

Mobile Ticketing Implementation in German Professional Soccer

Written Assignment

submitted to

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List of Abbreviations

| | |
|-------------|---|
| COVID-19 | Coronavirus disease 2019 |
| E-ticketing | electronic ticketing |
| ET | electronic ticketing |
| FCB | Fußball-Club Bayern München |
| FIFA | International Federation of Association Football |
| M-ticketing | mobile ticketing |
| PESTLE | Political, Economic, Socio-Cultural, Technological, Legal, Environmental |
| SWOT | Strengths, Weaknesses, Opportunities, Threats |
| UEFA | Union of European Football Associations |

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1 Introduction

1.1 Problem Statement

The history of sports has proven to consistently provide a tradition that brings fans together. Regardless of whether one is referring to team sports or individual sports, it is often the attendance that is perceived to bring the true excitement and emotion to competitions. This is viewed with soccer especially to major competitions such as the FIFA World Cup or the UEFA European Championship. Fan support is not only an important factor for those involved in the financial departments of soccer clubs and international teams, but the players also often show their appreciation by dedicating their special moments, such as important goals, by celebrating with the crowd.¹

According to Robert Kidd from Forbes, “German clubs attract the highest average attendances in world soccer.”² The German Bundesliga has consistently posted complete season attendance figures of over 11 million since the 2005/2006 season.³ Some of the leagues soccer clubs are making a statement with their attendance figures as Borussia Dortmund has averaged 80,000 visitors per match to Signal Iduna Park from 2013-2018.⁴ As a result, as spectators are willing to fill stadiums at all costs, it is an ideal league to test and implement new practices with regards to attendance.

The implementation of m-ticketing (mobile ticketing) is an example of an up-and-coming megatrend. With the societal role of mobile devices increasing significantly⁵, tapping into optimizing the match-day experience is something that soccer clubs undoubtedly consider. Traditional ticketing has long been available, e-ticketing (electronic ticketing) appears to be the standard and m-ticketing has potential to be the future. However, implementation is still relatively underdeveloped and needs to be further investigated.

¹ Cf. Bleacher Report 2008.

² Kidd 2019.

³ See Appendix 7.1, p.16.

⁴ Cf. Kinnersley 2019.

⁵ Cf. Blue Corona 2019.

Many fear changes, but change often brings out opportunity.⁶ Hence, implementing m-ticketing into the German Bundesliga must be carefully analyzed. Although there are many statistical and analytical advantages for a soccer club to allow entry into soccer stadiums to m-ticketing on its visitors and supporters, it must also be considered that there are many factors that lead supporters to be unwilling to use a mobile phone for entry. This leads to an important question of whether or not m-ticketing is a viable ticketing solution that can be implemented for all professional German soccer teams in the future.

1.2 Limitation and Approach

This research paper is designed to analyze the advantage of all German professional soccer clubs to implement m-ticketing usage on its visitors and supporters. To better understand this topic, an overview of sports ticketing management is relayed. After providing the background of sports ticketing, the history, development, and definition of sports ticketing gives an overall framework. Following this, an analysis of m-ticketing in Germany is given by providing the definition of m-ticketing and demonstrating a comparison with e-ticketing and traditional ticketing. Subsequent to the sports management analysis, a methodology is initiated defining the research approach and the approach used within this research paper to analyze a completed survey on German soccer and mobile ticketing. The results of the empirical data are then described before reviewing the application of these results and a conclusion.

Because this research and survey is focused on one specific league, the German Bundesliga, some limitations exist. The information is presented in the context of Germany because the country has a history of tradition within sports and the market has potential to portray whether or not m-ticketing implementation is able to work. Also, as the majority of the country's sports fans are likely to agree on which is the main sport, its focus is, therefore, on soccer.

⁶ Cf. Farber 2020.

2 Sports Ticketing Management

2.1 Sports Ticketing Background

2.1.1 History and Development of Ticketing

In order to have a better understanding of sports ticketing, a cursory understanding of general ticketing history is necessary. However, as this research is focused on sports ticketing, many events that are deemed unnecessary within the scope of relevance and understanding are omitted. "The term 'ticket' originated way back in the 16th century by being associated with a small note, a piece of cardboard or paper that gives its holder some sort of privilege used in specific scenarios."⁷ Ticketing, as it is portrayed today, is a result of the development of a series of changes put in place to create a system that is efficient for the customer and the organization. As the common use of ticketing is merely a mean of accessing a service or event, the idea behind it can be taken for granted.

"No one knows for sure when the first ticket in history was issued. It is logical to assume that ticketing was introduced as a result of the effects of supply and demand."⁸ Several sources have agreed that the first documented ticket usage for events was mainly for theaters in Ancient Greece and Rome. "Originally, small disks of clay were used to stamp seating details and were used as tickets. The small disks were about the size of a penny."⁹

Some of the most notable advances in ticketing have been a result of developments taking place during the last century. It was not until the 1900s when paper tickets were becoming the norm. The added fact that sports popularity was rising led to an increase of demand for sports viewership.¹⁰ The United States may have been the leaders for this increase and there are several key factors. In 1932, worker's rights laws were enacted, and these gave working United States citizens higher disposable incomes and leisure time to participate in sports and attend sporting events. In addition, technological advances and the further development of mass media (first the television

⁷ Sheth 2017.

⁸ Reese/Thomas 2020.

⁹ The Old Vic 2018.

¹⁰ Cf. Shoultes 2018.

and later the internet) contributed to the appeal of competitive sports spectators and this continues to influence sports figures at present.¹¹

In addition, with the development of the home printer, opportunities around the globe were uncovered.¹² In the 1990s, the first printable tickets started to appear. Several airline companies, such as United Airlines, took advantage of the recent development at the time.¹³ Instead of physically purchasing a ticket on-site or at one of its partners, a consumer could now print tickets from a personal computer at home. At the time, there was doubt that customers would be adept to using printed tickets as traditional tickets were the standard. However, after implementation, “it took only four years to reach 100% ET (Electronic Ticketing)”.¹⁴ The transition and ease of access led to higher sales and higher satisfaction from users and this continues to be the primary form of ticketing today.

2.1.2 Sports Ticketing in the Bundesliga

Because the German Bundesliga has the highest attendance figures in world soccer¹⁵, it is evident that in order to maintain such volumes, fan experience is a priority. In order to analyze the benefits that ticketing have on the entire league, match-day experience must be critically viewed as the most important indicator of attendance success. According to Financial Football News, “matchday revenue consists of ticket sales, hospitality and food/beverage sales on matchdays.”¹⁶ The latter two options would not be possible without the sale of stadium tickets.

Soccer club’s such as Bayern Munich (FCB) are embracing the opportunity of offering flexible options to its visitors and supporters. Traditional ticketing for FCB still exists in the form of a mailed ticket. In this case, the requestor must give the appropriate information, such as card number and address, in order to receive the ticket with sufficient time to kick-off. Additionally, electronic tickets can be purchased online and printed at home while mobile ticket are instantly available on one’s mobile device after

¹¹ Cf. DeMichele 2016.

¹² Cf. MASHABLE BRAND X FOR EPSON

¹³ Cf. Wade 1997.

¹⁴ IATA 2008.

¹⁵ Cf. Kidd 2019.

¹⁶ Financial Football News 2018.

purchase. Even though these are all valid methods of obtaining a ticket at FCB, the former two options are understandably more common.¹⁷

Although soccer clubs are becoming more creative with their methods of ticketing, match-day revenue for the German Bundesliga as a whole, however, is increasingly making up a smaller proportion of total revenue in the league. This is a result of the fact that revenue from advertising, media receipts, and transfers have increased substantially.¹⁸ Nevertheless, from a broad scope it would be disappointing for all stakeholders to see match-day revenue numbers diminish.

One recent worldwide effect that questions future attendance figures for the German Bundesliga is that of the COVID-19 pandemic. As there is currently no remedy for the virus, activity of sports competitions and stadiums around the globe are being temporarily ceased in order to prevent the death toll from rising.¹⁹ Although there is speculation that German soccer could return to action as early as May 2020, the scope of match attendance would be heavily impacted as a 300-person limit would be placed on the amount of participants who are permitted to enter the stadium.²⁰ As a result, the future of ticketing in the German Bundesliga is still open.

2.2 Various Ticketing in Germany

2.2.1 Ticketing Definitions

The usage of m-ticketing is currently an option for many events and services but is not yet the norm. According to Georges-Alexandre Hanin of Mobilosoft, m-ticketing “allows consumers to order, pay for, obtain and validate tickets wherever they are and whenever they want by using their smartphones.”²¹ The fact that this transition is possible demonstrates that the efficiency of technological advancement is increasing. Smartphones have only existed since 1992 and the fact that they are now so common demonstrates the speed of which technology can be implemented.

¹⁷ Cf. FC Bayern

¹⁸ See Appendix 7.1, p. 17.

¹⁹ Cf. talkSPORT 2020.

²⁰ Cf. Grater 2020.

²¹ Hanin 2015.

M-ticketing differs from traditional ticketing and e-ticketing, which are also common forms of ticketing. A traditional ticket is a ticket that is provided in one of several ways. Generally, with traditional ticketing, one receives a paper ticket after purchasing at a specific location or one receives a ticket in the mail after calling or purchasing online.²²

There is no common consensus on what constitutes an e-ticket that is uniform across all relevant industries. Therefore, for the scope of this research, the following definition from the Cambridge Dictionary has been used: "An e-ticket is a ticket for a journey, performance, etc. that you have bought online or by phone and which you usually print yourself directly from your computer."²³

Although all of these ticketing methods are possible to implement in the German Bundesliga, its advantages and disadvantages must be outlined in order to understand whether or not one or more can be eliminated completely. There are obvious advantages of soccer clubs to implement mandatory m-ticketing within the match-day experience, but a proper strategy must be thoroughly investigated in order that all parties involved benefit. The following section elaborates on these ticketing methods in more detail.

2.2.2 E-Ticketing, M-Ticketing, and Traditional Ticketing Comparison

In order to support the case of whether or not mandatory m-ticketing should be considered in Germany, a SWOT analysis²⁴ and a PESTLE analysis²⁵ have been conducted comparing traditional ticketing, e-ticketing, and m-ticketing. Because it is assumed that most visitors of German stadiums are from Germany, the analyses have been conducted accordingly.

Going to a soccer game is a memory and traditional tickets provide that in a way that other tickets cannot.²⁶ However, e-ticketing costs less for the company but more for the consumer.²⁷ M-ticketing, on the other hand, is digital and is better for the environment.²⁸ Each of the ticketing methods have their own strengths but m-ticketing seems

²² Cf. Hanin 2015.

²³ Cambridge Dictionary 2020.

²⁴ See Appendix 7.2, p. 17.

²⁵ See Appendix 7.3, p. 18.

²⁶ See Appendix 7.2, p. 17.

²⁷ See Appendix 7.2, p. 18.

²⁸ See Appendix 7.2, p. 18.

to have the most potential for opportunity. For soccer clubs, better tracking is possible with m-ticketing.²⁹ With traditional tickets and e-tickets, because each at some point is non-digital, the tracking is minimal.³⁰ This may seem like a strength for m-ticketing, but it could also be a weakness. In order for m-tickets to work, users must be informed and feel sure that their information is protected.

When looking at m-ticket implementation for German soccer clubs, however, there are additional factors to consider. As data protection is a serious issue, clubs have to be sure that data is not only protected but that it is not abused.³¹ This is especially important for Germany because data protection laws have been seriously assessed and passed.³² However, if this issue can be overcome, several environmental and economic benefits appear. The reduction of paper is not only beneficial to the environment, but it also reduces expenses for the user and the provider.³³ In addition, Germany is the 15th most active user of mobile phones in the world in terms of devices.³⁴ There are over 107.5 million cell phone subscriptions which is notable because the population is approximately 80 million.³⁵ This stat demonstrates that the cell phone usage is substantial enough to consider further implementation investigation for soccer clubs.

3 Methodology

3.1 Research Approaches and Definitions

In order to examine the current usage and future preference toward the usage of m-ticketing, a survey on German soccer mobile ticketing was conducted. Possible options in analyzing this survey were quantitative research or qualitative research. The definitions of quantitative and qualitative research are as follows:

“Qualitative research is multimethod in focus, involving an interpretive, naturalistic approach to its subject matter. This means that qualitative researchers study things in

²⁹ See Appendix 7.2, p. 18.

³⁰ See Appendix 7.2, p. 17-18.

³¹ See Appendix 7.3, p. 19.

³² Cf. Herzberger/Lensdorf 2019.

³³ See Appendix 7.3, p.19.

³⁴ Cf. Central Intelligence Agency 2020.

³⁵ Cf. Central Intelligence Agency 2020.

their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them.”³⁶

“Quantitative research gathers data in a numerical form which can be put into categories, or in rank order, or measured in units of measurement. This type of data can be used to construct graphs and tables of raw data.”³⁷

3.2 Used Research Approach

One method of research is not superior to the other. “A choice between research methods rests fundamentally on a set of decisions about the questions a researcher wants to answer and the practicality of gathering the kind of data that will answer those questions.”³⁸ The information for this research, as a result, calls for quantitative research.

Because the intended research was to evaluate the effectiveness of possible implementation of m-ticketing to all professional German soccer teams, a quantitative research approach was used. Within this questionnaire are 12 complete questions answered depending on the responses of the participants. Before conducting the questionnaire, the following null hypothesis was assumed valid:

- Null Hypothesis (H_0): $\mu \leq 50\%$ of people are willing to use m-tickets for a German professional soccer match.
- Alternative Hypothesis (H_1): $\mu > 50\%$ of people are willing to use m-tickets for a German professional soccer match.

The survey conducted was created through Google Forms and then dispersed through social media channels open for anyone to answer. As the focus of the research is whether or not m-ticket implementation is a valid practice for German soccer clubs, the main focus was on participants who were at least somewhat interested in attending soccer matches. Therefore, participants who never attend soccer matches in Germany were then directed to another section of the questionnaire and thus noted as unwilling to buy tickets. However, the responses of these participants are hereby included in order to further observe general m-ticket usage even if a participant was

³⁶ Denzin and Lincoln, p. 2, 1994.

³⁷ Treadwell 2019.

³⁸ Devault 2020.

not a “soccer fan”. The questionnaire was closed after 50 complete participant responses.

3.3 Survey Limitations

Before the analysis is presented, the limitations must be mentioned. In order to portray the fact that a diverse group of spectators attend soccer matches, the survey is represented by international spectators as well as German citizens. Therefore, the survey results are not an exact portrayal of the entire population of spectators at soccer matches. However, German spectators represent the majority of survey participants and therefore this inaccuracy of representation should not deter from the adequacy of the survey results.

4 Survey Results

4.1 General Information

The first section of the survey begins with general information questions in order to grasp an understanding of the demographics of all participants. Representing the majority of this survey were German citizens who made up 68% of all participants.³⁹ Those from India accounted for 6%, United States citizens 4%, and all other nationalities represented 2% equally.⁴⁰ 36 participants (72% of all participants) comprised of those who watched professional soccer matches in Germany at least once per 2-3 seasons.⁴¹ 14 participants (28% of all participants) comprised of those who never watch German professional matches.⁴² The second question of the first section is with regards to gender. 74% of participants were male and 26% of participants were female.⁴³ No participants marked “other” as their gender.

In order to avoid the sensitivity of respondents’ age, age groups were created. In addition, respondents aged 18 and under were omitted to avoid any issues related to consent. Therefore, five age groups were created as follows: 18-25 years, 26-35

³⁹ See Appendix 7.4.1, p. 20.

⁴⁰ See Appendix 7.4.1, p. 20.

⁴¹ See Appendix 7.4.1, p. 21.

⁴² See Appendix 7.4.1, p. 21.

⁴³ See Appendix 7.4.1, p. 20.

years, 36-45 years, 46-55 years, and 65+ years.⁴⁴ There were no participants who were in the 65+ age group.

4.2 M-Tickets in Soccer

The participants who did not respond “Never” to the question of “How often do you watch professional soccer matches in German stadiums?” were directed to the “M-tickets in Soccer” section. The key question herein was whether or not the participant would consider using an m-ticket to watch a professional German soccer match. The vast majority (88.9% of all applicable participants) responded with “Yes” with 86.2% of all German citizens responding the same accordingly.⁴⁵

Relatively younger age groups were more willing to use m-tickets than the older age groups. 94.4% of respondents aged 18-25 responded with the willingness to use an m-ticket and 100% of respondents aged 26-35 agreed.⁴⁶ It was not until the observance of the older two age groups that the metrics started to become more skewed. 60% of respondents aged 36-45 responded with the willingness to use an m-ticket while with the age group of 46-55, 66.7% felt the same way.⁴⁷ The only notable difference among German citizens in particular is that the age group of 36-45 were only 50% willing to use an m-ticket.⁴⁸

For the question of whether or not participants have used an m-ticket to watch a professional match before, several inversely correlated responses occurred. 91.7% of all applicable participants responded with never having used an m-ticket to watch a German professional soccer match.⁴⁹ 89.7% of German participants had the same response.⁵⁰

Using an m-ticket was only relatively more common for those who were in the age group of 18-25. 16.7% of the participants from this age group had used an m-ticket

⁴⁴ See Appendix 7.4.1, p. 21.

⁴⁵ See Appendix 7.5.3, p. 32-32.

⁴⁶ See Appendix 7.5.3, p. 32-33.

⁴⁷ See Appendix 7.5.3, p. 33-34.

⁴⁸ See Appendix 7.5.3, p. 35.

⁴⁹ See Appendix 7.5.4, p. 37.

⁵⁰ See Appendix 7.5.4, p. 37.

and with German citizens of this age group, 21.4% responded the same.⁵¹ Interestingly, not one single participant from any other age group had used an m-ticket before.⁵²

Surprisingly, the data shows that many participants are not only willing to use m-tickets to watch German soccer matches, but the preference is to use m-tickets to watch matches. This is an interesting data point because many participants responded that they had never used m-tickets before and yet the preference is towards its use. One rationale could be that m-ticketing is not an entry option for every German soccer stadium. Another reason could be that the participants are not aware as to how m-tickets are and can be properly used.

When prompted with the question of the type of ticket preferred to watch a German professional match, 47.2% of all applicable participants responded with traditional tickets, 19.5% for e-tickets, and 33.3% for m-tickets.⁵³ The German citizen preference was 51.7% for traditional tickets, 20.7% for e-tickets, and 27.6% for m-tickets.⁵⁴ A shift in traditional ticketing is increasingly evident per age group. Only 38.9% of the participants from the age group of 18-25 preferred traditional tickets and 40% of those aged 26-35 preferred traditional tickets.⁵⁵ Unsurprisingly, a rise to 60% was apparent at the age group of 36-45 whereas a 100% traditional ticket preference was viewed at the age group of 46-55.⁵⁶ For German citizens, this traditional ticket preference rose steadily as well from 42.9%, 37.5%, 75% and 100% accordingly.⁵⁷ These results denote a change from traditional methods as the younger age groups have adapted to up-and-coming developments.

The final question of this section was an open question denoting why the preference in the previous question was chosen. The answers varied but the most common answers were with regards to convenience.⁵⁸ If convenience is the main issue, then m-ticketing may be a possible solution.

⁵¹ See Appendix 7.5.4, p. 38 & 40.

⁵² See Appendix 7.5.4, p. 38-39.

⁵³ See Appendix 7.5.5, p. 43.

⁵⁴ See Appendix 7.5.5, p. 42.

⁵⁵ See Appendix 7.5.5 p. 43-44.

⁵⁶ See Appendix 7.5.5, p. 44-45.

⁵⁷ See Appendix 7.5.5, p. 45-47.

⁵⁸ See Appendix 7.5.6, p. 47-48.

4.3 M-Tickets Outside of Soccer

The participants who responded “Never” to the question of “How often do you watch professional soccer matches in German stadiums?” were directed to the “M-Tickets Outside of Soccer” section. Although this section is not relevant to the argument of whether m-tickets should be implemented in German professional soccer, some interesting data points have been extracted. When participants were asked if they would be willing to use an m-ticket for a concert or a train (essentially anything outside of German professional soccer), 92.9% of respondents answered with “yes” with 100% of German citizens answering the same.⁵⁹

When it came to the preferred ticket type (traditional ticket, e-ticket, or m-ticket), 85.7% of all participants responded that they would prefer to use an m-ticket with 14.3% responding that they would prefer an e-ticket.⁶⁰ 0% of all respondents replied that they would prefer traditional tickets and 100% of Germans replied that they would prefer m-tickets.⁶¹ The 2 participant outliers in this questionnaire who would prefer to use e-tickets were in the age groups of 18-25 and 26-35 and were not German citizens.⁶²

As in the previous section, the concluding input from the respondents was to explain why they prefer the choice from the previous section. Again, convenience was noted as one of the most common factors.⁶³ Understandably, convenience plays an important role in consumer choice.

5 Hypothesis Testing

5.1 Z-Stat

The overall objective of the survey was to decide whether or not to reject the null hypothesis and to decide if the alternative hypothesis could be valid.

⁵⁹ See Appendix 7.5.7, p. 49.

⁶⁰ See Appendix 7.5.8, p. 53.

⁶¹ See Appendix 7.5.8, p. 52-53.

⁶² See Appendix 7.5.8, p. 53-54.

⁶³ See Appendix 7.5.9, p. 55.

- Null Hypothesis (H_0): $\mu \leq 50\%$ of people are willing to use m-tickets for a German professional soccer match.
- Alternative Hypothesis (H_1): $\mu > 50\%$ of people are willing to use m-tickets for a German professional soccer match.

