UiT The Arctic University of Norway

UiT Alta – Department of Tourism

Tourist Motivations & Terrestrial Space Tourism

Clément Le Dily

Master's thesis in Tourism Studies…REI-3020…Mai 2020

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Acknowledgement

I would like to thank all the terrestrial Space tourism destination that have taken part in the study's data collection process.
On top of that I want to issue a special thank to Anne Mari Norheim, Section leader at Andoya Space Center and the staff of Andoya Space Center, for the effort they freely made, in order to gather a substantial amount of data. The result would not be as significant without their valuable help.
I also wish to express how grateful I am for the university of Tromsø, and the tourism department of Alta to allow me to write my thesis on a subject that seemed unrealistic or hard to grasp at first, and difficult to approach considering the lack of academic material concerning terrestrial Space tourism.
Lastly, I would like to express my gratitude for my supervisor and Professor Bard Tronvoll, who have followed my work and allowed me a great deal of freedom in both the process of gathering data, and writing the Master thesis. His help, advices, knowledge and mastery in academic writing have greatly facilitated the learning process necessary for me to achieve this Master thesis. Additionally, my appreciation goes to all the teacher at UiT Alta that have given useful and constructive recommendations on this project.

Late note: In early 2020 the SARS-CoV-2 virus have had disastrous consequences on the life of a great deal of people. Regarding this study, the pandemic had an impact on the access to any physical literature material, as all physical libraries were locked and closed during the duration of the necessary confinement that followed the outbreak and did not re-opened early enough to help with the writing process. This obviously affected the process of gathering references and previous studies through physical means. Online resource are plenty but books are rarely free or even accessible despite the existence of University VPNs.

Introduction

For centuries, human have been looking up the stars with envy, using their imagination to picture undiscovered places and unattainable reaches. Fifty years ago, the success of the Apollo eleven mission, showed to the entire world a small group of men, landing on the moon, creating dreams for entire generations. This achievement allowed technological progress like never before and had repercussion that shaped the society that we know today. Space has since then opened up, but is still a destination reserved for trained professionals with precise objectives, and it will remain this way for a few years. However, down on earth, the existence of terrestrial Space tourism destinations are giving the possibility for the public to learn and to be entertained with Space related activities, human achievement in Space exploration, and technological advances.

Terrestrial Space tourism, or Space related tourism, are not concepts that have been extensively studied by tourism academics. Even less so when paired with a study field like tourist motivation, and that despite the existence of structures like Space Centers, Planetariums, and Observatories. This is where this study comes in, to start filling the research gap concerning terrestrial Space tourism, laying the first stone toward the building of significant understanding of who are the tourists indulging in terrestrial Space tourism, and why they do indulge in it.
Since terrestrial Space tourism literature field is a blanc slate, the idea was to attack the subject of terrestrial Space tourism, by starting with one of the first stage of tourism development which is motivation. Some sort of motivation needs to exist before anything else, for someone to actually indulge in any form of tourism.
From those two-starting point of terrestrial Space tourism and tourist motivation, was laid out the aim of this study. Therefor this thesis aims to explain the interactions between tourist motivations and their impact on general motivation for terrestrial space tourism.

To answer this research question, the focus was laid on a limited set of Space related touristic structure, including Space Centers, Planetariums and Observatories over a period of 6 months. In order to produce valuable results, the selected method was to survey a population sample that had a chance to present some levels of motivation toward Space related topics, in order to

understand if such motivation existed and what those motivations could be.
Since this kind of approach is new for the terrestrial Space tourism industry, there is an obvious need of groundwork, as the last paper directly treating of terrestrial Space tourism was written 10 years ago. In other words, an important part of this study is to lay down the necessary work for the formulation of an answer to the research question and for further studies to take place.
Contrarily to studies and research done regarding actual Space tourism and the Space industry, this research and its finding will not suffer as much from time, as terrestrial Space tourism destinations will not change in the same way the Space industry has in the last decade. A lot of research papers written about Space tourism, ignoring its terrestrial side, have suffered from the bold claims and missed prediction that pictured tourist in sub-orbital and orbital flights by 2020's horizon, thus making them almost irrelevant only a handful of years later. Here this problem will not hold as the focus is set entirely to treat of terrestrial Space tourism, and not so much the future stages of "space tourism".
A necessary step toward this achievement is to properly define some of the most important terms used throughout a study that concerns Space related tourism. Terms like "terrestrial Space tourism", "Space related tourism" or "Interest in Space exploration" are defined in this paper to fulfil those objectives, as properly understanding tourist motivation for ground space tours and activities requires a proper definition to work with.
Another important aspect of the topic this study is covering is the relationship that people from the same population sample have with educational tourism and educational content, since this kind of content is potentially a major component of terrestrial Space tourism.
Lastly, and as a by-product of this study, terrestrial Space tourism providers will potentially find specific points to improve in their businesses within the findings of this paper, especially concerning who their customers are, what motivates them, and why they chose to specifically travel to terrestrial Space tourism structures like Space centers, Planetariums and observatories.

Structure wise, this paper is organized around a discussion, that will first take the reader through the interpretation of the findings with theory, and then work toward the establishment of proper definitions and terms necessary to start building knowledge around terrestrial Space tourism. The discussion will be surrounded by the classic structure followed by most

quantitative research paper. First a literature review is necessary to lay down the existing theory, models, and concepts used to treat the subject, then the methods takes place to explain the process of data gathering, and justifying choices made in this regards, and finally a result focus chapter take the reader through all the significant results and findings made, using the data gathered previously.

1- Literature review

The literature has been selected and searched for using two principal ways. The first one is the use of academic resources online, thanks to research platform such as Science Direct, or more broadly Google Scholar. The second one was the use of the librarian resources offered by UIT Alta.

A few important keywords have been used to gather the literature used in this review. The list below is a non-exhaustive list of the key words used into search engine of both internet research platforms, and the UIT library:

- Tourism motivation
- Travel motivation
- Motivation models
- Push and pull forces
- Escaping everyday life
- Educational tourism
- Space related tourism
- Terrestrial Space tourism
- Space tourism

Those terms are relevant here because they are not only the terms used to search for literature, but they also represent the key concepts of this study, making it a list of "flairs" that could be used to directly understand what this master thesis is about.

Motivation in tourism is partly defined by our global understanding of motivation as a concept first studied and described in sociology by the likes of Maslow (1943) and Beard & Ragheb (1983). However, in tourism, tourist motivation is referred too with deferent names and ways to express the same thing: "tourist motivation"; "travel motivation", "tourism motivation", are all variation of the same concepts. Hudson (2008, p. X) simply defined motivations as "*inner drives that cause people to take action to satisfy their needs*". His work is axed around the understanding of what makes someone a consumer or a buyer, from a marketing angle. This implies that understanding the concept of "motivation" requires understanding the concept of "Needs". He therefor defines the needs as "*the gaps between what customers have and what they would like to have, seen as the force that arouse motivated behavior*" (Hudson, 2008, p. X). But needs are just one part of the motivation

concept, just like self-actualization or the need to escape every-day life, and have been ranked and studied buy different kinds of motivation theory, as it constitutes the base on which motivation theory has evolved. For this reason, the “need” theory will be reviewed first.

Additionally, in order to structure and magnify the value of some of the literature used throughout this chapter, several hypotheses which will be answered later have been designed using the concept at play in the described literature.

1.1- Bases of the motivation theory

The first and most well-known of motivations theories, is the Maslow’s Hierarchy of Needs (Maslow, 1943). This theory established a hierarchy of needs, that was simply explaining that someone will have motivation to satisfy their most important need with a conscious or unconscious priority system (Maslow, 1943). In a tourism context, this hierarchy of needs is still useful to understand where a motivation potentially comes from (which category of Maslow’s hierarchy of needs is concerned for example). At the same time will be hindered by the nature of tourism itself, as touristic motivation in itself does not come from a basic need. However, tourism motivation can only exist when most of the basic needs of the Maslow’s Hierarchy of Needs are already fulfilled. If the most basic requirement of an individual are not meet on a daily basis, indulging in tourism will not be a priority.
Touristic motivation will concern the self-actualization needs, since all the other needs defined by this theory have been met prior to this one, according to Hudson (2008). However, touristic motivations cannot only be explained by the expression of a self-actualization need. Parameters like physiological needs, personal safety and belongingness still comes into play in a touristic context (like in any context). For example, personal safety has been shown to have a strong impact on destination’s tourism numbers, as acts of terrorism resulting in tourists casualties have had an impact on the concerned touristic destinations attractiveness (Pizam & Smith, 2000). This illustrate that the motivation related to tourism does not isolate itself from the most basic needs that still have to be met for an individual to successfully take part in said touristic activity, or simple make the decision to travel to a destination.

Building on Maslow's (1943) Hierarchy of Needs, which was the base that served developing most other sociological theory related to motivation, other models were developed with the objective to explain motivations with a different perspective. The leisure motivation scale is a good example, as it takes possible motivation component like intellectual component or stimulus/avoidance, and draws separate categories with them, respectively "*Intellectual, Social, Competence-mastery & Stimulus-avoidance*" (Beard, & Ragheb, 1983). This added another layer of analysis on the concept of motivation, with the creation of more categories that were described as more precise than the one first drawn by Maslow (1943), but especially with the inclusion of the concept of leisure (Beard, & Ragheb, 1983) as it was not about survival and basics needs more, but still depended on those needs to be fulfilled. At this point, it was not yet about tourism, but about a broader concept relating to pleasure seeking. Even if those theories are not the only one that preceded the main tourist motivation theories that will are reviewed below, most of the important dynamics that constitute motivation as a sociological term are covered.

1.2- Tourism Motivation theories

1.2.1- Motivators and demographics

Based on the "leisure motivation scale model" (Beard, & Ragheb, 1983), that Swarbrooke and Horner developed ideas about motivators in their study concerning consumer behavior in tourism. Here can be observed the shift between purely sociological theories and models and theory directly related to tourism. On top of the different category of the Leisure Motivation Scale, they pointed several motivators for individual tourist such as past experiences, personality traits, or individual strengths and weaknesses, but in general instead of looking at the details like most researchers have done concerning motivations, they outline two groups of "motivators" (Swarbrooke, & Horner, 2007):

- "[motivators] *which motivate a person to take a holiday*"
- "[motivators] *which motivate a person to take a particular holiday to a specific destination at a particular time*."

Adding to this what define a touristic motivation is rarely (if not never) just one motivator or one need. Tourist motivation will often be a result of several different category of motivations, needs and past experiences (Swarbrooke, & Horner, 2007). Things get even more complicated when studies start to consider motivations not only at an individual level, but as a group instead. Here individual motivations and shared motivation like family time or romantic context, play a part together in the decision-making process that precedes a choice regarding tourism (Swarbrooke, & Horner, 2007).

Another category-like differentiation of tourist motivation has for long been one of the main differentiations recognized by the tourism industry: demographic/age criteria (Swarbrooke, & Horner, 2007). If one would be looking at demographic statistic concerning a precise destination or activity, there would most likely be pattern matching the age categories (Swarbrooke, & Horner, 2007). For example, comics and video game related "giant" events like the "San Diego Comic Con" definitely matches a young and middle aged public, while cruise trips in the Arctic for example will displays a large number of attendant belonging in age group of 60 years old and plus (Bledsoe et al, 2007). This tend to show that demographic parameters have an influence on motivations (Swarbrooke, & Horner, 2007). However, slow tourism and nostalgia is not bound to be exclusively tied with elderly people, and adventure tourism is not exclusive to young and middle-aged people as none of those two hypotheses have been documented, therefore making it hard to issue a statement about it.

The first hypothesis was made regarding the specific demographic factor "gender". The hypothesis was that there was no significant difference in motivation between men and woman. This hypothesis seemed to make sense as nothing indicates that there should be a gendered difference regarding motivation for Space related topic. On top of that, if this hypothesis is confirmed to be accurate, it should mean than both male and female responses to the survey shall be treated and tested together as one population sample.

The second hypothesis was built by mixing the concepts of motivators (Swarbrooke, & Horner, 2007), and the concept of push and pull forces that was first described by Dann (1977). Because of what was argued in both of those theories, the hypothesis here is that there

is a positive relationship between tourists' motivational interests, and tourist's motivation to travel to a terrestrial Space tourism destination.

1.2.2- Push & Pull and escape concept

Motivation theory related to tourism is not only composed of studies that follows one model or the other. In fact, there are core concept in the motivation theory like the push-pull forces, that have a strong presence in the motivation literature. The push and pull forces are described as the interaction of two forces that together will result in a certain behavior (Dann, 1977). The push factor is something internal, personal, that pushes one toward something, while the pull factor, is an external factor coming from something else that attracts one towards it (Bogari, Crowther & Marr, 2004).

The push and pull factors can be studied for almost everything and represent yet another way to understand tourist motivation toward something specific. For example, pull and push factors have been studied and proved to play an important role in domestic tourism in the case of Islamic and Arabic culture (Bogari et al., 2004). Studying this type of tourism allowed the researchers to create motivational categories for both push and pull forces. On top of that this study also confirmed the relationship between pull and push forces (Bogari et al., 2004), making this model an efficient choice for the general study of tourist motivations in a precise context.

This push and pull theory was first design to answer simple questions "*what makes tourist travel?*" or "*why people travel there?*" (Dann, 1977). It is from the need of answers for those two questions that the first principles of push pull forces were designed. The push force would be the answer to the first question as it does not relate directly to something that hold value, but rather to the concept of what an individual is seeking, and the pull factor was the aswer to the second question, as it held in itself the value proposition of a destination, justifying its attractiveness to a tourist.

Next to the concept of push and pull force, is the stand point of Krippendorf (2010), when he proposed, as a summary of different theories and model of tourist motivation, the idea that travel and tourists where more motivated by escaping from something, rather than being pulled toward something else (Krippendorf, 1987). He built on the Dann's idea that escaping

was number one reason to travel, which he could not prove because of a lack of data at the time (1977).

This echoes several existing studies in the fields of event and festivals tourism, that have theorized that people attempts festival and conventions or any kind of event primarily to escape from the globalization, constant acceleration of time, and their everyday life. In several studies, the growing number of festivals and events was linked to the acceleration of time and globalization (Picard & Robinson, 2006), as well as the increasing "noise" of modern society, represented by the overwhelming presence of technologies for example (Jordan, 2016).

On top of that, the need to escape was mentioned originally at the same time as the concepts of push and pull forces described by Dann (1977) : "*On soutient de plus que la presences de tels facteurs mene a la creation d'un monde de reve auquel le touriste projette de fuir periodiquement*", this text originally in French means that the existence of the push and pull forces leads to the creation of a dream world in the tourist's head, in which he plan to periodically escape in.

It means that both concept of Push and Pull force and escaping reality are closely linked together, as the motivation felt by a potential tourist will not only make him want to travel somewhere precise, but also will make him idealize this destination as a mean to escape his reality (Dann, 1977). Additionally, some of the major "push" forces identified originally for tourists where either "nostalgia", or "escape" which confirm the strong link between both concepts.

More recently, the same pull & push factors have been studied in relation to modern concern about environment and the resulting activities in tourism. Nature-based tourism, while it has always existed, finds a renewed and "trending" interest each time the question regarding climate change, ecology and sustainable development break the news. Academically, this resulted in waves of studies taking existing concepts and applying them to those new concerns, sometimes creating new inputs for a theory. In the case of pull & push factor, a study of Hong Kong nature based tourism has shown that not only the "pull" factor have an influence over tourist recommendations, but also that the individuals "push" factor tend to moderate those recommendation (Xu, & Chan, 2016). This shows just how many possible interpretations and use of those older models can generate.

It is thanks to the concept of push and pull forces that several hypotheses were designed, in order to answer the research question.

The third hypothesis designed to answer the research question still concerns the concepts of push and pull forces, but this time is crossed with the concept of educational tourism as described by Ritchie et al (2003). Therefore, the hypothesis is that there is a positive relationship between tourists' motivational intertest related to Space topic, and tourists' motivation for educational tourism content.

1.2.3- Educational tourism

Educational tourism was defined to be a form of tourism born halfway between the concept of education, and the concepts of tourism (Abubakar, Shneikat & Oday, 2014). One form of educational tourism has been described to be the action of people traveling to a specific place to seek knowledge and education, often another country, and was found to mostly concern wealthy and developed countries (Abubakar, Shneikat & Oday, 2014). This form of educational tourism is tied to the concept of escaping everyday life, as the educational content of this form of tourism relies on different culture, new social norms and experience discovery (Abubakar et al, 2014). This form of tourism is often a long-run kind of tourism that demands individuals to take part in the community they have chosen to evolve in, like a student abroad learning the culture of the country/region they are studying in (Abubakar et al, 2014). This mainly concerns wealthy countries and population, as this form of educational tourism often include living abroad, thus asking for a regular income of resource over a long period of time (Abubakar et al, 2014).

