

The effect of income level on sport consumption during Covid: an empirical analysis

Nom de l'estudiant: Judit Siscart Serra

Nom del tutor/a: Giovanni Giusti

Data: 20/06/2022

MEMÒRIA DEL TREBALL FINAL DE GRAU

Curs: 2021-2022

Estudis: Turisme i Gestió del lleure

ACKNOWLEDGEMENTS

The making of this final degree project has been possible because of the advice and interest of some individuals whom I would like to thank.

First and foremost, I would like to thank my tutor Dr. Giovanni Giusti for his unconditional dedication, involvement and all the support he has provided. He motivated me from the first day and helped me with the direction and design of this project.

I would also like to express my gratitude for the contributions of the court, formed by Dr. Josep Maria Raya Vilchez and Maria Armiñana Maristany, as well as for their consistent feedback. Thank you for reading the document carefully and giving invaluable advice.

Also, I would like to give special thanks to Oriol Gallardo, who is the data base responsible of the collaborator company. He has been a keystone from the beginning of this project.

Moreover, I would like to say thank you to Tecnocampus University for these 5 years together and to help me finding my path in the professional world. It also allowed me to find great people that have accompanied me all this journey and they will do so for many years.

Last but not least, I want to thank all my colleagues from Business Administration and Tourism and my family for supporting me always.

Thank you all very much.

ABSTRACT

ENGLISH

Gym attendance experiences unstable tendencies during summer months. Therefore, most of the sport centers offer a temporary membership cancellation, which is a lower fee that maintain the membership alive although not attending the gym during summer months.

This study aims to expand knowledge of the reason that drives people to buy this special fee, since it is not very clear by now.

Two possibilities have been thought: the fact of saving money because of its cheap price or the simple fact of being out for vacation.

Since money is an aspect that cannot be easily analyzed, we take the presence of the worldwide pandemic in order to remove the possibility to go on vacation in specific periods of time.

Therefore, the relationship between income of people, vacations and temporary absences in gyms during the summer months will be studied, and the objective is to understand which is the main motive in order to be able to design the proper marketing and sales strategies for this summer period.

To achieve this goal, a natural experiment of a Spanish company (Cet10) has been analyzed. The company has provided the database of 2 different sports centers located in different socioeconomic areas, and an in-depth analysis of the gym's attendees' behavior during the summer months has been carried out to conclude if their economic situation influences their decisions during the holidays. The presence of Covid-19 allows us to see if the relationship really exists, since it has been taken as a limitation for users' vacations and it has implied notable changes in both the tourism and sports sectors. To take into account the pandemic effect, a comparison has been made between the years 2019, 2020 and 2021.

CASTELLANO

La asistencia al gimnasio experimenta tendencias inestables durante los meses de verano. Por ello, la mayoría de los centros deportivos ofrecen la baja temporal, que es una tarifa más económica que mantiene viva su afiliación sin asistir al gimnasio.

Este estudio pretende ampliar el conocimiento del motivo que impulsa a las personas a comprar esta tarifa especial, ya que por ahora no está muy claro.

Se contemplan dos posibilidades: consumirlo por ahorrar dinero debido a su bajo precio o el simple hecho de estar de vacaciones.

Dado que el dinero es un aspecto que no se puede analizar fácilmente, aprovechamos la presencia de la pandemia mundial para eliminar la posibilidad de irse de vacaciones en períodos de tiempo específicos.

Por tanto, se estudiará la relación entre los ingresos de las personas, las vacaciones y las ausencias temporales en los gimnasios durante los meses de verano, y el objetivo es entender cuál es el motivo principal para poder diseñar las estrategias de marketing y ventas adecuadas para los meses de verano.

Para conseguir este objetivo, se ha analizado un experimento natural de una empresa española, Cet10. La empresa ha facilitado la base de datos de 2 centros deportivos ubicados en diferentes áreas socioeconómicas, y se ha realizado un análisis en profundidad del comportamiento de los asistentes de los respectivos gimnasios durante los meses de verano para concluir si su situación económica influye en sus decisiones durante las vacaciones. La presencia del Covid-19 permite comprobar si realmente existe la relación, ya que se ha tomado como una limitación para las vacaciones de los usuarios y ha supuesto cambios notables tanto en el sector turístico como en el deportivo. Para tener en cuenta el efecto pandemia se ha realizado una comparación entre los años 2019, 2020 y 2021.

CATALÀ

L'assistència al gimnàs experimenta tendències inestables durant els mesos d'estiu. Així doncs, la majoria de centres esportius ofereixen una baixa temporal, que és una quota més econòmica que mantén viva l'afiliació en qüestió tot i que no s'assisteixi al gimnàs durant l'estiu.

Aquest estudi pretén ampliar el coneixement del motiu que impulsa la gent a comprar aquesta tarifa especial, ja que ara per ara no està molt clar.

Es contempen dues possibilitats: consumir-ho per estalviar-se diners gràcies al seu baix preu o el simple fet de ser fora per vacances.

Com que els diners són un aspecte que no es pot analitzar fàcilment, aprofitem la presència de la pandèmia mundial per eliminar la possibilitat de marxar de vacances en períodes de temps concrets.

Per tant, s'estudiarà la relació entre els ingressos de les persones, les vacances i les baixes temporals als gimnasos durant els mesos d'estiu, i l'objectiu és entendre quin és el motiu principal per tal de poder dissenyar les estratègies de màrqueting i vendes adequades per als mesos d'estiu.

Per aconseguir aquest objectiu, s'ha analitzat un experiment natural d'una empresa espanyola, Cet10. L'empresa ha facilitat la base de dades de 2 centres esportius situats en diferents zones socioeconòmiques, i s'ha realitzat una anàlisi en profunditat del comportament dels assistents als respectius gimnasos durant els mesos d'estiu per concloure si la seva situació econòmica influeix en les seves decisions durant les vacances. La presència del Covid-19 ens permet comprovar si la relació existeix realment, ja que s'ha pres com a limitació de les vacances dels usuaris i ha implicat canvis notables tant en el sector turístic com esportiu. Per tenir en compte l'efecte pandèmia, s'ha fet una comparació entre els anys 2019, 2020 i 2021.

TABLE OF CONTENTS

1. Introduction.....	8
2. Theoretical framework	11
2.1. Scientific relevance.....	11
2.2. Personal motivation	14
3. Objectives and hypotheses.....	15
4. Research design and methods	19
4.1. Context.....	19
4.2. Natural experiment	19
4.3. Data collection	25
4.4. Data analysis	26
4.5. Data interpretation	27
5. Analysis	31
5.1. Frequency tables	31
5.2. Difference in differences.....	33
6. Results	34
6.1. Description of the results.....	34
6.2. Interpretation of the results.....	35
7. Conclusions	37
8. Recommendations	38
9. Reference list	39
10. Table of figures, charts and tables.....	41
11. Annex.....	42

1. Introduction

Healthy behaviors have been expanding over the years and physical activity has become more common, even essential, in everyday life (Acland et al., 2010). At present, approximately 183 million people exercise in gyms worldwide, belonging to almost 210.000 fitness centers (The 2019 IHRSA Global Report | IHRSA). Nevertheless, gym attendance tendencies go through a strong seasonal variation throughout the year, and these establishments face high dropout rates (Tavares Amorim Oliveira et al., 2021).