To analyze this, the key question of the survey was, "Would you consider using an m-ticket (mobile ticket) to watch a professional German (soccer) match?" To calculate if the null hypothesis can be rejected, several key data points must be uncovered. Based on the given information, it is already understood that the sample size is 50 ($n=50$) and the objective of the test is to decide if the population mean (μ) of .50 is accurate based on the sample population (\bar{x}) of .64. The sample mean was determined by dividing the number participants who responded "yes" to the key question (32) by the sample size (50).⁶⁴

Because the goal is to determine if the population mean is less than or equal to 50%, a one-tailed test was used. The critical value of this test can be determined using alpha (α). Alpha is also considered the level of significance and has a value of 0.05 or 5% for a one-tailed test.⁶⁵ The lower critical value for alpha in a one-tailed test is approximately -1.64. Thus, the upper critical value is +1.64. Therefore, the rejection area for the alternative hypothesis is between these two values and the rejection area of the null hypothesis is either less than -1.64 or greater than +1.64. From the sample mean, the sample population and the standard error of the mean, a z-score is determined. If the z-score of the null hypothesis mean lies outside of these values, then it is to be rejected.

The z-score is determined by the following formula:

$$z = (\bar{x} - \mu) / (\sigma / \sqrt{n})^{66}$$

The second part of that equation ($\sigma_m = \sigma / \sqrt{n}$) is referred to as the standard error of the mean.⁶⁷ The population standard deviation is not known and therefore the sample standard deviation is used.⁶⁸ Knowing these values, the z-score can be calcu-

⁶⁴ See Appendix 7.6, p 56.

⁶⁵ Mohr 2004.

⁶⁶ Statistics How To 2020.

⁶⁷ Cf. Siddharth/Wilson.

⁶⁸ Cf. Laerd Statistics.

lated. As mentioned above, this is done by taking the sample mean (\bar{x}) and subtracting the population mean (μ) and then dividing that by the standard error of the mean. The result is a z-score of approximately 2.04. Because the z-score results in a number that is higher than the rejection area, the null hypothesis is to be rejected.

5.2 P-Value

Another test can be conducted to determine if the null hypothesis should indeed be rejected. One can use a p-value as another way to show the significance of results against a hypothesis.⁶⁹ If the p-value is lower than alpha (or the level of significance), the null hypothesis will be rejected.⁷⁰

Generally, "P-values are calculated using p-value tables or spreadsheets/statistical software."⁷¹ Therefore, for the sake of this analysis, a Microsoft Excel formula was used. In order to calculate the p-value, the z-score is needed. From the previous section, it has already been established that the z-score is approximately 2.04. From this z-score, the p-value result is approximately 0.02. Because 0.02 is less than alpha (0.05), the null hypothesis must once again be rejected.

6 Conclusion

It is evident that m-ticket implementation should undoubtedly be integrated into German professional soccer. Although it may be too soon for enforced implementation at the moment, there is solid evidence that a demand for mobile advancement is necessary. Based on the high attendance of the German Bundesliga, the league is optimal for conducting attendance-based experiments. History shows that the future of ticketing is inevitable. Old ways of ticketing are no longer remembered while new and improved methods have taken the throne. If the German Bundesliga wants to remain attractive in the competitive soccer market, its clubs must invest in innovation within all areas.

⁶⁹ Cf. Rumsey 2020.

⁷⁰ Cf. Lee 2019.

⁷¹ Beers 2020.

Some advantages to other ticketing methods remain which explains its valid use to this day. Many still view traditional tickets as a memory and others trust having something physical for admission. However, having the option of m-ticketing will not deter from this fact for those who have different preferences. Just as other forms of ticketing are no longer remembered, it is inevitable that traditional ticketing will eventually wane out. The statistics show a trend towards an inevitable trend toward m-ticketing that will soon take over as the new norm.

7 Appendix

7.1 Significant Data Points

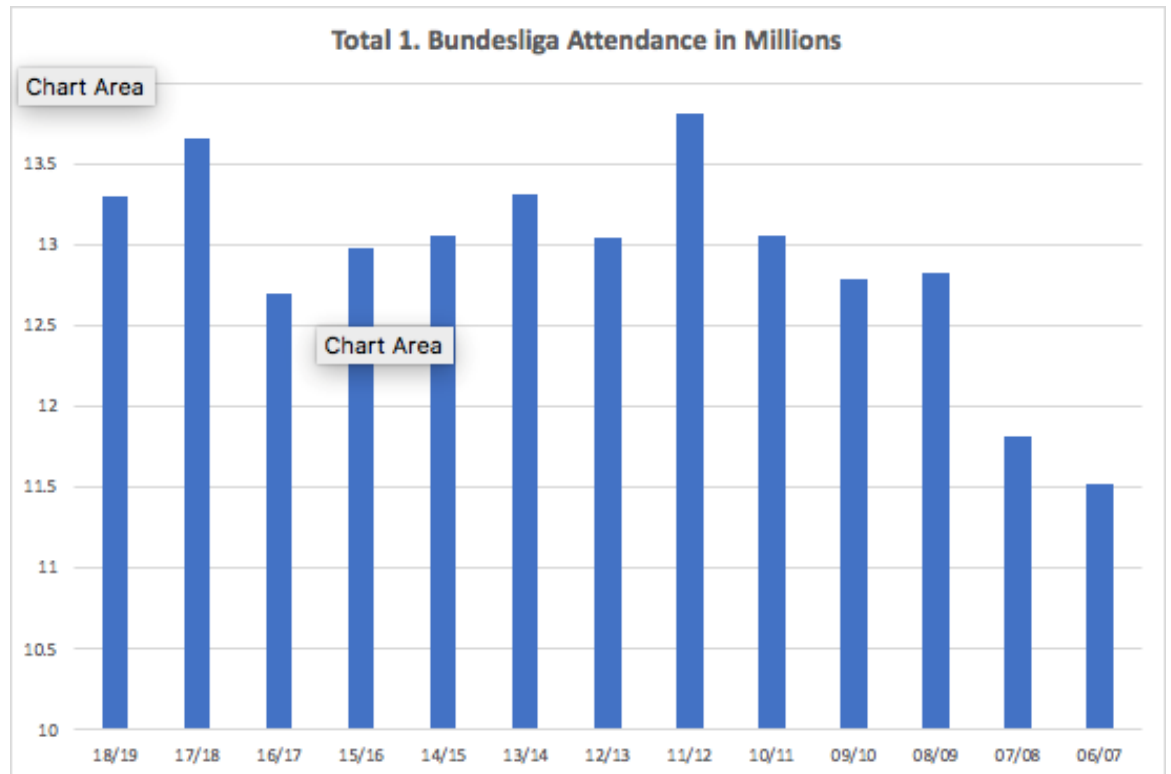


Fig. 1: Total Bundesliga Attendance in Millions⁷²

⁷² Cf. Gough 2020a.

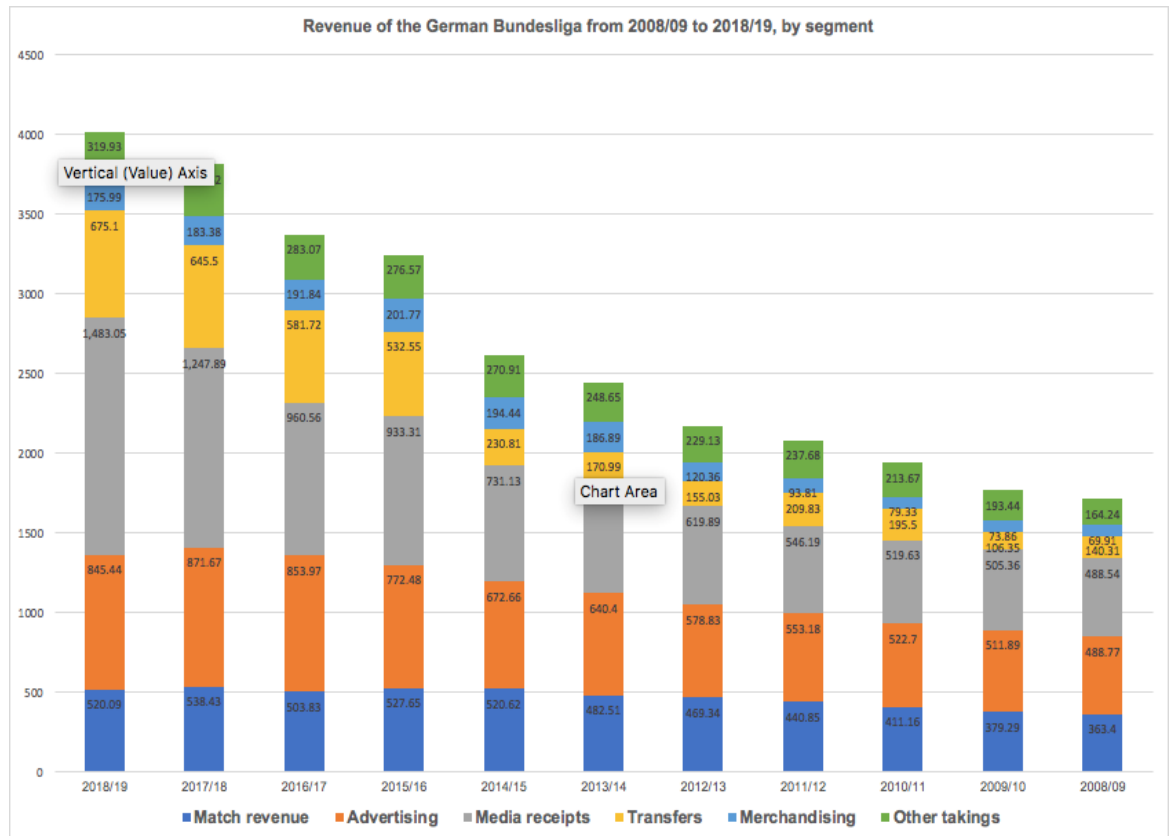


Fig. 2: Revenue of the German Bundesliga from 2008/09 to 2018/19, by segment⁷³

7.2 SWOT Analysis

“The SWOT analysis is a strategic planning and analysis instrument of marketing, which is based on a holistic and regular examination of the internal, influenceable (strengths/weaknesses) and external, non-directly influenceable (opportunities/risks) determining factors of a company.”⁷⁴

Tab. 1: SWOT Analysis - Traditional Ticketing

| Strengths | Weaknesses |
|--|---|
| <ul style="list-style-type: none"> Memory of physical ticket⁷⁵ | <ul style="list-style-type: none"> Chance of ticket not being delivered Chance of ticket not being delivered on time Not as easy for companies to track (compared to e-ticketing and m-ticketing)⁷⁶ An expense for companies to print Could be lost |

⁷³ Cf. Gough 2020b.

⁷⁴ Cf. 2016, p. 65.

⁷⁵ Cf. Rushin 2019.

⁷⁶ Event Espresso.

| | |
|--|---|
| <p>Opportunities</p> <ul style="list-style-type: none"> • Designing of ticket for future demand⁷⁷ | <p>Threats</p> <ul style="list-style-type: none"> • New ticketing methods • Bad word of mouth due to possible late delivery time |
|--|---|

Tab. 2: SWOT Analysis - E-Ticketing

| | |
|---|--|
| <p>Strengths</p> <ul style="list-style-type: none"> • Can be printed at home • Less paper and ink expenses for company • If lost at home, can be replaced • No mailing cost⁷⁸ | <p>Weaknesses</p> <ul style="list-style-type: none"> • If no printer, cannot be printed • If lost on the way to event, cannot be recovered at all⁷⁹ • Not as easy to track as m-ticketing |
| <p>Opportunities</p> <ul style="list-style-type: none"> • Coupons⁸⁰ | <p>Threats</p> <ul style="list-style-type: none"> • The world is becoming less paper and more digital.⁸¹ |

Tab. 3: SWOT Analysis - M-Ticketing

| | |
|---|--|
| <p>Strengths</p> <ul style="list-style-type: none"> • Simple entry with device⁸² • Environmentally friendly⁸³ • Tracking of trends and behavior⁸⁴ • Less printing expenses for company⁸⁵ • No waiting in line to buy tickets⁸⁶ | <p>Weaknesses</p> <ul style="list-style-type: none"> • No physical memory • If phone dies, no ticket⁸⁷ |
| <p>Opportunities</p> <ul style="list-style-type: none"> • implementation within all professional German soccer⁸⁸ | <p>Threats</p> <ul style="list-style-type: none"> • Information leakage⁸⁹ |

⁷⁷ Cf. Purplepass.

⁷⁸ Cf. Amtrak.

⁷⁹ Cf. Virgin Trains.

⁸⁰ Cf. eTickets.ca.

⁸¹ Cf. Cochrane 2020.

⁸² Cf. Ticketmaster.

⁸³ Cf. MacDonald 2018.

⁸⁴ Cf. Passenger 2017.

⁸⁵ Cf. Fischer/Muret 2014.

⁸⁶ Cf. Roos.

⁸⁷ Cf. crosscountry.

⁸⁸ Cf. TheTicketingBusiness 2019.

⁸⁹ Cf. Dave 2010.

| | |
|--|--|
| | <ul style="list-style-type: none"> • Hackers⁹⁰ |
|--|--|

7.3 PESTLE Analysis

“The so-called PESTLE analysis (political, economic, socio-cultural, technological, legal, environmental analysis) is used to identify and interpret relevant characteristics from a larger (global) context of the business environment. Taking into account developments and trends, such as from society, stakeholder scenario, etc., six characteristic environmental areas are analyzed and forecasted.”⁹¹

Tab. 4: PESTLE Analysis M-Ticketing in Germany

| |
|--|
| <p>Political</p> <ul style="list-style-type: none"> • Germany wants to continue being a world leader in technology, engineering and innovation.⁹² • Safety of citizens and especially data will be a priority. |
| <p>Economical</p> <ul style="list-style-type: none"> • GDP of Germany is ranked #4. May want to compete or sustain.⁹³ • Save on paper for company and consumer. • Average salary in Germany was 46.560 EUR in 2018 denoting disposable income to attend matches.⁹⁴ • Bundesliga tickets are more economical than Premier league tickets.⁹⁵ |
| <p>Socio-Cultural</p> <ul style="list-style-type: none"> • High well being/standard of living.⁹⁶ • Citizens value privacy especially with regards to data.⁹⁷ |
| <p>Technological</p> <ul style="list-style-type: none"> • Better data and tracking. • More Advertising possibilities. • Cell phone usage in Germany is high.⁹⁸ |
| <p>Legal</p> <ul style="list-style-type: none"> • Data protection. This is an issue due to the data scandal in Germany. • New Data protection laws could be implemented as recent ones have been enacted.⁹⁹ |

⁹⁰ Cf. Melendez 2017.

⁹¹ Huber 2016, p. 67.

⁹² Cf. European Commission.

⁹³ Cf. Wordlometer 2017.

⁹⁴ Cf. IamExpat Media.

⁹⁵ Cf. Bundesliga 2019.

⁹⁶ Cf. Better Life Index.

⁹⁷ Cf. Devins 2017.

⁹⁸ Cf. Statista Research Department 2019.

⁹⁹ Cf. Von Walter 2019.

Environmental

- Decreasing the amount of paper that is used because of phone usage.
- Environmentally initiative trends in Germany.¹⁰⁰

7.4 Direct Survey Results**7.4.1 General Information**

What country are you from? Aus welchem Land kommst du ?

50 Antworten

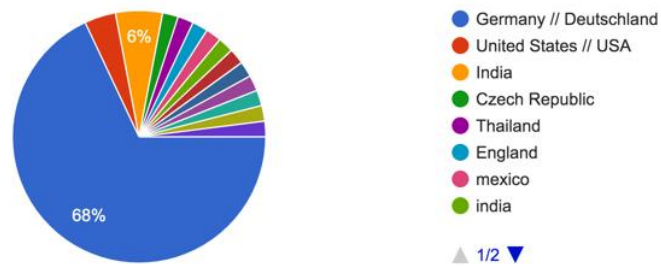


Fig. 3: Nationality of Participants¹⁰¹

What is your gender? // Von welchem Geschlecht bist du?

50 Antworten

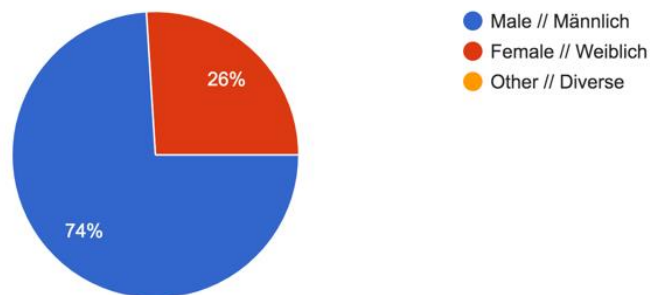


Fig. 4: Gender of Participants¹⁰²

¹⁰⁰ Cf. OECD.

¹⁰¹ Own illustration based on Google Forms.

¹⁰² Own illustration based on Google Forms.

How old are you? // Wie alt bist du?

50 Antworten

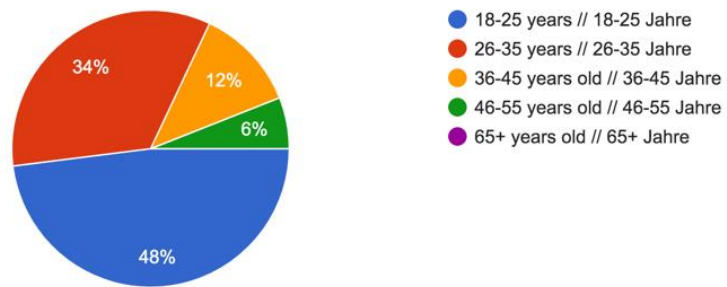


Fig. 5: Age Groups of Participants¹⁰³

How often do you watch professional soccer matches in German stadiums? // Wie oft schaust du dir Profifußball-Spiele in deutschen Stadien an?

50 Antworten

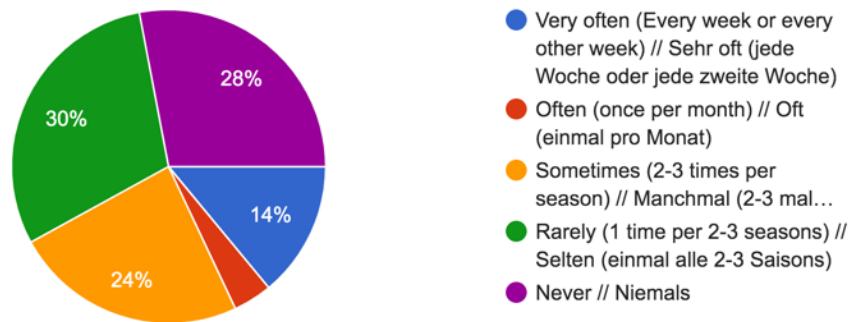


Fig. 6: Frequency of Professional German Soccer Viewership¹⁰⁴

¹⁰³ Own illustration based on Google Forms.

¹⁰⁴ Own illustration based on Google Forms.

7.4.2 M-Tickets in Soccer

Would you consider using an M-ticket (mobile ticket) to watch a professional German match? // Könntest du erwägen, ein...utsches Profifußball-Spiel zu verwenden?
36 Antworten

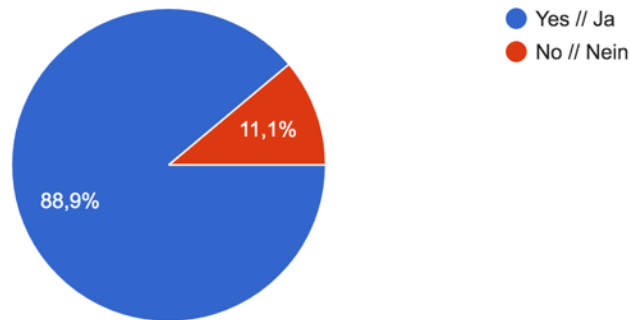


Fig. 7: Consideration of M-Ticket Usage for Professional German Soccer¹⁰⁵

Have you already used an M-ticket (mobile ticket) to watch a professional German match? // Hast du bereits zuvor ein M-Ticke...ein deutsches Profifußball-Spiel zu sehen?
36 Antworten

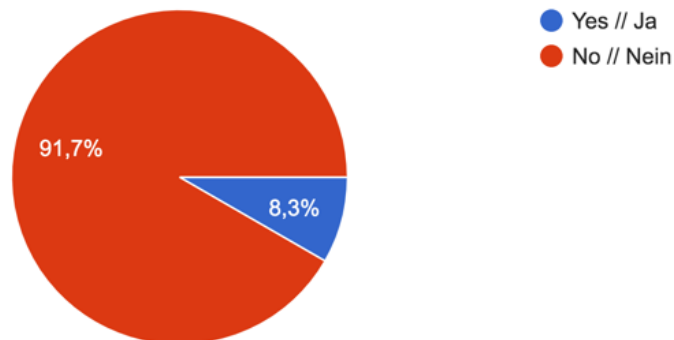


Fig. 8: Previous Usage of M-Tickets for Professional German Soccer¹⁰⁶

¹⁰⁵ Own illustration based on Google Forms..

¹⁰⁶ Own illustration based on Google Forms.

Which type of ticket do you prefer using to watch a german professional match? // Welche Ticket-Variante bevorzugst du für deutsche Profifußball-Spiele?

36 Antworten

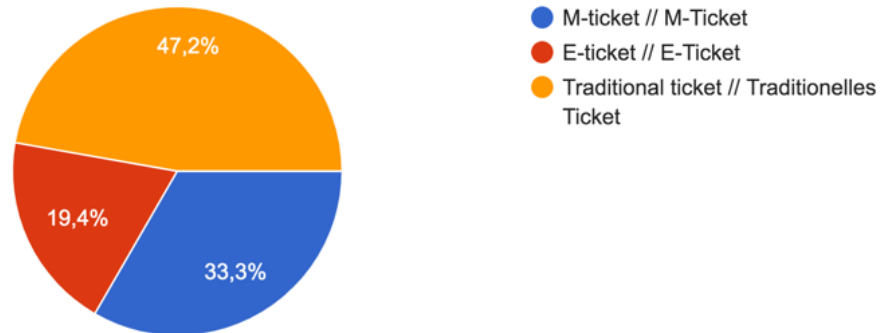


Fig. 9: Preferred Ticket Type for Professional German Soccer¹⁰⁷

7.4.3 M-Tickets Outside of Soccer

Would you ever use an M-ticket? (For a concert, Train, etc.) // Würdest du jemals ein M-Ticket verwenden? (Für ein Konzert, Zug, etc.)