There is obviously a difference between that concept and other sub-category of the vast concept of educational tourism, which does not stop at a precise category of tourism (Ritchie, Carr & Cooper, 2003). Every form of tourism can be imbued with educational content and learning experience, meaning that it is not necessarily with the intent to learn in a formal way that a tourist will potentially attend a visit or travel to a destination, but that the knowledge acquired will be a by-product of this experience (Ritchie et al, 2003). On the other hand, certain forms of tourism require the motivation to learn and to challenge existing knowledge and vision of the world in order to be enjoyed, and that could be characterized as a purer form

of educational tourism (Ritchie et al, 2003). Overall educational tourism, or educational content in tourism can be described as anything that includes discovering, learning or reading for example, which will be display for tourist with the active intention of teaching something, or by providing learning as a by-product of an experience.

Therefore, the fourth hypothesis carries again the concept of educational tourism, and it is paired this time with the more general concept of tourism motivation. The hypothesis is there is a positive relationship between tourists' motivation for educational content, and tourists' motivation to travel to a terrestrial Space tourism destination.

1.2.4- Additional input on motivation theory

Tourism motivational theory is not the most advanced motivation theory out there. If it needs to get more complicated or not is a different matter on its own, but the for the sake of the arguments that will be conducted in the discussion chapter, and for the theorical justification of some of the questions, additional theorical input are presented here.
One important point to make is that tourist motivation is not to be studied only with tourism theory and models, recent or old, but also with existing theory/model originalting from different fields of research.
The literature about tourist motivation seems to have defined itself only through the different models that treated the subject, and while there is more complexity and depth to motivation, as will be shown below, the tourism studies that do not simply adopt one model or the other as their base line of work seem to shallowly describe motivations in casual ways. For example, a 2017 study (Kirkup & Sutherland, 2017) about the relationship between motivation and loyalty within sport event tourism, took the concept of motivations, defined it quickly through models and definitions such as the Leisure motivation scale or the push and pull factors on top of less academics take on motivations, and specified the different more specific studies regarding sport event tourist motives in order to argue for their thesis (Kirkup & Sutherland, 2017). While this does not take away the potential quality of findings made in this study about sport event tourism, it displays the way the tourism field of research has been treating motivation theory over the past years.

On the other hand, looking at different fields of study like marketing or even bio-chemistry, can opens for a deeper and better understanding of the concept of motivation in general, or applied to a specific context like tourism.

Recently for example, the MEC, "Means-end chain model", was used to analyses travel motivation of Chinese outbound tourists (Jiang, Scott, & Ding, 2015). Travel motivation has been studied and defined several time, as a state of mind that compels one or several person of a group to travel to a precisely defined destination, or toward a lest precise objective (Dann, 1981).

Travel motivation has been studied as a necessity for tourism providers to understand the different reasons that make tourists take the decision to travel, in order to adapt to their expectations and needs, through personalized services (Huang & Hsu, 2009).

The MEC is originally a marketing model that have been mainly used in research to study consumer behavior (Jiang et al, 2015). The means-end chain can be used to establish a relationship between a product or a service attributes/purpose, and the value the consumer gets out that product/service (Jiang et al, 2015).

The value consumer gets out of a product or service has been described by Gutman as "*consequences*" that can be psychological or physiological depend on the nature of the product, and the relationship the consumer will have with it (Gutman, 1997).

Coming back to Chinese outbound tourists, the means-end chain allowed to create a ranking, or hierarchy, of the most important motivation interviewed tourist had to visit a specific place (Jiang et al, 2015). Element such as "*natural scenery"*, "*relaxation"*, or "*experience differences"*, were picked and ranked as motivational factor for Chinese outbound tourists, but more than a few precise elements, the MEC can actually highlight categories of motivational factor (Jiang et al, 2015).

Those motivational factor could be the tourists need for fulfilling a wish linked to a personal interest for example, or the will to feel happy and have a pleasing life through relaxation (Jiang et al, 2015) but overall when it comes to travel motivation, MEC has been proved to be potentially helpful to identify tourists long term motivational factors.

On top of that the means-ends chain model is a good way to understand tourist behavior through consequences and values as described by Gutman (1997).

Motivation should not only be explained by scratching the surface of what constitute a need or a desire. Motivation is a chemical phenomenon (Puglisi-Allegra & Ventura, 2012), before being understood in the means of marketing, economy, tourism, or in the present context, terrestrial space tourism. Without going to deep into this, behavior is the result of a chemical process constantly shifting between the production and distribution of chemicals like Dopamine by the brain, and the physiological/behavioral response to those chemical.
When it comes to motivation, there is a concept called "motivational salience" that find similarities in its definition with other motivational concept like the push and pull forces. Motivational salience is a chemical based cognitive process that makes one feel attracted toward (or away from), an object, an event, or a place, and that controls the intensity of the motivation felt (Puglisi-Allegra & Ventura, 2012).
This concept can constitute a help to understand tourism motivation (and/or any kind of motivation), as it is at the base of every motivational process described or not by social sciences. As mentioned before tourism motivations are not only developed on basic and fundamental needs (Hudson, 2008), and can be based on the idea that motivation is a chemical trigger for a behavior to happen (Puglisi-Allegra & Ventura, 2012).
«Motivational arousal» about a destination for example, happens after the brain register and analyses the information received about a certain destination, like climate, or pictures, sounds and stories (Correia & Crouch, 2004). On top of that, the search for positive experience driven by a chemical need are logically an important factor in travel motivation.
For example the search of warmer weather, extreme sensation, romantic setting, and basically everything that will favor a positive response to motivational salience could be seen as potential tourism motivation, including all the different factors and concept described earlier, as motivational salience also concerns concepts like escaping every day life.

The fifth hypothesis designed to answer the research question is that there is a negative relationship between tourists' motivation to travel to a Space center, and tourists' motivation coming from someone they are travelling with. This hypothesis blends concepts like the push and pull forces as described and explained earlier, and tourism motivation seen through a new concept, such as "being motivated not by a precise activity or subject, but rather by someone else's interest toward something".

1.3- Theory related to terrestrial Space tourism and Space tourism

In general, “space tourism” is too much of a mainstream term, and while it has a meaning for specialists, the tourism literature surrounding all the subject that touches “Space Tourism” lacks a proper definition that would allow academics to use the term (Reddy, Nica & Wilkes, 2012). In a study of research recommendation concerning the future of the tourism and space industry, the need for defining the term “Space tourism” was explained as being a necessary of sub categories like “Terrestrial Space tourism” to exist (Reddy et al., 2012). This problem will be addressed in the discussion chapter. Despite that lack of definition, doubled by the general lack of academic resource regarding the concepts of “Space Tourism” or “Terrestrial Space Tourism” that will be addressed several time throughout this paper, there are still a few studies that have mentioned the concept of tourism related to Space down on earth.

In his study, Cater (2010) wrote about the opportunities and the existing tourism related material for what the literature calls “Space tourism”. His work on the subject is first describing the history of Space tourism up until 2008, and the first big step taken in the direction of truly sending non-professionals in space. As one could expect, and in accordance with all the other article reviewed on the topic of space tourism, the author is describing the whole concept of sending tourists in space as an expensive process (Cater, 2010) that will not be soon fitted for masses. It is important to note that Cater’s study came in 2010, and that only one year later, NASA shut down their Space shuttle program, leaving the transportation of human beings in Space to other organization and countries, and significantly slowing down the progress of human based space exploration.
Whether it is in Cater’s work (2010) or in others like “Point-to-point sub-orbital space tourism: Some initial considerations” (Webber, D. 2010), at that time, everyone seemed to agree on the point that Sub-orbital or orbital flight required a great deal of wealth both to engineer and to take part in. The problems raised by the concept of human commercial Space flight were already numerous, and academics at that time where obviously too optimistic with the time table of such achievement, as it is now 2020, ten years later, and the largest organizations and companies in the world are still working on a way to get over-trained astronauts and scientists safely to the International Space Station, meanwhile SpaceX has

barely figured out rocket re-usability. Before sending tourists in Space, there are a lot of safety, legal, economical, and technical issues that needs to be addressed, and while there are new mentions here and there of sending tourists in Space, this probably won't happen before at least another 4 years (Space videos, 2020). It is safe to say that in all the literature regarding Space related tourism mentioned here, academics were focusing on an achievement that they thought would be a couple of years away from the publication of their paper, and that is most likely one of the main reason for the lack of literature regarding terrestrial Space tourism.

Despite that lack of literature, terrestrial Space tourism has been addressed lightly in a couple of studies treating of the concept of Space tourism or Orbital Space Flight. The oldest one reviewed here mentioned the concept of Space related tourism on earth in 2001, and stated that Space tourism, regardless of its nature, starts on earth. Whether it is about visiting a structure like a planetarium or a Space Center, or actually taking off in a Space Flight, at least a part of the experience will happen on earth (Crouch 2001). In his paper, what Crouch called the "movement of terrestrial Space tourism", began with the movement of astronautical observers, moving from place to place in order to observe astronomical events and object. A important part of Terrestrial Space tourism would then be the search and travel to a place where the observation condition would be optimal, which means minimal light pollution and sufficiently long nights (Crouch, 2001). After that comes the structures that allows tourists to pick a destination that puts regular visits and activities, or even have a visitor Center opened all year.

For this, Cater described what he believes to be the existing first steps of "space tourism": "Terrestrial Space Tourism", which concerns all tourism attraction related to space exploration and observation (Cater, 2010). He does so regardless of the lack of a proper definition for the term "Space tourism". Here the author take the biggest space center open for public in the world (the Kennedy Space Centre in Cape Canaveral) and analyses the challenges for a place like this to define itself, to entertain and educate, while arguing how it constitute the first step of Space related tourism and probably the more prominent one. He raises the problem for a Space related structure to define itself in regard of its touristic activities, and tries to explain with the help of a mass tourism structure like the Kennedy Space Center, how this kind of destination should not define itself like theme park, in order to partially avoid competing with other theme parks (Cater, 2010).

Additionally, terrestrial Space tourism was also described as the "*Space Tourism as Present*",

because it actually is the only form of Space tourism accessible to the public, regardless of wealth and exceptions (Crouch, 2001). This statement still holds almost 20 years later, but for the sake of clarity in the terms used by, and for the purpose of the study, the term “Space tourism” will be replaced by either “terrestrial Space tourism” or “Space related tourism”, to describe any type of tourism regarding Space, that does happen on ground level. This excludes any kind low gravity experience in planes, or anything happening outside of the troposphere.

Alongside fixed terrestrial Space tourism structures like Space Centers, and astronautical Observations, exist another number of less known terrestrial Space tourism activity. UFO pilgrimage, where people will visit famous sites where someone was believed to had seen or had an interaction with extraterrestrial life can be described as somewhat part of terrestrial Space tourism. More seriously, collecting meteorite in Antarctica is a better example of a niche kind of adventure tourism related to Space, much like eclipse tour for example, but obviously limited by its own nature (Cater 2010). Overall those secondary kinds of terrestrial Space tourism are not documented enough to be more than mentioned here.

When it comes to the topics related to the relationship between Space exploration, leisure and educational tourism, studying tourists travelling to a terrestrial Space tourism destination like a Space Center, a Planetarium or an Observatory might be the only option available for research as those places are fixed and most of the time open all year for visitors, which means that on top of a pool of knowledge regarding Space related subject, terrestrial Space tourism structures are a great opportunity for the expansion of the tourism field of studies, unlike the other kind of terrestrial Space tourism mentioned in this literature review.

Overall there, is a great lack of literature and a massive research gap when it comes to the study of Space Centers or Space related tourism. The only existing literature concerns most of the time the future of sub-orbital and Orbital flight, with on top of that a omission of terrestrial Space tourism by the academics of that field who are almost completely ignoring the existence of a touristic demand for Space related tourism attraction down on earth, despite the existence of “mass tourism” structure like the Kennedy Space Center. To illustrate that claim the following quote comes from a one of the first result gotten with a google scholar search for academic resource using the term “terrestrial Space tourism” : “*For the purpose of this current study, we did not study terrestrial forms of space tourism like museums, ground*

space facilities and visitor centres, launch viewing, astronomy facilities or locations, etc. Such interest and activity is an important breeding ground for potential space tourism consumers, and might therefore be of use in profiling certain potential market segments" (Crouch, Devinney, Louviere & Islam, 2009). There is a clear acknowledgement that terrestrial Space tourism is the necessary first step for any kind of touristic evolution regarding Space, but this is also one of the last time the term "terrestrial Space tourism" will be used in a decade, despite the abundance of Space tourism research paper, treating with the hypothesis of achievements that have yet to happen.

2- Methods

2.1- Methodological Approach

The first step was to define what kind of data was required in order to assess motivation from a defined population sample. Quantitative methods where chosen over qualitative ones because the of the aim of the study, which is to explain how the interactions between the different tourist motivations impact the general motivation tourists display toward terrestrial Space tourism. . The quantitative method was chosen because the tools coming with this methodology would allow one to scale motivations in order to statistically study the significant differences and similarities between the motivations of tourists taking part in Space related touristic activities.

Uncovering general motivational patterns logically requires a significant number of participants, which makes the qualitative research method obsolete, as qualitative methodologies are better suited for uncovering behavioral tendencies and emotion that would be harder to quantify. Interviews, for example would not be enough to prove the existence of any meaningful relationship between different motivations, therefore make the choice of quantitative methods an obvious one.

Here, the expression of motivations is to be studied and potentially compared and cross with other gathered information about motivations, and demographic information. This directly justified the methodological choice over to quantitative and, as a result, one of the study's goal would be to put down a first necessary stone for the understanding of the existing interest in Space related Touristic activities and visits.

To do so, the selected population sample had to be composed of people potentially already interested in Space related knowledge and activities. The reason for this is that a larger, random sample of the population gathered outside of a terrestrial Space tourism context would might be a good way to assess the general existing demand for such a precise type of destination, but it would not be effective at uncovering what are the motivation toward Space related tourism.

This population sample is therefore only composed of people that are visiting a space related

tourism structure, did visit a Space related tourism structure in a close past, or will do in a close future".

2.2- Context for theory and Space related tourism

When reading a paper about Space related tourism, there are a few contextual elements to keep in mind, in order to understand the reasons behind the lack of references for those subjects.

This thesis aims to explain how the interactions between the different tourist motivations impact the general motivation tourists display toward terrestrial Space tourism. . One struggle regarding such a study is grounded in the lack of academical resources regarding terrestrial Space tourism.

The tourism field has plethora of motivation theory and models to work with, but on top of those aging models that can find themselves quite passed in regard of the modern tourists and the dynamics brought by internet, there are almost no academic resources and meaningful studies when it come to the study of a particular tourism concepts, such as motivation, experience or safety, in regard to Space related tourism.

Apart from a handful of papers treating of terrestrial Space tourism as a concept, the rest of the existing literature has eyes only for anything that would actually happen in Space, or at least on low earth orbit. Concerning the later, they have not aged well over the last decade, as most of them, were written in the assumption that sub-orbital touristic flight would have been not only been achieved, but would be safe, and commercially viable, all of that within a handful of years. Obviously this has not happened yet as described earlier in the literature review, despite the massive progress made by some actors of the Space industry in the past couple of years. This just points out that the challenge that represents "sending tourists in Space" was vastly underestimated at the time. The number of milestones necessary for human commercial flights to take place are just starting to become visible, as in 2020, The major actors of the Space industry have just figured how to "safely" detach a capsule meant to carry human crew, from a failing rocket (Space Videos, 2020).

On top of all that, Space centers, planetariums, and Observatories are not the most visible and

marketed touristic structures, appart from several Centers and specific venues around the world. The same thing can be said about the more private area of Space related tourism travel concerning astronomical object observation. Thus, while it would be exaggerated to describe terrestrial Space tourism as a niche tourism without data to support that claim, it might one of the reasons for most of the tourism literature to elude its existence, apart from a few exception described in the literature review.

However this does not means that terrestrial Space tourism is not popular. Each time a rocket lift off from Cap Canaveral, massive amounts of tourism are still showing up to witness it (Crouch, 2001). The same goes for Structures like the Kennedy Space Center, that was already attracting more than 2 million visitors back in 2007 (Cater, 2010).

