthers, J. (2019). Abiding by the rules? A sequential mixed-methods study on the determinants of regulatory compliance with maritime environmental legislation. *Maritime Business Review, 4*(1), 31–48. https://doi.org/10.1108/MABR-09-2018-0034

Frey, B. S. (1997). *Not just for the money: An economic theory of personal motivation*. Edward Elgar.

Fürst, E. W. M., & Herold, D. M. (2018). Fare evasion and ticket forgery in public transport: Insights from Germany, Austria and Switzerland. *Societies*, 8(4), 98. https://doi.org/10.3390/soc8040098

Gemmell, N., & Hasseldine, J. (2014). Taxpayers' behavioural responses and measures of tax compliance 'gaps': A critique and a new measure. *Fiscal Studies, 35*(3), 275–296. https://doi.org/10.1111/j.1475-5890.2014.12031.x

Gibbs, J. P. (1968). Crime, punishment, and deterrence. *Southwestern Social Science Quarterly*, 48(4), 515–530. Retrievable via https://www.jstor.org/stable/42867909

Godtman Kling, K. G., Fredman, P., & Wall-Reinius, S. (2017). Trails for tourism and outdoor recreation: A systematic literature review. *Tourism*, 65(4), 488–508. http://miun.diva-portal.org/smash/record.jsf?pid=diva2:1174211

Godtman Kling, K. (2019). Paths to collaboration? A Study on Multifunctional Mountain Trails. Licentiate thesis in Tourism Studies at Faculty of Human Sciences, Mid Sweden University, Östersund. Retrieved January 06, 2025 via https://miun.diva-portal.org/smash/record.jsf?pid=diva2%3A1268913&dswid=5768

Gössling, S., & Hall, C. M. (2006). Uncertainties in predicting tourist flows under scenarios of climate change. *Climatic Change*, 79(3–4), 163–173. https://doi.org/10.1007/s10584-006-9081-y

Guarda, P., Galilea, P., Handy, S., Muñoz, J. C., & Ortúzar, J. d. D. (2016). Decreasing fare evasion without fines? A microeconomic analysis. *Research in Transportation Economics*, 59, 151–158. https://doi.org/10.1016/j.retrec.2016.06.001

Guest, G., Namey, E., & Chen, M. (2020). A simple method to assess and report thematic saturation in qualitative research. *PloS One*, 15(5), https://doi.org/10.1371/journal.pone.0232076

Gurinskaya, A., Nalla, M. K., & Jaynes, C. M. (2024). Fear, learning, or self-control? Predictors of Russian citizens' compliance with mandatory and voluntary COVID-19 prevention measures. *Criminology & Criminal Justice*, 24(3), 608–628. https://doi.org/10.1177/17488958221147505

Hall, J. N. (2013). Pragmatism, Evidence, and Mixed Methods Evaluation. In D. M. Mertens & S. Hesse-Biber (Eds.) *Mixed Methods and Credibility of Evidence in Evaluation* (p. 15–26). Retrievable via https://onlinelibrary.wiley.com/doi/abs/10.1002%2Fev.20054

Heldt, T. (2010). Financing Recreational Infrastructure with Micropayments and Donations: A Pilot Study on Cross-country Ski Track Preparations in Sweden, *Scandinavian Journal of Hospitality and Tourism*, 10(3), 386–394. https://doi.org/10.1080/15022250.2010.496569

Hendricks, W. W., Ramthun, R. H., & Chavez, D. J. (2001). The effects of persuasive message source and content on mountain bicyclists' adherence to trail etiquette guidelines. *Journal of Park and Recreation Administration*, *19*(3), 38–61. https://js.sagamorepub.com/jpra/article/view/1566

Ickes, M., Gokun, Y., Rayens, M. K., & Hahn, E. J. (2015). Comparing two observational measures to evaluate compliance with tobacco-free campus policy. *Health Promotion Practice, 16*(2), 210–217. https://doi.org/10.1177/1524839914561060