14 Antworten

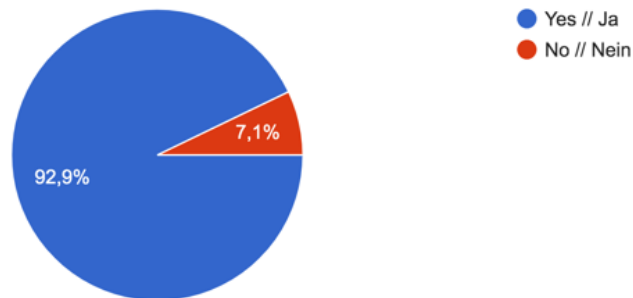


Fig. 10: Consideration of General M-Ticket Usage¹⁰⁸

¹⁰⁷ Own illustration based on Google Forms.

¹⁰⁸ Own illustration based on Google Forms.

Have you already used an M-ticket before? // Hast du bereits ein M-Ticket verwendet?

14 Antworten

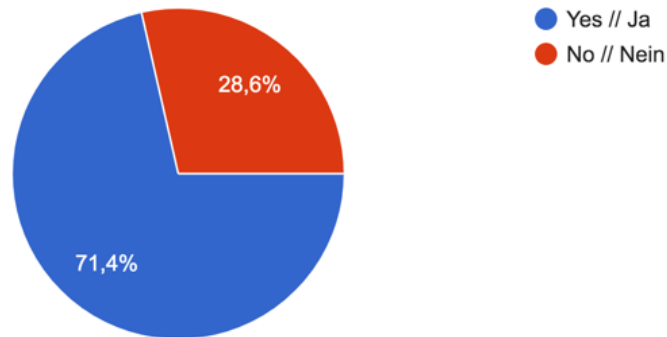


Fig. 11: General Previous Usage of M-Tickets¹⁰⁹

Which type of ticket do you prefer for these occasions? // Welche Ticket-Variante bevorzugst du für diese Anlässe?

14 Antworten

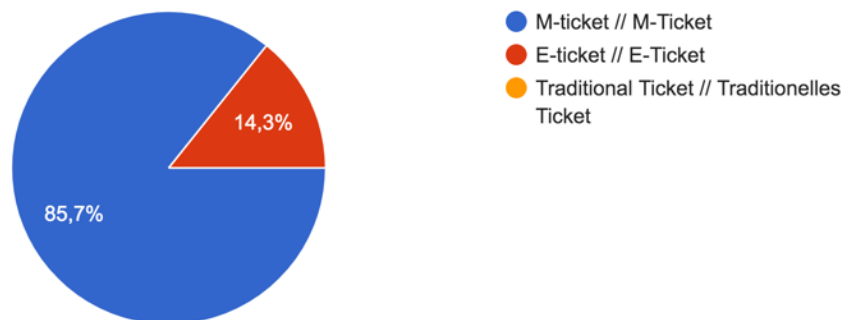


Fig. 12: General Preferred Ticket Type¹¹⁰

¹⁰⁹ Own illustration based on Google Forms.

¹¹⁰ Own illustration based on Google Forms.

7.5 Analysis of Survey Results

7.5.1 Demographics

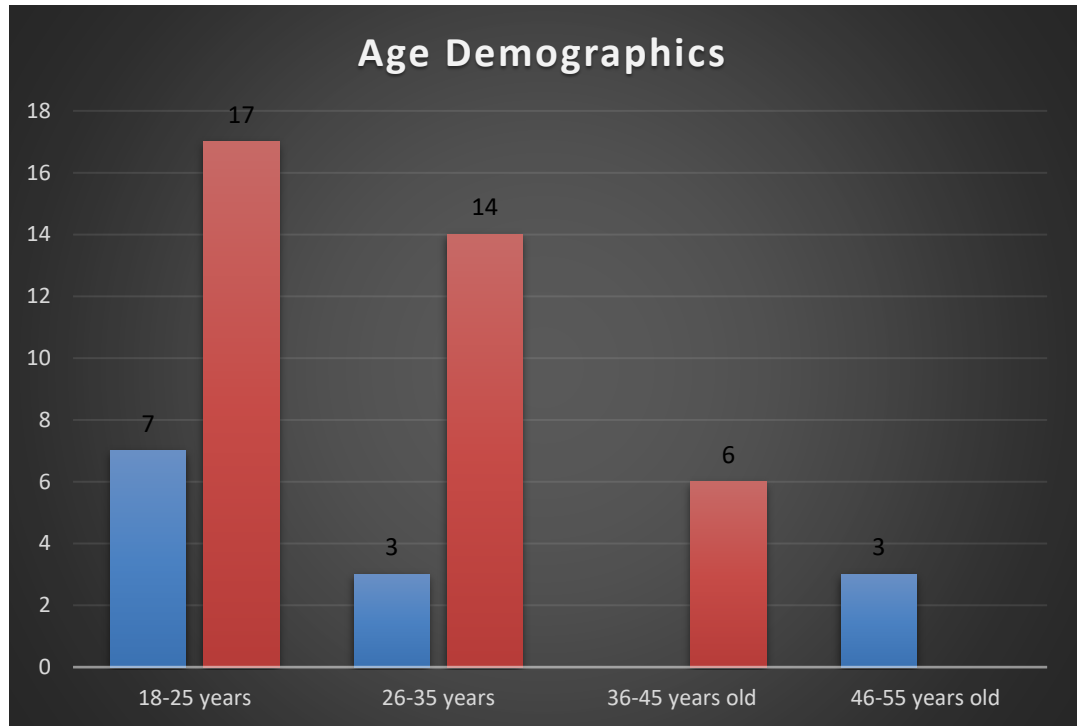


Fig. 13: Age Demographics¹¹¹

¹¹¹ See Analysis Report (Additional Charts).

7.5.2 Frequency of Viewership

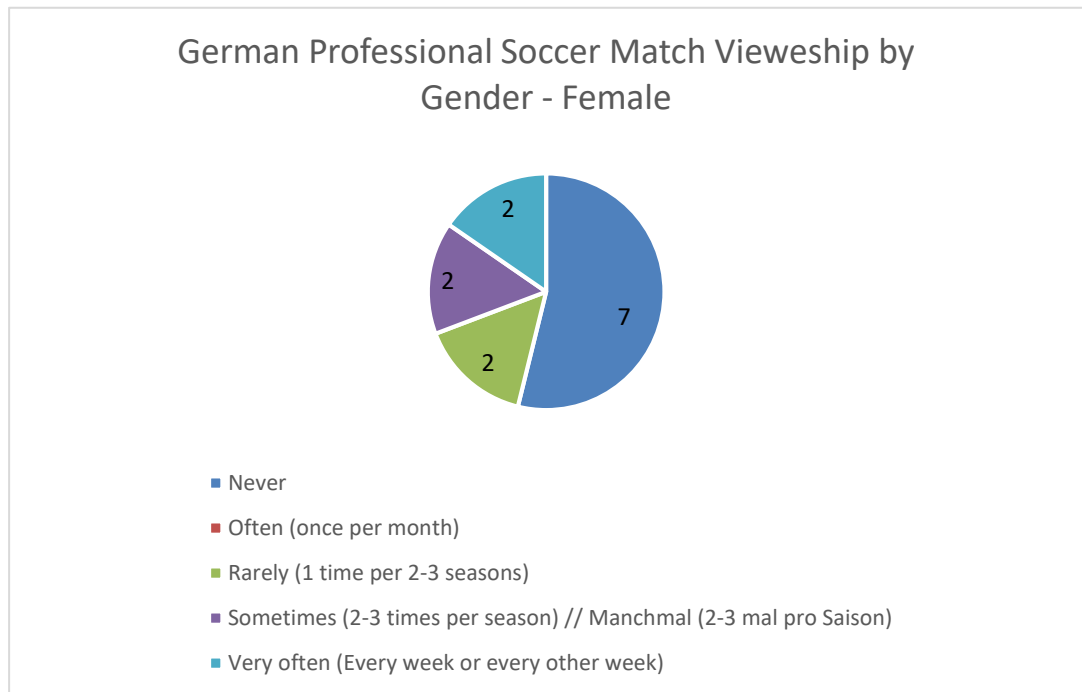


Fig. 14: German Professional Soccer Match Viewership by Gender – Female¹¹²

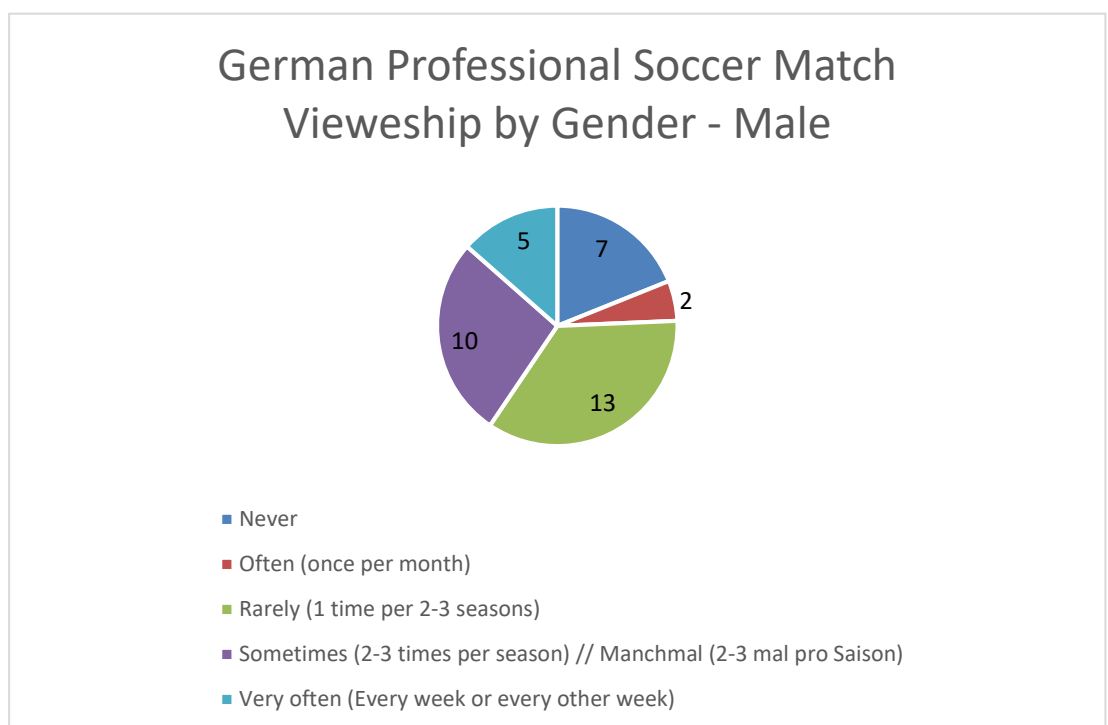


Fig. 15: German Professional Soccer Match Viewership by Gender – Male¹¹³

¹¹² See Analysis Report (Additional Charts).

¹¹³ See Analysis Report (Additional Charts).

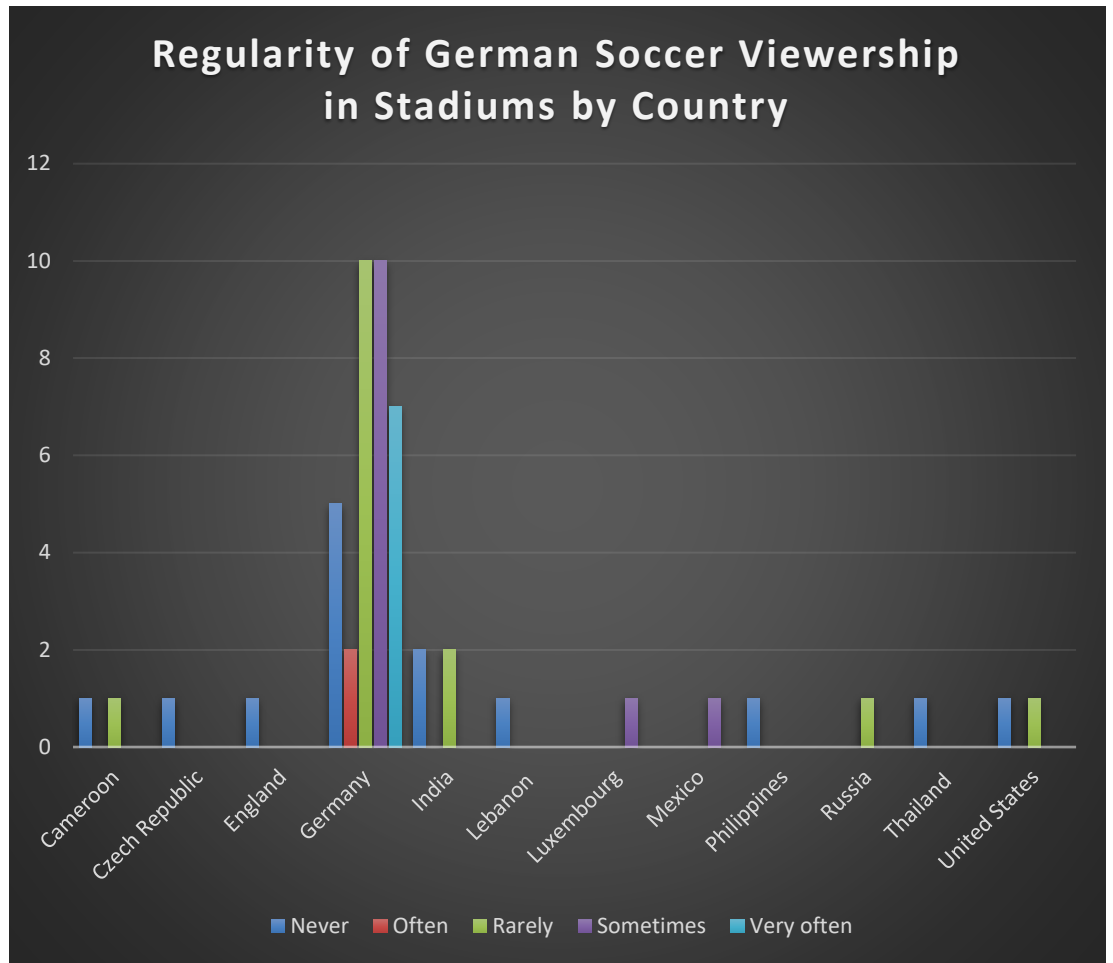


Fig. 16: Regularity of German Soccer Viewership in Stadiums by Country¹¹⁴

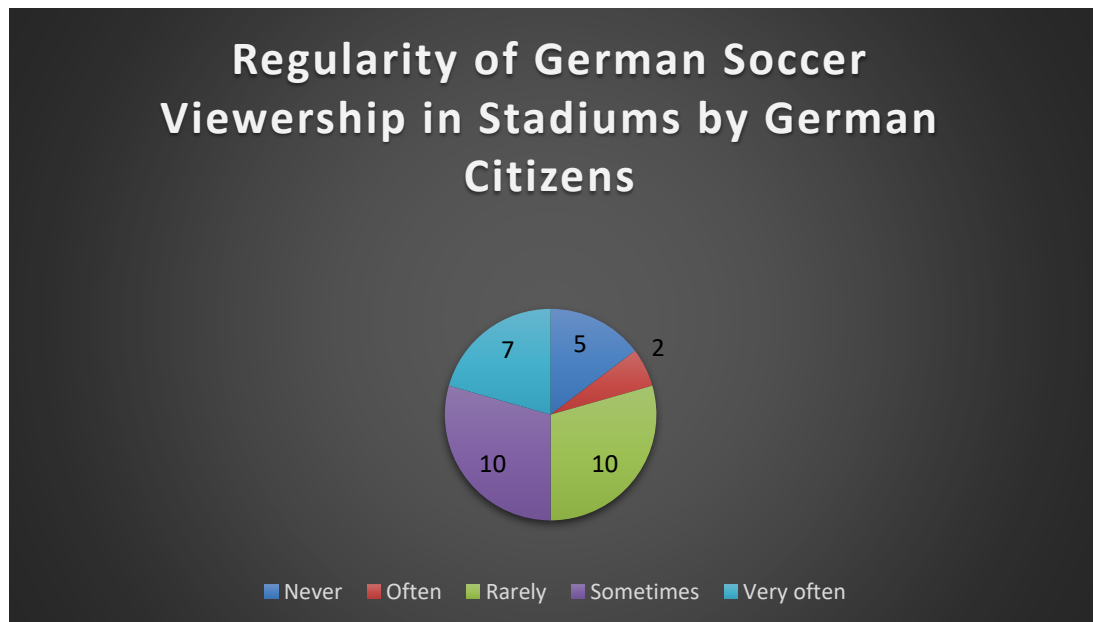


Fig. 17: Regularity of German Soccer Viewership in Stadiums by German Citizens¹¹⁵

¹¹⁴ See Analysis Report (Additional Charts).

¹¹⁵ See Analysis Report (Additional Charts).

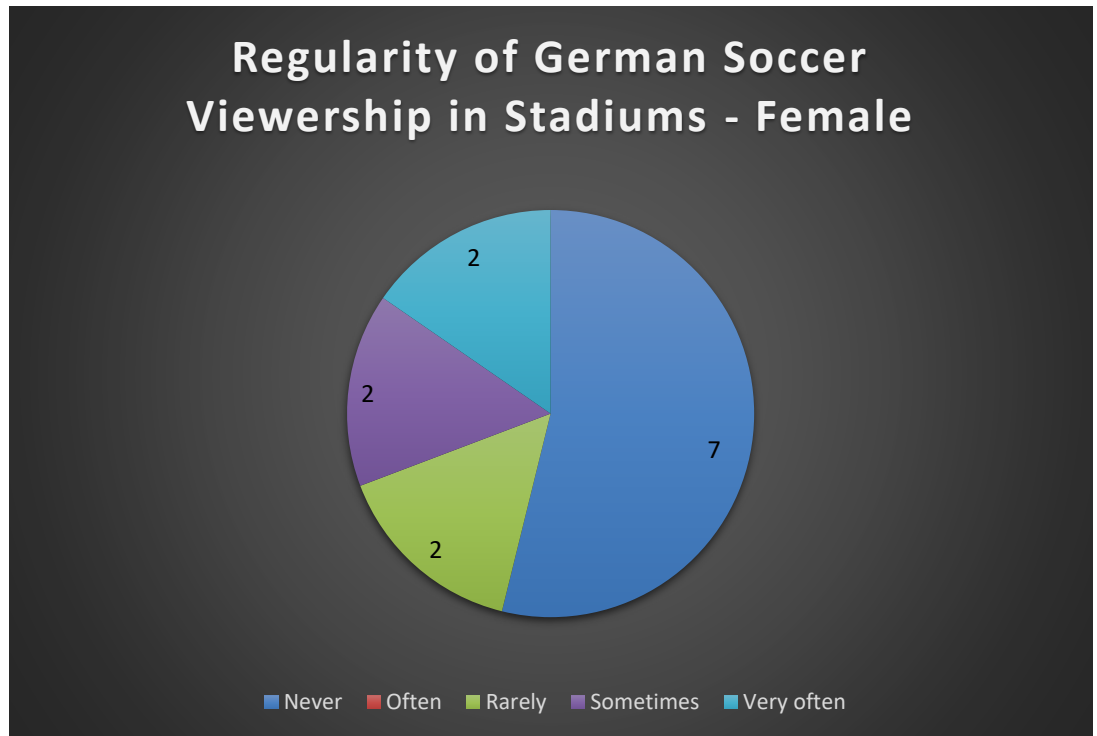


Fig. 18: Regularity of German Soccer Viewership in Stadiums – Female¹¹⁶

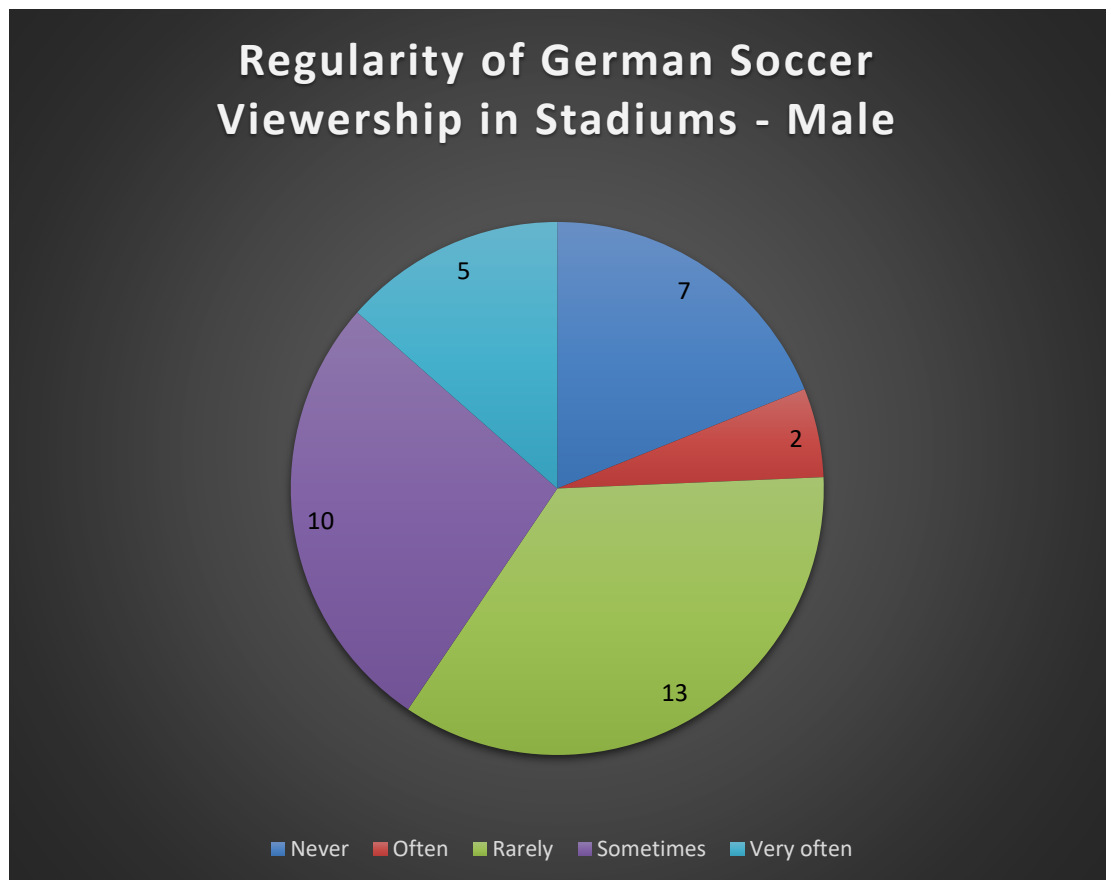


Fig. 19: Regularity of German Soccer Viewership in Stadiums – Male¹¹⁷

¹¹⁶ See Analysis Report (Additional Charts).