Overall, because of that context, writing a study with the intent to tie a well-researched subject like tourist motivations, and a subject with an immense research gap like Space related tourism, poses obvious challenges regarding the writing process. One of the major challenges is the lack of definition and existing terms used to argue the validity of findings and to compare them with existing theory. Since almost nothing has been done to study define regarding Space related tourism, most of the specific terms used here have to be defined without cross references and support from previous work. It is almost in an arbitrary manner than some of the terms have to potentially be defined, and hopefully in the least biased way possible.

Contextually writing a paper about a subject almost untouched before is a difficult challenge, especially for the chapter called most of the time “discussion”. Those chapters are meant to compare previous findings made by other academics to the ones made by the concerned study, and to challenge and explain those findings with theory. In the case of studying tourist major motivational interests toward terrestrial Space tourism, the academic field supporting this subject is a clear blank slate. Not only, as mentioned many times, there is a lack of research material for the Space related tourism theory, but the participants of such tourism have not yet been studied in regard of a particular phenomenon like motivation. There are no studies taking the visitors of a Space related tourism type of destination that studies them with a precise angle tied to tourism literature. This means that even if some of the discussion here can be tied with tourist motivation theory, a large part of the discussion has to be spent defining terms, explaining what is being discussed and justifying with hypothesis many of the different point argued for, because of that non existing theory.

For a larger picture, there are a few indicators that have shown a recent uproar in popularity for Space related subjects. Our current technological advancement has offered opportunities for the public that people did not have twenty or even ten years ago. The possibility to watch rockets launch live on youtube, or to tune in at any moment of the day on a live feedback from the International Space Station cameras pointed at earth, are things that could potentially have an important impact on the results and findings of this study.
For another example, 2019 was the anniversary of the Apollo 11 mission, that saw humans first put a foot down on the moon. For that occasion, an independent watch maker made a campaign in collaboration with NASA, to create a time piece commemorating the moon landing. To give an idea of how popular Space related subject are with the public, this crowdfunding was expecting 10.000$ from backers, and over all got more than 5.000.000$ within the time limits, thus becoming the most supporter time piece project ever funded (Kickstarter, 2019). While not directly tied with the concept of tourism, this is mentioned here to give the reader an idea of how much potential there is for Space related tourism, based on the success of existing touristic structures, and the obvious interest people carry for the history of Space exploration and human achievements.

2.3- Methods of data collection

In order to collect data, a survey seemed to be the most appropriate method of data collection because the limitations that comes with conducting a study as a student, and because of the geographical repartition of the destinations concerned by the study. On top of that a survey is an efficient tool that has the potential to created large amount of data with a limited number of question, as it depends on the nature of those questions and the way they propose answers.
The survey was designed to fit not just one place in particular, but all the different terrestrial Space tourism destinations listed below, thus presenting no specific artefact that would concern one set of destination in particular. Next is a description of the research design of the survey, and the two data collection instruments used by the present study to fulfil its

objective, as both terrestrial Space tourism venues and online surveys were solicited in the process.

The surveys were run at certain location corresponding to the criteria established, where the respondent would have to answer the survey on paper and at their will. The survey held on one page and was supposed to take approximately 5 minutes to answer in order to facilitate a rapid process, potentially more compelling to the visitors making the effort to take from their own free time.
The list below is the selection of places where the survey was conducted. It is important to note that the reason the list of venues below were chosen is first because they correspond to what could be described as terrestrial Space tourism destination, and because the managers of those venues were the only ones to take their time to answer the initial request and accept it :

- Planetarium de Nantes
- Andoya Space Center
- Centre d'Astronomie Saint-Michel l'Observatoire
- Planetarium Ludiver

A total of around 30 terrestrial Space tourism destination were contacted before and during the data gathering process between July and October 2019. Out of all of that, around 10 of those Space related structures took the time to answer the request, with 5 of them ending up accepting to take part in the study. One of those five would cut the communication after that, leaving 4 participating venues.

The survey was conducted first at Andoya Space Center which had a closed timetable between the end of June and mid-august 2019. All the other places were surveyed between October 2019, and until the 5th of January 2020. The timetable differences could be seen as a problem , however the static nature of the Space related tourism destination concerned by this study have allowed more freedom when it comes to data collection. Regardless of what time of the year, the activities and visits of said places remain axed around the same Space related topics, therefor making a perfect coordination of the data collection unnecessary. This is also the reason why only the static and "public" form of terrestrial Space tourism was targeted by this study, as Space related tourism does not only concern destinations like Space center, planetariums, and Observatories, but also includes any form of travel undertaken with the

precise objective to observe astronomical objects. Including this form of Space related tourism in the study would require much more time and resource, ruling out this possibility for the present study as it had to be delivered within a defined time frame.

An arguments could be made around the fact that Space Centers, Planetariums and Observatories are different destinations, that have their own specificities and that can differs in several ways. Against that, the point of this study comes in play, as the objective is not to understand what are the tourist motivations f or a specific kind of destination, but rather what are the tourist motivation toward the larger concept of terrestrial Space tourism. Therefore the argument here is that the similarities that put these different structures in the pool of terrestrial Space tourism destinations, are much more relevant to this study that the differences that sets them apart.

The data were collected on site and available for the tourists to freely fill them up as they were laying on a table or a desk for the visitors to pick. Andoya Space Center actually made a special effort to encourage their visitor to fill up the survey, as the particular situation they were in during the summer 2019 did not allow a simple organization to take place regarding the data collection (construction and modification of the venue). The other venues reportedly did not had the necessary staff at disposition in order to present the survey to their visitors.

Around December 2019 and because of uncertainties regarding the amount of data that would be gathered by the participating destinations, research was done toward the targeted distribution of the survey online. Therefore because of the lack of data reportedly received throughout the different structures involved, the survey was conducted online using a Sub-Reddit specialized in surveys, which still allowed to target a precise population sample, thanks to a very strict set of rules. For the survey to be posted on this sub reddit, there was a list of requirements to match, that would enforce the targeted population sample to be respected by the members of the sub-reddit. Those requirements included a Flair, that would divide the different surveys into categories (Academic, Marketing, Casual and Results), a survey title supposed to describe the content and context of the survey within a few words, and the definition of the precise population sample concerned by the survey. This last point was surely the most important one regarding this study, as the struggle was to keep the

population sample as close to the one that got surveyed at the Space related tourism destinations described above.

In the case of this study, the title, flair and population sample was formulated as follows:

"[Academic] First Space Related Tourism Motivation Study (Everyone that has recently visited Space Center or Planetarium, or Observatories, or Space related Museum, or will do in a close future)"

The population sample, as described in the survey title above was formulated this way in order to try to minimize the negative impact of surveying people online. Since it was impossible to explain the concept of terrestrial Space tourism with the limits of a title, and because of how quick people are inclined to give up on reading something online if it is not concise enough, the description of the targeted population sample stayed as basic as an enumeration of the required visited destinations. Therefor it was assured that only a selected group of people that had visited either a Space Center, a Planetarium or an Observatory would answer the online survey, allowing for potentially including the online survey result in the pool of data gathered for this study.

Despite the very large number of subscriptions this Sub-Reddit has (a 100 000+ people), and because of the very precise population sample that was formulated on the survey, only 60 people answered it. It can be argued here that this small number of participants could mean that people respected the population sample requirement and did not answered the survey if they thought they thought they were not concerned. The online survey was only available in English, as the massive majority of the surveys displayed on the sub-reddit were written in English. This also seemed as a good way to attract more respondent. Additionally, the terrestrial Space tourism destinations that participated in the study were not located in natively speaking English countries, adding potential diversity into the origin of the respondents and augmenting the reach of the survey, as people online would not have been limited to the 4 specific places actively participating in the survey.

Here the process of gathering data online can be justified by looking at who the survey was targeting originally, and who would answer it online.
Originally, the survey would be targeted at a population sample that had one thing in

common: “Indulging in a space related visit, because of personal interest, or because of someone else”. This is a very precise population sample in which there would be a random pick of participants, regardless of age, nationality or gender.
Thanks to the structured nature of the Sub-reddit used here, the online survey is able to target a closely similar population sample, as it accepted “people that did experienced a Space related Visit recently, or knew they would do so in a very close future”. The only major potential difference here would come from a parameter inherent to the Sub-reddit used. Since this Sub-reddit is a mean of data collection for student and researchers, the population touched by the survey would then be defined by the targeted population in the title, among a population sample defined by its interest in answering surveys and collecting data.
Therefor it can argue that collecting the data online through this precise Sub-reddit, had only a minimal impact on the data quality. Concerning the online gathering, it is important to notify that the survey was not shared through any private ways. All the respondents were kept anonymous and never actively solicited to answer the survey by any means.

Sample information:

- Number of participants: 138 (78 participants on paper and 60 online)
- Participant’s gender: 77 males, 55 Female, 3 “prefer not to tell”.
- Number of different nationalities: 23
- Top 3 participant’s nationality: France, Norway, US
- Top 3 Age group: 18-34(44%), 35-54(27%), 55-74(11%)

2.4- Measurements

The questions were designed to have a high data potential, as all the questions in the survey where designed with an interval scale, apart from the demographic questions. The survey used a 7-point Likert scale, as they propose a “neutral answer”, that allows respondent to choose a moderate answer, rather than a forced choice between two sides.

The survey was designed in 4 different languages, with English, Spanish, French and Norwegian. As a result, there was a challenge and a need for the different translation to match each other in terms of “choice strength”, in order to minimize the risk of having differed answer only based on language.

For example, where the English version used “Definitely” the Spanish version used “marcado” which can be translated as “pronounced, strong or decided”, but that would not completely match the strength of the French translation with “definitivement”, closer to “definitely”. This kind of small difference is the perceived strength of the words used in the survey was an additional challenge to overcome, on top of the other struggle that present the design of a survey.

In order to overcome that challenge, the survey was designed first in English, and then translated from English to the other languages. Since not all the specific terms used in the scale had a precise translation that would carry the same “strength”, words with the closest meaning and strength to the English version were chosen. This allowed for the closest thing to a consistency of meaning and strength between the different version, as they were all translated from English, even if for the case of the Spanish version, it would have been easier to translate from the French version, as both language is close to their Latin roots. External help was used to translate the survey in Norwegian.

On an additional note, it should be stated that all the version of the survey were effectively put at use. The structures that took the survey in France displayed an overwhelming use of the French translation, while both Andoya Space Center and Online surveys displayed an important variety of respondent when it came to nationality.

In total the survey was composed of 11 question with one of the questions being composed of 9 “smaller” question using the same 7-point Likert Scale. Amongst those 11 questions, 4 are demographic questions, respectively about:

- Age group

	Age Group					
	12 or under	12-17yo	18-34yo	35-54yo	55-74yo	75 or above
Percentage	8,9	7,4	45,2	27,4	11,1	0

- Gender

	Sex of participant		
	Male	Female	Prefer not to tell
Percentage	57	40,7	2,2

- Travel modality (group or family)

	Visit as part of a group	
	Yes	No
Percentage	79,3	20,7

- Nationality

Every single question that will be described following this sentence used a 7-point Linkert Scale.

Question 1: “*What previous interests could influence your motivations to go to a Space Center?”* This question was designed in order to understand if participant’s motivation could have been influenced by a previous personal interest in a particular field or subject. The question then displayed 6 of those “interests”: *Space Exploration, Science, Technologies, Uniqueness, Science fiction, Unspecific curiosity*. Regarding the theory and like other questions in the survey, this question is inspired by the concept of push and pull forces first described by Dann (1977) and argued for by Bogari et al (2004). This question of the survey was design to outline some potential push and pull forces that make tourists travel to the type

of terrestrial Space tourism destinations concerned by this study. Theoretically speaking, since this question ask the respondents to describe the motivation levels they get from a specific interest they hold, the analysis the answer would potentially shed light on push force rather than a pull force. However, in tourism an interest is often link to a product or a subject that that can be exploited, something that is identified as a push force can often also be identified as a pull force in some degree (Dann, 1977).

Question 2: *How the following parameters influenced your motivation to travel to the Space Center?* Here the aim of this question was to know if demographic and geographic parameters such as "Distance from the center", "Reputation of the center", "Activities at the center", "Size of the center", could influence the tourist's motivation to travel to the Space center/Planetarium/Observatory. Compared with other questions, this one could potentially allow to see if any of the listed parameters have more importance than "previous personal interest in Space Exploration for example". Here this question was designed with the leisure motivation scale in mind (Swarbrooke, & Horner, 2007). More than a precise point in the leisure motivation scale, this question was thought of in relation to one of the motivators group described by its authors as motivators that influence tourists to choose to go to a precise destination within a precise time frame (Swarbrooke, & Horner, 2007). Further more, depending of the result analysis and outcome of this question, it could also help identifying other push and pull forces, however this time the forces identified would potentially be closer to a pull than a push, as the location of the terrestrial Space tourism destinations is something that is held by the destination, like its reputation or the activities offered there.

Question 3: "*Are Space Exploration and Space related topic one of your personal interest/hobby/passion?"* This question is similar to the first option given in the first question, but is here to reinforce the notion of interest, by adding the dimensions of "hobby" and "passion". This allow a deeper comprehension of the participants relationship with the subjects related to Space. Just like the first question this question is linked to the push and pull force concept, aiming to potentially reinforce the outcome of the first question and double down on the "previous interest" push factor (Bogari & al, 2004). An interest identified as being a motivation for a tourists does not mean this tourist has a hobby or a passion regarding this interest, thus making this question relevant in quantifying the strength of the interest tourist have for Space related subject. The answers of this question where thought to

be tested with the answer of the question 1, especially in the scenario where respondent would actually Hight level of motivation for Space exploration.

Question 4: *"Does actuality and news coming from the Space Industry are a motivational factor for you?"* Thanks to technological advancements, it is now easier than ever to follow the progress of particular Space related missions and companies. Knowing that, this question was there to assess if participant's motivation were influenced by the recent achievement made by the Space "Industry". This question was put there for hypothetical comparison with the previous question, to see for example, if participant that would not describe Space related topic as a passion or a hobby, would still be motivated by news coming from the Space industry. Theoretically, this question remains close to the question 1 and 3. But since it pinpoints to a precise event (a coming news about the Space industry for example), it could answer the concept of motivational salience raised in the literature review as being the process from which a person will feel motivation toward something precise (Puglisi-Allegra & Ventura, 2012) . Here the "actuality and news coming from the space industry" could be potentially seen as the motivational salience trigger that would require a person to go to a Space related structure in order to fulfil this desire.

Question 5: *"Which activities proposed by the Space Center make you feel more motivated?"* This question was designed first as a nominative question, and then brought up to an interval scale. The participants were given two types of activities to rate: "Educational" and "Fun". Here the aim was to quantify the motivational effect that the prospect of fun, or educational activities have on the participants. The demographic parameters were involved in the creation process of that question, as the targeted population of this study was not directed at a precise age group. Swarbrooke, & Horner (2007), described that demographic parameter such as age had an influence on motivation, and this question was designed in order to test the potential link between age group and motivational attractiveness of two different activity categories. On top of that, this question was also an opportunity to interpret the results as an expression of the motivational Salience concept developed in the previous chapter. Since motivation salience comes from the fulfilment of something someone was motivated for, it seems like this question is simple enough to interpret the result as a motivational salience trigger. Moreover, this study put a strong emphasis on the educational aspect of the content presented at a terrestrial Space tourism destination, and the motivation tourists are displaying toward

such content. For that reason this question is particularly important for the answer of the research question as it has the potential to shed light on at least major tourist motivation. In fact it is possible that because of the nature of educational and entertaining/fun content, both type of content divided for this survey will come out as being a major motivation for tourist to indulge in terrestrial Space tourism.

Question 6: ”*Did other persons of a group, a family member, or a friend made you feel motivated to visit the Space Center?”.* This question comes in relation with the demographic question asking for the travel modality (group/family travel or solo travel). The point of this question is to potentially get a precise explanation of why a participant displays a low motivation level regarding any Space related activity, while still going at the Space Center/Planetarium/Observatory. Therefore, this question is here to confirm if the participant came because of its own interest in Space related topics, or because of someone else. Just like the previous question, the theory behind it would be linked to the demographic parameter “age” and “family” as motivational factor (Swarbrooke, & Horner, 2007). On top of that the aim of this question was to justify the presence of the demographic question regarding travel modalities, and to identify the presence of some family travelling dynamics, as it can allows one member of the family to be motivated toward something, and get to travel there despite the lack of motivation displayed by other family members (Hsu & Huang, 2008).