Jackson-Morris, A., Bleymann, K., Lyall, E., Aslam, F., Bam, T. S., Chowdhury, I., Daouda, E. A., Espinosa, M., Romo, J., Singh, R. J., & Semple, S. (2016). Low-cost air quality monitoring methods to assess compliance with smoke-free regulations: A multi-center study in six low- and middle-income countries. *Nicotine & Tobacco Research 18*(5), 1258–1264. https://doi.org/10.1093/ntr/ntv290

Kajala, L., Almik, A., Dahl, R., Dikšaitė, L, Erkkonen, J., Fredman, P., Jensen, F. Søndergaard, Karoles, K., Sievänen, T., Skov-Petersen, H., Vistad, O. I. and Wallsten, P. 2007. Visitor monitoring in nature areas – a manual based on experiences from the Nordic and Baltic countries. Copyright by Swedish Environmental Protection Agency, Nordic Council of Ministers and authors (Naturvårdsverket). Retrieved March 31, 2025 via https://norden.diva-portal.org/smash/get/diva2:702543/FULLTEXT01.pdf

Kelman, H. C. (1958). Compliance, identification, and internalization: Three processes of attitude change. *The Journal of Conflict Resolution*, 2(1), 51–60. https://doi.org/10.1177/002200275800200106

Kläppen (n.d.). Our tracks. Retrieved November 09, 2024 from https://www.klappen.se/en/skiing/cross-country-skiing/Our-tracks/

Kubo, T., Shoji, Y., Tsuge, T., & Kuriyama, K. (2018). Voluntary contributions to hiking trail maintenance: Evidence from a field experiment in a national park, Japan. *Ecological Economics*, 144, 124–128. https://doi.org/10.1016/j.ecolecon.2017.07.032

Laarman, J. G., & Gregersen, H. M. (1996). Pricing policy in nature-based tourism. *Tourism Management (1982)*, 17(4), 247–254. https://doi.org/10.1016/0261-5177(96)00016-7

Landauer, M., Pröbstl, U., & Haider, W. (2012). Managing cross-country skiing destinations under the conditions of climate change – scenarios for destinations in Austria and Finland. *Tourism Management*, 33(4), 741–751. https://doi.org/10.1016/j.tourman.2011.08.007

Larneby, M., Svensson, D., & Hedenborg, S. (2025). Challenges, tensions and opportunities: Sport and climate change [Introduction]. *Sport in Society*, https://doi.org/10.1080/17430437.2025.2560751

Leavy, P. (2017). *Research Design*. New York: The Guilford Press.

Leggett, C. G., Kleckner, N. S., Boyle, K. J., Duffield, J. W., & Mitchell, R. C. (2003). Social desirability bias in contingent valuation surveys administered through in-person interviews. *Land Economics*, 79(4), 561–575. https://doi.org/10.2307/3147300

Lukoseviciute, G., Pereira, L. N., & Panagopoulos, T. (2022). The economic impact of recreational trails: A systematic literature review. *Journal of Ecotourism*, 21(4), 366–393. https://doi.org/10.1080/14724049.2022.2030745

MacLeod, N. (2016). The role of trails in the creation of tourist space. *Journal of Heritage Tourism, 12*(5), 423-430. https://doi.org/10.1080/1743873X.2016.1242590

Mankiw, N. Gregory. (2012). Principles of microeconomics (6th ed.). South-Western Cengage Learning. Retrieved September 15, 2025 via file:///C:/Users/jbm/Downloads/Principles%20of%20Microeconomics(%206th%20Edition)_N.%20Gregory%20Mankiw.pdf

Merriam, S. B., & Grenier, R. S. (Eds.). (2019). *Qualitative research in practice: Examples for discussion and analysis*. John Wiley & Sons.