¹¹⁷ See Analysis Report (Additional Charts).

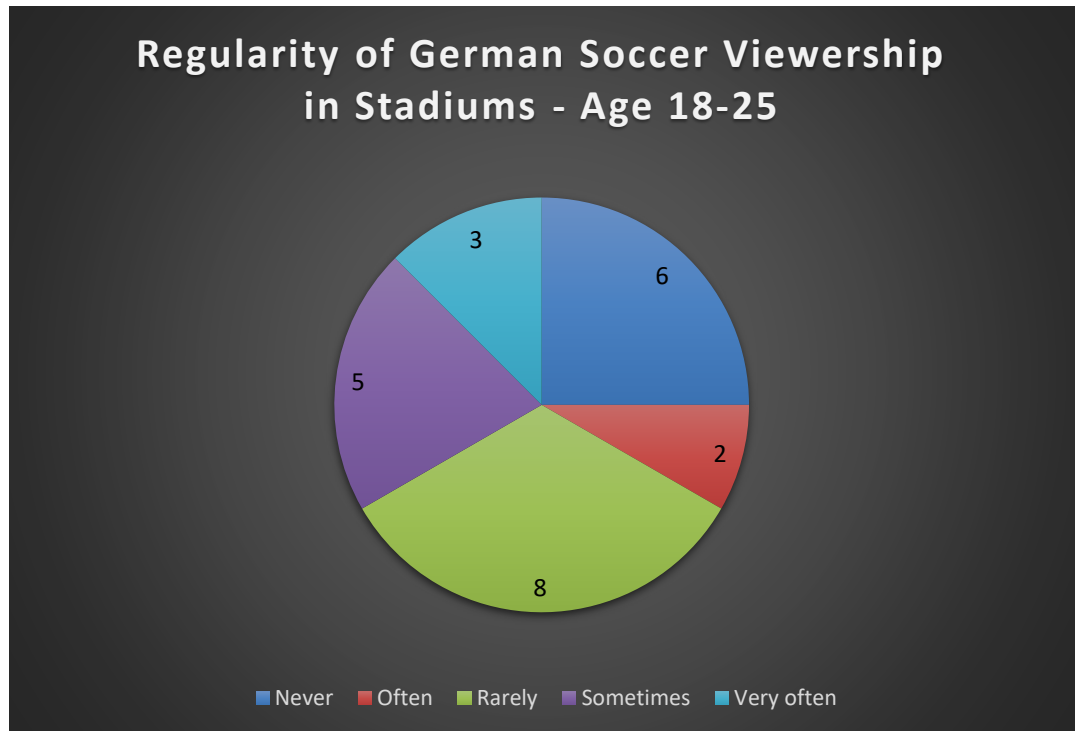


Fig. 20: Regularity of German Soccer Viewership in Stadiums - Age 18-25¹¹⁸

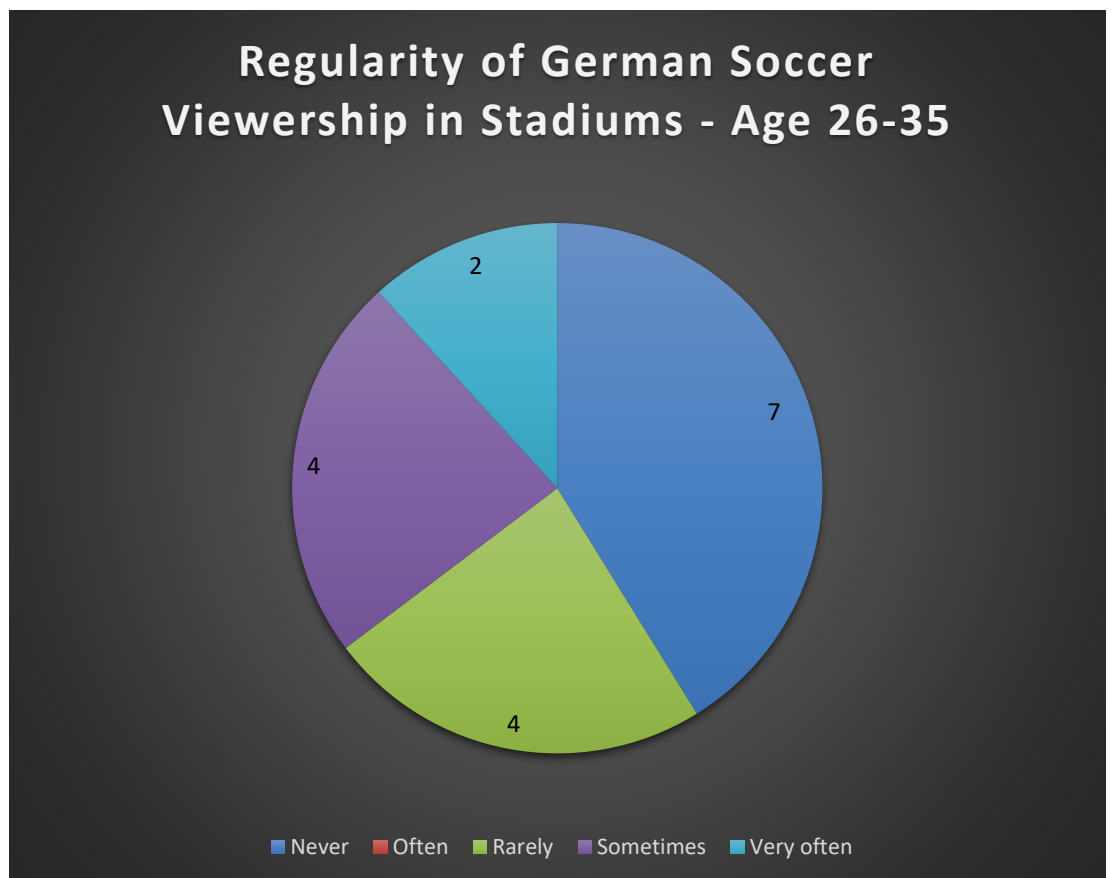


Fig. 21: Regularity of German Soccer Viewership in Stadiums - Age 26-35¹¹⁹

¹¹⁸ See Analysis Report (Additional Charts).

¹¹⁹ See Analysis Report (Additional Charts).

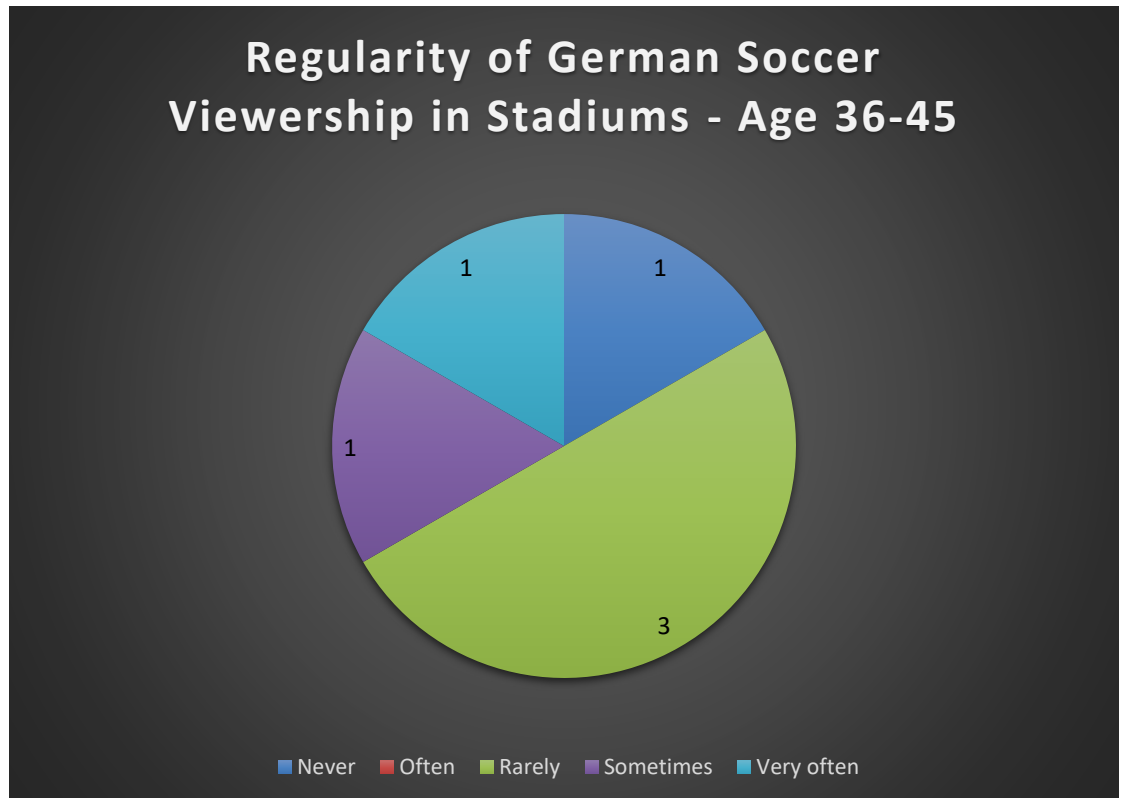


Fig. 22: Regularity of German Soccer Viewership in Stadiums - Age 36-45¹²⁰

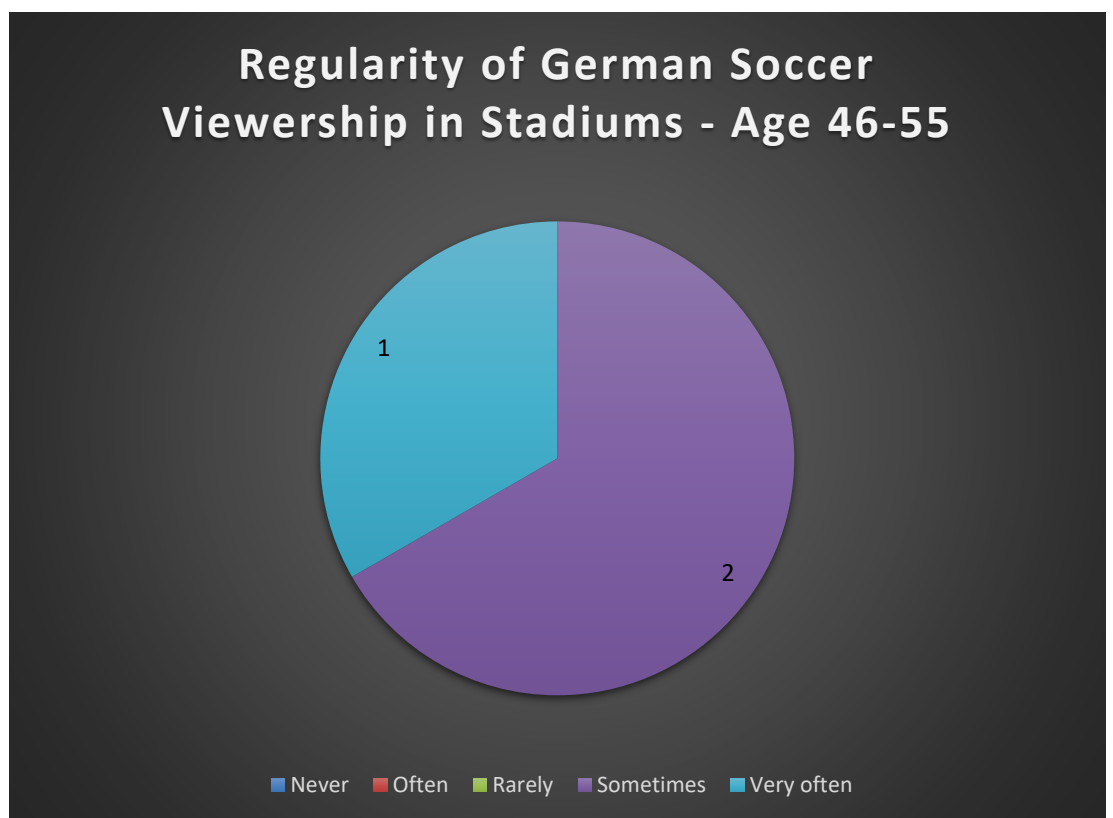


Fig. 23: Regularity of German Soccer Viewership in Stadiums - Age 46-55¹²¹

¹²⁰ See Analysis Report (Additional Charts).

¹²¹ See Analysis Report (Additional Charts).

7.5.3 M-Ticket Willingness for German Soccer

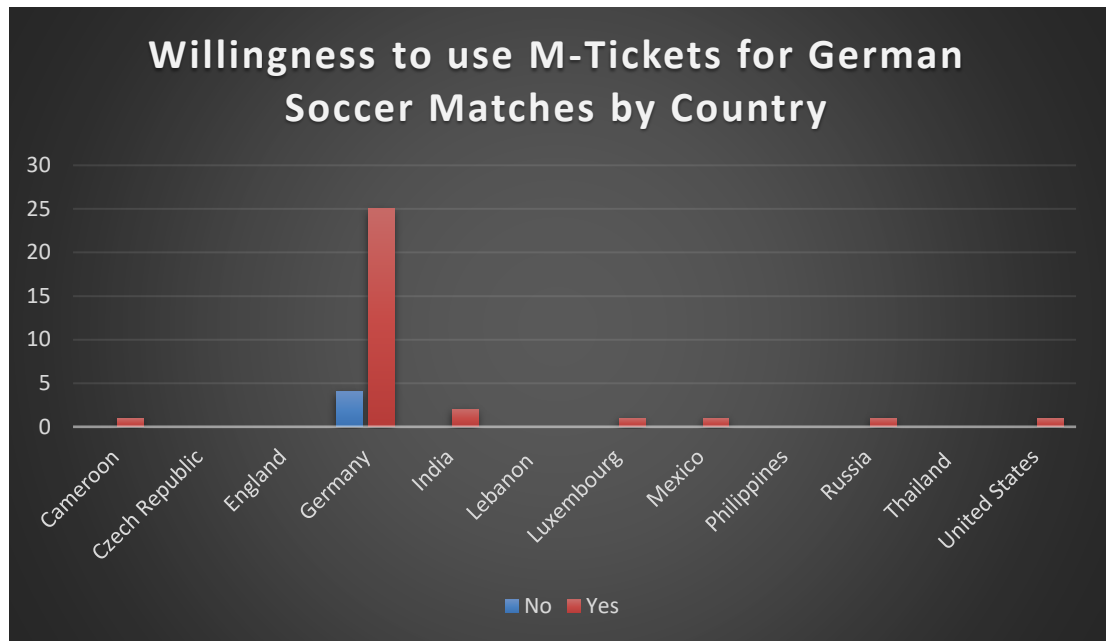


Fig. 24: Willingness to use M-Tickets for German Soccer Matches by Country¹²²

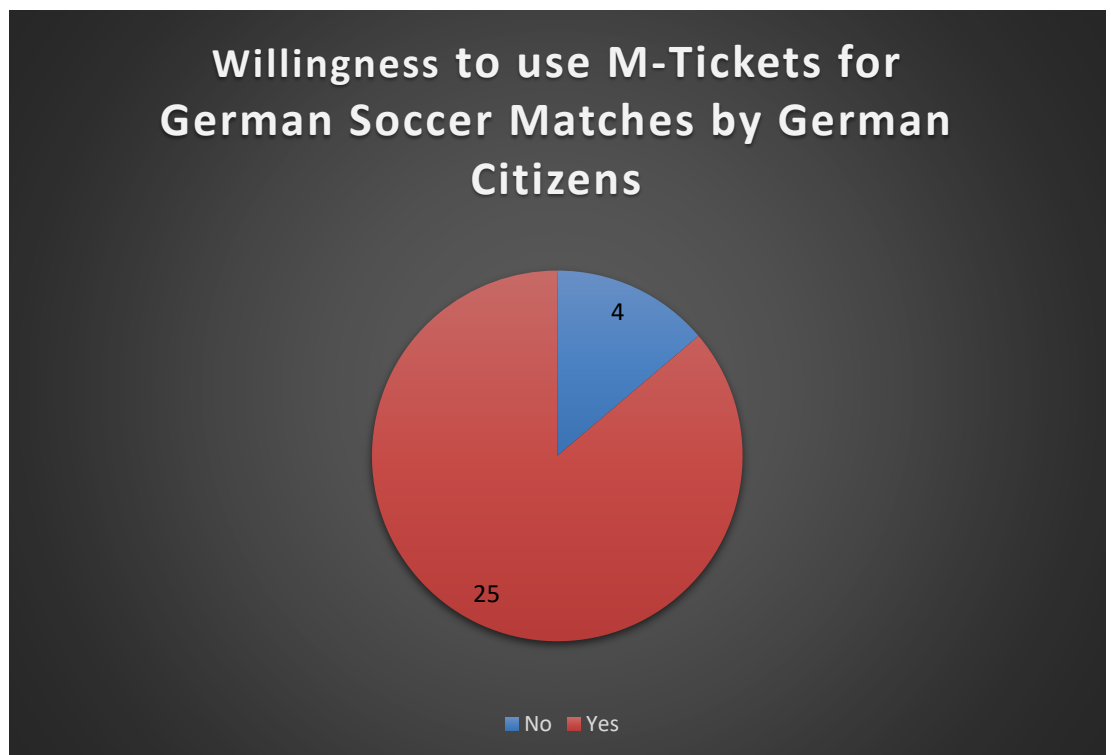


Fig. 25: Willingness to use M-Tickets for German Soccer Matches by German Citizens¹²³

¹²² See Analysis Report (Additional Charts).

¹²³ See Analysis Report (Additional Charts).

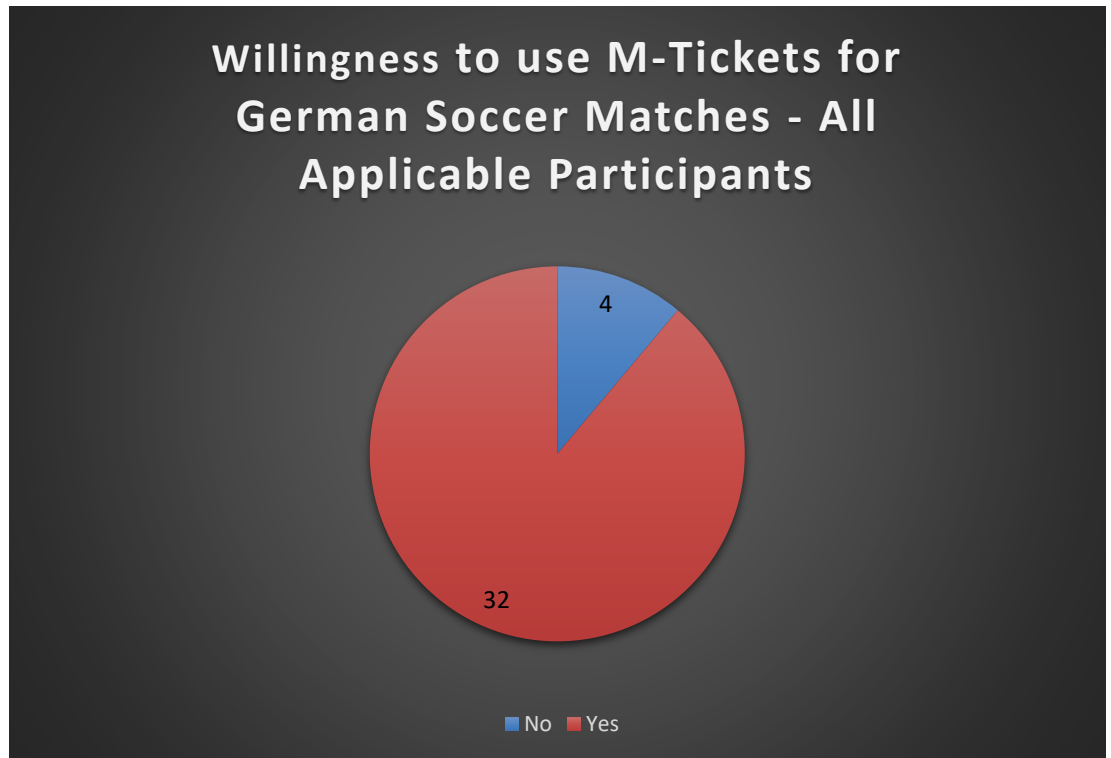


Fig. 26: Willingness to use M-Tickets for German Soccer Matches - All Applicable Participants¹²⁴

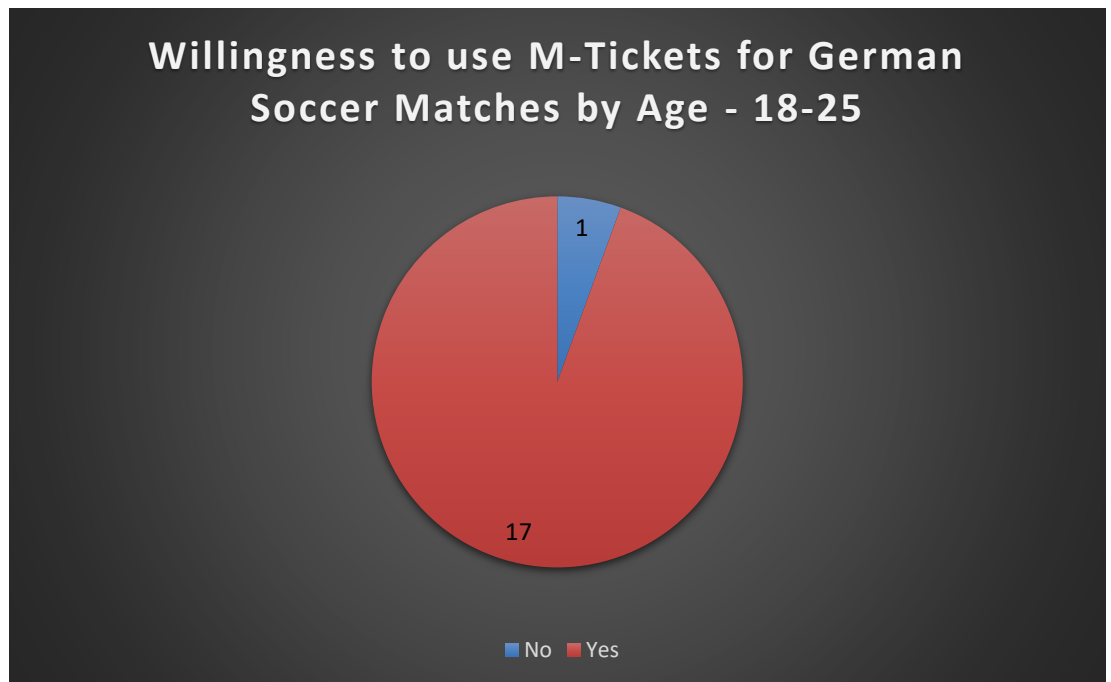


Fig. 27: Willingness to use M-Tickets for German Soccer Matches by Age - 18-25¹²⁵

¹²⁴ See Analysis Report (Additional Charts).