Question 7: The question seven is divided in a following of 9 short “statement” the participant would have to rate using the 7-point Linkert Scale. Each of those statement would then provide a potential comparison with each other and with any of the other question described above, on top of also having value on their own, as the scale is there to directly describe assess motivational levels. Below is the list of “statements” used by the question 7 to asses motivation level regarding:

- *Specifically Going to a Space Center*
- *Having a “normal” group/family time*
- *Learning about science related to space*
- *Having fun with Space related activities*
- *Learning about technologies*
- *Visiting something different from normal “museums”*

- *Cutting from the everyday life/activities*
- *Learning about the history of Space Exploration*
- *Going to any amusement park (coaster and theme park for example)*

The Theory behind this cluster of small "question/statement", would be a mixe between the push and pull forces concept (Bogari et al 2004), and Krippendorf's theory about tourism as a mean to escape from something else. For example, the statement *"cutting from the everyday life/activities*" is there to illustrate the need to escape from the everyday life. Same thing for the statement "*Visiting something different from normal "museums*", in which the scale would rate the motivation one would feel to do something different than what is presented in the statement.
The statement that was thought to bear the most usable outcomes was the first one "Specifically going to a Space center", as it was designed with the idea to test other variables in order to uncover motivations that would compel tourist to take part in terrestrial Space tourism. Basically if any variable concerning tourist motivations shows a correlation or a stronger link with the motivation displayed by respondents for "Specifically going to a Space Center", it may bring a potential answer to the research question.

For each of the questions, a 7 point Linkert scale was used. The use of a 7 point scale seemed to be the best comprise between the number of possibilities allowing a certain level of precision, and the presence of a middle "neutral" value. This neutral value would allow the participant to express a mitigated level of motivation, somewhere in between a low level of motivation, and a higher level. The scale designed for this does not display any kind of "negative motivation" like reluctance. Instead it went from a nonexistent motivation to a very high level of motivation. This choice was made because of the tourism context in which this study is taking place. The thought process was that to indulge in tourism in the first place requires a potential tourist to not be reluctant about the idea of travelling to a specific destination. Therefore, instead of "negative" level of motivations, the scale was thought to display on null, weak, moderate, or strong level of motivation as it seemed to better match the concept of tourism motivation.

3- Results

The result chapter is going to be presented by following the set of hypothesis that will be answered with the results and statistical output. This chapter is structured that way in order to give a direct meaningful purpose to the tests and their results as they all get to be justified by a direct question, rather than by existence of the larger research question of the study. Those hypothesizes as there to direct the production of tests and result that will, compiled together, help formulate an answer to the main research question of this study. As this paper aims to explain how the interactions between the different tourist motivations impact the general motivation tourists display toward terrestrial Space tourism, each hypothesis is supposed to push valuable findings (or lack of) that will worked toward the aim of the study. While the hypothesizes that were formulated in the literature review chapter will be either confirmed or disproved here, the true interpretation of those results will only happen in the discussion chapter.

3.1- Answering the first hypothesis: Is there any gender significant gender differences between Tourists' motivational interests?

This question is there to either rule out the "problem" of gender, either to initiate the process of understand why there would be a difference between males and females when it comes to motivation regarding terrestrial Space tourism destinations. To do so, the variable used for the first test are being compared with gender, in order to check each variable for a potential significant difference justified by gender.

To answer this question the all the variables of the survey's first question were tested as dependent variables, with the participant's gender as independent variable in an ANOVA test.

The test of homogeneity of variance did not violate the assumption of homogeneity of variance (p-value > 0.05) for any of the variable.

		df	F	Significance
Interest in Space Exploration	Between Groups	4	2,094	0,085
	Within Groups	130		
	Total	134		
Interest in Science	Between Groups	4	0,894	0,470
	Within Groups	130		
	Total	134		
Interest In technology	Between Groups	4	0,617	0,651
	Within Groups	130		
	Total	134		
Interest In Uniqueness	Between Groups	4	1,507	0,204
	Within Groups	130		
	Total	134		
Interest in Science Fiction	Between Groups	4	0,912	0,459
	Within Groups	130		
	Total	134		
Unspecific Curiosity	Between Groups	4	0,613	0,654
	Within Groups	130		
	Total	134		

(Table1) – ANOVA Table

The Table 2 display the results of the ANOVA tests.

For all the variables, p-value > 0.05 so the null hypothesis cannot be rejected and there is no significant different in means between males and females for any of the variables (at a 95% confidence interval).

There is no significant gender differences between previous motivational interests. Regarding the variables used here, none of the ‘important” variable identified by the descriptive statistics showed any significant differences regarding gender. Overall this allows the tests to be conducted without dividing males and females, and it will make it possible to extrapolate findings without having to explain or justify those findings because of a gender difference in motivational interests.

This confirms the first hypothesis,; which hypethtized that there are no differences between genders regarding motivational interests for tourist visiting a terrestrial Space tourism structures.

3.2- Answering the second hypothesis: Is there a positive relationship between tourists' motivational interests, and tourists' motivation to travel to a terrestrial Space tourism destination?

In order to answer that question and confirm or disprove the second hypothesis, it is important to lay the basis descriptive analysis of tourists' motivational interests, and explain what tendencies regarding those motivational interest can be observed among Tourists attending Space related visits and activities.

The following table is a descriptive statistic table displaying several information gathered using simple frequency analysis tools. This was chosen as the first result displayed in the result chapter because of how important it is to identify which motivation has the potential to impact visitor's motivation to travel to a terrestrial Space tourism destination.

		Interest in Space Exploration	*Interest in Science*	*Interest in Technolog*	*Interest In Uniqueness*	*Interest in Science/Fictio*	*Unspecific curiosity*
Mean		5,47	5,64	5,35	4,57	4,35	5,22
Mode		7	7	7	4	4	6
Variance		2,348	1,558	2,389	2,842	2,769	2,484
Frequencies (%)	Not at all	0,7	0	0,7	4,3	3,6	1,4
	Barely	5,8	2,2	5,8	11,6	11,6	7,2
	Slightly	4,3	3,6	5,1	6,5	15,9	4,3
	Moderately	13,8	13	16,7	23,9	23,2	13,8
	Definitely	21,7	20,3	18,1	18,8	16,7	23,2
	A lot	17,4	30,4	25,4	23,2	18,8	27,5
	Very much	36,2	30,4	28,3	11,6	10,1	22,5

(Table2)- frequency table

The Table 1 displays the frequencies of the survey's first question "What previous interests could influence your motivations to go to a Space Center?".
Frequencies and percentages are showing tendencies as the percentage of participants answering "Very much" seem to fluctuate as shown by the table 1.

In order to see if those tendencies could be generalized, and not limited to the highest level of the Linkert motivation scale, the percentages of the 3 highest level of the scale (“Definitely”; “A lot”; “Very much”) were added together.

Doing so, only “Interest in Space Exploration” and “Interest in Sciences” showed a cumulative percentage of participant superior to 75% for the 3 highest level of the motivation scale.
Both “Interest in technology” and “Unspecific curiosity” got a cumulative percentage superior to 70% for the tree highest level of the motivation scale, while both “Interest in Uniqueness” and Interest in Science-fiction/movies, got less than 55% of participants picking the 3 highest level of the motivation scale.
Regarding the overall tourist motivation, this seems to point out that visitor’s interest in Space exploration and science could be the two most important variables represent tourist motivational factors.

Now that the descriptive analysis has been done, there are several tests available for searching for correlation. The most basic one is a bivariate Pearson correlation test. However, because the variables tested here are interval scale variables, the better test will be a Spearman correlation test.

In order to test for a correlation between the dependent concerned variable “Motivation felt for Specifically going to a Space Center” and the independent variables “Interest in Space exploration as a motivational factor”, “Space Exploration and Space related topic as a personal hobby/passion” and “Actuality and News coming from the Space Industry as a motivational factor”, the data must answer a list of requirements (those requirements will be detailed only for the first correlation test):

An ANOVA test was done for both variable “Interest in Space exploration as a motivational factor” and “Space Exploration and Space related topic as a personal hobby/passion”. Both variables passed the requirement for the correlation test.

However, for the third independent variable “Actuality and News coming from the Space Industry as a motivational factor”, p-value >0.05 so the null hypothesis cannot be rejected. In

order to keep the results for this question as significant as possible, this variable will not be included in the correlation test.

A linearity test was done for both of the variables that passed the previous requirement. It showed that there is a linear relationship between each of the independent variables and the dependent variable.

(Table3) – Correlation

			Interest in Space Exploration	*Are Space topic Personal interest hobby passion*
Spearman's rho	*Specifically going to a Space Center*	Correlation Coefficient	,391**	,332**
		Sig. (2-tailed)	0,000	0,000
		N	135	135

**. Correlation is significant at the 0.01 level (2-tailed).

The table 3 shows the result of the Spearman correlation test between the 3 interval scale variables.

There is a statistically significant (p-value<0.01) moderate to strong correlation between the variable “Motivation felt for Specifically going to a Space Center” and variables “Interest in Space exploration as a motivational factor”

There is a statistically significant (p-value<0.01) moderate correlation between “Motivation felt for Specifically going to a Space Center” and ”, “Space Exploration and Space related topic as a personal hobby/passion”.

Now that correlations are established, in order to see if any of the 2 independent variables tested here have a significant impact on the outcome of the dependent variable a Linear regression test was needed.

(Table4): Linear regression analysis	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	3,820	0,384		9,953	0,000	3,060	4,579
Interest in Space Exploration	0,262	0,090	0,315	2,911	0,004	0,084	0,440
Are Space topic Personal interest/hobby passion	0,064	0,077	0,090	0,828	0,409	-0,089	0,216

Dependent Variable: Specifically going to a Space Center

The Table 4 shows the results of the linear regression.

The variable “Interest in Space exploration as a motivational factor” has a significant impact on the outcome of the variable “Motivation felt for Specifically going to a Space Center” (p-value< 0.01).

However, despite an existing correlation, the variable “Space Exploration and Space related topic as a personal hobby/passion” does not have a statistically significant impact on the outcome of the variable “Motivation felt for Specifically going to a Space Center”. (p-value<0.05).

The motivation identified here as being one of the main motivations for tourist to indulge in terrestrial Space tourism is their interest in Space exploration, as it has shown to have a cause-effect relationship with the motivation visitor’s felt toward visiting a Space center. Therefore, and to answer the question justifying these tests, yes, there is a correlation between visitor’s motivational factors like “Interest in Space exploration” or “Space related topics as a hobby” and the motivation those same visitors feel toward specifically travelling to a Space related structure like a Space Center, a Planetarium, or an Observatory. On top of that, the motivation tourist got from their interest in Space exploration has been shown to have an impact on their motivation to travel to a terrestrial Space tourism destination.

This result confirms the second hypothesis which supposed that there was a positive relationship between tourists' motivational interests, and tourists' motivation to travel to a terrestrial Space tourism destination. However, this does not concern all the motivational interests targeted by the survey, thus also partially disproving to some level this hypothesis.

3.3- Answering the third hypothesis: There is a positive relationship between tourists' motivational interest related to Space topic, and tourists' motivation for educational tourism content.

In order to accept of reject this hypothesis, it is necessary to test first if there is a correlation between previous interest that could influence motivation to take part in Space related tourism, and motivation felt for educational or fun activities with a Space related tourism context?
After having tested some variables for an existing relationship between some of the motivational interest visitors were surveyed for, and their motivation to take part in terrestrial Space tourism, the motivational interest that was showed to have such an impact on this motivation to travel to a Space related destination was further teste with other variables representing theorical concepts, such as educational tourism.

All the variables concerning previous motivational factor are tested with the two variable "Motivation felt for educational activities at the Space center" and "Motivation felt for the fun activities at the Space center"

Just like for the previous question, all the variables were tested for the correlation test requirements:

- The variable "Interest in Uniqueness as a motivational factor" was removed from the correlation test due a violation of the assumption of Linearity (p-value <0.05).
- The variable "Interest in Science-fiction/Movies as a motivational factor" was removed from the correlation test because of an the ANOVA results : [F(6,1)=0.498, p=0.809; F(6,1)=0.544, p=0.774] p-value >0.05 the null hypothesis is accepted.

- The variable “Unspecific curiosity as a motivational factor” was removed from the correlation test because of the ANOVA results: [F(6,1)=2.117, p=0.055; F(6,1)=1.593, p=0.154] p-value > 0.05

(Table5) – Spearman Correlation

			Interest in Space Exploration	*Interest in Science*	*Interest In technology*
Spearman's rho	*Feel motivated for fun activities*	Correlation Coefficient	,235**	0,115	,225**
		Sig. (2-tailed)	0,006	0,179	0,008
		N	138	138	138
	Feel motivated for educational activities	Correlation Coefficient	,312**	,320**	,247**
		Sig. (2-tailed)	0,000	0,000	0,003
		N	138	138	138
**. Correlation is significant at the 0.01 level (2-tailed).					

The Table 5 shows 2 statistically significant moderate correlations between the motivation felt for educational activities and the “Previous motivational Interests”.
There is only statistically significant weak correlation for the motivation felt toward fun activities and the “previous motivational interests”.

The two tables following are displaying the result for the linear regression analysis done for both dependent variable (Fun/entertaining activities & Educational activities) :

(Table 6): Linear Regression output	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	3,554	0,555		6,400	0,000	2,456	4,653
Interest in Space Exploration	0,187	0,102	0,206	1,828	0,070	-0,015	0,390
Interest in Science	-0,158	0,130	-0,143	-1,216	0,226	-0,416	0,099
Interest In technology	0,208	0,093	0,225	2,233	0,027	0,024	0,392

Dependent Variable: Feel motivated for fun activities

(Table7): Linear regression output	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	3,511	0,436		8,061	0,000	2,650	4,373
Interest in Space Exploration	0,070	0,080	0,094	0,869	0,386	-0,089	0,229
Interest in Science	0,194	0,102	0,215	1,904	0,059	-0,008	0,396
Interest In technology	0,109	0,073	0,144	1,488	0,139	-0,036	0,253

Dependent Variable: Feel motivated for educational activities

The Linear Regression tests showed that only the variable "Interest in technology as a motivational factor" had a statistically significant impact on the outcome of the variable "Motivation felt toward Fun activities at the Space Center" (p-value <0.05).
None of the other independent variables had any significant impact on the dependent variables.
Overall these variables were tested to uncover a potential link between educational content, fun content, and the motivation visitors got from their own interest in different topics. While there are significant correlation between some of those interest and both educational and fun content, only motivational interest in technology seemed to compel visitors to be motivated in fun activities, thus establishing a cause-effect relationship.

This result rejects the third hypothesis that states that there is a positive relationship between tourists' motivational intertest related to Space topic, and tourists' motivation for educational tourism content. The third hypothesis is rejected, since the result showed only a correlation and not a causal relationship between educational tourism and the motivational interest studied here. However the regression test showed the existence of a causal relationship between tourists motivational interest in technologies and the motivation felt for fun activities (Table6).

3.4- Answering the fourth hypothesis: There is a positive relationship between tourists' motivation for educational content, and tourists' motivation to travel to a terrestrial Space tourism destination.

To accept or reject that hypothesis, the following question has to be answered: between the educational activities and the fun activities, what is the most motivating factor for tourism to indulge in Space related tourism like going to a Space Center, Planetarium, or observatory? The aim of this hypothesis is to directly provide the main research question of the study with a potential answer. For that, one of the two kind of content proposed by any of the terrestrial Space tourism destination has to show at least a correlation, and if possible, at cause-effect relation with tourist motivation to travel to a Space related touristic structures like a Space Center, a Planetarium or an Observatory.

To answer this, a correlation and a linear regression test are done. The concerned variable is first tested for the correlation requirement. For both variable:

- Anova test P-value <0.05
- Deviation from linearity > 0.05

(Table8) – Spearman Correlation

			Feel motivated for fun activities	*Feel motivated for educational activities*
Spearman's rho	*Specifically going to a Space Center*	Correlation Coefficient	,195*	,350**
		Sig. (2-tailed)	0,023	0,000
		N	135	135
**. Correlation is significant at the 0.01 level (2-tailed).				
*. Correlation is significant at the 0.05 level (2-tailed).				

The Table 6 shows two statistically significant correlation. One weak correlation, and one moderate correlation.

The Linear regression test showed that out of the two independent variables, only the variable "Motivation felt toward educational activities at a Space Center" had a statistically significant impact on the outcome of the variable "motivation felt toward Specifically going to a Space Center" (p-value=0.01).

(Table9): Linear regression output	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	3,562	0,560		6,359	0,000	2,454	4,670
Feel motivated for fun activities	0,134	0,077	0,149	1,729	0,086	-0,019	0,286
Feel motivated for educational activities	0,245	0,094	0,226	2,620	0,010	0,060	0,430

Dependent Variable: Specifically going to a Space Center

This result means that there is a cause-effect relationship between the motivation visitor feel for educational content, and their overall motivation to travel to a Space related structure like a Space Center, adding "educational content and activities" to the list of tourist motivation justifying their presence at a terrestrial Space tourism destination. This indeed constitute a possible answer for the research question of this paper, as it allows to clearly identify one of the prevalent tourist motivations to travel to a Space related structure.