Naturvårdsverket (2024, January 26). Mindre till lokala satsningar och friluftsliv när medel för värdefull natur fördelats. Retrieved April 25, 2025 via https://www.naturvardsverket.se/om-oss/aktuellt/nyheter-och-pressmeddelanden/2024/januari/mindre-till-lokala-satsningar-och-friluftsliv-nar-medel-for-vardefull-natur-fordelats/

Naturvårdsverket (2025a, April 28). 2,9 miljarder till värdefull natur – här är resultaten från 2024 års satsningar. Retrived April 25, 2025 via https://www.naturvardsverket.se/om-oss/aktuellt/nyheter-och-pressmeddelanden/2025/april/29-miljarder-till-vardefull-natur--har-ar-resultaten-fran-2024-ars-satsningar/

Naturvårdsverket (2025b, March 27). Åerrapportering av medelsanvändning och resultat för skydd av och åtgärder för värdefull natur 2022–2024. Retrieved April 25, 2025 via https://www.naturvardsverket.se/498b2e/globalassets/media/publikationer-pdf/7100/978-91-620-7188-2.pdf

Naturvårdsverket (n.d.). Allemansrätten för organisered verksamhet: Du som vill ta ut avgift för skidsår. Retrieved September 3, 2024 from https://www.naturvardsverket.se/vagledning-och-stod/allemansratten/organiserad-verksamhet/

Nepal, R., & Nepal, S. K. (2021). Managing overtourism through economic taxation: Policy lessons from five countries. *Tourism Geographies, 23*(5-6), 1094-1115. https://doi.org/10.1080/14616688.2019.1669070

Nowak, M., & Heldt, T. (2023). Financing recreational trails through donations: Testing behavioural theory in mountain biking context. *Journal of Outdoor Recreation and Tourism*, 42, 100603. https://doi.org/10.1016/j.jort.2022.100603

Nye, F.I. (1958). Family relationships and delinquent behaviour. Wiley. Retrievable via https://archive.org/details/familyrelationsh0000nyef/page/172/mode/2up

Orr, M., & Schneider, I. (2018). Substitution interests among active-sport tourists: The case of a cross-country ski event. *Journal of Sport & Tourism*, 22(4), 315–332. https://doi.org/10.1080/14775085.2018.1545600

Orsa Grönklitt (n.d.). Cross-country skiing in Orsa Grönklitt – Cross-country trails about 6 months a year. Retrieved May 16, 2024 from https://www.orsagronklitt.se/en/skiing/cross-country-skiing

Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press.

Outdoor Foundation (2021). 2021 Outdoor participation trends report. Retrieved December 15, 2023 from https://cdn.ymaws.com/www.americancanoe.org/resource/resmgr/sei-documents/2021-Outdoor-Participation-T.pdf

Outdoor Industry Association. (2017). The outdoor recreation economy. Retrieved January 16, 2024 via https://outdoorindustry.org/wp-content/uploads/2017/04/OIA_RecEconomy_FINAL_Single.pdf

Panwanitdumrong, K., & Chen, C. (2022). Are tourists willing to pay for a marine litter-free coastal attraction to achieve tourism sustainability? Case study of Libong Island, Thailand. *Sustainability*, 14(8), 4808. https://doi.org/10.3390/su14084808

Peters, A., & Fuchs, M. (2025). A relational exploration of tourists' environmental values and their perception of restrictions in protected nature. *Journal of Sustainable Tourism*, 33(1), 28-45. https://doi.org/10.1080/09669582.2023.2295234

Petersson-Forsberg, L. (2014). Swedish spatial planning: A blunt instrument for the protection of outdoor recreation. *Journal of Outdoor Recreation and Tourism*, 5–6(April), 37–47. https://doi.org/10.1016/j.jort.2014.03.003

Prayag, G. (2018). Mixed methods in tourism: Philosophical assumptions and key research design issues. In R. Nunkoo (Ed.), *Handbook of research methods for tourism and hospitality management* (pp. 363–372). Edward Elgar Publishing. https://doi.org/10.4337/9781785366284.00038

Ravenscroft, N. (1993). Public leisure provision and the good citizen. *Leisure Studies*, 12(1), 33–44. https://doi.org/10.1080/02614369300390031

Reichenberger, I. (2023). Membership motivations for natural conservation tourist attractions. *Tourism Recreation Research*, 48(2), 205–219. https://doi.org/10.1080/02508281.2021.1904695