Although people establish gym as a habit, these routines may be broken by external interruptions, such as holiday breaks (Fredslund & Leppin, 2019). Therefore, one of the highlights of this occurrence is the summer time, since there is a considerable alteration on vacation (Fredslund & Leppin, 2019). The entrances in the fitness centers vary a lot as well as the memberships themselves. There are several reasons why subscribers tend to attend less to the sports centers*, but the main one is the fact that people go on holidays in August (Fredslund & Leppin, 2019).

As noted in many studies, there is a large range of travel behaviors, as well as types of vacation (Joseph S. Chen et al., 2009). However, in almost all cases people are not staying in their usual city for a while. This fact brings many subscribers to directly cancelling their memberships during summer. Consequently, there are more probabilities that they do not come back to the centers in September since a new membership implies a new registration to pay. And, in a simple economically significant decision according to the enrollment and attendance, users tend to deviate systematically from the optimal contractual choice enrollment and attendance in a gym (DellaVigna Berkeley et al., 2005).

Moreover, a part from personal and social factors, the economic factor is the one that influences the most the consumer behavior during summer. The income determines the type of vacation in most of the cases of people and, in many cases, it also determines the simple fact of travelling or not (Fratu, 2011).

**Different routines, commitments such as family visits and activities with kids who are on vacation from school (which may prevent parents going to the gym), changes in the physical or social environment which may imply an absence of behaviors such as going to the gym before/after work, passing the gym on the way to work, meeting colleagues to work out with, etc.*

When the income per family is stable or rising, the inclination towards tourism is strong, while the people who has an unstable economic situation or the income is in a decreasing moment, the inclination for going out for vacation is weak (Fratu, 2011).

In this study, we will have into account the differences between the income of people when it comes to vacation.

This information is relevant for fitness centers because potential efforts should be focused specifically at the holiday time periods. Although incentivizing gym attendance creates a short-run habit (Acland et al., 2010), a lot of gyms have preferred to assume the situation and try to deal with it.

Due to the fact mentioned above, several companies have already implemented a temporary membership cancellation for the summer months which guarantee the users to come back in September without any enrolment to pay. Moreover, the monthly fee is much cheaper than the others. In this way, there is a win-to-win situation: users are expected not going to the gym but coming back after the summer months; and they just have to pay a lower fee in order to maintain their membership alive.

Since we were interested in this particular issue and we had the opportunity to gather real data from a Catalan sports company, we talked to one of the bosses about it.

The company, which will be introduced in the *experiment section* of the paper, implemented the temporary membership cancellation thinking about the win-to-win situation explained above. He told us that is working very well because it is an efficient strategy to avoid dropouts during the summer months. The fact of taking it, guarantees the company that users are not going to drop out the gym although not attending in summer.

Nevertheless, they do not have clear the main reason that drives people to buy this temporary membership cancellation. If the motive was its cheap price, it would be very important to know it since efforts for avoiding it should be done. For instance, some incentives should be offered during summer months in order to motivate people to attend the gym instead of paying the temporary membership cancellation. In this way, users would prefer going to the gym paying a little bit more rather than considering this cheaper option just because they are saving money.

On the flip side, the main motive could also be the simple fact of being out of their usual city for vacation (which, in fact, is the one thought by the company applying it). In this case, it would mean that the strategy is working as expected since it is precisely for this market niche.

Therefore, we came up with the following question:

- **When it comes to the temporary membership cancellation, what is more important, money or vacations?**

In other words, we wonder if people are consuming it because they are giving priority to go on vacation and, consequently, they are out of the city and they are not able to go to the gym; or people is consuming it because its economic price and they are giving priority to the money they are saving. It has to be clear that, in the second option, we assume that people are not considering the fact of being or not being out for vacation as a key decision factor.

It is a very complex question to answer, and the only way to do it would be to remove one of the things, either the money or vacations. Since the money is an impossible item to be removed, we take the presence of Covid as an advantage in order to remove vacations and be able to answer the respective question. Therefore, the existence of Covid will allow us to study the relationship.

Taking all of the facts mentioned into consideration, this study aims to expand knowledge of the relationship between people's income level, vacations and temporary membership cancellation in gyms during the summer months.

2. Theoretical framework

2.1. Scientific relevance

Healthy lifestyle follows particular seasonal patterns, which means that physical activity is also affected by the time of the year. For this reason, all of these strong seasonal variations should be studied and understood by the sport centers in order to design efficient and accurate campaigns at the right moment (Madden, 2017).

There are some studies which have been analyzing the reasons of these tendencies, and it should be highlighted that the type of activity is one of the aspects that makes the difference. Obviously, the outdoor activities are more likely to practice in summer, whereas the indoor ones are more frequent during the winter months (Seasonal Variation in Leisure Time Physical Activity: Medicine & Science in Sports & Exercise).

Nevertheless, when it comes to the sport industry, summer months are very unstable due to the changes of people's behavior. Consequently, these establishments face high dropout rates (Tavares Amorim Oliveira et al., 2021).

Looking into different studies which present differences between them, there is a common conclusion which states that there is a very high probability of dropping out of gyms after enrollment. Different factors can be related to this behavior, such as the age of people, their gender or their particular financial situation (Sperandei et al., 2019).

However, what caught our attention the most was that in a study published in RBCE (Revista Brasileira de Ciencias do Esporte), it is established that holiday breaks with long intervals are one of the main factors that weaken the fact of going to the gym (Tavares Amorim Oliveira et al., 2021).

For this reason, as we have already mentioned, some gyms offer a temporary cancellation fee which guarantees the user to come back in September without any enrolment to pay. Although most of the sport centers have applied this strategy as a possible solution for the unstable period of summer, it is still not clear which is the main motive that drives the users to consume it.

Moreover, it is noteworthy that the literature on the conduct of people who attends to gyms during summer is reasonably limited.

For this reason, it is extremely important to study it in details in order to know which is the profile of people in which sport centers should focus on when it comes to summer campaigns. Achieving a proper segmentation of the gym users focused on the drop out factor is essential in order to predict future situations and identify different behaviors based on the likelihood of dropping out (Sperandei et al., 2019).

Therefore, sport centers would be able to optimize their loyalty strategies and, especially, prevent the abandonment of their users during summer months (Emeterio et al., 2020). Furthermore, if this gap is successfully found, it could help service companies of sectors that have the same type of problems during summer.

Once deep research has been done on the field, it is clear that a greater focus and importance should be given to the users' adherence rather than the single fact of engaging people to join gyms. And this is the big challenge for sport establishments.

Thus, determining the motive that drives the users to take the temporary cancellation fee option during summer may provide relevant information to design accurate strategies in order to promote the permanence of membership (Sperandei et al., 2019).

As the CFO of the company which will be analyzed told us, it would be very interesting to find out the main reason of its consumption in order to be able to adapt prices and offers to the real needs of the segment. And here is when Revenue Management has to be taken into account and applied.

Revenue Management is the fact of selling the service to the right customer, at the right time, at the right price, and through the right channel.

For achieving it, a deep research and observation of the customer's behavior should be done to get the maximum benefit optimizing sales and making the right decisions.