The fourth hypothesis, that hypothesized that there is a positive relationship between tourists' motivation for educational content, and tourists' motivation to travel to a terrestrial Space tourism destination, is confirmed thanks to the regression test (table9).

3.5- Answering the fifth hypothesis: There is a negative relationship between tourists' motivation to travel to a Space center, and tourists' motivation coming from someone they are travelling with.

This hypothesis was designed as an attempt to pinpoint on of the possible reasons for which some of the survey's respondent did not display any kind of interest for Space related topics. For that the first step was to check for an existing relationship between the variable "did motivation came from others like family members or friends", and the demographic variable asking if visitors came at the terrestrial Space tourism destination as part of a family or group. The table below display the result of the correlation test, followed by the linear regression test.

(Table10) Pearson Correlation

		Part of a group or family
Did motivation came from others like family or friend	Pearson Correlation	-,400**
	Sig. (2-tailed)	0,000
	N	135
**. Correlation is significant at the 0.01 level (2-tailed).		

The table 7 shows that after testing the correlation requirement like in the previous tests. There is a statistically significant negative correlation between the variables "Part of a group/family" and "Did other persons of a group, a family member, or a friend made you feel motivated to visit the Space Center?".

The linear regression test shows that the variable "Part of a group/family" has a significant impact on the outcome of the variable "Did other persons of a group, a family member, or a friend made you feel motivated to visit the Space Center?" (p-value<0.01).

(Table11): Linear regression output	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	1,537	0,073		21,097	0,000	1,393	1,681
Did motivation come from others like family or friend	-0,083	0,017	-0,400	-5,040	0,000	-0,116	-0,051

Dependent Variable: Part of a group or family

There are no significant correlation between any of the variable expressing an interest related to Space as a motivational factor and the variable "Did other persons of a group, a family member, or a friend made you feel motivated to visit the Space Center?" which seems surprising considering the strength of the relationship showed by the two variable test for this question.

Therefore, it is impossible to answer clearly this question as no correlation was found to support any significant answer, however, the finding of a strong relationship between being part of a group, and traveling to a Space related tourism destination because of someone else's motivation is a valuable information regarding the research question of this study.

The results of those test confirm the fifth hypothesis, that stated that there is a negative relationship between tourists' motivation to travel to a Space center, and tourists' motivation coming from someone they are travelling with. However, this hypothesis was not reinforced and confirmed by anything than a simple correlation.

3.6 - Additional test: Are visitors interested in subjects like Space exploration, also interest in Sciences and/or technologies?

This question was though to help understand what motivated terrestrial Space tourists outside of a singular interest. The objective here is to uncover a pattern in motivational interests, that have been mentioned numerous times up until now. To do so, the main motivational interest held by the surveyed visitors were tested for a correlation, in order to better understand who

those visitors are motivation wise.
What was considered the "main" motivational interest for this question are the ones that showed significant correlation with other key variables concerning terrestrial Space tourism motivation.

Below is the result table of the correlation test:

(Table12): Spearman Correlation Output			*Interest in Science*	*Interest In technology*
Spearman's rho	*Interest in Space Exploration*	Correlation Coefficient	,690**	,470**
		Sig. (2-tailed)	0,000	0,000
		N	138	138

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation test shows strong to very strong significant correlation for both variable tested, therefore a linear regression test is performed in order to confirm or infirm a cause-effect relationship between those motivational interests.

(Table13): Regression analysis	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	0,598	0,464		1,291	0,199	-0,318	1,515
Interest in Science	0,689	0,092	0,565	7,507	0,000	0,508	0,871
Interest In technology	0,183	0,077	0,180	2,396	0,018	0,032	0,335

Dependent Variable: Interest in Space Exploration

The linear regression test showed that their was a causal relationship between the motivational interest in Space exploration, and both visitor's interest in Science and

technologies (p-value < 0.05). Therefore, it can be concluded that visitors interest in Space exploration are linked to both an interest in science, and technologies.

Many of the different question from the survey delivered data that were not used either because of the variables were not meeting the requirements for a specific test, or because of a lack of correlation with another key variable. On top of that, some significant correlation between variable were not used, as they fail to show a significant input on the output variable through a regression test. This could be described as the decision-making process used in this study to keep only the most significant and impactful findings, for the purpose of extrapolating the result to the whole population sample, beyond the 138 participants.

Discussion

4 - Findings Presentation

4.1- Research question and findings summary.

This thesis aims to explain how the interactions between the different tourist motivations impact the general motivation tourists display toward terrestrial Space tourism. Therefor this study's goal is to present a set of different motivations and explanations for why tourists are indulging in Space related tourism, within the boundaries laid by the study's limits (here the limits are the types of places that were surveyed). Additionally one "by-product" of the research carried on here is to allow the concerned industry to understand if tourists visiting Space Centers, Planetarium and Observatories have previously held motivational interests in subjects tied with the Space industry and Space Exploration, as well as interest in educational tourism. The arguments carried on by this paper are also equally important as a mean to build a meaningful tourism literature for Space related tourisms.

The result analysis presented in the previous chapter has shown some significant results that are summarized below:
There are tendencies shown by frequency analysis in favor of previous motivational interests regarding Space exploration and Science in particular.
There are no significant gender differences for previous motivational interests like Space exploration, Science, technology, Uniqueness, Science-Fiction, or unspecific curiosity.

An important finding was that there are significant correlations between the motivation felt by tourist toward "Specifically visiting a Space Center" and the two following motivation factors (Table3):

- Previous interest in Space Exploration
- Space exploration and Space related topic as a Hobby/passion

On top of that the regression analysis showed for the factors "motivational interest in space exploration" not only a correlation, but a direct impact on the outcome of participants

motivation toward “Specifically going to a Space Center” (Table4), establishing a causal relationship, and allowing the second hypothesis to be accepted.

Secondly the results indicate that there are several correlations between previous motivation interests such as “Interest in space exploration” or “Interest in Science”, and the motivation felt for fun or educational activities (Table5). However only couple of variables seemed to present a causal relationship after a regression analysis (Interest in technologies and motivation felt for fun activities at the Space Center”) which is why the third hypothesis was rejected.

More importantly the data showed after analysis that between fun activities and educational activities, the most motivational factor out of the two was the educational activities as shown by the strength of the correlations (Table8) and the regression analysis (Table9) that showed on top of the correlations, that educational activities had a direct impact of the motivation felt by tourist for “Specifically going to a Space Center”, thus allowing the fourth hypothesis to be accepted.

Moreover the study found out that there was a strong negative correlation between being part of a group family during the visit of a Space Center/Planetarium/Observatory, and the variable “did motivation came from others like family or friend”, while there was no positive or negative correlations between any of the previous interest related to space topics and the variable “Did other persons of a group, a family member, or a friend made you feel motivated to visit the Space Center?”. A regression analysis showed that there was a causal relationship between visiting and terrestrial Space tourism destination as part of a group, and being motivated by other members of that group rather than by the activities itself.

Lastly several motivational interests carried by visitors were found to be strongly linked together. The motivational interest in Space exploration showed a relationship with both motivational interest regarding Sciences and technologies, potentially showing similarities in the way tourists approach those subjects, at least in the tourism context.
In the meanwhile, the same motivational interests were tested for a correlation and direct cause-effect relationship with visitors’ motivation for both educational and fun/entertaining content and activities. While several correlations were found, showing the potentiality of a

link between those variables, only the motivational interest concerning technologies was proved to have a direct impact on tourists' motivation toward fun/entertaining content and activities.

Additionally, there are several precise points where, considering the information gathered in the literature, there should have been potentially significant cause-effect relationship that failed to show up on the results. Either because the variables failed to pass the test requirements, or because there was no significant result to exploit with those test, variables such as "escaping from everyday life" did not produce any significant correlation to exploit, despite the theorical connection between the concept of "escaping everyday life", and tourism motivations.

4.2- Findings interpretation

Interpreting the findings made thanks to statistical analysis is an important step not only to give potentially needed explanation about an uncovered pattern or phenomenon, but also to explain why some results potentially did not match the hypothesis made earlier . For that reason, this interpretation chapter is structured by taking each hypothesis and findings and explaining those with theory and interpretation. This way, each outcome will receive individual attention and explanation, before conclusions can be drawn regarding the research question.

4.2.1- Frequency and gender

First the frequency analysis was based on the first question of the survey, which was asking participants what previous interests could influence their motivations to go to a Space Center, and was designed with the concept of push and pull forces (Bogari et al, 2004) in mind.

Because of the nature of this question, and since the main concept surrounding it is "motivation", it seems logical that the factors outlined by this question and its variables are

push factors more than pull factor, as they are motivation held by the visitors toward a specific subject.
The push factors were described as the internal forces that push an individual to towards a destination, when pull factor are the attraction felt by an individual because of a destination attribute (Bogari et al, 2004).
If we are just talking about frequency and percentages, the strongest push factors felt by the participants were the motivation they had from previous interest in Space Exploration, and previous interest in Sciences.
This means that more than an interest in technology, science fiction or simple curiosity, a fairly large majority of tourists visiting a Space Center/Planetarium/Observatory are pushed by the motivation they get from subjects like Space exploration or Sciences.

The first hypothesis was designed to address the potentially of a gender difference in motivational interests. The expected result was that there would be no gender differences between males and females regarding the motivational interests targeted by the survey.
As the result showed, there seems to be no significant difference between genders and any the motivation interest proposed in the first question of the survey.
However, the gender analysis is only indicative to the level of precision provided by 138 participants. It is important to acknowledge that there was more males (77) answering the survey than females (55). Taking this difference into consideration can somehow strengthen the claim that there are no significant gender differences between previous motivational interest or push factors, as there was no statistical significant differences despite the difference in male and females respondent percentages. This also allows for the two other hypothesis that were made regarding the motivational interests, to be extrapolated to the whole population targeted by this study without the risk of including a gendered bias.

4.2.2 – Interest in Space and Motivation to travel to a Space center

One of the major interrogation and finding of the study was the existence (or lack of) of correlation and causal relationship between the motivational interests related to Space topics we described as push factors earlier, and the motivation felt by tourists toward the action of specifically going to a Space Center.
The hypothesis regarding this was the second one, and it hypothesized that there is a positive relationship between tourists' motivational interests, and tourist's motivation to travel to a terrestrial Space tourism destination.

As stated in the finding's summary earlier, the data did show existing correlations between the push factor 'Interest in Space" exploration, a similar push factor as "Space topics as personal interests/hobby/passion which was the 3 question of the survey, and the motivation felt by tourist for the action to "specifically go to a Space center". The correlation between the push factor and the motivation felt by tourist to Specifically go to a Space center was reinforced by the finding of a causal relationship between the two variables.
This means that tourist's motivation to travel to a Space related structure is significantly influenced by their Interest in Space exploration and Space related topics. This is an important finding in the measure that it first identifies an important push factor that compels tourist to travel to a Space related destination, and it generally means that Space related structures and activities directly beneficiate from people's interest in Space exploration. Moreover, this constitute one important part of the research question's answer, as this answer positively to the second hypothesis.

Regarding tourism literature, this finding does not only call back to the concept of Push and Pull forces (Dann, 1977), but also to the concept of "motivators" described by Swarbrooke and Horner (2007).
Between the two main category of described motivators, the second one seems to be the most relevant concerning the interest in Space exploration displayed by tourists visiting several different Space related structures like Planetarium, Observatory, and Space Center as it is a motivational factor that would compel the tourist to go to a specific destination for a specific reason (Swarbrooke, & Horner, 2007). Here, part of that specific reason would be the interest

those tourists already have for Space related topics.
Considering the high percentage of participants that claimed getting some positive levels of motivation from their personal interest in Space exploration, and since there was a causal relationship between the motivation felt for specifically going to a Space center and the motivational factor described as interest in Space exploration was a moderate to Strong correlation, this means that even if not all tourists participating in Space related visits and activities have a personal interest in Space exploration, or see Space related topics as a hobby/passion, it can be said that tourists attending such activities and visits do have some sort of previous interest in Space related topics. On top of that, the last test displayed in the result chapter did show a strong link between the motivational interest in Space exploration, and two other motional interests, respectively "interest in Sciences" and "interest in technologies". This causal relationship between those motivational interest held by visitor can be interpreted as something that would thus have an impact on their overall motivation to take part in terrestrial Space tourism.

4.2.3- Motivation for Educational tourism

4.2.3.1- Findings about educational tourism

Since this thesis's goal is to explain how the interactions between the different tourist motivations impact the general motivation tourists display toward terrestrial Space tourism, it is important to understand which kind of activities and content people feet more motivated for when it came to Space related visits, and how those activities were influenced by the motivational interests called "push factor" (Bogari et al, 2004) or "motivator" (Swarbrooke, & Horner, 2007) earlier.
The third hypothesis presented in the literature review said that there should be a positive relationship between tourists' motivational intertest related to Space topic, and tourists' motivation for educational tourism content. After analysis, as displayed in the result chapter this seemed that it is not accurate here and the hypothesis was therefor rejected.
Here the result showed that the motivation tourist had because of previous interests such as "Interest in Space Exploration" or "Interest in Sciences", were sharing stronger correlation

with the motivation that tourists felt for educational activities, rather than the "fun" activities. However, after analysis it seemed that there was no causal relationship in play for the variable concerning motivation for educational tourism (Table7). Oppositely, Table 6 showed that there was a causal relationship between tourists' motivational interest for technologies, and the motivation felt for fun activities.
This result seemed surprising because of what one could think about the kind of experience tourists will have at destinations like Space Centers, Planetarium, and Observatories. However, because of the lack of literature and overall academical coverage of Space related tourism structures, it is difficult to foresee such result in advance and support those claim with previous research, hence the necessity of studies like the present thesis.

The "problem" of defining activities between fun and educational is not new to the Space related tourism industry as described by Cater in his work concerning "terrestrial Space tourism". Places like the Kennedy Space Center, have been struggling during the last decade to define themselves and their activities, as a Space center will often propose something in between the purely educational activities and the purely fun interactions (Cater, 2010). However, here in this study, it is all the Space related tourism that is to be considered, and while a Space Center will potentially have the infrastructure to mix things up in terms of activities, places like Planetarium and Observatories will most of the time offer presentation, shows and semi interactive presentations grounded in something closer to what can be described as educational.
Therefore, as a finding, the fact that there seems no causal relationship between motivation for educational activities and interest in Space exploration as a motivational factor, is a bit of a surprise as the opposite could have very well helped Space related tourism structure to define themselves as a place of discovery and learning, rather than an amusement park for example.
This finding coupled with the previous one about how tourists travelling to Space Related structures are motivated to do so because of the interest they have for Space related topics, is helping to refine what the tourists that do travel to Space related structures like Planetarium, Observatories or Space Center are interested in.
It has been established now that those people are interested in Space topics, that those Space topics can constitute a hobby or a passion for them, and that they seem to be more interest in

educational side of Space related structure, than they are in the purely fun activities.

This previous finding is opposed to the result issued to find an answer to the fourth hypothesis which stated that there should be a positive relationship between tourists' motivation for educational content, and tourists' motivation to travel to a terrestrial Space tourism destination.
In fact, between educational activities and fun/entertaining activities, the most motivating factor for tourist to travel to a Space related destination is the educational ones, therefor confirming what was hypothesized in this regard, thanks to the regression analysis displayed in the result chapter (Table9).
Here it is not about the correlation between a personal interest as a push factor, but rather it is about the fact that the motivation felt by tourists for educational content related to Space has a significant impact on the motivation they will feel to specifically travel to a Space related Structure creating a causal relationship between the two. On the other hand, the same statement cannot be made about "fun" activities which have been shown to have no direct impact on tourist's motivation to specifically travel to a Space center for example. This finding is important in the measure that it shows how much more motivating educational content is for people to indulge in Terrestrial Space tourism in general.
While the third hypothesis was rejected, it is important to keep in mind that it concerned a single very precise variable, which did not show a causal relationship with the motivation felt for educational activities and content. On the other hand, the fourth hypothesis which was accepted, puts on the forefront the fact that tourists are in general motivation to travel to a terrestrial Space tourism destination because of its educational dimension, which constitute a much stronger finding.