Ross, H.L. (1991). Review of *Why People Obey the Law* by Tom R. Tyler, 1990. *American Journalof Sociology*, Vol. 96, No. 4, pp. 1055–1057, Published by: The University of Chicago Press. Retrieved March 25, 2025 via https://www.jstor.org/stable/2780763

Sandell, K., & Fredman, P. (2010). The right of public access – opportunity or obstacle for nature tourism in Sweden? *Scandinavian Journal of Hospitality and Tourism*, 10(3), 291–309. https://doi.org/10.1080/15022250.2010.502366

Sandelowski, M. (2013). Unmixing mixed-methods research. *Research in Nursing & Health*, 37(1), 3–8. https://doi.org/10.1002/nur.21570

Sandholtz, W. (2017). International Norm Change. *Oxford Research Encyclopedia of Politics.* Retrieved 11 Jun. 2025, from https://oxfordre.com/politics/display/10.1093/acrefore/9780190228637.001.0001/acrefore-9780190228637-e-588

Schreder, G., Siebenhandl, K., & Mayr, E. (2009). E-inclusion in public transport: The role of self-efficacy. In A. Holzinger, & K. Miesenberger (Eds.), *HCI and usability for e-inclusion* (pp. 301–311). Springer Berlin Heidelberg https://doi.org/10.1007/978-3-642-10308-7_21

Silverman, D. (1993). *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction*. SAGE Publications.

Skriver-Hansen, A., Beery, T., Fredman, P., Wolf-Watz, D. (2022). Outdoor recreation in Sweden during and after the COVID-19 pandemic – management and policy implications. *Journal of Environmental Planning and Management*, 66(7), 1472–1493. https://doi.org/10.1080/09640568.2022.2029736

Steiger, R., & Abegg, B. (2013). The sensitivity of Austrian ski areas to climate change. *Tourism Planning & Development*, 10(4), 480-493. https://doi.org/10.1080/21568316.2013.804431

Steiger, R., Posch, E., Tappeiner, G., & Walde, J. (2020). The impact of climate change on demand of ski tourism - a simulation study based on stated preferences. *Ecological Economics*, 170, 106589. https://doi.org/10.1016/j.ecolecon.2019.106589

Sténs, A., & Sandström, C. (2014). Allemansrätten in Sweden: A Resistant Custom. *Landscapes*, 15(2), 106–118. https://doi.org/10.1179/1466203514z.00000000029

Su, M. M., Yu, J., Qin, Y., Wall, G., & Zhu, Y. (2021). Ancient town tourism and the community supported entrance fee avoidance – Xitang Ancient Town of China. *Journal of Tourism and Cultural Change*, 19(5), 709–731. https://doi.org/10.1080/14766825.2021.1880418

Teddlie, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. SAGE.

Thompson, D. (2020). New research reveals greater public appetite for outdoor activities. European Outdoor Group 2022, Retrieved December 11, 2023 via https://www.europeanoutdoorgroup.com/sustainability-projects/new-research-reveals-greater-public-appetite-for-outdoor-activity

Tillväxtverket (n.d.). Tourism statistics – Accommodation. Retrieved September 02, 2025 via https://tillvaxtdata.tillvaxtverket.se/statistikportal#page=72b01aa0-1d4a-425c-8684-dbce0319b39e

Tyler, T. (1990). *Why people obey the law.* New Haven: Yale University Press. Latest version retrievable via https://www.jstor.org/stable/j.ctv1j66769

Vail, D., & Hultkrantz, L. (2000). Property rights and sustainable nature tourism: Adaptation and mal-adaptation in Dalarna (Sweden) and Maine (USA). *Ecological Economics*, 35(2), 223–242. https://doi.org/10.1016/S0921-8009(00)00190-7

Vasaloppsföreningen Sälen-Mora (n.d.). FACTS – Vasaloppet's Winter Week 2023 In Numbers. Retrieved January 07, 2024 via https://www.vasaloppet.se/en/news/the-100th-vasaloppet-2024-is-fully-booked/#:~:text=Of%20those%20registered%20in%202023%2C%2045.246%20came%20to,in%20Berga%20village%20to%20the%20finish%20in%20Mora