Bringing this technique to our specific case, a proper market segmentation should be performed in order to distinguish the users who buy the temporary cancellation fee, and be able to adapt the offer to the right people and cover their needs.

Thus, in order to carry out the proper touristic marketing campaigns of summer, it is necessary to find out which is the type of people interested in this summer temporary cancellation fee that some sport centers offer. Having in mind that the association between consumption and income is significant (Diacon & Maha, 2015), it is not only relevant the different characteristics of the users who consume this type of service, but also the differences of their economic level.

In fact, a study published in the “Journal of Health Economics” made an experiment in order to conclude which of 2 different intervention was the best for increasing the gym attendance: a financial incentive or a social one providing positive feedbacks. After carrying out the experiment, they found that the low-cost intervention had a very significant effect on attending the gym, whereas the social intervention had no perceptible effect (Beatty & Katare, 2018).

For these reasons, the objective of the paper is to determine which is the main reason why people do not go to the gym during July and August: **the fact of going on vacation or the economic incentive.**

It should be clear that the presence of Covid-19 will allow us to observe if there really is a direct relationship with travelling, since it has been taken as a limitation for users' vacations, given that it has implied notable changes in tourism and sports sectors at specific times.

On the contrary, in case that the previous statement cannot be proved, it must be shown that the consumption of the temporary cancellation fee is determined by the importance given to its price (being a cheaper option than the normal rate, people with less income would consume it while people with more income would not even consider it).

It is noteworthy that the literature on this behavior is quite limited (Tavares Amorim Oliveira et al., 2021), and this paper wants to go deeper in the field and verify which are the tendencies on this alternative among members of sport centers.

Therefore, we want to answer the question stated above since being able to design the proper touristic marketing campaigns of summer is crucial for sport establishments.

Furthermore, it is not only important for the sports industry, but it could also be extrapolated to other tourism sectors closely linked to the holiday season.

2.2. Personal motivation

Two of my favorite hobbies are practicing different kind of sports and travelling, and I could not understand my life without them, since they are not only my hobbies but I also consider them essential.

Due to the pandemic situation, I have also been affected for the restrictions applied in both sectors, sport and tourism. For this reason, I immediately thought about doing a research paper which involved both fields.

Thinking how could I combine the fitness industry and the tourism one, I came up with the idea of understanding the behavior of gym attendants' during the summer months. In addition, I realized that finding a casual relationship between the income and the users' decisions was very interesting in order to do better summer campaigns.

Furthermore, I have the opportunity to gather real information of a Spanish company, since my dad is working on the field. Real data collection is usually one of the obstacles when it comes to scientific studies. Thereby, I could not lose the chance of having actual and recent data, and I was sure that I wanted to focus in how sport companies are dealing with the COVID-19 situation during summer months.

Talking to a member of the respective company, I quickly saw the opportunity to use a natural experiment in order to conduct the analysis related to the temporary membership cancellation and either reject or accept my hypotheses. So, what interested me was not only the advantage of using data base directly provided by a real company, but also the fact of analyzing the relationship between income and the people's behavior in summer.

In addition, one of the subjects that caught my attention the most during the double degree in University was "Leisure facilities and equipment", which is perfectly related with the present paper. Moreover, those subjects based on statistics and research were always an interesting challenge for me, and I found them so useful and necessary. Thus, I quickly saw the opportunity to work on it.

For all of the reasons mentioned, I think that focusing in such an interesting topic is not only important for me, but also for the society and the fitness industry.

3. Objectives and hypotheses

As we have exposed in the previous points, the goal of this study is being able to find a causal relationship between income of people and temporary drop-outs in gyms during the summer months.

As previously mentioned, the economic factor is the one that influences the most the consumer behavior during summer. For this reason, we will use the income for determining if people can afford being out of their usual city for a long time or not (Fratu, 2011).

If we establish that people with higher incomes can afford a non-essential good such as travelling, it is understood that they tend to dropout more often in the holiday's months (July and August) because they are outside of their usual city and they cannot attend to the gyms. Taking into account this argument, this behavior is the one that should be covered with the temporary membership cancellation, and it is the reason why this strategy could be interesting for people with more money. Having this option allows this profile of people go on vacation without leaving their gyms, and it becomes a win-to-win situation.

A deep analysis will be carried out comparing the data bases of different gyms of the same Spanish company. In order to do it, two gyms will be observed over the course of 3 summers (2019, 2020, 2021) and, in particular, the personal characteristics of the members that may be associated with this temporary membership cancellation will be explored.

It has to be pointed out that the main variable which will be taken into account in order to distinguish the profiles of users will be their income. Therefore, the comparison will be conducted in economically distinguished gyms in order to conclude if the financial situation of them influences their decisions.

Additionally, the gender and the age of the people will be also analyzed in order to see which kind of people is more likely to buy this service.

We take advantage of the presence of COVID as a limitation for user vacations. Since people could not travel during the summer of 2020, the probability that the user does not unsubscribe from their own gym in the summer months should be higher and the probability that they attended is greater. Thus, if holidays are limited due to Covid, we expect that higher income correlates with less dropouts.

Having in mind the pandemic situation, we will be able to observe if by 2021 the subscribers have continued using the temporary cancellation fee or the new circumstances caused by Covid-19 pandemic have changed this trend.

As explained previously, in higher social areas there is more probability of not going to the centers during summer for the fact that a greater level of income increases the proxy of the standard of living and, consequently, this people is more likely to go on vacation (Diacon & Maha, 2015). In the same way, people with a better economic level have more alternatives to protect their assets after a financial crisis (Dilek et al., 2011), and the poorest people have a more income-related effect.

Therefore, the main fact that is being taken into consideration in order to construct our hypotheses is that having a higher economic condition will bring people to not staying in their usual city during vacation.

Taking all of the previous arguments into account, the hypotheses constructed are the following ones.

Hypothesis 1

Going on vacation effects the decision of consuming the temporary cancellation fee. Consequently, rich people consume it more since they go on holidays, and it implies being out of the usual city.

Hypothesis 2

People with a higher income consumed the temporary cancellation fee less in 2020 than 2019 because of the Covid-19 limitations during summer.

Hypothesis 3

In summer 2021, people with a higher income consumed the temporary cancellation fee more than 2020 since they have more resources to overcome the crises and go again in vacation. On the contrary, people with lower income could not increase the consumption of the temporary cancellation fee since they could not afford vacation after the crises.

First, in 2020 people were not used to have restrictions and, moreover, they were not able to choose what to do during summer. It was directly an imperative not to go on vacation due to the limitations in travelling.

Nevertheless, in 2021, people could choose, so the differences between people's behavior should be relevant regarding their financial situation. Since consuming sport activities is not a priority, it is assumed that rich people can afford going on holidays again, while the poor ones have not enough resources although having the chance to take flights again.

In summer 2021, passenger air traffic in Spain increased by more than 50% compared to 2020 thanks to the lifting of mobility restrictions, especially with other European countries. According to Statista data, the total number of air transport passengers in Spain was 76.1 million in 2020, while in 2021 it was 119.96 million at the end of the year (Tráfico aéreo de pasajeros en España 2012-2021 | Statista, 2022).