The question about educational or fun activities was partly designed after the concept of motivational salience (Puglisi-Allegra & Ventura, 2012), as the question only had two variable that were defined by some rather simple concepts (Educational or Fun). Therefore, on top of the findings described above, we can say that Tourists are in general experiencing a motivational salience phenomenon in which the educational aspect of the activities are important. They are pushed and pulled, in the way described by the concept of Push and pull forces (Dann, 1977), towards a precise destination because of the need to fulfill a desire. This

desire comes both their own interests and from the attribute of a destination, which are potentially going to be the content, activities, the location of the destination, and the overall "package" proposed by a structure like a Space center, Planetarium or Observatory. The motivational salience phenomenon will be triggered by the action of indulging into something specific (here it is terrestrial Space tourism, or specifically travelling to a Space related destination) because of both personal interest leading to motivation, that are described as a Push force, and the attributes and "package" displayed by the destination which will be the Pull force (Dann, 1977).

4.2.3.2- A point about educational content for Space related tourism destinations

Generally, in places like Space centers or planetariums (depending on their size), what could be called the fun content and the educational content are never clearly divided. Interactional activities that could be considered somewhat fun have an educational purpose and will just represent another way to bring educational content to guests. Oppositely, there are purely educational activities, as a visit in a Space Center will often display panels with informational text, and it is up only to the visitor to read this content.
This is what makes terrestrial Space tourism destinations diverge from theme parks. The biggest Space center on earth, the Kennedy Space center has had this problematic in the past, regarding how to define itself, either as a Space themed park, or as a specific kind of structure that simply allows access and visits (Cater, 2010). As stated earlier this problematic is true for Space Centers, but also concerns Planetariums and Observatories, as they often are not only tourism destinations, but places that conducts research and science related to Space.
Understanding the motivational power of educational content compared to the purely fun and entertaining content is important because almost everything presented during a visit at a terrestrial Space tourism destination is educational at some level.
In order to do so, the point was made initially to divide the potential activities into two different category. However, since the line between educational and "fun/entertaining" is a very difficult one to define and explain, this was done with the purpose to confirm that educational content was indeed the major motivational factor when it came to activities related to Space. Now that this confirmation has been made, and that a causal relationship was

proved to exist between the motivation felt by visitors for educational activities/content, and the motivation they feel about specifically going to terrestrial Space tourism destination like a Space center, it is important to be very clear on what is educational content in Space related tourism context.

For that it is important to understand what kind of activities and visits are proposed to visitors in the concerned places. In Space centers, the activities and visits are going to be a bit different from the two other type of structure this study focuses on. Potentially Space centers give their visitors the opportunity to visit places used by the Space industry to produce and design essential Space exploration component like rockets or satellites. On top of that, a few Space center are offering (or plan to offer) for visitors to watch a rockets launching event on site. Apart from those specific kind of activities, Space Center will often also give the opportunity to their visitors to have a similar educational experience than at Planetariums and Observatories. This is not meant to say or consider all Space related tourism destination as similar or made out of the same mold, as they all have their particularities, but rather, it justify the fact that in this study, all 3 kind of structures will be considered together, as actors of the terrestrial Space tourism concept, and carrier of educational tourism.

The educational tourism as described in the literature review chapter, is divided into several non-exhaustive subcategories of educational tourism (Ritchie et al, 2003). The educational content generally presented by terrestrial Space tourism destinations seems to be the kind that require its visitor to be motivated about the educational content, as shown by the result analysis. While this finding would tend to indicate that terrestrial Space tourism could be a form of educational tourism, there are other component of Space related tourism that for which visitors showed motivation. As described in the previous paragraphs, the line between "fun" less serious content, and educational content is a difficult one to draw, and educational content does not limit itself to any categories of activity and/or form of tourism (Ritchie et al, 2003).

Overall the terrestrial Space tourism structures studied here can be described as destinations that define themselves through several forms of educational content, such as presentation, shows, presentation panels, visits and tour, all with the purpose to teach and entertain the visitors with Space history, science, and discovery. Therefor it would be possible to describe

terrestrial Space tourism as a form of educational tourism that requires the visitors to be motivated by learning.

However, the points made here about educational content are not there to hinder the uses of entertaining and fun content made by terrestrial Space tourism destinations. As mentioned before, it seems very hard to properly define what is solely educational and was is solely entertaining. So instead of doing so in the interpretation of the findings, what was done in the survey was to give the freedom to the study respondents to actually describe their level of motivation for both educational and fun content, and in a second time, from an analysis standpoint, the objective was to asses which of those two possibilities represented higher motivation level from the visitors. Thus, as explained before, it seems that the educational content and activities prevailed in the mind of the visitors when it came to express their motivation between educational and Fun/entertaining.

4.2.4- Motivation coming from others

As an additional finding and to answer the fifth hypothesis which pushed the idea that there should be a negative relationship between tourists' motivation to travel to a Space center, and tourists' motivation coming from someone they are travelling with, it was established by the result of a series of test described in the result chapter that the tourists that have claimed to not be motivated by a personal interest in Space exploration are often going to the Space related destination because of a travelling partner that is actually motivated by Space related topics.

This is another way to strengthen the first finding, which is that in general people going to a Space related touristic structures are motivated by an interest in Space related topic. This make sense since the negative correlation between the two concerned variable (Table12) is a strong correlation, with a direct impactful relationship. In other terms, this means that the tourist that are not motivated to go to a Space Center, are often accompanying family members or friends from which the motivation comes from, thus confirming the fifth hypothesis.

This highlights something singular about the whole concept of tourism motivation: motivation does not necessarily directly comes from the tourist travelling to a specific destination, but rather, it can come from a close member of his/her group. The hypothesis to explain that phenomenon is that not only the tourists are accompanying someone that is indeed motivated to travel to that specific destination, but on top of that they also have a different form of motivation that compels them to accompany someone despite their lack of interest for a specific topic.

This motivation could be the motivation to make a close relative happy, or to facilitate someone else dreams and expression of interest.

For example, here there was a number of visitors that had no interest whatsoever in terrestrial Space tourism, but that actually answered that they came as part of a group, family and that the motivation to travel to a grounded Space related tourism facility was coming from someone else. The hypothesis is not that those respondents had no motivation at all, but rather, that they are motivated to content someone they care for.

4.2.5- Additional discussion on the findings

The motivation coming from a personal interest in Space related topic was described earlier as a push factor. However the push and pull concept is described as something that cannot be dissociated (Bogari et al., 2004). In a tourism context, when someone makes the choice to travel to a specific destination, there will always be a push force and pull force on effect, resulting in the decision making (Dann,1977). Here after the findings about the motivation that people get from educational activities proposed at a Space related structure, and the findings about previous interest in Space related topic as motivational factor, both Push and pull forces in action in a Space related tourism context can be clearly identified.

The Push force making tourist travel to the very specific destinations that a Space Center, a planetarium, or an Observatory represents, has been established earlier as being the interest in Space related topics those tourists have. However, this is not enough to explain why those tourists are actually travelling to a Space Center. What attracts these tourists, on top of what pushes them to indulge in Space related tourism is primordial to complete the picture. To do

so, the pull forces in play are to be identified.

Thanks to the data analyzed in the result chapter and gathered in the 4 different Space related structures that participated in the study as described in the method chapter, the pull forces that were identified was the educational content presented at those Space related structures. An important parameter was also the nature of the content presented whether it is entertainment, educational, or both, as it is not only the educational content that attracts those visitors, but as shown by the motivational interest that have a significant impact on tourist motivation, identified in the result chapter, an attractive characteristic for someone that will be interested in Space exploration, will be that the destination he looks at for a potential visit is proposing content related to his interest.

This also shows that the concept of push and pull forces is not only delimited to the factors that can be described as push, and factors that can be described as pull, but rather that a lot of the motivations and parameter playing a role into pushing and/or pulling someone toward a destination, cannot be definitely classified as one or the other. The best example we have concerning this study is the motivational interest that played a part in several findings: interest in Space exploration as a motivation.

Earlier in this paragraph, this motivational interest was described as the best example this study has for a push factors, since it is something that is held by the potential tourist before he actually travels to a said terrestrial Space tourism destination. However from the tourism providers point of view, this motivational interest can also be described as a pull factor, since terrestrial Space tourism destinations are potentially presenting Space exploration related content for example.

This shows that the interest in Space exploration that has been used as one of the main variables throughout this study, can be seen and described as both a Push force, and a Pull force. It only depends on how we choose to look at it.

Overall the two main motivations identified for people to indulge in Space related tourism are the interest they have in Space related topic like Space exploration, and the motivation they feel toward educational content related to Space. However, while it is important to highlight the findings that constitute a direct answer to the research question, they should not overshadow the other “discoveries” made by this study. While not answering directly the research question, what was found regarding visitors’ motivation for fun/entertaining content

and the motivation those same visitors got from their own personal interest in technologies, help drawing a clearer picture not only on what motivates tourists to indulge in terrestrial Space tourism, but also on what explains certain motivations, and why they are showing motivation for a number of variables.

At this point it is important to keep in mind that the generalization made about the Push and Pull forces and motivators identified above are not the only reasons tourists will indulge in Space related tourism and visits structures like Space Center, Planetariums and Observatories. There are many other parameters going into this complex equation, such as Science as a motivational interest, the need to escape everyday life as described by Krippendorf (2010), or fun activities that have been shown to share correlations with other motivational factors. However, the difference with those "parameters" and the ones presented as the main push and pull forces at play in the study of tourists motivation toward Space related tourism, is that they (the main push and pull forces) have recurrently shown a strong relationship with the simple variable expressing a motivation to travel to a Space Center, making it easier to see which parameter had a more important impact on the global motivation expressed by the study's participants. And as it happen, this is precisely the goal of this study, thus explain the emphasis made around the concept of push and pull forces.

It is the strength of the tests used that allowed those conclusions to be made. Without them any of the other previous motivational interest with a high frequency on the two or three highest point of the scale used throughout the survey could have been selected as one of the major push factor (interest in science, interest in technologies, interest in uniqueness, or even unspecific curiosity). In other word, the parameters identified here as playing a role in tourist motivation towards terrestrial Space tourism are assured to be important enough to take into consideration when thinking about tourist motivation for terrestrial Space tourism.

An additional founding was made concerning motivational interest. Even if this this finding is not a primordial one, there is still value in putting proof and statistical analysis behind something that seems logical.

Tourist that have an interest in Space exploration have been found to also show interest in both sciences, and technologies. There are several possible explanations for that. The first one is that Space exploration is a topic that regroup both science and technology, thus making a

interest in both fields a requirement to effectively dwell in Space exploration topics. This could explain why visitors interrogated about the motivation they got from their personal interest, have shown patterns linking those 3 interests together (displayed by regression analysis Table13) .
Another close explanation, would be that Space exploration as a motivational interest is the result of those people's existing interest in technology and science, and that it is not because of Space exploration that they are motivated by Sciences and technologies, but rather the opposite, making the motivation caused by Space exploration, a result of the existing motivation raised by sciences and technologies.
Moreover, it is possible that both possibilities holds true and only depends on how individuals approach the concepts of Space exploration, science and technology.
Those interest as motivational factor can be studied from the angle of push and pull forces (Dann, 1977) and again those motivational interest are a perfect examples that embody both push and pull forces, as interest are held by people potentially building a push force over time, but destination are responsible for what they are presenting as content during activities and visits, thus creating a pull force for tourists (Bogari et al, 2004).

This close relationship between the motivational interests in Space exploration, Science and technologies, highlights something else regarding educational tourism. Despite the lack of information, data and research in tourism regarding the subject tied to terrestrial Space tourism, subject like "sciences" or "technology" that represent motivational interest here, can be regarded as a potential component of educational tourism, as terms like "science" are logically tied to the concept of educational tourism, while the term "Science tourism" has even been used as a synonym to educational tourism (Laarman & Perdue, 1989).
On top of that, it seems reasonable to argue that pure concepts like sciences or technologies can logically be tied with educational content, in the dimension that science and technology per say have potentially limited ranges of application outside of educational tourism. This hold especially true when applied to terrestrial Space tourism.
However, if we are to consider the assumption that the Motivational interests that are linked together (Space exploration, science and technologies) can be related to educational content, this means that there could be a potential link between visitor's motivation for educational content, and their motivational interests. As it happens, one test was done with the purpose of uncovering a potential correlation between those motivational interest and visitor's

motivation for both fun and educational content. If the test showed significant correlation between all the 3 motivational interest “Interest in Space exploration”, “Interest in Science”, “Interest in technology” and the motivation toward both education and fun content, there was no direct relationship between any of those interest and educational content.
While this hinders the potentiality of an argument made in favor of a strong link between the nature of those motivational interests and motivation toward educational content, there was still a significant correlation between both, arguably because of the close nature of concepts like Science, technology and educational content.
However, there was a causal relationship uncovered between the motivational interest concerning technology, and tourists’ motivation for “fun” content. This could be justified by the nature the motivational interest in technology. A potential explanation here is that fun content is easier to translate into an interactional activity that would be considered closer to something fun than something educational by the visitors, hence the strong relationship between the motivation for fun activities and visitors’ interest in technologies. Terrestrial Space tourism is a field were technologies are at one of the attention center, because the subject used in this field are so closely related to the Space industry and Space exploration, which are staples of technological innovation. Therefore, because of the tendencies and relationship uncovered here, it seems safe to state that terrestrial Space tourism can be an ideal context for the development of interactive content, both fun and educational, grounded in technological innovation. As an example, places like the Andoya Space Center or the Kennedy Space Center are already providing its visitors with a plethora of interactive activities, that present both high educational and entertainment potential.

As stated in the literature review, the Means-end- chain theory was used not only to describe travel motivation, but to rank tourists’ motivations based on interviews (Jiang et al, 2015). Basically in this thesis only the data strong enough to pass all the test requirement for correlation and regression analysis were displayed in the result section, which means that the correlation’s strength relating to the same variables can be compared in order to tell which of the different choice given to the participants represent the strongest motivation.
Out of all the correlation tested with the variable expressing tourists’ motivation to specifically travel to a Space center, the two strongest were as expected the motivation

visitors got from the interest they already had in Space exploration, and the motivation they had for educational activities. As stated in the literature review, the means-end chain theory can be used to identify travelers' long term motivational factors (Jiang et al, 2015). Considering the nature of the findings made by this study, especially the ones regarding tourists' previous motivational interests, the means-ends chain theory output could very well be valuable here, as thanks to the strength and the nature of the findings made here, Space exploration as a personal interest could very well be considered a long term motivator. However in order to properly establish that, there would a need for information about how long Space exploration has been an interest for Space related destination visitors. This is the limit of the use the MEC model, as it was originally designed to analyses the results of interviews. Without a variable resulting from a survey question asking precisely for how long people have considered Space exploration as a personal interest, properly establishing "Space exploration as a previous interest", as a long term motivation is impossible. On top of that, a question like this on a survey would require a condition, making the survey potentially more complicated and fastidious to answer.

This thesis aims to explain how the interactions between the different tourist motivations impact the general motivation tourists display toward terrestrial Space tourism and destination like Space center, Planetarium, and Observatories.
The findings made thanks to the survey that was conducted in the selected tourism destinations have allowed us to identify tourist motivation to indulge in Space related tourism. According to the results and the analysis conducted, the two factors that seem to motivate tourists to travel to a terrestrial Space destination are their interest for Space exploration and Space related topic, whether it is as a singular interest, or as a personal hobby/passion, and the motivational they have toward educational content. In other words, Space center, planetarium and Observatory's visitors travel there because they are motivated by Space related subjects, and because they want to learn more about Space exploration. Additionally, tourists have shown to have motivation for other minor factors, without necessarily meaning that those factors had a significant impact on their motivation to travel to a Space related tourism destination. Technology or Science related to Space were relatively standing out from the rest of the minor motivational factors, still showing correlation with the overall motivation that visitors had to visit the structure they were in, without displaying a cause-effect relationship. The same thing goes for what was called here the "fun" activities that for which visitors

actually showed motivation but overall could not be strong enough to have a direct impact on people's motivation to travel to a Space center for example.
It is important to notice that the motivations identified by this study do not constitute an exhaustive list that would describe all the motivations that could push a tourist toward a terrestrial Space tourism destination. There are potentially other factors that play a part in the decision-making process of potential tourists, for them to actually indulge in terrestrial Space tourism. Moreover, this study is not a mean to understand that decision making process, as the aim is only to explain what are the principal interacting motivations tourist have for taking part in terrestrial Space tourism, as a part of laying down the necessary ground work for the understanding of terrestrial Space tourism as a whole.