Venter, Z. S., Barton, D. N., Gundersen, V., Figari, H., & Nowell, M. (2020). Urban nature in a time of crisis: Recreational use of green space increases during the COVID-19 outbreak in Oslo,

Norway. *Environmental Research Letters*, 15(10), 104075. https://doi.org/10.1088/1748-9326/abb396

Visit Dalarna. (2025, February 6). Dalarna slår nya rekord bland utländska besökare. Retrieved April 25, 2025, from https://corporate.visitdalarna.se/dalarna-slar-nya-rekord-bland-utlandska-besokare

Visit Dalarna. (n.d.a). Prioriterade utlandsmarknader. Retrieved April 25, 2025, from https://corporate.visitdalarna.se/besoksnaringen/prioriterade-utlandsmarknader

Visit Dalarna (n.d.b). Dalarna Besöksnäringen i siffror 2009–2019. Retrieved January 06, 2024 via https://www.besoksnaringdalarna.se/besoksnaringen-i-siffror-2019

Wolf, I. D., Croft, D. B., & Green, R. J. (2019). Nature conservation and nature-based tourism: A paradox? *Environments*, 6(9), 104. https://doi.org/10.3390/environments6090104

World Trade Organization (2022). World Trade Report 2022 I Climate change and international trade. Retrieved December 04, 2023 via https://www.wto.org/english/res_e/booksp_e/wtr22_e/wtr22_e.pdf

Yin, R. K. (2009). *Case study research: Design and methods* (4.th ed.). SAGE.

Zou, P. X. W., & Xu, X. (2023). *Research methodology and strategy: Theory and practice* (1st. ed.). John Wiley & Sons. https://doi.org/10.1002/9781394190256

10 Appendices

Appendix A *(Interview guideline for semi-structured interviews with skiers of Kläppen and Orsa Grönklitt, 2024)*

Ice-breaking

1. Can you tell me about cross-country ski as your hobby/sport? (Alternatively: How would you describe yourself as a cross-country skier and what do you enjoy about it?)

Skiing experience (Let's talk a bit about your skiing experience in Kläppen/Orsa.)

2. Can you take me back to one of your cross-ski trips in Orsa/ Kläppen and describe it from beginning to end (motivation/company etc.)

3. What aspects do you consider important to have an enjoyable cross-country ski experience?

Funding model and expectations (Let's move more specifically into the situation in Orsa/Kläppen.)

4. Most ski resorts, such as Orsa/Kläppen, have introduced a trail pass system to maintain their cross-country trails. How do you feel about a user fee system for using cross-country ski trails?

5. What do you consider part of the product you purchase with a trail pass? (Alternatively: What do you feel you are paying for when buying a trail pass?)

6. Based on your own observation, how do you perceive the functioning of the current funding model? (Alternatively: Based on

what you have seen on the trails (e.g., ski badge) how do you think a system of visitors paying for the trail use works right now?

7. How do your expectations change towards a XC ski trail when you pay for the use of it?

8. In what way does the ownership of the trail provider play a role for buying a trail pass (sports club, volunteers, private resorts, municipalities)?

9. Given that there is a trail pass system, what are your thoughts of the price related to the experience you get? (125 SEK day pass Kläppen, 210 SEK day pass Orsa)

10. Have you been exposed to a spot check? If yes how was the encounter for you?

Allemansrätten

11. (Are you familiar with the term allemansrätten?) What does the term allemansrätten mean to you in relation to cross-country skiing?

12. How do you perceive allemansrätten in combination with trail passes to access trails? Do you see a connection between allemansrätten and the system of trail passes? In what way?

Ending (we are slowly coming to an end...)

13. Have you ever done cross-country skiing outside Sweden? If yes, which country, and please share the experience and possible differences you identified.

14. In what way does your national/cultural background play a role in using trails/ buying a trail pass? Do you consider your

national/cultural background to be influencing your way of using trails or buying a trail pass?