¹²⁵ See Analysis Report (Additional Charts).

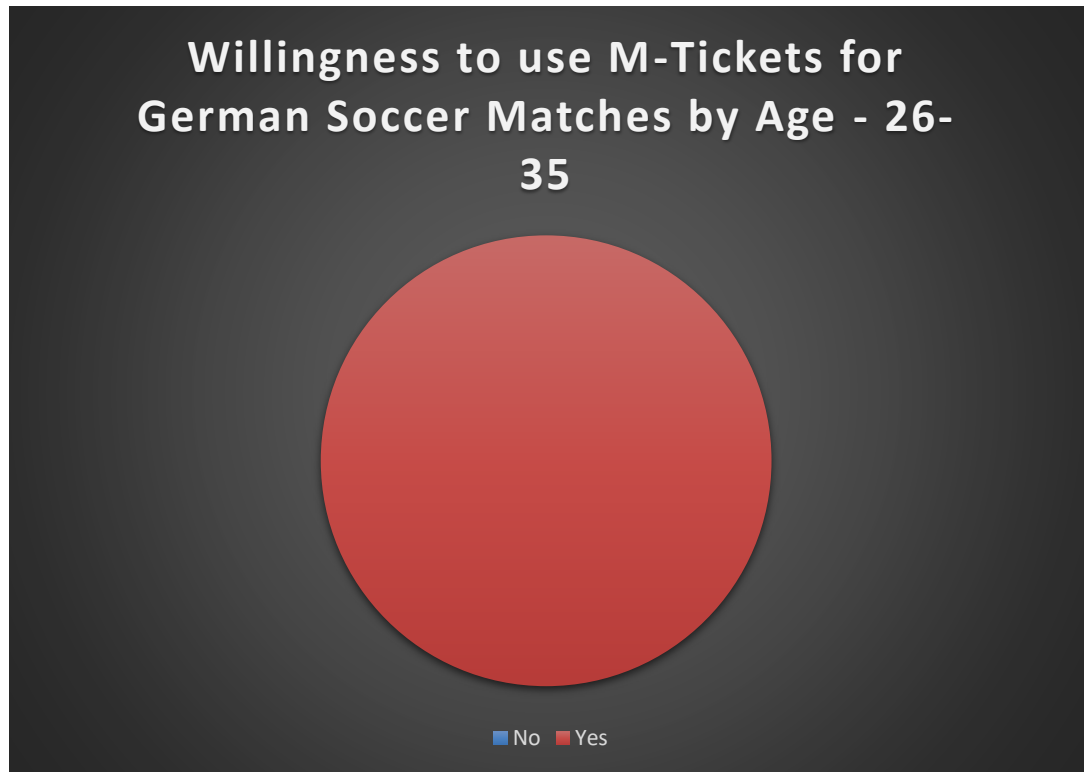


Fig. 28: Willingness to use M-Tickets for German Soccer Matches by Age - 26-35¹²⁶

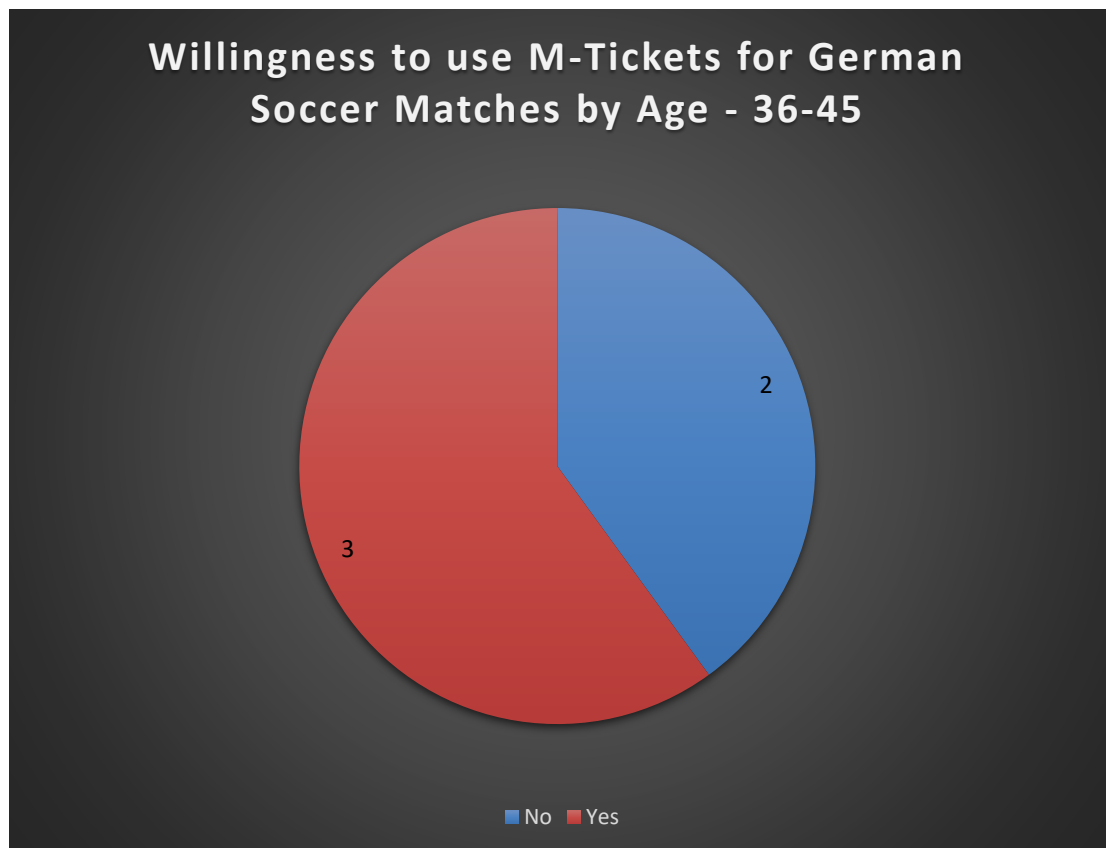


Fig. 29: Willingness to use M-Tickets for German Soccer Matches by Age - 36-45¹²⁷

¹²⁶ See Analysis Report (Additional Charts).

¹²⁷ See Analysis Report (Additional Charts).

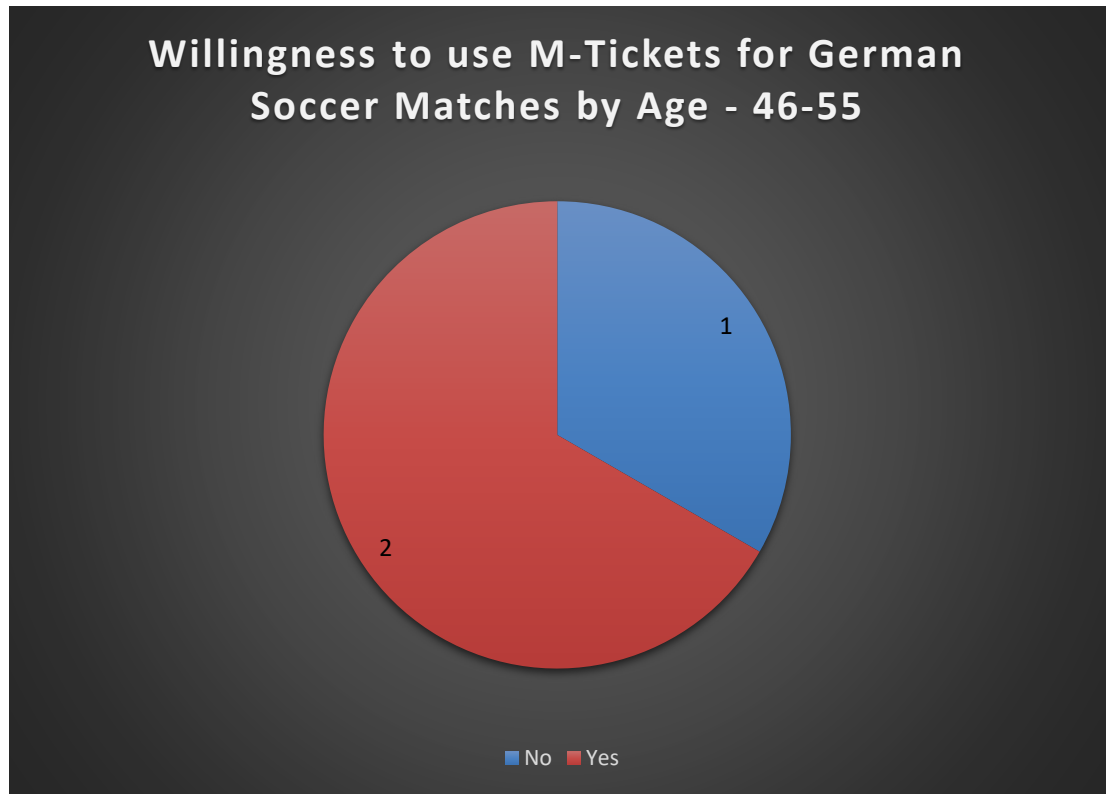


Fig. 30: Willingness to use M-Tickets for German Soccer Matches by Age - 46-55¹²⁸

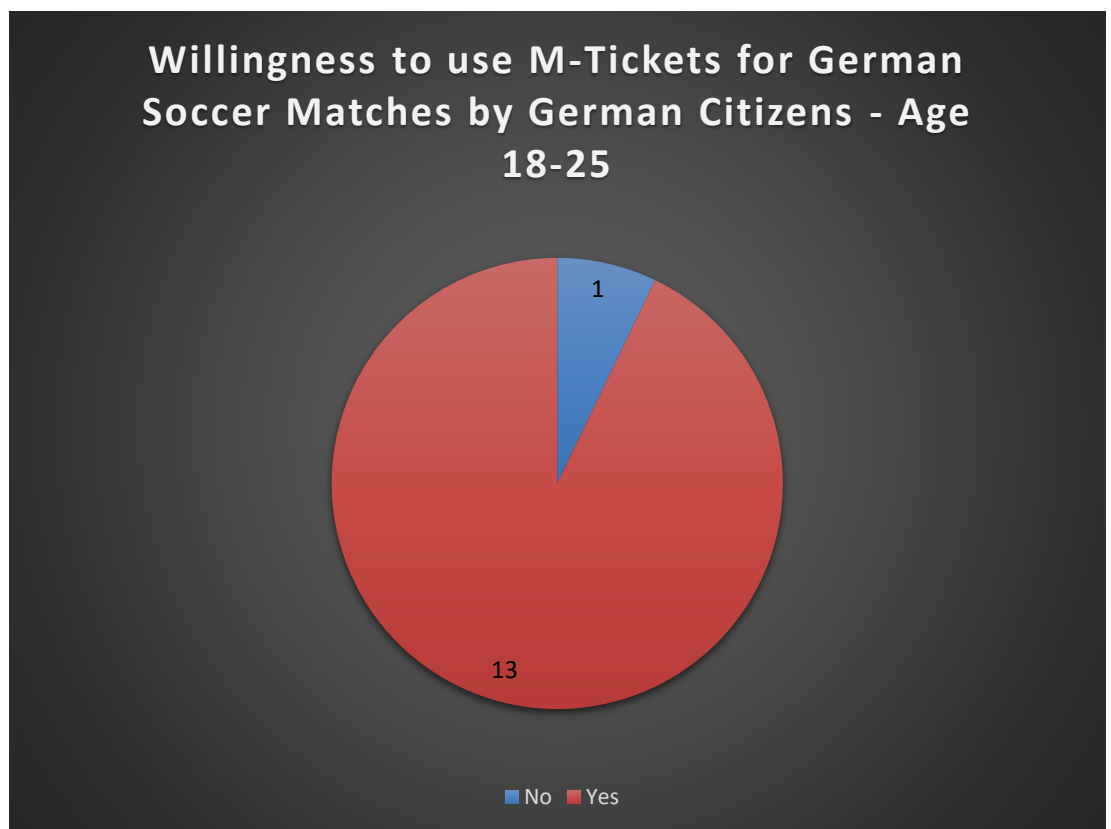


Fig. 31: Willingness to use M-Tickets for German Soccer Matches by German Citizens - Age 18-25¹²⁹

¹²⁸ See Analysis Report (Additional Charts).

¹²⁹ See Analysis Report (Additional Charts).

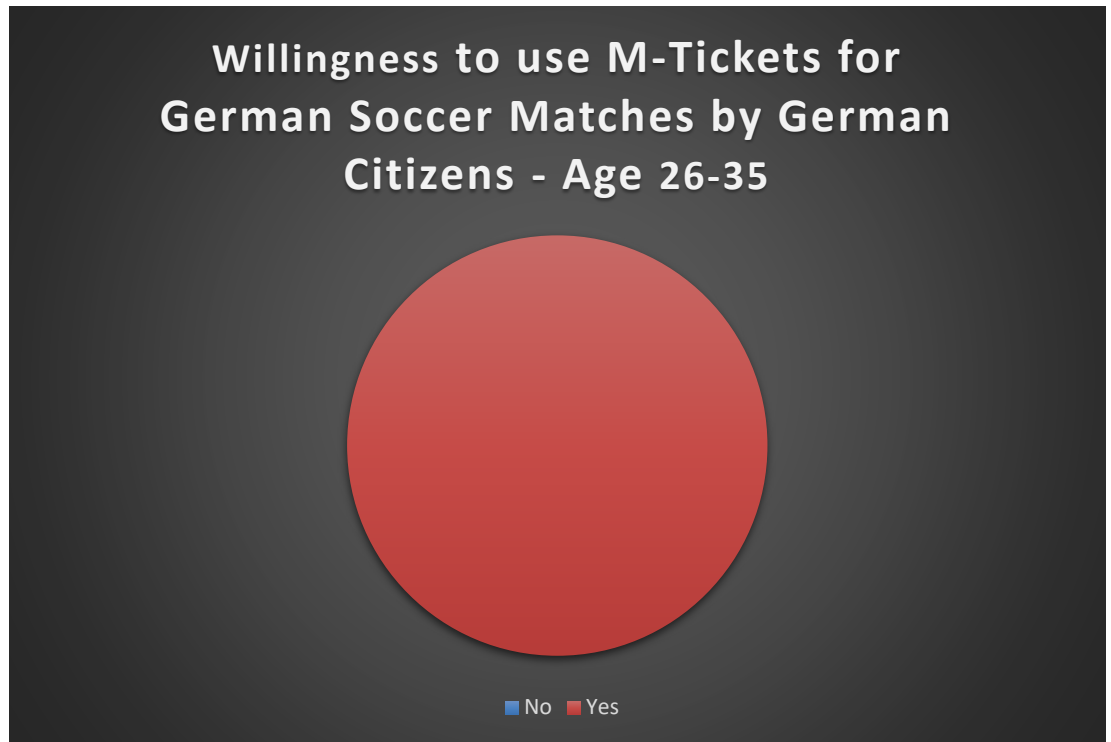


Fig. 32: Willingness to use M-Tickets for German Soccer Matches by German Citizens - Age 26-35¹³⁰

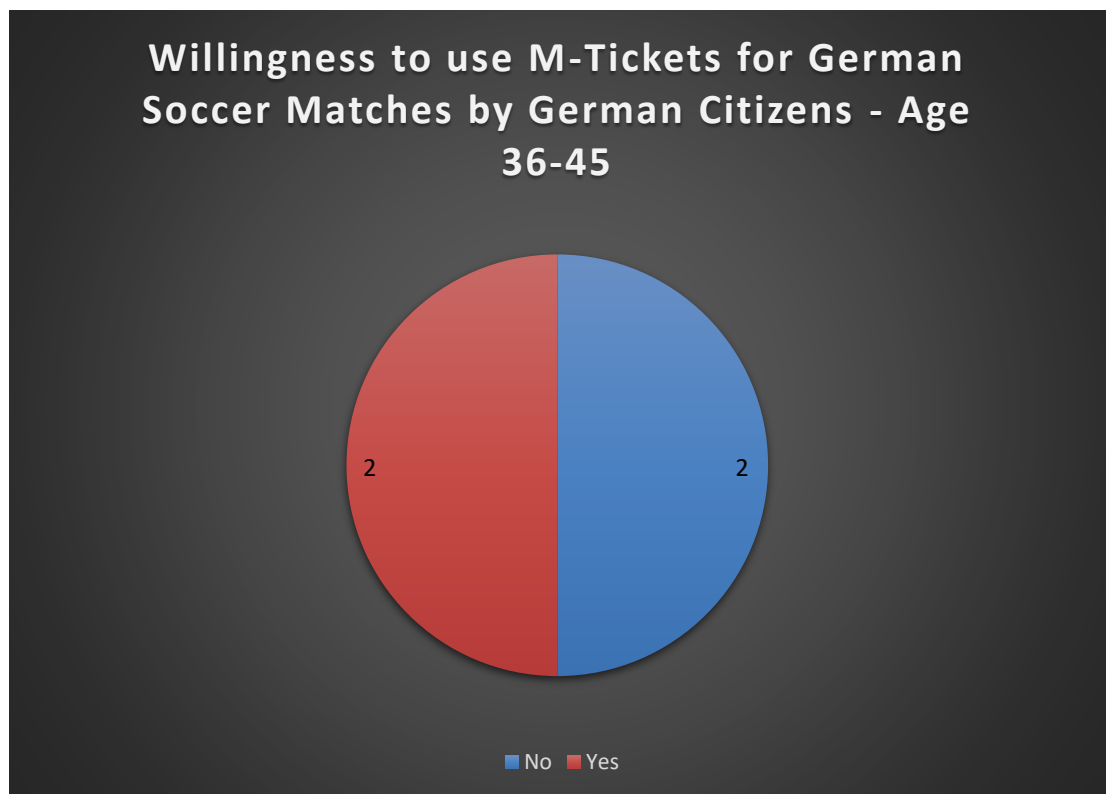


Fig. 33: Willingness to use M-Tickets for German Soccer Matches by German Citizens - Age 36-45¹³¹

¹³⁰ See Analysis Report (Additional Charts).

¹³¹ See Analysis Report (Additional Charts).