In regards to summer months, Volotea (Spanish airline) transported more than 619,000 passengers in Spain on 4,164 flights during the months of June, July and August 2021, 127% more than in 2020. This shows that its number of flights is very similar to the number of flights operated in 2019 (Tráfico aéreo de pasajeros en España 2012-2021 | Statista, 2022).

And, as mentioned above, the main argument is that people with more money are more likely to take vacations as they can afford them; while the poorest, not being able to go on vacation, stay in the sport centers because they cannot go on vacation.

Thus, our main objective is to determine if people with higher incomes tend to take the temporary cancellation fee more during the vacation months due to the fact that they are away from their usual city. Or, in the case that the relationship does not hold, demonstrate that the consumption of the temporary cancellation fee is determined by the importance given to the price of the temporary cancellation fee (being a saving, people with less income would consume it more while people with more income would not even consider it).

The paper is structured as follows.

Firstly, the context is explained in order to understand the analysis that wants to be done. Afterwards, the natural experiment's analysis is defined as well as the methodology to be used.

The next section presents the data of the summer months 2019, 2020 and 2021 once collected and organized.

Subsequently, a careful definition of the data is done in order to have an adequate and correct understanding of it.

When the definition is finished, an extended result analysis is embodied in the paper. Therefore, the 3 hypotheses are rejected or accepted, and a proper inspection of the experiment is done.

Finally, the main argument is restated in the conclusion in order to come to an end and summarize the whole paper.

The specific schedule with the dates can be observed in the Table 9 of the Annex.

4. Research design and methods

4.1. Context

The 31st of December 2019 marked a turning point in the world history, since the first official cases of Covid-19 were recorded in Wuhan, China. Days later, the World Health Organization (WHO) declared the quickly spreading of the virus as a Public Health Emergency. The cases were raising month by month and they were confirmed in countries all over the world due to its high level of contagion. Therefore, on the 11th of March, a pandemic was declared (“About the virus”, 2022). The people infected experienced respiratory illnesses and most of them recovered without medical attention. Nevertheless, some became seriously ill and needed special treatment.

Vaccinations were developed rapidly, and trials demonstrated them to be effective. By September 2021, almost 2 years after the virus was identified, there had been more than 200 million cases and it caused over 4.6 million human deaths (Liu et al., 2020).

Since the pandemic situation was a transcendent fact, we consider the natural experiment’s analysis to be done between summer 2019 and summer 2021.

Covid-19 provides an ideal context in order to conduct the analysis of the natural experiment and test the effect of the crises and the differences between people’s behavior before and after the virus existence.

4.2. Natural experiment

Taking into account the characteristics of our research questions, the quantitative approach is the most suitable one since it is an effective and direct method to have a better understanding of the existing gap.

The company that will be analyzed is CET10 (Col·lectiu d’Esports per a Tothom 10), which is a Catalan business group that manages various sports centers, facilities and services around the world of sports and education. Concretely, it manages more than 10 sports centers (gyms, tennis clubs, paddle and football equipment) and leisure (adventure park and elastic lists) located in Barcelona, Valencia, Madrid and Menorca. Moreover, they work with more than 30 schools and bring sports and educational leisure to more than 4,500 children.



Figure 1. CET10 logo

Comparing the subscribers report of the years 2019 and 2020 of the company, we can easily see a notable difference between them. The general problem is the fact that there has been a decline in the number of members since march 2020, due to the pandemic situation. This situation can be seen in the chart below, and the data has been provided directly from the company CET10. Thereby, taking into account the current situation, it will be the adequate fitness club to analyze.

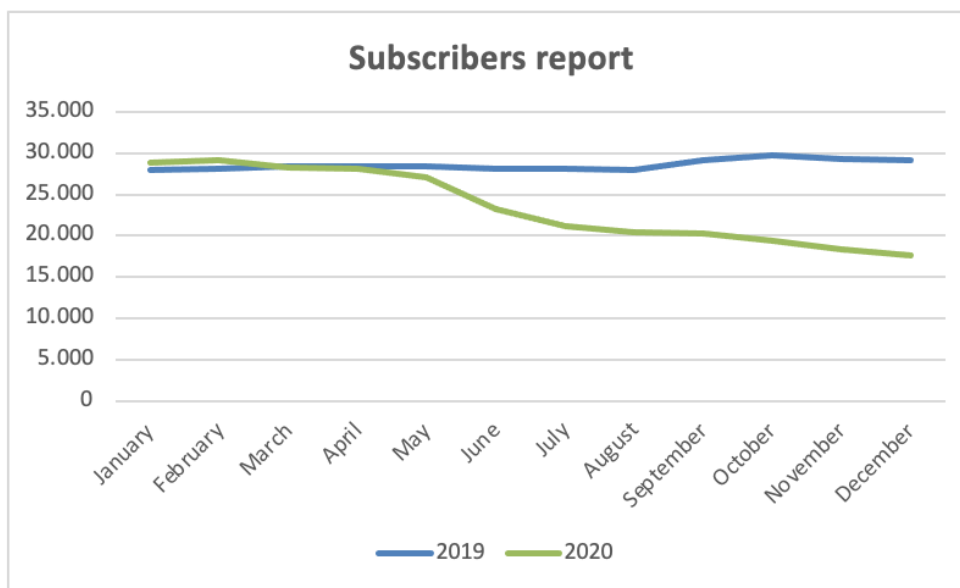


Figure 2. Decline of subscribers in CET10 gyms

As mentioned above, gyms have to face the summer situation since the general tendency is having more dropouts. Therefore, Cet10 company has also implemented a strategy for balancing this seasonal variation: a temporary cancellation during summer months. It consists on paying a specific amount of money for maintenance in order to guarantee the customers their membership although not attending. In this way, they avoid paying their usual fee since they are not attending to the center.

The gyms which will be part of the analysis have been chosen having in mind their location. Taking this into account, we will analyze 2 sports centers in socioeconomically different areas of Valencia as a model for each economic level.

Center 1



Name: **Malilla**
City: Valencia
Average fee: **22,02€**

Figure 3. Malilla logo

This sports center has more than 6,000 m² of sports facilities in the Valencian neighborhood of Malilla. In this gym there is plenty of things to do: swimming, guided classes, exercise in the fitness room; physiotherapy sessions and playing paddle and tennis.

Additionally, with the card that identifies people as members and thanks to the collaboration of different entities, all the subscribers are able to enjoy a series of advantages and discounts related to sport.



Figure 4. Picture of Malilla center

The gym has the following facilities:

- Indoor fitness and weight room in large rooms with state-of-the-art machines.
 - More than 1.200 monthly directed activities: Pilates, Yoga, Zumba, Body Pump, Body Combat, Indoor Cycle and many more.
 - Large aquatic area with two swimming pools with 8 lanes and a small shallow one.
- There is also a sauna and steam bath area.



Figure 5. Picture of Malilla indoor's swimming pool

- 4 paddle courts.



Figure 6. Picture of Malilla outdoor's paddle courts

- Indoor cycling and running with natural light which has more than 50 bikes.