16. Is there anything that that we have not talked about today that I have missed and you were hoping to talk about?

Appendix B *(Survey on stated compliance of skiers in Kläppen, 2024/25. Last question and information about voluntary interview participation only in survey of 2024)*

The survey in your hand is part of an ongoing research project "**Financing of recreational trails in tourist destinations: How insights from behavioural economics and new technology can finance and develop trail systems in Sweden**". The project is conducted in collaboration with Orsa Grönklitt, Kläppen Resor AB and SkiStar Sälen with funding from the Knowledge Foundation.

Are you interested in a **SEK 400 gift card** to the ski resort? If so, please share your e-mail address at the end of the survey so that we can contact you for a follow-up interview via Zoom to find out more about your experience.

However, your responses will be treated anonymously and your email address will only be collected for scheduling purposes.

If you have any questions, please do not hesitate to contact us. Thank you in advance!

Project leader: Tobias Heldt, Associate professor, CeTLeR, e-mail: the@du.se

Del A. Your current visit in Kläppen

1. **Approximately how many kilometers have you skied or plan to ski today??**
   ……km
2. **Which trail did you use last?**

   ☐ Toppspåret trail ☐ Myrspåret trail ☐ Bergspåret trail ☐ Älvspåret trail

   ☐ I used the **lift** to reach **Toppspåret trail.**

3. **What type of skier are you?**

   ☐ Beginner ☐ Holiday-skier ☐ Recreational-skier

   ☐ Competing skier ☐ Elite athlete

4. **How many days are you visiting Kläppen during this stay?**.....days
   ☐ I am local.

5. **What describes your company best?**

   ☐ Family/ relatives ☐ Colleagues ☐ Friends
   ☐ I am skiing alone ☐ Ski club ☐ Other.....

1. **How many people are part of your company?.....**

2. **Have you visited Kläppen on any other occasion in the last three years during winter?** Multiple answers possible.

   ☐ Yes, this year ☐ Yes, 2022/23 ☐ No, it is the first time

   ☐ Yes, 2021/22 ☐ Yes, 2020/21

Del B. Your demand for different services related to cross-country skiing

1. **Overall, how satisfied are you with the quality of cross-country skiing opportunities and related services here in Kläppen?**

Strongly dissatisfied	Dissatisfied	Neutral	Satisfied	Fully satisfied
☐	☐	☐	☐	☐

2. **What type of trail pass did you buy?**

I did not buy/ Don't want to answer	Day-pass	Multiday-pass	Season-pass	Combination pass – alpine
☐	☐	☐	☐	☐

3. **What percentage (%) of cross-country skiers in Kläppen do you think buys a trail pass?** .....%

Del C. Question about yourself

4. **I am:** ☐ female ☐ male ☐ non-binary

5. **Which age range do you belong to?**
☐ 18-25 ☐ 26-35 ☐ 36-45 ☐ 46-55 ☐ 56-65 ☐ 66-75 ☐ 76-85 ☐ äldre än 85

6. **What type of visitor are you?**

☐ Day visitor Sälen/Malung municipality ☐ Day visitor (not from Sälen/Malung)

☐ Overnight at Kläppen cabin ☐ Overnight in other rented cabin

☐ Own cabin ☐ Camping

Other accommodation, what type?.....

1. **What is your home country?** ……..

2. **How much do you estimate was your gross annual income for 2023? (Your answer will be treated anonymously).**

☐ I receive student's fund ☐ 560 000 – 659 999 SEK

☐ Below 150 000 SEK ☐ 660 000 – 759 999 SEK

☐ 150 000 – 259 999 SEK ☐ 760 000 – 859 999 SEK

☐ 260 000 – 359 999 SEK ☐ 860 000 – 999 999 SEK

☐ 360 000 – 459 999 SEK ☐ Above 1 000 000 SEK

☐ 460 000 – 559 999 SEK ☐ Don't want to answer/ Don't know

3. **Your email** ……..... (Voluntary! You will be contacted for a follow-up interview via zoom and receive a 400 SEK gift voucher if selected for an interview.)

Thank you for your participation!

If you have other suggestions or comments, you can leave them below.