4.3.1- Absence of Findings and potential explanations

Some of the survey's questions were designed after a tourism theory that concerned the concepts of escaping from reality and cutting from everyday life (Krippendorf, 2010). The only finding that got out of question variables like the motivation felt toward "cutting from everyday life", or visiting something different than classic and "normal" museums, is that cutting from every life or reality does not seem to be a significant motivational factor for tourist visiting Space related structure like Planetariums, Space Centers or Observatories. Krippendorf described the need to escape every day life and duties as a major component of the general concept of tourism (2010). That idea was even developed as something more significantly important to tourists' motivation than the push and pull forces concept described by Dann (1981).
But according to the data analysis results gathered for the purpose of this research, even if it has been argued above that tourist attending Space related visits are in general motivated by the interest they previously held about Space related topics, escaping from their everyday routines does not seems to be a motivational factor to indulge in Space related tourism. However, this does not means that the lack of finding concerning the "escaping" concepts cannot compliments the other findings made by this study, as it could very well means than more than for a simple interest in Space exploration and Space related topics, people

attending Space center, Planetarium and Observatory visits by their own accord actually see those visits as an active part of fulfilling a hobby or a passion.
Additionally, there was a surprising lack of impact from certain variables that were thought to potentially be of a significant impact. Variables describing how the motivation felt by tourists was affected by the distance from the Space center, or how the size of the destination would affect that motivation, showed little to no significant impact overall, because of how inconsistent the answers were for those questions.
Because of an insufficient amount of data, the findings and impactful variables were not compared with the age categories of the participants. Because of that, it is difficult to uncover potential patterns and trend in the data regarding age categories, even if there most likely exist such patterns, as for most touristic destinations (Swarbrooke, & Horner, 2007). However, demographic parameter have been described before to have an impact on motivational research outcome (Swarbrooke, & Horner, 2007), and while it is impossible to do so with the amount of data collected for this study, it could be interesting to expend the findings made by this study by comparing them with demographic parameters.

As mentioned before, one of the surprising outcome about the findings made with the data collected with the 4 different Terrestrial Space tourism structured that participated in the study, is that there was a lack of true relationship between tourist motivation to travel to a Space related touristic structure, and a potential need to escape their everyday life. This somehow goes against the theory of Dann about the concept of escaping everyday life and daily routines, being one of the most important push force if not the most important (1977). On top of that this theory has been argued for by Krippendorf (1987) that also described the need to escape everyday life as being a much stronger motivation than anything else is the tourist's head.
Thus, it becomes difficult to understand the lack of relationship between the visitors behavior and those theories. The findings of this study showed that tourists had strong motivational interests for Space related subject and educational activities and those have been identified in the discussion as Push and Pull forces compelling people to travel to those terrestrial Space tourism destination. Despite how close are the Push and pull forces theory and the "escaping everyday life" theory are (since they originated from the same concept at first) (Dann, 1977), it seems here that cutting with every day life is not necessarily a motivational factor for tourist indulging in Space related tourism. There are several potential reason that could be considered

as the cause for why tourists to not see terrestrial Space tourism as a mean to escape their routines and daily life.

One explanation could be that Space Centers and other terrestrial Space tourism Structures are not something tourists actually travel long distances for. However, as stated earlier there was no significant correlation between tourist's motivation to travel to a Space Center, and the distance they would have to travel to get to their destination, when those variables where tested during the result analysis that ensued the data collection. Even if this does not completely rule out this hypothesis, there seems to be no real cause-effect relationship between tourist motivation to indulge in Space related tourism and the motivation they get from cutting with their everyday life. It is important to note that with more data and more destination surveyed such results could potentially change.

The second potential explanation is that since the data has shown that in general there is a strong relationship between motivational interest such as Space exploration, and the motivation tourists are feeling for specifically travelling to a Space center, a majority of the people surveyed for this study might not see Planetarium, Space Centers and Observatories as "tourism destinations", but as actors of the personal interests and hobbies they exercise in their everyday life. In other words, for tourist, the lack of correlation between the concept of "cutting from everyday life as a powerful motivator" (Krippendorf, 1987), and the motivation felt for travelling to a terrestrial Space tourism destination, just means that such activities might not be perceived as "exceptional" or "unique".

In support of that hypothesis, the data showed no statistically significant relationship between the variable "Interest in Uniqueness" which described the motivation visitors got from their interest in the singular nature of terrestrial Space tourism, and the motivation they felt for specifically travelling to a Space center, which could partly explain why cutting from everyday life does not seem to be a strong motivational factor influencing visitors motivation to take part in terrestrial Space tourism. A lack of finding is not an undeniable proof, but rather can either be an indicator and suggestion for where to dig deeper, or an expression of a possible weakness in the data set

5- Discussing Space related tourism/terrestrial Space tourism

As stated before, there is a research gap, and an obvious lack of academic resources when it comes to Space related tourism. Even more difficult is to find a proper definition for concepts like “Space tourism”, “Terrestrial Space tourism”, or “Space related tourism”.
For this study the term “Space related tourism” is extensively used, alongside terrestrial Space tourism and a few other variations of the similar meaning. “Terrestrial Space Tourism”, is a term that have been used by a few academics to describe the tourism aimed at fulfilling a set of objectives regarding Space in a touristic context down on earth. The term “terrestrial Space tourism” was first described and explained as the action to travel around the globe to observe astronomical phenomenon and objects (Crouch, 2001).
Then, it started to look like something matching modern representation of tourism, with people traveling in groups of professional and amateur astronomers in order to avoid light pollution and find optimal observation conditions (Crouch, 2001). More recently tourism places like Space centers were included in the discussion surrounding terrestrial Space tourism (Cater, 2010).
Moreover, places similar to Space Center like Planetariums and observatories should be more often included in the definitions and discussions surrounding terrestrial Space tourism.
This is why, as an attempt to put down the base for a general definition, and thanks to the existing motivation displayed by the findings for such a form of tourism, terrestrial Space tourism will be defined as follows:

- Terrestrial Space Tourism is a generic term including any form of tourism happening down on earth, for which the activities are directly or indirectly related to Space.

Structures like Space Centers, Planetariums, or Observatories are examples of what should be considered as Terrestrial Space tourism destinations, but it also includes any form of travel or activities made with the purpose of observing astronomical event or objects.

It is with that definition is mind that the rest of the discussion will proceed, but it is still important to remember that this study only treats the subject in relation with terrestrial Space tourism structures as established by the definition. Structures like Planetariums, Space center,

and Observatories are the only static and accessible structures that could be studied with the resource and time available. Thus, any time the term terrestrial Space tourism has been mentioned in this study, was only referring to the tourism destination similar to the ones that participated in the data gathering process. This goes as well for any findings made by this study as they should be held significant only regarding Planetariums, Space Centers, Observatories, and/or any form of Space related structure that welcomes visitors with the purpose of educating, and entertaining thanks to content and activities related to Space.

Defining important terms is just as important for a study as producing meaningful findings, but none of this this would matter if the Space related tourism industry (or Terrestrial Space tourism industry), was not evolving. A potentially big factor for terrestrial space tourism is the state of things for the actual Space industry. Every strides, advancements and discovery made by the Space industry adds material to the pool of knowledge, events and subjects that the touristic structures can tap into. Without backing this statement with proof and data it is only an hypothesis, but it seems to make sense to say that terrestrial Space tourism is highly dependent to the state of the Space industry and Space exploration in general as most of the content and activities proposed by terrestrial Space tourism destination taps into the historical strides, technological and scientific advances, and visual discoveries made by the Space industry and the astronomical community of professionals and amateurs.

To illustrate that, in a recent appearance during a post-flight conference that took place after SpaceX managed to detach a crew capsule from a purposefully failing rocket for the first time, NASA administrator Jim Bridenstine said: "*We're on the cusp of commercializing low-earth orbit, I want to see large amounts of capitals flowing into activities that includes humans in space and those activities could be industrialized bio-medicine, it could be advanced materials and it could be people that want to go to space for tourism*"(Space Videos, 2020).

This statement is obviously directed toward the actual space industry but is one of the first statement from a NASA official mentioning the future of Space related tourism, and the next step of Tourism evolution in general. Additionally, one could say that it is a good display of motivation toward the concept of Space tourism.

This is mentioned here because this kind of information, video, and event, can be seen as one

of the elements that has the potential to build over time the motivation mentioned throughout the paper as “interest in Space exploration”, “Space related topics as a hobby/passion”, or even “interest in technology or sciences”.
On an additional note, this sentence from NASA administrator also displays the importance of understanding what kind of motivation animates people that have interest in Space related subjects. In the quote used earlier in this section, he mentions that one part of the future activities that could take place in Space could be represented by people that “want” to go to Space for tourism purposes. The mention of a will is another way to express the need for people motivation to take part in the future of Space related tourism. Since terrestrial Space tourism was described as the first step of Space tourism (Cater, 2010), understanding the basic motivations that compel tourist to travel to a Space related tourism destination is primordial, giving this present study even more relevance concerning the evolution of all Space related tourism.

5-1- Discussing key terms

Inside this study, on top of the main term “terrestrial Space tourism” that was just defined above, several terms and phrases are mentioned an important amount of times. Terms like “interest in Space exploration”, Space related topic as a hobby/passion”, “Specifically going to a Space Center” or Interest in Science/Technology”. Several of those terms have been lightly explained and justified in the literature review chapter when they got tied with some of the tourism theory, but some time should be taken here to explain what is compelling about those terms, and why they are repeated numerously throughout the study. In other words, understanding what a term like “Interest in Space exploration” is made of is an important step for understanding what are the tourists motivation that compels them to indulge in terrestrial Space tourism, and also for the reading process of this paper.

The term “interest in Space exploration”, is taken from the survey and like most term in the study, is tied with the large concept of motivation. But beyond the motivational aspect of this term, the pure meaning behind it also has importance, particularly in the interpretation of the findings made by this study. The word “interest” here was chosen because of how generic of a

word it is. The non-specificity of this word allows the respondent of the survey and the reader of this paper to relate to what he would characterize as being an interest. The subjective nature of that term has made it possible for this study to capture a wide range of motivational level without being too specific and without guiding the respondent. For some, an interest can be wanting to know about something, for others it means being attracted by something, and it can even represent a hobby, something one will spend time for.

The word interest was then followed by a particular item. The most important one, as shown by the result chapter was, "Space exploration". Here the term Space exploration was chosen instead of simply putting "Space", because of the large amount of definition the word "Space" has. Space exploration seemed more specific to something people could understand without an explanation, as one of the primary objectives for a survey is efficiency getting respondents to answer all the question.

Space exploration, roughly defined as the action to explore outer Space with the use of a vast array of technologies and instruments (NASA, 2009), means that the statement "interest in Space exploration" can be translated as being attracted by the concepts of outer Space, or even taking part in Space exploration at an individual level.

For that part, Space exploration as an activity is a lot more accessible than most people would think.

Owning a telescope for example, would come first in mind when asked about individual Space exploration as an activity, but the simple action to look up the sky at night without instruments, or only with a pair of binoculars, is an act of Space exploration on its own.

For those reasons the full term "interest in Space exploration" was chosen to represent one of the motivational interests people could potentially have coming in a Space Center, a Planetarium, or an Observatory.

Of course, the same kind of reasoning went into the other statements mentioned before. Interest in science or technology, while being less specific, carry a different meaning that is useful to understand where tourist motivation comes from.

Here the word "science" was used as a broad term referring to hard science, physics and all space related sciences in general, going from exo-biology to bio-medicine and anti-matter experimentation, basically englobing all the specific sciences and fields that will not get often talked about in an other context than Space related topics.

While some statement found in the study are similar, or could translate to the expression of

the same motivation for tourists in general, like the “Space related topic as a hobby/passion” being close to “Interest in Space exploration”, those similar statements are there to potentially “complete the picture” and reinforce potential findings.
Additionally, all those variables and terms used alongside the word “interest”, are also an efficient way to search and identify parameters and factors in the way the theory has described. For example, interest in exploration as a terms, or a variable, has allowed to identify push and pull factor as described by Dann (1977). Furthermore, this can be held true for the handful of different theories and models that have been mentioned throughout the study.

Concerning the term “Space topic as a hobby/passion”, is simply means that Space related topics can be for some people a hobby or a passion. For example, writing a full study about Space related tourism motivations would require one to take Space related topics at heart for example. But whether it is about observing the sky, or waiting for those “once in a century” events to take out the telescope, Space is a hobby for many people as proved by the frequentation number of terrestrial Space tourism destinations like the Kennedy Space Center (Cater, 2010).
It is in the interpretation of what a “hobby” is that lies the difference with the simpler term “interest”. In general, to define Space related topics as a passion or a hobby, a hobby would logically require more time investment that the previous statement defined here as “Interest in Space exploration”.
An interest can be a hobby or a passion, but not all interests are hobbies. This, for example is the reason why those two similar statements were included as different variables in the survey and in this discussion.

One of the way to answer this study’s research question was to accept or reject hypothesizes, one of them asking what relationship Educational or Fun content had with other key motivational factor like interest in Space exploration, and how those kinds of activities affected people’s motivation to indulge in Space related tourism.
For that reason, the term educational is used throughout the paper as a key term to justify tourists behavior toward Space related tourism.
The definition and findings produced by tourism academics over the years are matching the

context of the Space related tourism industry, as educational tourism was found to be more widely popular in wealthy and developed countries (Abubakar et al, 2014).
Crossed with the different motivation and needs model presented in the literature review, there seems to be a logical link between educational tourism, and Space related tourism, as Space related structure and activities will not be needed for a tourist to fulfil a basic need like the ones described by Maslow (1943), but rather for something closer to the self-actualization needs as argued by Hudson (2008). Space related leisure activities are obviously highly educational to anyone that has ever attended a visit at a Space center or at a Planetarium on top of what the findings showed about tourist motivation for educational tourism.
On top of that, even if there is a general lack of data and academic resource about Space related tourism, it seems that most of those activities are concentrated in countries that have or are part of an active Space exploration program.
European countries like France or Norway, in which are located the Space related structures surveyed for this study, are part of the European Space Agency, both competing and working in tandem with other similar organization like the US's NASA, and the Chinese CSNA (China National Space Administration) for example. During the research phase for potential places to survey, most of the research's results pointed to one of the country part of those organizations. This seems to potentially confirm that educational tourism, which is an important part of what Space related tourism is about currently, is linked to a category of need that goes beyond the fulfillment of basic needs. However those basic needs must be met before indulging into any form of Self-actualization (Hudson, 2008).

5.1.2- Differences between terrestrial Space tourism and Space tourism

As mentioned, a few times already, terrestrial Space tourism and Space tourism are two concepts diverging from each other, but that originated from the same starting point. Without dwelling to much in details, clearly establishing the differences between the two form of Space related tourism might help to understand the cruciality of dividing both fields in a research paper.
Explaining the difference between those two concepts, despite the closeness of the term used to name them is an important step even in the context of this study, as it necessary to clearly

state the differences between Space tourism and terrestrial Space tourism in order to properly explain tourist motivation for terrestrial Space tourism. As shown previously by both the results and the interpretation of those results, tourists are travelling to terrestrial Space tourism destinations because they motivated by several factors, and the importance to state and explain the main differences between the concepts of Space tourism and terrestrial Space tourism, lays in the fact that the findings made by this study concerns only (for now) terrestrial Space tourism.

Terrestrial Space tourism has been defined here as the form of tourism that include any activity concerning Space, but with the necessity to happen down on earth, while Space tourism has been described as the commercialization of human sub-orbital, Orbital, and interplanetary travel for no other particular means than a tourism experience. This makes the differences between the two concepts massive, despite the closeness of the terms used to describe them.

Practically the differences between Space tourism and terrestrial Space tourism seems visible enough to not described extensively. Instead of a long description, the table 8 is a non-exhaustive summary of the most notable differences between Space tourism and terrestrial Space tourism.

	Geographical location	***Activities***	***Potential motivations***
Space tourism	Sub orbital, Orbital flights, within limits of a shuttle/habitat	Passive observation, zero gravity experience, additional provided services	Specifically going to Space, Risk acceptance
Terrestrial Space tourism	Space Center, Planetarium, Observatories, Outdoor observation spots	Visits, Tours, Shows, Conferences, interactive activities, Astronomical events observation.	Motivated by Space related subjects, Motivated by educational content, or by a tierce person

(Table14) – Differences between Space tourism and Terrestrial Space tourism

Terrestrial Space tourism has been described to be a Sub-category of Space tourism (Reddy et al., 2012), however, it is possible that because of this representation, terrestrial Space tourism

has not gotten attention on its own. It seems that academics writing about Space tourism have considered the final objective of both concepts to be similar, as Space tourism as a concept aims to take people into different level of orbits and beyond, while terrestrial Space tourism plays a big part about educating the public regarding Space and human Space flight, and those different orbital levels. To know if the final objective for both kind of Space related tourism is the same, a question like "would people that have visited a terrestrial Space tourism destination or taken part in a travel aimed at observing astronomical object, actually go to Space if they were given the opportunity to?" needs an answer.