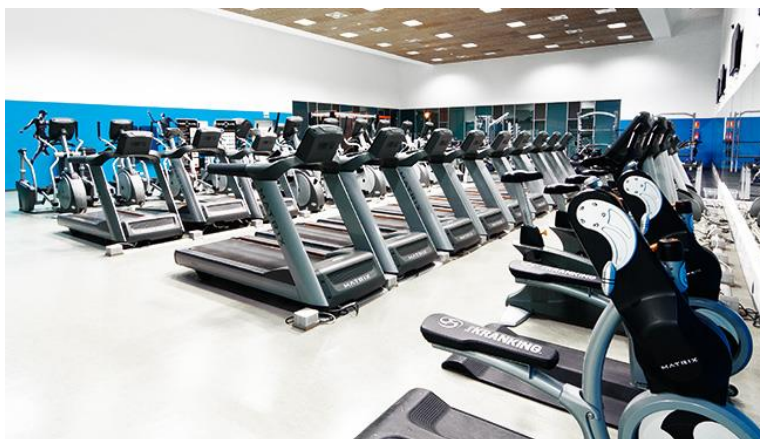


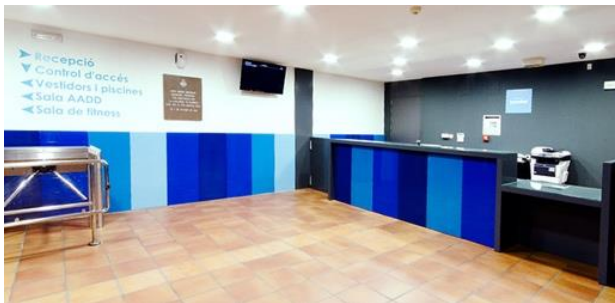
Figure 7. Picture of Malilla's cycling and running rooms

Center 2



Name: **Torrefiel**
City: Valencia
Average fee: **14,96€**

Figure 8. Torrefiel logo



In this health center there are more than 3,000 m2 of sports facilities. Located in the Valencian neighborhood of Torrefiel, it has a large space dedicated to fitness and wellness with extensive facilities with natural light.

Figure 9. Picture of Torrefiel center

Specifically, it has the following facilities:

- A large aquatic area with two swimming pools, one large (25 meters long and with 6 lanes) and another small one, aimed at children and users who carry out guided activities.



Figure 10. Picture of Torrefiel indoor's swimming pool

- Fitness room and free weights with state-of-the-art Power Plate machines.



Figure 11. Picture of Torrefiel fitness room

As it can be observed above, the average fee of both centers reveals the differences of the respective zones' financial aspect. In this way, Malilla is the center with a higher socioeconomic level (22,02€ average fee), followed by Torrefiel (14,96€ average fee). Although 7,06€ could not seem a lot, it really makes a difference when it comes to an average fee. Specifically, the average fee of Malilla is 47,19% greater than the Torrefiel one, which means almost the half of it.

Moreover, in order to do a proper comparison, both centers are located in the same city, Valencia. Thus, it can be proved that both have notable economic differences.

The natural experiment that we will use has the following characteristics.

Location of the experiment's analysis	Valencia
Analysis' date	July and August of 2019, 2020 and 2021
Group 1 (Malilla)	3.464 people
Group 2 (Torrefiel)	1.991 people
Genre	2.298 women and 3.157 men
Age	From 18 to 84 years

Table 1. Description of the natural experiment

Conducting this study, not only will we be able to study the effect that Covid has had according to the different fees, but also to carry out a comparative study between the gyms in Valencia, as we have “nominate” each one according to the social level of the area.

Therefore, we will be able to compare both groups and to accept or reject the hypotheses which state that rich people are more willing to consume the temporary cancellation fee during summer because of their absence in the city.

It will be approached like this because a natural experiment is the best way when it comes to measuring causality and establishing the cause-effect. Thereby, this tool is suitable to address this research question.

In order to achieve the main objectives of this study, different tools have to be used to collect and analyse the empirical data.

4.3. Data collection

With the aim of accomplishing the research question, a quantitative method will be applied in order to collect the data.

As it has been explained, the company Cet10 directly provided the data. In order to have the adequate one, different meetings with the company responsible of Cet10 data base were done. At first, we presented the objectives of the paper to contextualize. In this way, he was able to help us and be as efficient as possible. In this case, we needed the database of Torrefiel and Malilla centres during summer months (July and August).

Once we had it, we had to organize it, since the only thing that we wanted was focusing on the temporary fee cancellation. Therefore, we had to invest time sorting the information given.

First of all, a document Excel is the most visual and efficient way to dump the data collected. It is the suitable tool since charts can be done easily and the results can be shown in columns.

In the table below, the different columns which makes up the Excel sheet are defined.

Columns	Variable	Variable exposure
Column 1	Gym	1 = Malilla / 0 = Torrefiel
Column 2	People	ID of the person
Column 3	Age	Age of the person
Column 4	Gender	1 = Female / 0 = Male
Column 5	Date	Year (2019, 2020 or 2021)
Column 6	Temporary cancellation fee	0 = no / 1 = yes

Table 2. Description of the Excel document

It should be highlighted that the extraneous variables will be the gender and the age of the people, since we cannot control them but will be also taken into account in order to see which kind of people is more likely to buy this service.

On the other hand, the temporary cancellation fee will be the dependent variable that will reveal the situation of both centers, so it is the key of the study.

For all the reasons mentioned, a document screening analysis is going to be conducted, since this tool is the sourcing numerical data from reports or counting occurrences.

4.4. Data analysis

Once the data is collected, it is time to run a statistical method of analysis. For the purpose of this study, a *multiple regression* has to be applied.

It is a statistical technique that pretends to analyze the relationship between a single dependent variable and several independent variables. In this model, the independent variables (whose values are known) are used to predict the value of the single dependent value.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_i X_i$$

Y is the dependent variable; **X** is the explanatory variable; β_0 is the intercept; $\beta_1, \beta_2, \beta_3 \dots$ are the regression coefficients for the explanatory variables; and $X_1, X_2 \dots$ are the independent variables.

In our case, “Y” will be the *temporary cancellation fee*, and the independent variables will be the following ones:

- *Gym (dichotomic variable): 1 = Malilla / 0 = Torreñiel*
- *Age (distributed by different groups to be defined)*
- *Gender (dichotomic variable): 0 = Male / 1 = Female*

The dependent variable of the study is the *temporary cancellation fee*, and it represents if the person had this specific fee or not. It takes on two values, 0 denoting the answer “no” and 1 denoting the answer “yes”.

Since we want to observe the same aspects before and after Covid-19, the regression model will be done 3 times, the first one taking the data base of preCovid (2019), the second one taking the data base in the middle of Covid (2020), and the third one with the 2021 summer data base.

4.5. Data interpretation

Before starting the main analysis, a general organization and interpretation of the data will be done in order to contextualize both centers and do a comparison between them.

In the following tables, the number of temporary cancellation fees (July and August) can be observed over the years 2019, 2020 and 2021.

In addition, the total of subscribers is needed in order to compare both centers and see what represents out of the total. Moreover, the total of subscribers which should be taken is the one of the previous month, June (just before summer months).

With the aim of analyzing the data properly and being able to compare both centers, the absolute numbers have to be divided. Therefore, the percentages shown in the 4th column of the following tables are the ones which will be essential to determine the hypotheses.