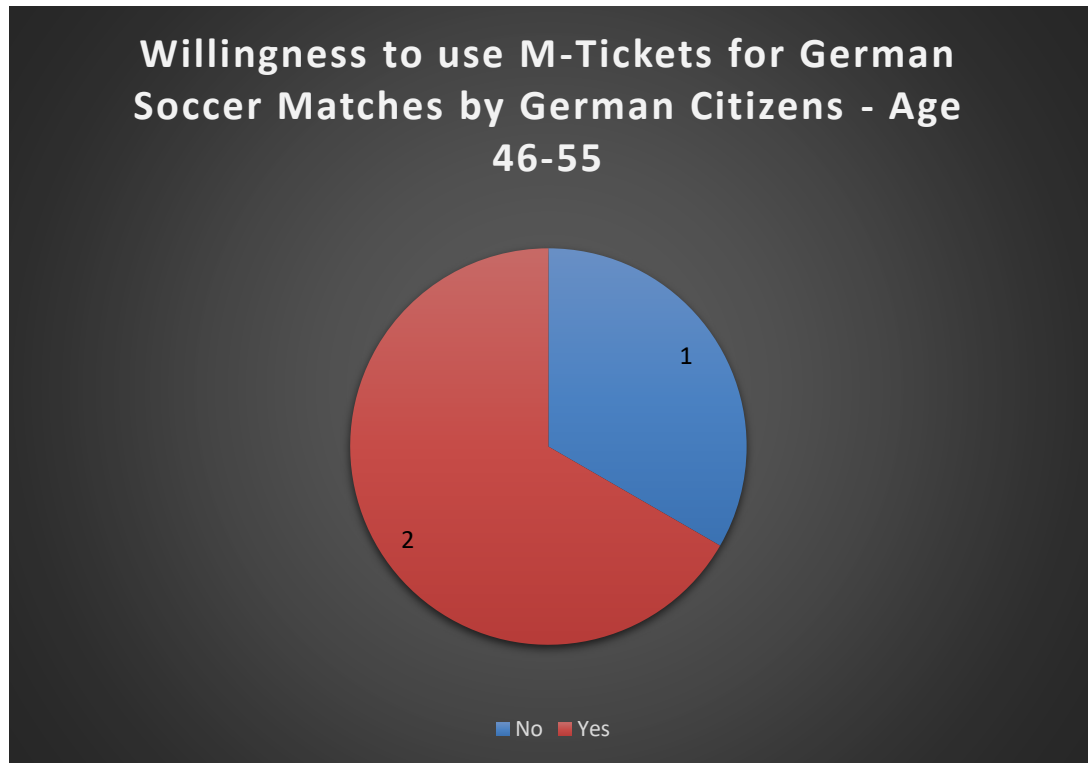


Fig. 34: Willingness to use M-Tickets for German Soccer Matches by German Citizens - Age 46-55¹³²

7.5.4 Previous Usage of M-Tickets for German Soccer

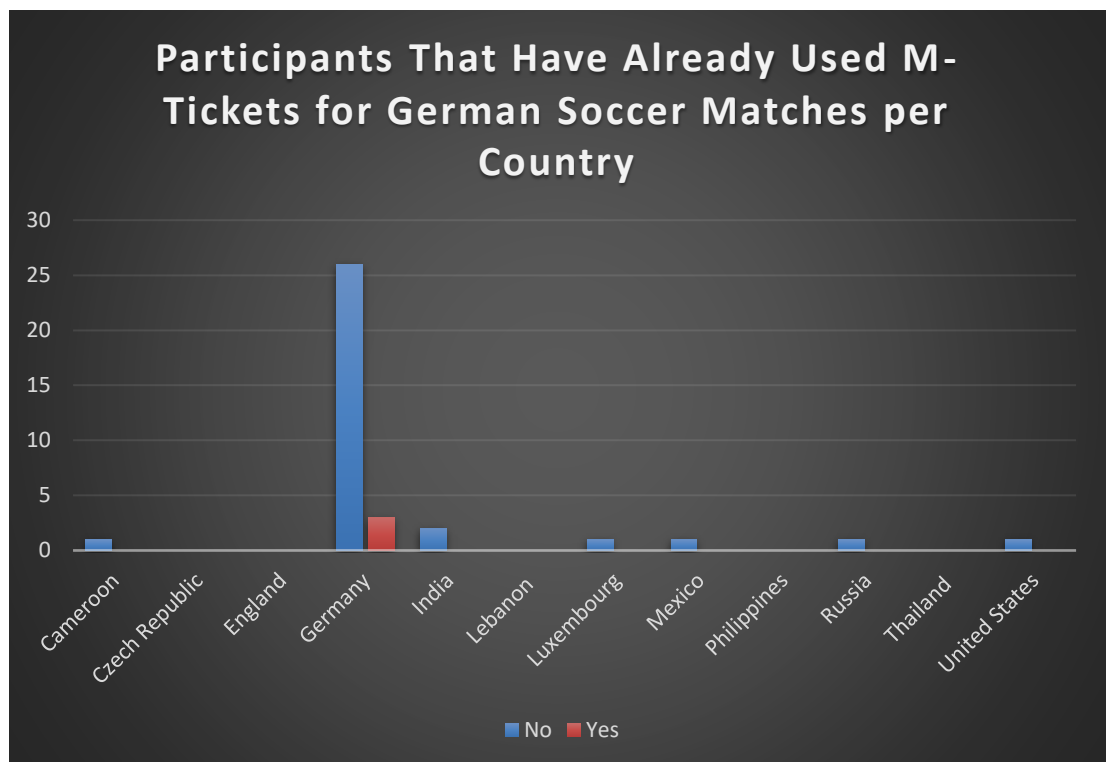


Fig. 35: Participants That Have Already Used M-Tickets for German Soccer Matches per Country¹³³

¹³² See Analysis Report (Additional Charts).

¹³³ See Analysis Report (Additional Charts).

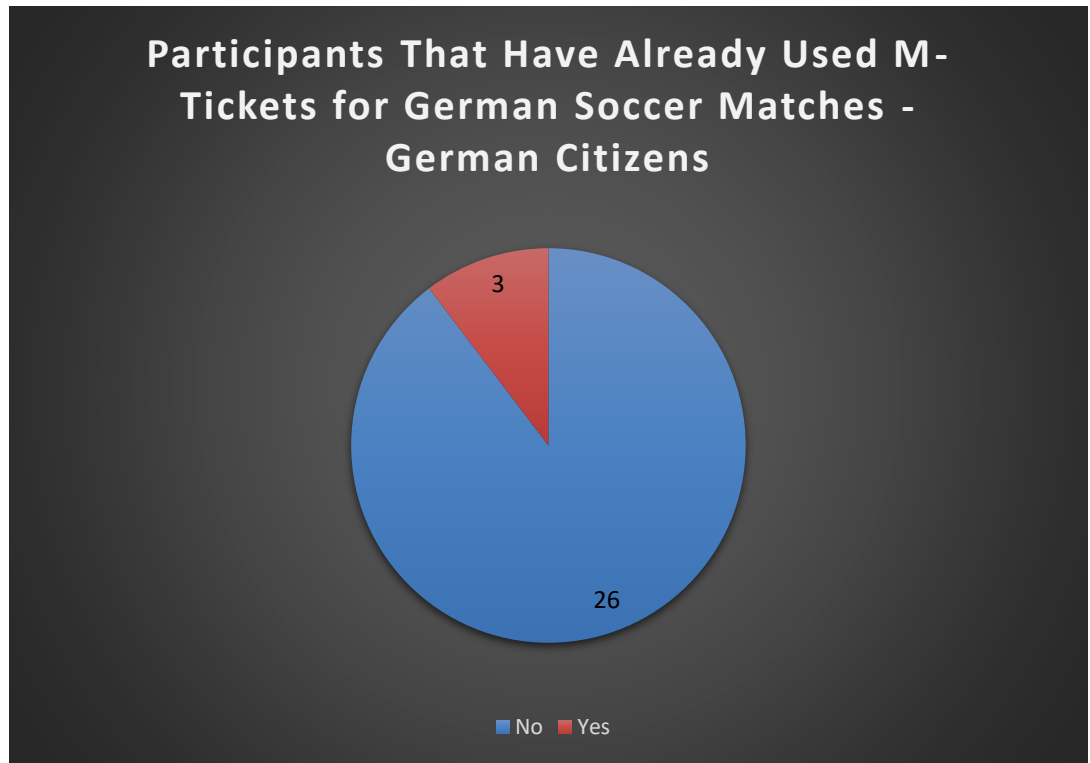


Fig. 36: Participants That Have Already Used M-Tickets for German Soccer Matches - German Citizens¹³⁴

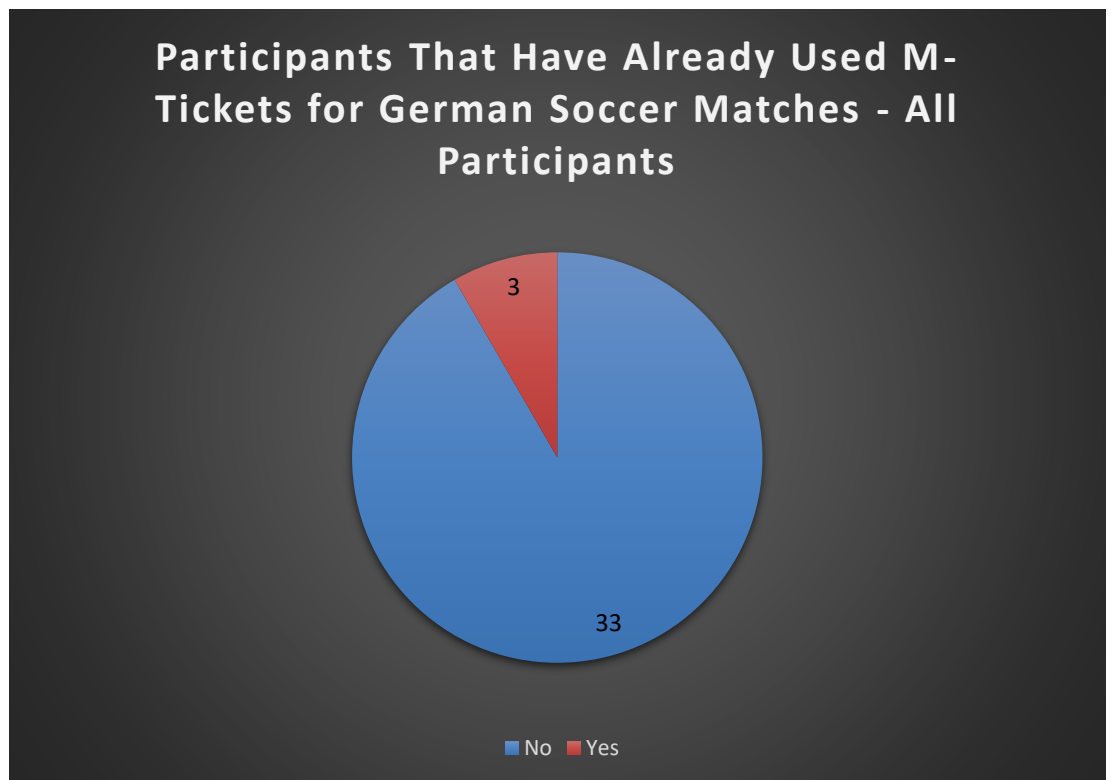


Fig. 37: Participants That Have Already Used M-Tickets for German Soccer Matches - All Participants¹³⁵

¹³⁴ See Analysis Report (Additional Charts).

¹³⁵ See Analysis Report (Additional Charts).

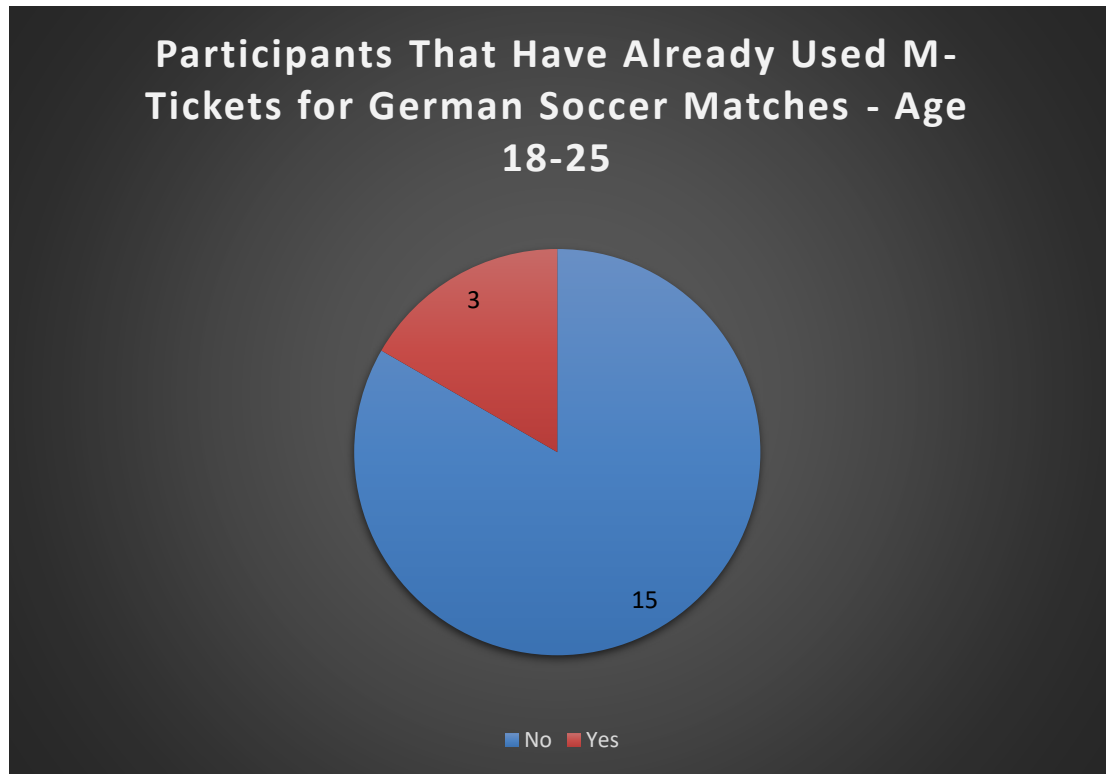


Fig. 38: Participants That Have Already Used M-Tickets for German Soccer Matches - Age 18-25¹³⁶

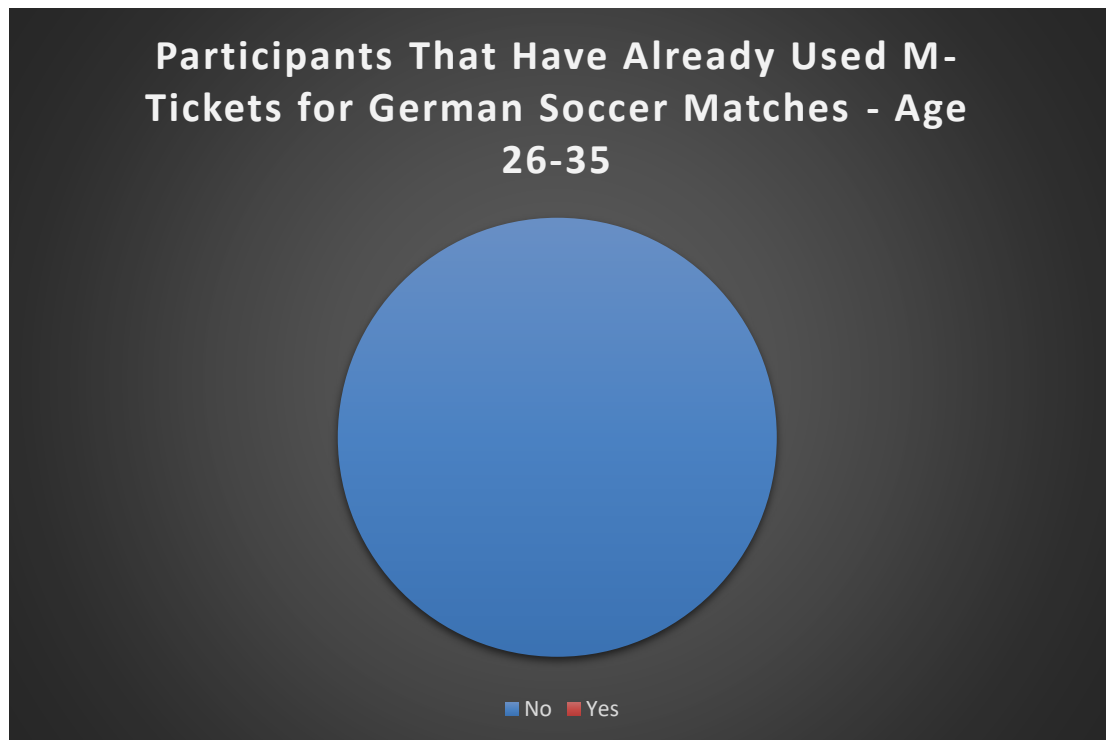


Fig. 39: Participants That Have Already Used M-Tickets for German Soccer Matches - Age 26-35¹³⁷

¹³⁶ See Analysis Report (Additional Charts).

¹³⁷ See Analysis Report (Additional Charts).

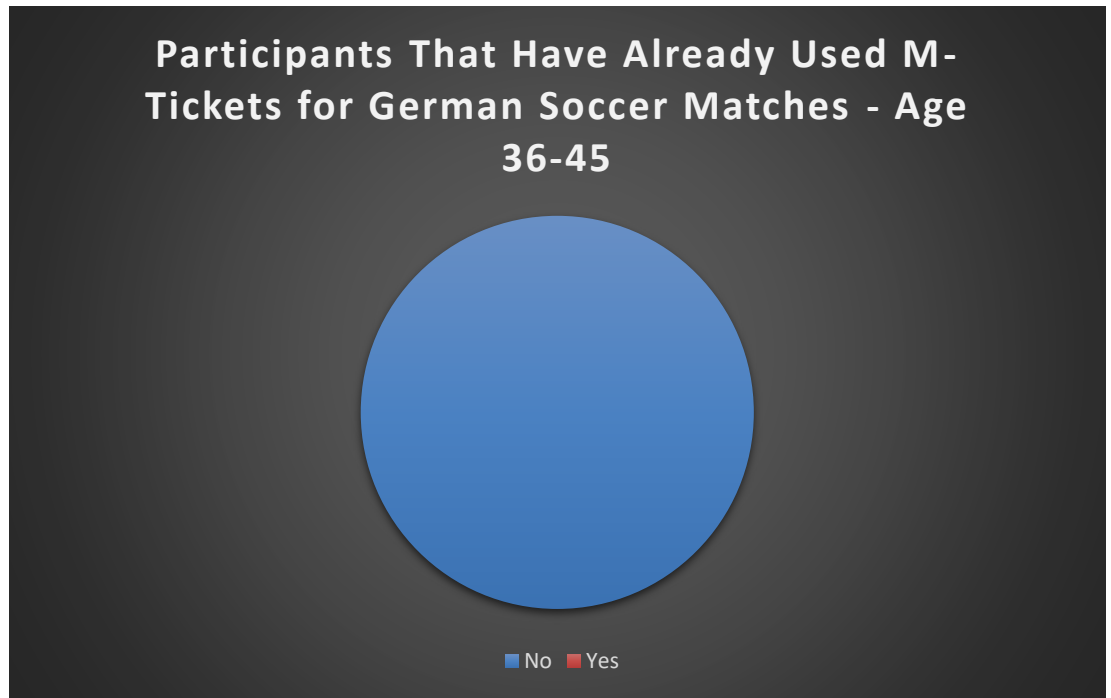


Fig. 40: Participants That Have Already Used M-Tickets for German Soccer Matches - Age 36-45¹³⁸

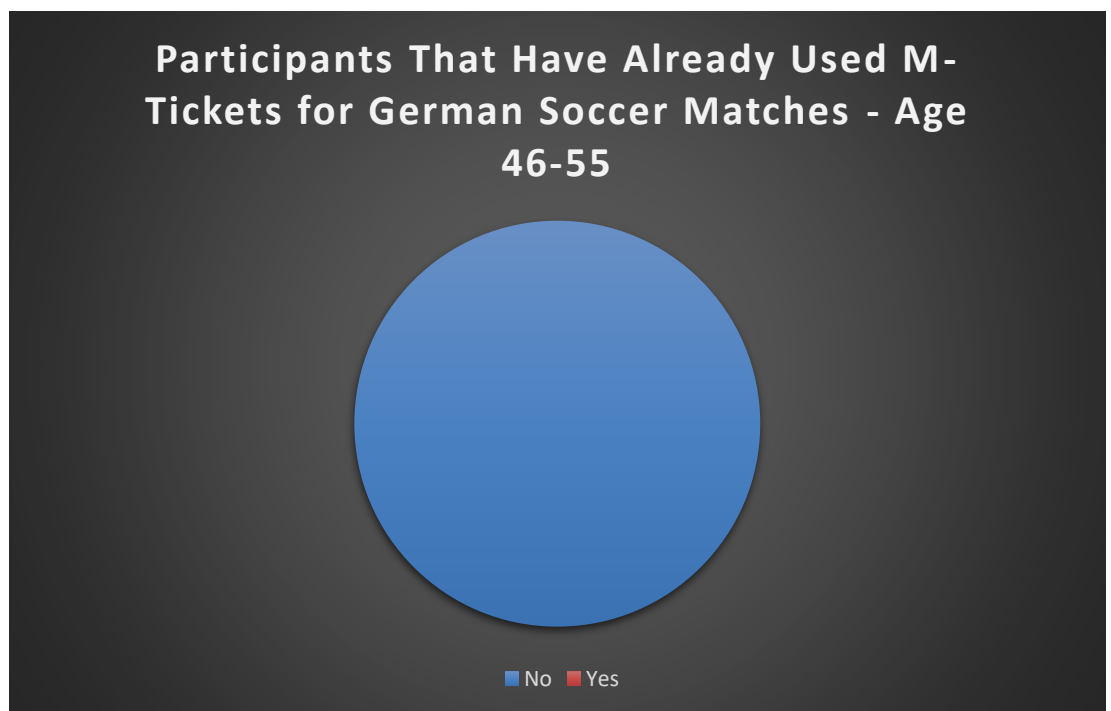


Fig. 41: Participants That Have Already Used M-Tickets for German Soccer Matches - Age 46-55¹³⁹

¹³⁸ See Analysis Report (Additional Charts).

¹³⁹ See Analysis Report (Additional Charts).