While this question cannot be answered right here and right now, this study has already proved that there is an existing significant motivation from tourists visiting Space related structures, toward Space exploration and space related topics or even educational tourism as shown by the results. This could constitute the first argument toward the understanding of a potential market for actual Space tourism. On top of that, such a question will potentially only be answered through the means of terrestrial Space tourism studies, as the population sample targeted by the future market of commercial human sub-orbital, orbital and Space flight are people showing extreme motivation toward Space exploration and Space related topic, because of the risk-full nature of such experience, and certainly for the status that would bring the achievement of going in Space.

This link between terrestrial Space tourism and Space tourism might be one of the reason terrestrial Space tourism has not been studied on its own, but this potential motivational link seems to be the only hypothesis tying the two fields together. Otherwise, the very nature of both make it difficult to treat the subject as it has been before, meaning Space tourism as the main field of study and terrestrial Space tourism as a secondary sub-category. Space tourism is so much different in practice than its terrestrial counterpart, there are no need for particular evidences to argue that Space tourism and terrestrial Space tourism should be studied separately as individual entities, at least for the time being. When the Space industry figures out a viable way to send tourists in Space, only then they should we use terrestrial space tourism as a way to argue for Space tourism. Until then, terrestrial Space tourism should be studied as an individual body, rather than under the umbrella of a concept like Space Tourism that has yet to truly take place.

Moreover, on the subject of differences, it has been mentioned several time before in this research paper that the objects of study are specifically static terrestrial Space tourism

destinations. Terrestrial Space tourism was defined earlier as including any form of tourism related to Space down on earth including both destinations and venues like Space Center, Planetariums, astronomical Observatories, and tourism to nonspecific site with the purpose of astronomical observation. This would include Eclipse tours, Midnight sun, Planet, Moons and star gazing, as well as Auroras. While it might be obvious to some that both type of destinations are different, establishing what are the most notable differences between Specific terrestrial Space tourism structures and terrestrial Astronomical observation tourism is necessary for the delimitation of this study's reach.

- Terrestrial Space tourism structures as venues fixed geographically, that have a set of activities, shows and content accessible to the public.
- Terrestrial Astronomical observation tourism is a more volatile form of terrestrial Space tourism which does not require any type of geographically fixed venue in order to take place. In can be highly dependent on astronomical event, and people that indulge in that form of Space related tourism are not already guaranteed to witness the event, phenomenon that they traveled to observe. For this form of terrestrial Space tourism, the travel is often justified by an attempt to escape light pollution produced by man made infrastructure all around the globe. The event and phenomenon targeted by terrestrial Astronomical observation tourism are often dependent of the weather conditions, sometimes making the sole purpose of a travel almost pointless as the conditions met at the chosen location do not allow the observation to take place.

It is partly because of those specificity that this master thesis has been focusing on terrestrial Space tourism destination like Space center, planetariums and Astronomical Observatories. On top of that the tourism related to phenomenon like Auroras and midnight sun have been extensively studied, and simply adding the lens of "terrestrial Space tourism" on those activities would not justify a master thesis.

6- Implications

As stated several time already in this study and in both Crouch (2001) and Cater (2010) studies, the space related tourism industry has received little to no critical attention, despite the recent advances that gave a new wind to the Space industry. How relevant the findings of this study are regarding tourist motivation is not just important because of what they mean precisely as findings, but because those findings have no precedents in the terrestrial Space tourism literature. Space related Tourism businesses have had only their own satisfaction survey and contact with customer to figure out how to evolve. This means that, even if the findings of this study are not like a breakthrough or a surprise, they confirm was seemed to be obvious, but also what nobody ever took the trouble to confirm with analysis. Because of how hard it is to get people to answer surveys that are this specific, only a dedicated study could achieve this kind of result.

This is also the first very recent stone added to the terrestrial Space tourism literature, and potentially the first to actually treat of a subject apart from the general notion of "terrestrial Space tourism". Since the existing literature is lacking so much, having one doing the groundwork about tourists motivation is also helpful in the sense that motivation precedes concepts like experiences or memories or safety.

More precisely, this study should help academics and professionals to better understand who their customer are, not in a demographic way, but rather in a motivational way. On top of that, what those tourists are most interested in and why they feel motivated to visit Space related touristic structures, can be a valuable information to have.

Additionally, understanding visitors motivation not only toward Space related content, but specifically toward educational activities can be a valuable information when it comes to content creation and what means could be used to bring that content to the visitors. It is important as well to help defining what kind of tourism destination a Space Center, a Planetarium, or an observatory wants to be from a tourism stand point, as it has been shown especially for the bigger structures, that there are choices to be made regarding what to call and define a terrestrial Space tourism Destination (Cater, 2010).

Proving that tourists are indeed motivated by specific factor and forces, is also the proof of an existing demand for certain types of content. This could help refine the visits, tours, and

activities proposed by terrestrial Space tourism destinations. In that line of ideas, the relationship discovered between technology as a motivational interest, and fun, entertaining content and activities, can be a good indicator for the terrestrial industry to follow the footsteps of precursor structures like the Kennedy Space Center, and start including more interactive activities based on the technological advances and discoveries made by the Space industry. One advantage about that would be the diversity of possibilities, matching the diversity of terrestrial Space tourism Structures, as a Planetarium would not necessarily present the same content than a Space Center or an Observatory.

Furthermore, now that the most important motivation for terrestrial Space tourism have been identified, and that the important terms necessary to discuss of such topics have been defined, there is room for the progression of the academical understanding of ground Space related tourism and the people indulging in it.

Whether it is from a consumer behavioral angle, or a more traditional touristic approach such as the description and the understanding of the experience a tourist will get during a visit at a terrestrial Space tourism destination, there is a plethora of potential approach that will be needed if we are to talk one day of a proper literature body concerning terrestrial Space tourism. Additionally, even if arguments were held here towards the differentiation of Space tourism and terrestrial Space tourism, ultimately, it is likely that both field will end up being linked together as they both relate to the same general idea of "Space". Therefore, a thorough description and analysis of all different facets of terrestrial Space tourism is going to be needed for the future literature concerning actual Space tourism, as it will potentially need to evolve based on an existing knowledge regarding why, and who indulges in Space related tourism down on earth, in order to begin to understand why and who will take part in Space tourism (Sub orbital and orbital flights).

Therefor it seems clear that there is an important amount of work and research that is going to be required, even if we are only to consider terrestrial Space tourism literature and nothing else.

For that reason, and since the lack of existing material concerning terrestrial Space tourism is so big, the only true recommendation that is going to be given here is that Space related tourism happening on earth needs to be investigated, described, and analyzed from a tourism standpoint. More visitors need to be surveyed, responsible and managers need to be

interviewed, and a pool of common knowledge concerning any subject and topic related to terrestrial Space tourism needs to be built as soon as possible.

7 - Limitations

In order to carry out more tests and bring more valuable results, a larger amount of data would have been required. However, a great deal of effort came into the data collection process. As stated in the method chapter, around 30 Planetarium, Space Centers, Observatories, and cultural museums focused on Space related topics where contacted over a period of 4 month (between July 2019 and October 2020). Out of all the structures that were asked to participate in the study, only 10 actually took the time to answer, and out of those 10, a total of 5 ended up accepting to give out surveys to theirs guests. One more structure would then recede without a word. On top of that small number of structure willing to participate in the study, most of them would not have the necessary staff to actively give the survey to their guests, instead just leaving it on a desk for the guest to freely fill it up. Those circumstances led the amount of data collected, with some structure providing only 3 survey after 4 months of data collection. This is the reason why Online survey would get involved in the study, even if it was not part of the original plan. Surveying people online is always a risk, but as explained in the method chapter, it was done with upmost care for the important details regarding target population sample. For that reason, even the online survey did not manage to gather more than 60 participants, however it should be seen as an indicator that the requirement given for targeting the right population sample were respected.

Overall, concerning the data gathering one important limitation to acknowledge is the political trouble that happened in France between December and January. Massive strikes greatly affected travelling capacities by train for the whole country. Since 3 out of 4 of the reviewed terrestrial Space tourism Structure happened to be located with France's mainland territory, there has potentially been some frequentation consequences for tourism businesses. There is not really an easy way to know if that has affected to the number of participants, but it is worth mentioning.

Additionally, the paper was limited by the lack of academic resources regarding terrestrial Space tourism, as described before, which made some part of the discussion an exercise of definition and building arguments around terms, rather than with the help of previously reviewed research paper. However, the subject of this paper was chosen knowing very well how difficult it would be to write such a discussion, and the lack of academic resources is

mentioned here to acknowledge the work and efforts laid down for the building of this study. The fact that visitors of Space centers, planetariums and observatories have not been studied from any angle before limited the arguments to a simple comparison between existing motivational theory, and the findings made in this study. A more documented field of study would potentially have had possibilities to compare those findings with other similar studies, or more simply the opportunity to build on a solid base of facts and arguments.

Finally, one major limiting factor that came in place during the data gathering was the condition of being a "student". Being a student added a layer of difficulty in the process of convincing structure to take part in the data gathering process of the study. In fact, even when some big structures voiced interest in the study's goal and subject, they immediately stepped back and refused any collaboration when they understood that this study was a Master thesis. This was at some point a major setback as it concerned some of the biggest terrestrial Space tourism destinations, like the Kennedy Space Center. This highlights that some structures that would have been open to participate in the study, refused only because it came from a student no matter how much insights they would gain from participating.

Additionally, there might be a lack of academic attention on one phenomenon that was observed in this study thanks to the survey's question number 6, which was written with the secondary purpose of uncovering a potential link between the lack of motivation displayed by a respondent especially toward Space related subject and the presence of this person being justified by someone else. Many of the respondent expressed the fact that the motivation that pushed them to travel to the terrestrial Space tourism destination was not their own, but rather that is came from someone else they travelled to that said destination with. When trying to process and interpret this information, there was very little motivation literature that actually mentioned that phenomenon, when someone's motivation is not his/her own, and comes from a partner, a group member, a friend or else. Tourism motivation despite being a research field particularly studied in the realm of tourism research, seem to have mostly ignored and forgotten this simple, but rather important phenomenon, especially as a concept (this phenomenon might have been mentioned here and there, but not properly studied).

8- Conclusion

This thesis aims to explain how the interactions between the different tourist motivations impact the general motivation tourists display toward terrestrial Space tourism. Based on a quantitative analysis of visitors' different sources of motivations, several patterns have been brought to light.

The first one (on top of the fact that there are no significant gender differences when it comes to tourists personal interests) is that one of the main motivations for tourist to indulge in terrestrial Space tourism comes from the interest they hold for Space related subject such as Space exploration, and less markedly sciences and technologies related to Space.

This motivational interest held for Space exploration and related topic has been a constant throughout the study as it has shown to be linked not only with tourists 'motivation to indulge in terrestrial Space tourism, but also with other motivational factor that were identified as being impactful for this study such as visitors interest in sciences or technologies. On top of that, and in order to understand what type of effect such motivation can have, it was tied to the concept of push and pull forces (Dann, 1977), which seemed to be the closest theory-like concept that matched the motivation displayed by tourists as "personal interest".

Secondly the analysis of the data showed that when a visitors expressed motivations for the direct act of travelling to a terrestrial Space tourism destination, this motivation could be directly influenced by the motivation he or she held for educational content and activities creating a causal relationship. This finding coupled with the nature of terrestrial Space tourism confirms that Structures like terrestrial Space tourism destinations are perceived by tourists as a place of education and discovery, and that this fact is a strong motivational factor to take in consideration.

Thirdly, concerning motivation, one potent "discovery" was made concerning the visitors that did not expressed high level of motivation for Space related topic, but came as part of a group. The strong relationship found there showed that someone's motivation could originate from someone else's and was less personal of a concept that previously thought. Effectively, this means that some visitors that indulge in terrestrial Space tourism are potentially not doing so because they are themselves motivated by Space related topics and activities, by rather because someone they are travelling is indeed motivated by Space related topics. While this phenomenon is not something that seems new, having tangible proof that this is taking place

in a tourism setting as specific as terrestrial Space tourism, might indicate that there is a larger phenomenon at play. On top of this, it could also mean that terrestrial Space tourism destinations are always the object of some interest related to what they propose, as it was showed that survey respondent that were not motivated themselves to indulge in terrestrial Space tourism, still did so because of someone they travel with (and are potentially close to).

On top of the findings made by the study thanks to the quantitative methods used for its data collection and analysis, this work constitute an important step in the building of the arguments and the definition of key terms used for characterising both the study as a whole and to answer the research question. Terrestrial Space tourism was defined as tourism taking place down on earth, in which activities and content are using Space related material, topics, sciences and innovations. Terrestrial Space tourism concern specific venues and structures likes Planetariums, Astronomical Observatories and Space Center, but also any kind of non-geographically specific Astronomical Observation tours or private observations. However it is important to keep in mind that the findings made by this study, and all the conclusions and extrapolations argued for, only concern actual terrestrial Space tourism structures as described throughout the study, and while some comparison and extrapolation can be made with tourist indulging into Astronomical Observation tourism, there are no guarantees that the findings of this study would apply for the later as well as it does for the tourism venues targeted by this study.

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Appendix

Space Center Tourism Motivation - 2019

This survey aims to gather information in order to understand tourist's motivations felt toward Space Centers. This is part of a Master thesis project conducted by a student of the University of Tromsø studying in a Master of Tourism Studies. No information gathered here will be used out of the context of this study. This survey is anonymous.

1/ What previous interests could influence your motivations to go to a Space Center?

	Not at all	Barely	Slightly	Moderately	Definitely	A lot	Very much
Interests in Space exploration	○	○	○	○	○	○	○
Interest in sciences	○	○	○	○	○	○	○
Interest in technology	○	○	○	○	○	○	○
Interest in uniqueness	○	○	○	○	○	○	○
Interest in Science-fiction/Movies	○	○	○	○	○	○	○
Unspecific curiosity	○	○	○	○	○	○	○

2/ How the following parameters influenced your motivation to travel to the Space Center?

	Not at all	Barely	Slightly	Moderately	Definitely	A lot	Very much
Distance from the Center	○	○	○	○	○	○	○
Reputation/review of the Center	○	○	○	○	○	○	○
Activities at the Center	○	○	○	○	○	○	○
Size of the Center	○	○	○	○	○	○	○

3/ Are Space Exploration and Space related topic one of your personal interest/hobby/passion? *(pick one)*

Not at all	Barely	Slightly	Moderately	Definitely	A lot	Very much
○	○	○	○	○	○	○

4/Does actuality and news coming from the Space Industry are a motivational factor for you?*(pick one)*

Not at all	Barely	Slightly	Moderately	Definitely	A lot	Very much
○	○	○	○	○	○	○

5/ Which activities proposed by the Space Center make you feel more motivated?

	Not at all	Barely	Slightly	Moderately	Definitely	A lot	Very much
The mainly fun activities	○	○	○	○	○	○	○
The mainly educational activities	○	○	○	○	○	○	○

6/ Did other persons of a group, a family member, or a friend made you feel motivated to visit the Space Center?

Not at all	Barely	Slightly	Moderately	Definitely	A lot	Very much
○	○	○	○	○	○	○

7/ Based on the motivation scale model described in the box, give a score from 1 to 7, to the activities listed below *(select the number on the boxes that represent what the activity make you feel like)*:

Motivation Strength model:

1	→Not at all
2	→Barely
3	→Slightly
4	→Moderately
5	→Definitely
6	→A Lot
7	→Very Much

Specifically Going to a Space Center:	1	2	3	4	5	6	7
Having a "normal" group/family time:	1	2	3	4	5	6	7
Learning about science related to space:	1	2	3	4	5	6	7
Having fun with Space related activities:	1	2	3	4	5	6	7
Learning about technologies:	1	2	3	4	5	6	7
Visiting something different from normal "museums":	1	2	3	4	5	6	7
Cutting from the everyday life/activities:	1	2	3	4	5	6	7
Learning about the history of Space Exploration:	1	2	3	4	5	6	7
Going to any amusement park (coaster and theme park for example):	1	2	3	4	5	6	7

8/ What age group are you part of:

12 or under ○ 12-17 ○ 18-34 ○ 35-54 ○ 55-74 ○ 75 and above ○

9/ Sex:

Male ○ Female ○ Prefer not to tell ○

10/Did you come to the Space Center/Observatory as part of a group/family?

Yes ○ No ○

11/ What is your nationality: .....

Thank you for your participation !

Survey used to gather data (English version)