Malilla

Year	Number of temporary cancellation fees (July-August)	Total June subscribers	Percentage of temporary cancellation fees
2019	884	4645	19,03%
2020	475	4313	11,01%
2021	258	2256	11,44%

Table 3. Summary of Malilla data base

As it can be seen, the tendency of the subscribers is clear in Malilla, since it is decreasing year by year. Concretely, the decrease has been a 7,15% from 2019 to 2020 ($4313 / 4645 = 0,928525296 \rightarrow 92,85\%$) and 47,70% from 2020 to 2021 ($2256 / 4313 = 0,523069789 \rightarrow 52,30\%$).

Torrefiel

Year	Number of temporary cancellation fees (July-August)	Total June subscribers	Percentage of temporary cancellation fees
2019	224	1885	11,88%
2020	150	1577	9,51%
2021	64	925	6,92%

Table 4. Summary of Torrefiel data base

As it can also be seen, the tendency of the subscribers is also clear in Torrefiel, since it is decreasing year by year. In the same way as it has been done in Malilla data, a division of the absolute numbers has to be done in order to analyze the decrease with percentage. Concretely, the decrease has been a 16,44% from 2019 to 2020 ($1577 / 1885 = 0,836604775 \rightarrow 83,66\%$) and 41,35% from 2020 to 2021 ($925 / 1577 = 0,586556753 \rightarrow 58,65\%$).

If we focus in the 4th column, we can conclude that, firstly, as we expected in the hypotheses, the people living in higher socioeconomic area (Malilla) is consuming the temporary cancellation fee more. This statement can be observed in the percentages of both centers.

In all the years analyzed, the behavior is the same. Therefore, we could already conclude that the temporary cancellation fee during summer months is more used in Malilla.

Secondly, as expected in the hypotheses, the center with a higher economic level (Malilla) consumed the temporary cancellation fee less in 2020 than 2019.

Moreover, in summer 2021, the center with a higher economic level (Malilla) consumed the temporary cancellation fee more than 2020 since we assume they have more resources to overcome the crises and go again in vacation.

In order to materialize the data and visualize it better, we have created a chart. Thereby, we can observe the clear effect that Covid had in the consumption of the temporary cancellation fee.

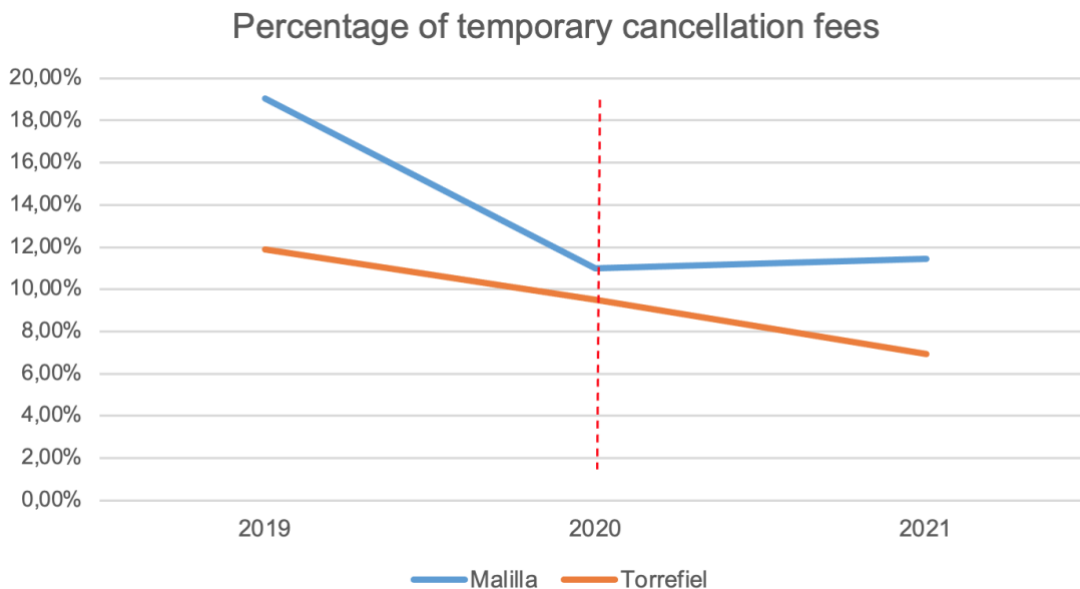


Chart 1. The effect of Covid 19 in the consumption of the temporary cancellation fee

Analyzing the chart, we can see that the pandemic crisis was differently faced each center. In 2021, the richer center (Malilla) shows a change of behavior and people are again consuming the service, while in Torrefiel there is still a decreasing tendency.

As we could already conclude with the tables above, the chart shows that the pandemic is what changed the dynamics of the consumption. In other words, the fact of going on vacation seems to be the reason explaining such consumption.

Therefore, we could already conclude that, assuming that people with more money are travelling more, the socioeconomic level affects the decision of consuming the temporary cancellation fee.

Nevertheless, it has to be pointed out that a deeper and more specific analysis will be done in the next sections.

5. Analysis

First of all, it has to be said that the whole statistical analysis has been done through Stata, which is a statistical software for studying data bases.

5.1. Frequency tables

Frequency tables are used to know the number of times an event or a specific value occurs. In our case, it was the first thing we did in order to have a list of the different behaviors regarding the Temporary Cancellation Fee.

It should be clear that the variables that we are relating are the “Year” and the “Temporary Cancellation Fee”; and our null hypothesis is that these variables are independents, while our alternative hypothesis is that they are not independents, so they are linked.

As we could see when doing different frequency tables, “Pr” is always lower than 5%, which means that we reject our hypothesis. Thus, we can affirm that the variables “Temporary Cancellation Fee” and “Year” are related. However, we should go deeper in order to see this relation in more details.

In the following tables, we are able to see the total number of Temporary Cancellation Fees taken during summer in both centers. The information is also given by percentages in order to compare the years independently of the total number of people of each year.

-> YEAR = 2019

TEMPORARY CANCELLATIO N FEE	Freq.	Percent	Cum.
NO	4,032	88.54	88.54
YES	522	11.46	100.00
Total	4,554	100.00	

Table 5. TCF frequency table of 2019

-> YEAR = 2020

TEMPORARY CANCELLATIO N FEE	Freq.	Percent	Cum.
NO	3,872	93.14	93.14
YES	285	6.86	100.00
Total	4,157	100.00	

Table 6. TCF frequency table of 2020

-> YEAR = 2021

TEMPORARY CANCELLATIO N FEE	Freq.	Percent	Cum.
NO	3,439	92.60	92.60
YES	275	7.40	100.00
Total	3,714	100.00	

Table 7. TCF frequency table of 2021

As shown in the tables above, the percentage of “YES” decreased almost until the half from summer 2019 to summer 2020 (11,46% and 6,86% respectively). This tendency is clearly representing the effect of COVID in the second summer, since people could not go on vacation due to the worldwide pandemic restrictions.

In regards to 2021, the percentage of Temporary Cancellation Fees taken is slightly greater than the one in 2020, 7,40%. Therefore, we can observe a big change on the behavior of the people from the first to the second year, and a shy change from the second to the third one.