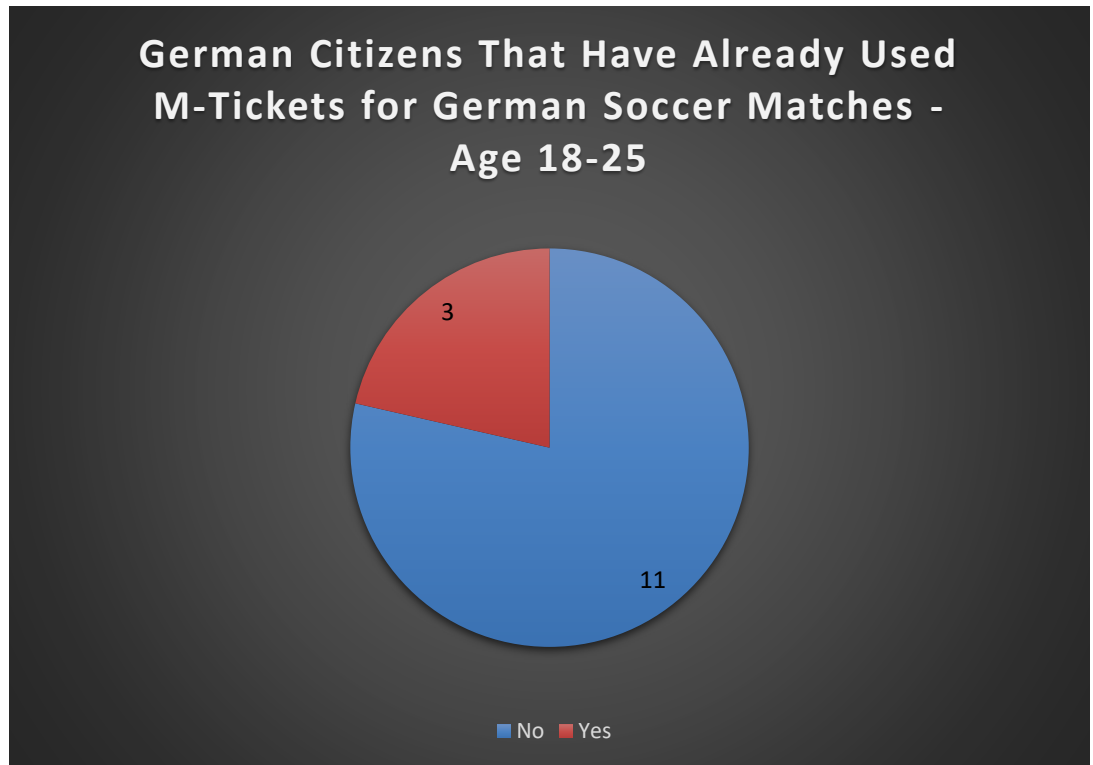


Fig. 42: German Citizens That Have Already Used M-Tickets for German Soccer Matches - Age 18-25¹⁴⁰

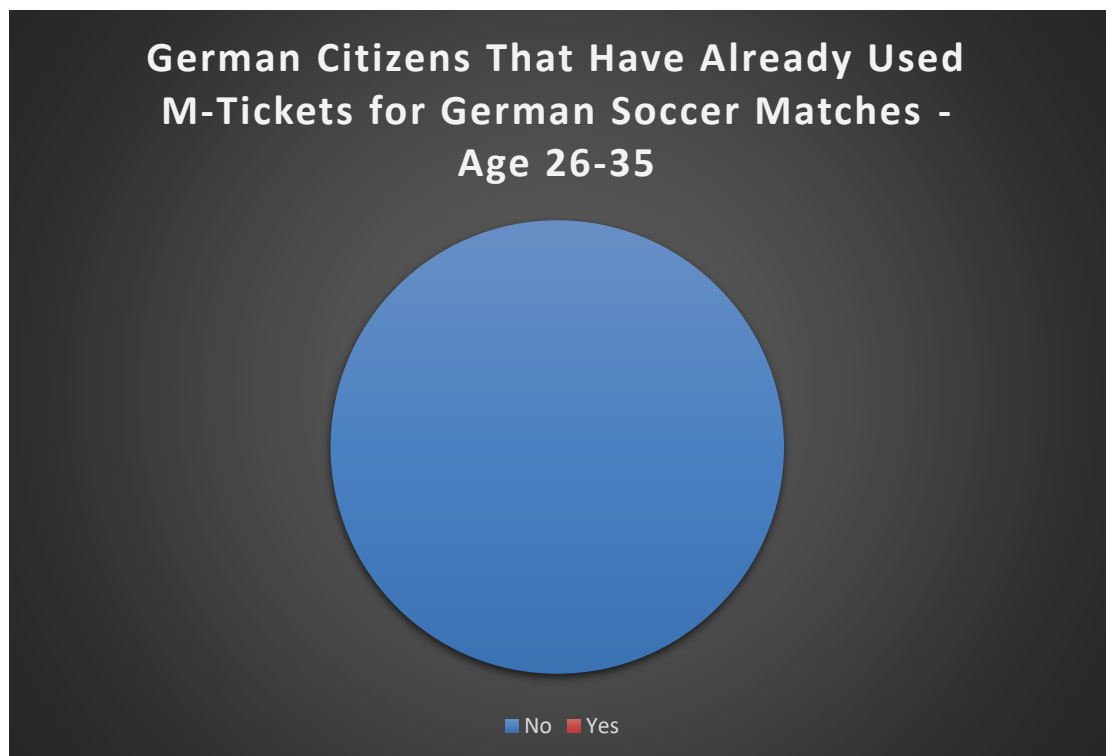


Fig. 43: German Citizens That Have Already Used M-Tickets for German Soccer Matches - Age 26-35¹⁴¹

¹⁴⁰ See Analysis Report (Additional Charts).

¹⁴¹ See Analysis Report (Additional Charts).

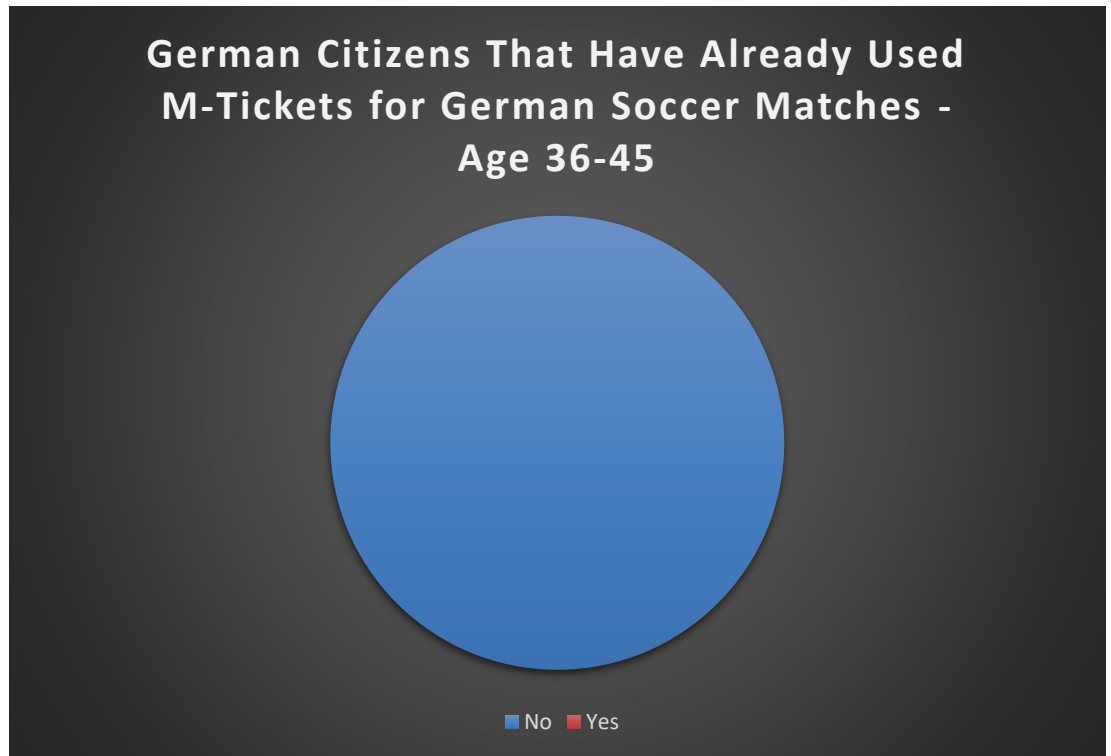


Fig. 44: German Citizens That Have Already Used M-Tickets for German Soccer Matches - Age 36-45

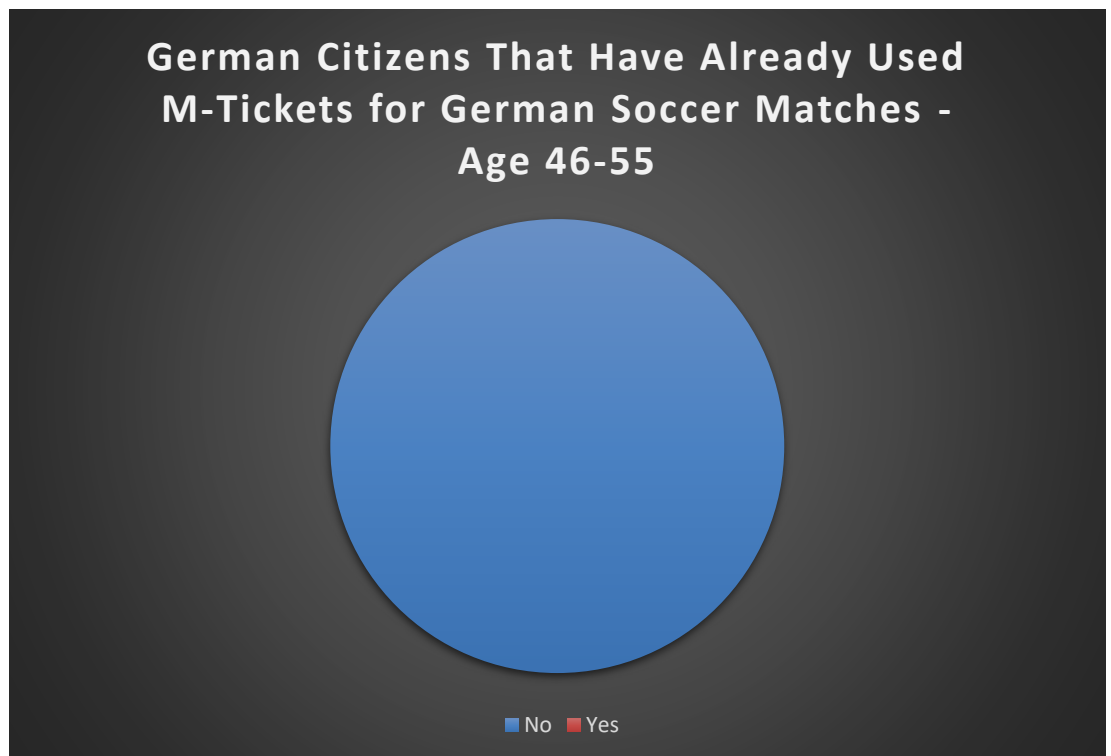


Fig. 45: German Citizens That Have Already Used M-Tickets for German Soccer Matches - Age 46-55¹⁴²

¹⁴² See Analysis Report (Additional Charts).

7.5.5 Preferred Ticket Type for German Soccer

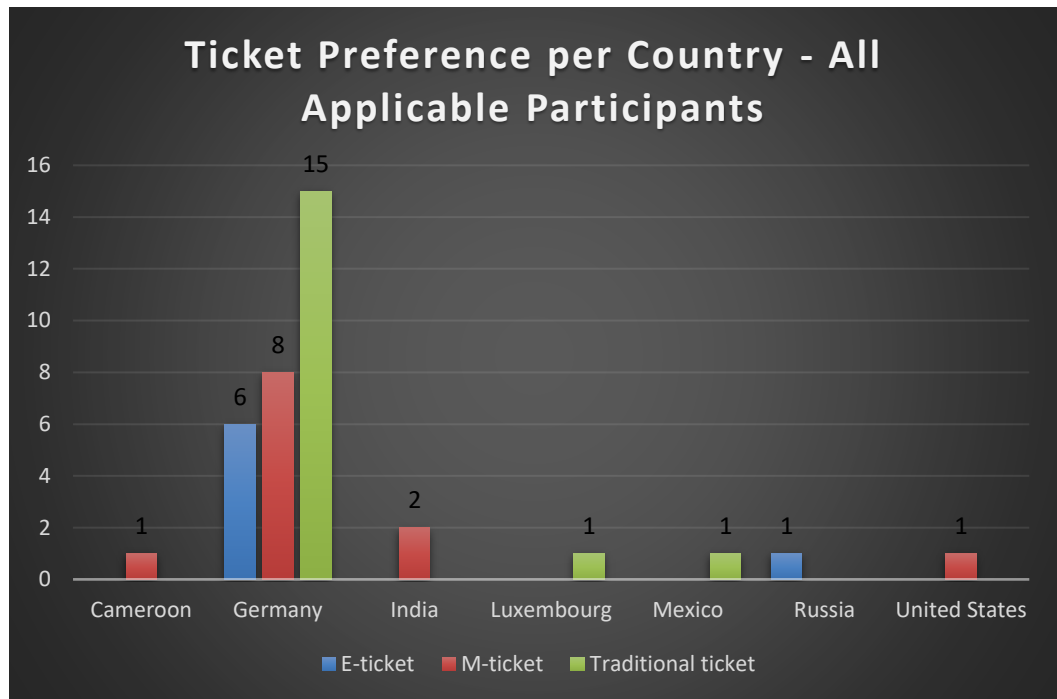


Fig. 46: Ticket Preference per Country - All Applicable Participants¹⁴³

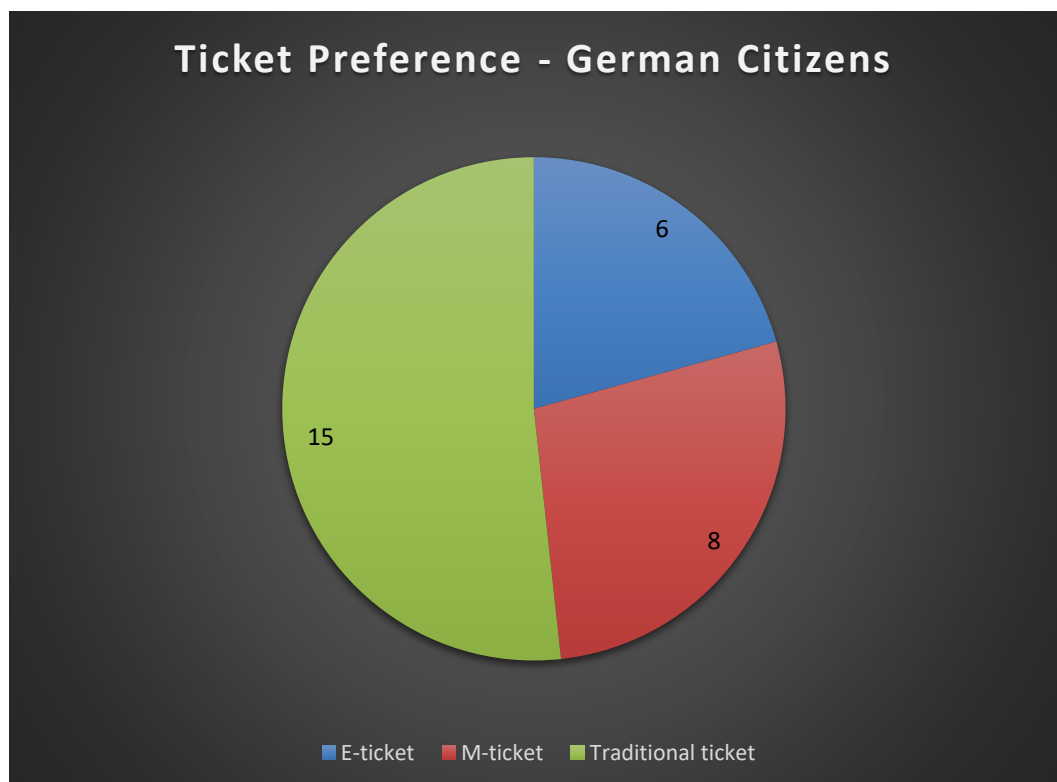


Fig. 47: Ticket Preference - German Citizens¹⁴⁴

¹⁴³ See Analysis Report (Additional Charts).

¹⁴⁴ See Analysis Report (Additional Charts).

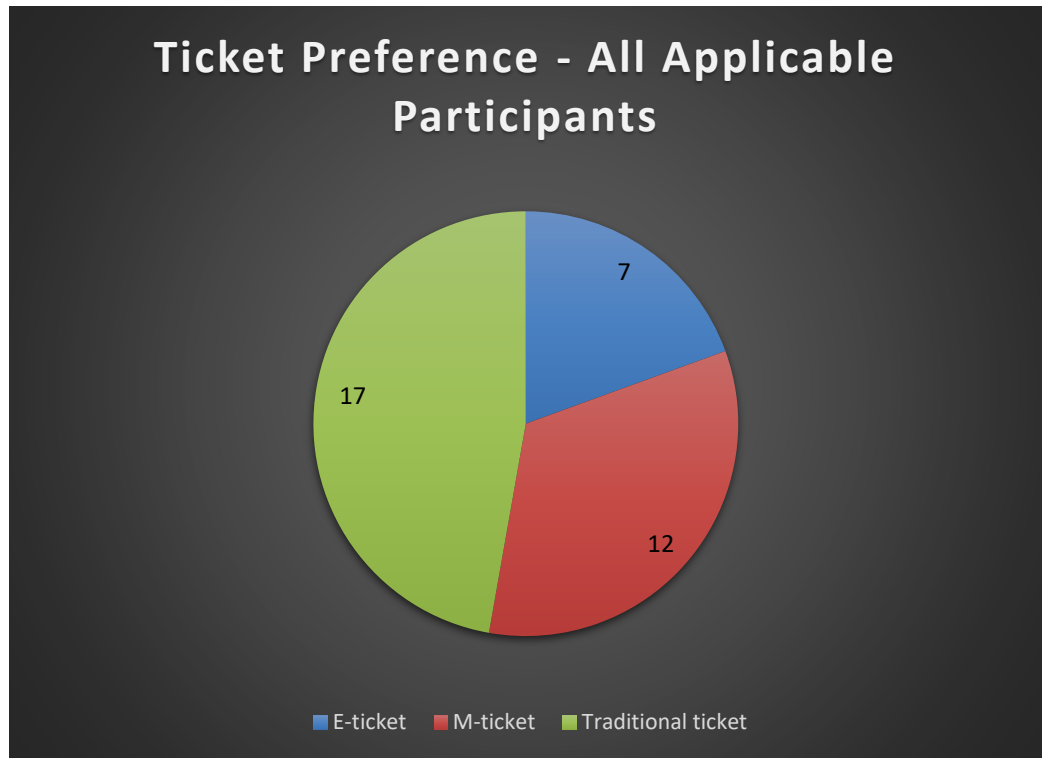


Fig. 48: Ticket Preference - All Applicable Participants¹⁴⁵

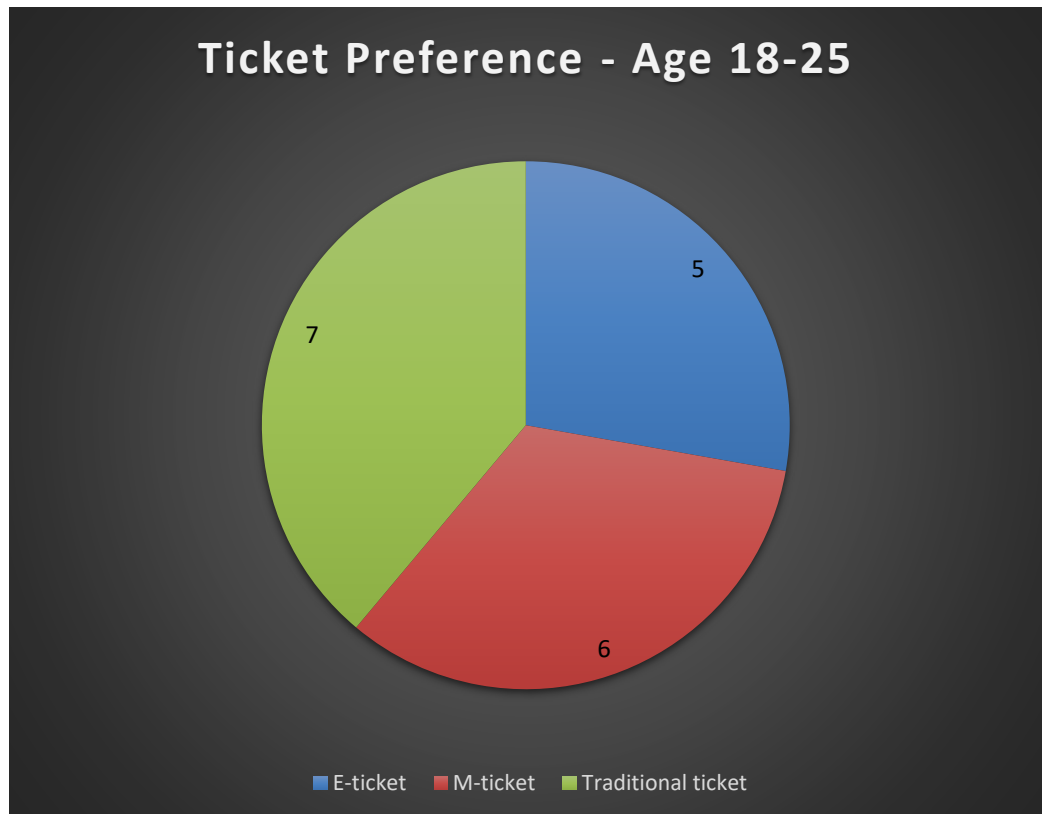


Fig. 49: Ticket Preference - Age 18-25¹⁴⁶

¹⁴⁵ See Analysis Report (Additional Charts).

¹⁴⁶ See Analysis Report (Additional Charts).