However, it should be mentioned that we are not taking into account the differences between the centers (Malilla and Torrefiel) and, in this study, it is an essential distinction to do. For this reason, as we did on the chart above, we will separately analyze both centers on the next analysis.

5.2. Difference in differences

The statistical model that will be used is the DID, which means Difference-In-Difference. It is used to calculate the result of a treatment through dependent and independent variables; and it takes into account the time in order to analyze the different changes that a particular issue causes in different groups.

We consider that this type of method is the adequate since it is used to assess the effect of a treatment measured over time. In our case, the behavior of the gym's users according to the temporary cancellation fee was evaluated each year from 2019 to 2021, and a new treatment was implemented in 2020. In this case, the treatment would be the pandemic. As previously seen in the chart 1 "Percentage of temporary cancellation fees", there was a different behavior of both gym's users when COVID arrived (2020).

Moreover, the difference-in-difference technique will allow us to compare two differences: the differences on the user's behavior before and after COVID-19, which is our treatment; and the difference between those differences in both groups, Malilla and Torrefiel. Thanks to it, we will be able to see not only the effect that the pandemic had on the temporary cancellation fee but also the behavior's differences between rich and poor people.

It should be also mentioned that this method uses panel data in order to calculate the differences (multi-dimensional data including measurements over time in which the observations are for the same subjects).

6. Results

It has to be said that all the following results have been done through Stata, and we have 16.928 observations in total.

6.1. Description of the results

We started the DID analysis comparing the years 2019 and 2020, and we obtained the following results.

TCF	Coefficient	Probability value
CENTER	0,06	***
AGE	0,02	***
GENDER	0,05	***
delta1	-0,04	***
cons	-0,04	***

Figure 12. Summary of Difference in Difference results

First of all, it has to be said that all the results shown are statistically significant since the P-values are less than 5%, specifically 0,000. The significance is represented by the following symbols: *** when $p < 0.01$; ** when $p < 0.05$; * when $p < 0.1$; nothing when $p > 0.1$.

The result that matters the most to our analysis is the variable “delta1”, since it means that the fact of being richer implies a lower possibility of taking the Temporary Cancellation Fee in 2019 and 2020 rather than being poorer. In this case, the coefficient is -4,49%, and it means that the relationship between the temporary cancellation fee and the people of Malilla gym is negative. In other words, in summer 2020, there was a 4% less of membership cancellations of richer people compared to the poor ones.

Moreover, if we observe the variable “GENDER”, we can conclude that the fact of being a woman implies a greater possibility of taking the temporary cancellation fee. We can affirm this because the coefficient is slightly positive (0,05 points), and the fact of being a Female was represented by a 1.

In the same way, regarding the age of people, we can observe that the fact of being older implies a greater possibility of taking the temporary cancellation fee.

Generally speaking, the center Malilla took more the Temporary Cancellation Fee. Therefore, as we expected, we can affirm that the fact of having more money implies a greater possibility of going on vacation.

Once the analysis has been done for the years 2019 and 2020, it was time to study the summer of 2021. However, the results were not statistically significant. Therefore, we have omitted them in this analysis.

6.2. Interpretation of the results

In order to interpretate the previous results, we should first have a look into our hypotheses.

Hypothesis 1

In the first hypothesis, we established that going on vacation affected the decision of consuming the temporary fee.

Now, it can be fully accepted since we can corroborate that rich people consume the Temporary Cancellation Fee more than the poor ones. Therefore, we can affirm that going on vacation affects the decision of consuming the temporary cancellation fee.

Hypothesis 2

In the second one, we said that people with a higher income consumed the temporary cancellation fee less in 2020 than 2019 because of the Covid limitations during summer.

After having done our study, it can be also accepted since in our results we could clearly see that the users of Malilla consumed the Temporary Cancellation Fee less than the poor ones. Moreover, if we observe the absolute numbers of the richer center, they consumed the fee less in 2020 than in 2019.

Hypothesis 3

Finally, the third hypothesis referred to the summer 2021, and we manifested that people with a higher income would consume the temporary cancellation fee more than 2020 since they have more resources to overcome the crises and go again in vacation. On the contrary, people with lower income could not increase the consumption of the temporary cancellation fee since they could not afford vacation after the crises.

In this case, it cannot be accepted. Although we could first conclude that, in 2021, people with a higher income consumed the temporary cancellation fee more than 2020 when we created the chart with the data bases of both centers, we could not corroborate it in our DID analysis.

For this reason, although we know for sure that going on vacation is the fact that influences taking the special fee or not, we cannot establish that rich people had more resources to overcome the crises and go again in vacation in 2021 and; on the contrary, people with lower income could not increase the consumption of the temporary cancellation fee since they could not afford vacation after the crises.

7. Conclusions

The main purpose of this paper was to determine which is the main reason that drives people not going to the gym during July and August: the fact of going on vacation or the economic incentive.

Throughout the whole study results, we can clearly conclude that vacation is the reason why people is not attending the sport centers during summer months, and the socioeconomic level influences the fact of consuming the temporary cancellation fee.

We were taking the presence of the Covid-19 pandemic as an advantage in order to remove vacations and be able to answer the respective question. Therefore, the existence of Covid enabled us to study the relationship between the Temporary Cancellation Fee and vacation, since the restrictions of 2020 were applied worldwide. Once the results were accurately analyzed, we can assure that the pandemic was what changed the dynamics of this consumption. Furthermore, we can now affirm that the pandemic crisis was differently faced in both analyzed centers.

However, in regards to the gym attendants' behavior after the restrictions of 2020, we cannot accept or reject our hypothesis since our main analysis results are not relevant enough and we have to omit them. Therefore, although the richer center (Malilla) showed a change of behavior and people were again consuming the service while in Torrefiel there was still a decreasing tendency; we cannot explain this conduct deeper and accurately.

Once a deep study has been carried out, we can clearly confirm that the Temporary Cancellation Fee consumption during the summer months depends on the fact of being out of the city. In other words, the fact of going on vacation is the reason for consuming it.

Thereby, we came up with the following answer: **when it comes to the temporary membership cancellation, vacations are more important than money.**

In conclusion, people are consuming the Temporary Cancellation Fee because they are giving priority to go on vacation and, consequently, they are out of the city and are not able to go to the gym.

Looking back to our first objectives, it should be clear that this study was done in order to be able to design the proper marketing and sales strategies for summer months. In this case, then, the strategy applied by the company analyzed is working as expected since it is precisely thought for this market niche.

8. Recommendations

Looking back to our main goal, we were focusing on the concept Revenue Management in order to be able to adapt prices and offers to the real needs of the segment.

In this case, the study has shown that vacations are the main reason for not attending the sports centers during summer. Therefore, we make the following suggestions.

Firstly, the sport centers should be carefully customized in order to sell the service to the right customer, at the right time, at the right price, and through the right channel.

Thus, in order to carry out the proper touristic marketing campaigns of summer, it is necessary to find out which is the profile of the people interested in this summer temporary cancellation fee that some sport centers offer. Having in mind that the association between consumption and income is significant, it is not only relevant the different characteristics of the users who consume this type of service, but also the differences of their economic level. Therefore, if the center is located in a high socioeconomic area, the temporary cancellation fee could be offered but the price could be higher, since they are not precisely consuming it for its cheap price. On the other hand, another option could be the fact of directly not offering the option expecting them to go abroad for vacation without dropping out of the gym.

Moreover, each center should do a deep research and observation of the customer's behavior to get the maximum benefit optimizing sales and making the right decisions. A suggestion would be to offer some incentives according to different activities during summer months in order to motivate people to attend the gym instead of going out for vacation.

Finally, another suggestion would be to hire a consultancy service in order to provide and present expertise or strategic advice for consideration and decision-making.

In other words, a professional and specialized service that could perform a proper market segmentation in order to distinguish the users who buy the temporary cancellation fee, and be able to adapt the offer to the right people and cover their needs.

9. Reference list

- Acland, D., Levy, M., DellaVigna, S., Charness, G., Gneezy, U., Hua Ho, T., Kariv, S., Koszegi, B., Malmendier, U., Mas, A., & Rabin, M. (2010). *Habit Formation and Naiveté in Gym Attendance: Evidence from a Field Experiment* *.
- Beatty, T. K. M., & Katare, B. (2018). Low-cost approaches to increasing gym attendance. *Journal of Health Economics*, 61, 63–76. <https://doi.org/10.1016/J.JHEALECO.2018.05.006>
- DellaVigna Berkeley, S. U., Malmendier, U., Baker, G., Croson, R., Dehejia, R., Gilbert, R., Hart, O., Hoxby, C., Paserman, D., Rangel, A., Saez, E., Shleifer, A., Tobacman, J., Wertenbroch, K., Wolfers, J., particular Edward Glaeser, in, Katz, L., & Laibson, D. (2005). *Paying Not to Go to the Gym* *.
- Diacon, P.-E., & Maha, L.-G. (2015). The Relationship between Income, Consumption and GDP: A Time Series, Cross-Country Analysis. *Procedia Economics and Finance*, 23, 1535–1543. [https://doi.org/10.1016/S2212-5671\(15\)00374-3](https://doi.org/10.1016/S2212-5671(15)00374-3)
- Dilek, S., Üniversitesi, K., & Çolakoğlu, N. (2011). *The Relationship Between Income and Consumption After Global Financial Crisis Market analysis View project The Relationship Between Income and Consumption After Global Financial Crisis*. 10(12), 1221–1230. <https://www.researchgate.net/publication/313117432>
- Emeterio, I. C. S., García-Unanue, J., Iglesias-Soler, E., Gallardo, L., & Felipe, J. L. (2020). Drop out prediction in sport centres. Definition of models and reproducibility (Predicción de bajas de clients en centros deportivos. Definición de modelos y reproducibilidad). *Retos*, 37(9), 54–61. <https://doi.org/10.47197/RETOS.V37I37.71423>
- Fratu, D. (2011). FACTORS OF INFLUENCE AND CHANGES IN THE TOURISM CONSUMER BEHAVIOUR. *Bulletin of the Transilvania University of Braşov* *, 4(53).
- Fredslund, E. K., & Leppin, A. (2019). Can the Easter break induce a long-term break of exercise routines? An analysis of Danish gym data using a regression discontinuity design. *BMJ Open*, 9, 24043. <https://doi.org/10.1136/bmjopen-2018-024043>
- Joseph S. Chen, Yu-Chih Huang, & Jen-Son Cheng. (2009). VACATION LIFESTYLE AND TRAVEL BEHAVIORS. *Journal of Travel & Tourism Marketing*, 5,6-494,506.
- Liu, Y. C., Kuo, R. L., & Shih, S. R. (2020). COVID-19: The first documented coronavirus pandemic in history. *Biomedical Journal*, 43(4), 328–333. <https://doi.org/10.1016/J.BJ.2020.04.007>
- Madden, K. M. (2017). The Seasonal Periodicity of Healthy Contemplations About Exercise and Weight Loss: Ecological Correlational Study. *JMIR Public Health Surveill*

2017;3(4):E92 <https://Publichealth.Jmir.Org/2017/4/E92>, 3(4), e7794.
<https://doi.org/10.2196/PUBLICHEALTH.7794>

Seasonal variation in leisure time physical activity : Medicine & Science in Sports & Exercise. (n.d.). Retrieved May 5, 2022, from https://journals.lww.com/acsm-msse/Abstract/1993/06000/Seasonal_variation_in_leisure_time_physical.17.aspx

Sperandei, S., Carvalho Vieira, M., & Reis, A. C. (2019). Adherence to Physical Activity in an Unsupervised Setting: The Case of Lapse and Return to Practice in a Brazilian Fitness Center. *ATHENS JOURNAL OF SPORTS*, 6(2), 95–108.
<https://doi.org/10.30958/AJSPO.6-2-3>

Tavares Amorim Oliveira, G., Camilo Pereira, L., Linhares, M., Reniê Fernandes da Silva, L., Ricardo Silva, P., & Mohamed Elsangedy, H. (2021). Dropout predictors at gyms: a retrospective study. *Revista Brasileira de Ciências Do Esporte.*
<https://doi.org/10.1590/rbce.43.e014220>

The 2019 IHRSA Global Report | IHRSA. (n.d.). Retrieved December 5, 2021, from <https://www.ihrsa.org/publications/the-2019-ihrsa-global-report/>

10. Table of figures, charts and tables

Figure 1. CET10 logo	19
Figure 2. Decline of subscribers in CET10 gyms.....	20
Figure 3. Malilla logo	21
Figure 4. Picture of Malilla center.....	21
Figure 5. Picture of Malilla indoor's swimming pool.....	21
Figure 6. Picture of Malilla outdoor's paddle courts.....	22
Figure 7. Picture of Malilla's cycling and running rooms	22
Figure 8. Torrefiel logo	23
Figure 9. Picture of Torrefiel center.....	23
Figure 10. Picture of Torrefiel indoor's swimming pool.....	23
Figure 11. Picture of Torrefiel fitness room.....	24
Figure 12. Summary of Difference in Difference results	34
Chart 1. The effect of Covid 19 in the consumption of the temporary cancellation fee	29
Table 1. Description of the natural experiment	24
Table 2. Description of the Excel document	26
Table 3. Summary of Malilla data base.....	28
Table 4. Summary of Torrefiel data base.....	28
Table 5. TCF frequency table of 2019	31
Table 6. TCF frequency table of 2020	32
Table 7. TCF frequency table of 2021	32
Table 8. Schedule of the thesis work	42

11. Annex

Table 8. Schedule of the thesis work

TASK	November	December	January	February	March	April	May	June
Meeting with tutor								
Literature review								
Structure of the thesis								
Theoretical framework								
Methodology								
Scientific relevance								
Research questions								
Delivery of report 1		30						
Methodology extension								
Data collection								
Data organisation								
Delivery of intermediate report to the tutor					2			
Data analysis								
Interpretation of the data								
Hypothesis explanation								
Final buffer delivery					16			
Presentation preparation								
Monitoring court					23,24,25			
Conclusions								
Delivery of final report to the tutor								6
Respective changes								
Final review								
Fine memory delivery								20
Presentation preparation								
Final courts								28,29,30