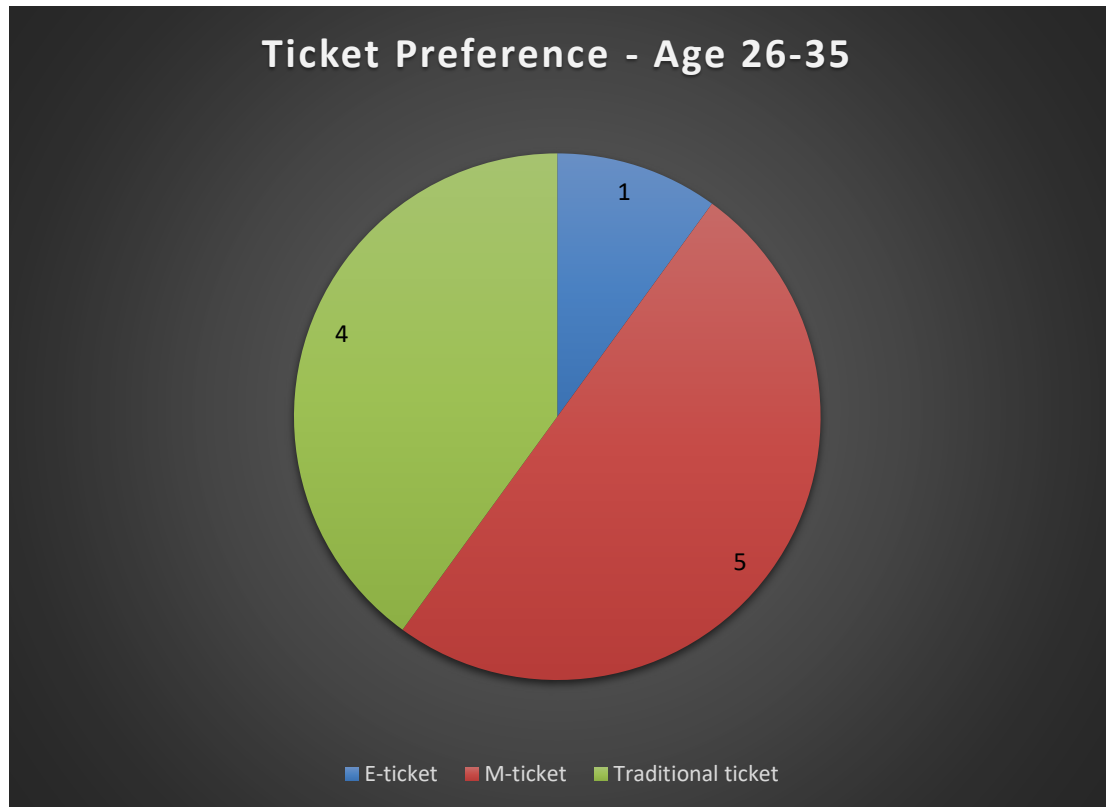


Fig. 50: Ticket Preference - Age 26-35¹⁴⁷

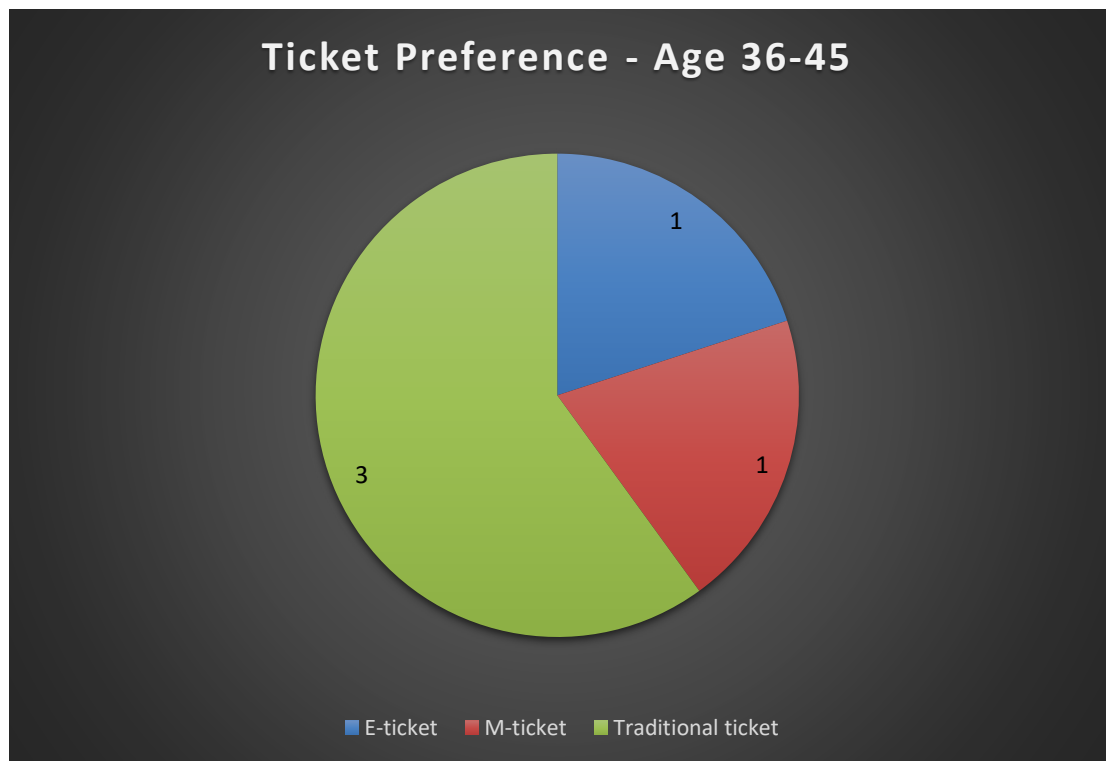
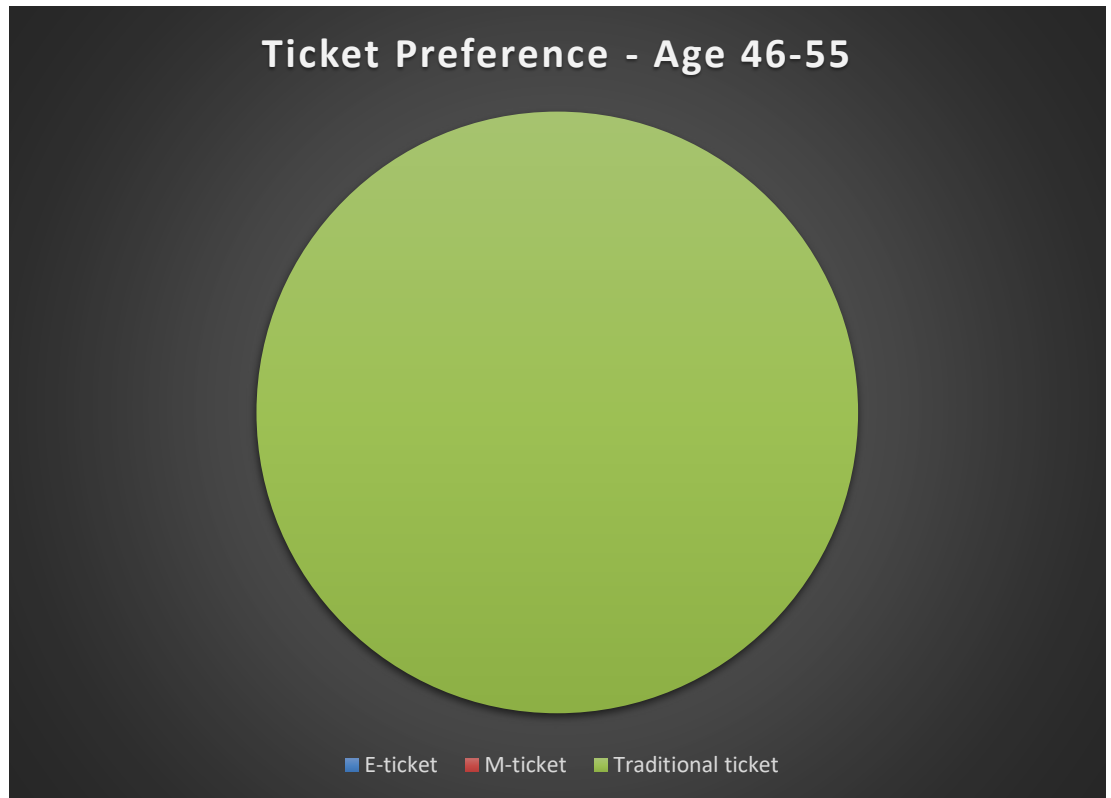
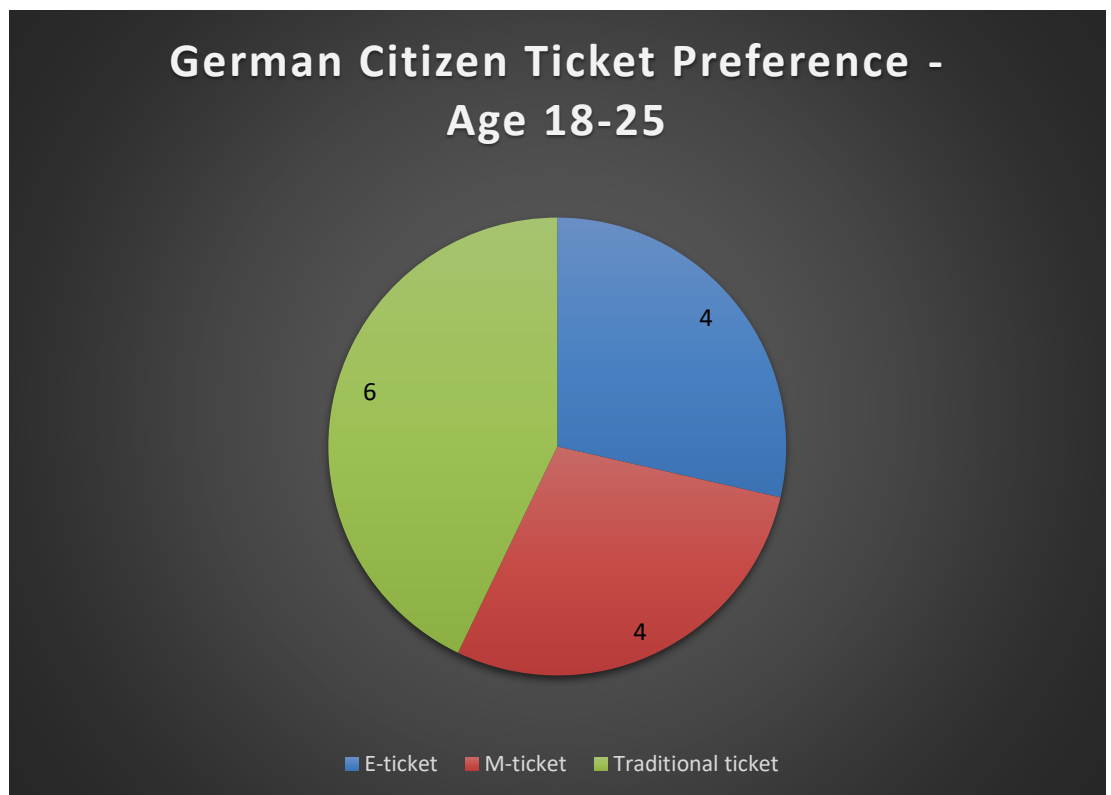


Fig. 51: Ticket Preference - Age 36-45¹⁴⁸

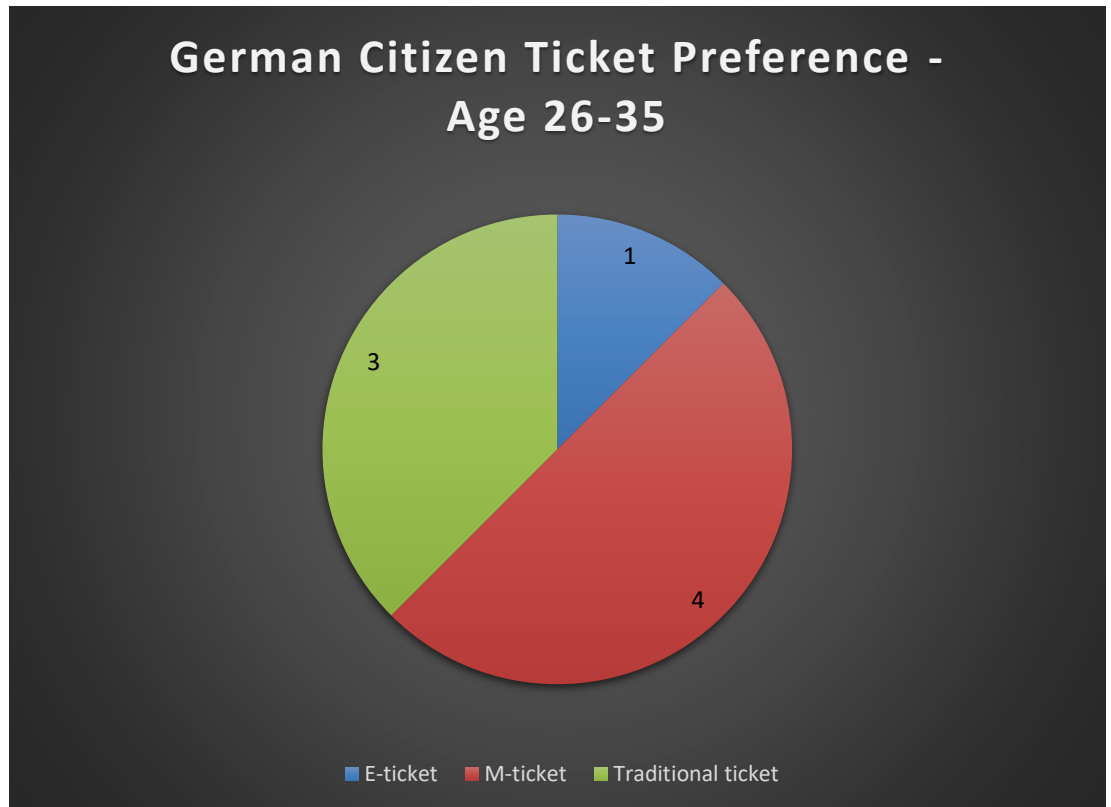
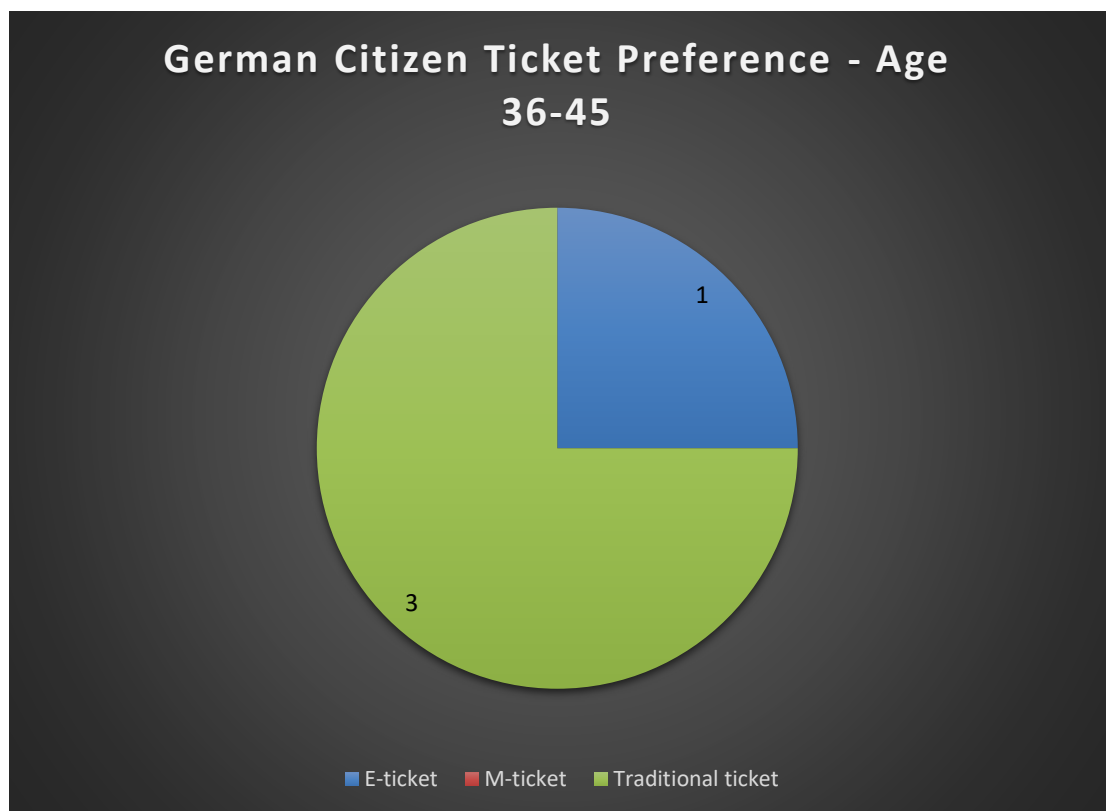
¹⁴⁷ See Analysis Report (Additional Charts).

¹⁴⁸ See Analysis Report (Additional Charts).

Fig. 52: Ticket Preference - Age 46-55¹⁴⁹Fig. 53: German Citizen Ticket Preference - Age 18-25¹⁵⁰

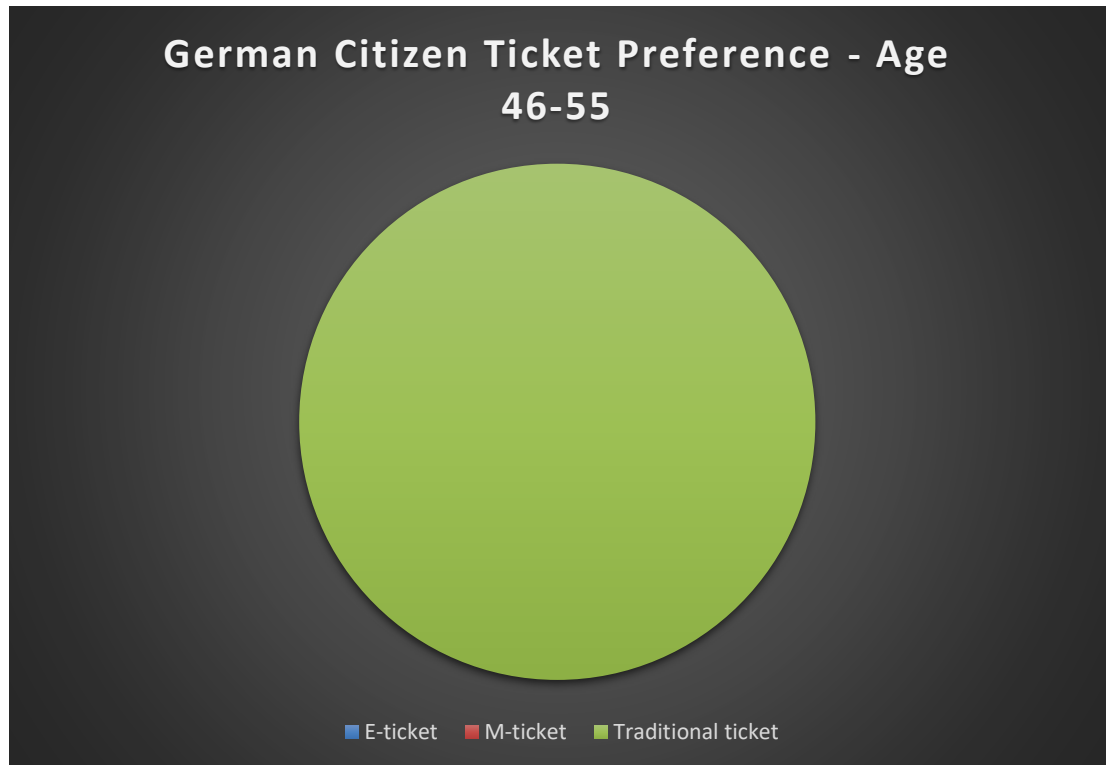
¹⁴⁹ See Analysis Report (Additional Charts).

¹⁵⁰ See Analysis Report (Additional Charts).

Fig. 54: German Citizen Ticket Preference - Age 26-35¹⁵¹Fig. 55: German Citizen Ticket Preference - Age 36-45¹⁵²

¹⁵¹ See Analysis Report (Additional Charts).

¹⁵² See Analysis Report (Additional Charts).

Fig. 56: German Citizen Ticket Preference - Age 46-55¹⁵³

7.5.6 Preference of M-Tickets Explanation

Tab. 5: Explanation of Ticket Preference¹⁵⁴

| Please quickly explain why you prefer M-tickets, E-tickets, or the traditional method of ticketing. |
|---|
| Umweltfreundlicher, direkt immer mit dabei |
| No possibility of losing or forgetting the ticket since my phone is always in my pocket |
| Weil ich flexibel bin, falls mein Handy kaputt geht |
| Ist einfacher |
| M ticket. Einfach und schnell |
| Das Ticket geht nicht verloren und ist immer greifbar wenn es auf dem Handy abgerufen werden kann / the ticket is always simply accessible and cannot be lost if stored on a cell phone |
| I'm used to having a printed ticket |
| E-Tickets waren bis jetzt am bequemsten. |
| Als Erinnerung |
| Easy to use |
| Einfach, schnell |
| Manche Tickets sind es wert das sie auch über Jahre aufgehoben werden. |
| M-Ticket ist immer dabei |
| It is much easier to receive, can't be lost and helps the environment |

¹⁵³ See Analysis Report (Additional Charts).

¹⁵⁴ See Analysis Report (Additional Charts).

| |
|--|
| Bisher nur traditionelle Tickets genutzt |
| Ich würde sagen, rein aus Gewohnheit. |
| Einfacher |
| Rather convenient and eco friendly |
| It is much more convenient |
| Weil ich immer, das in meinem Handy habe |
| I like the feeling of the traditional ticket and the memory I have with the ticket |
| traditional tickets seem slighty safer however i cannot provide any reasoning for it |
| Because it is more closely to traditional method and it safe environment |
| Saves paper, more convenient, less possibilities of losing my ticket |

7.5.7 General M-Ticket Willingness

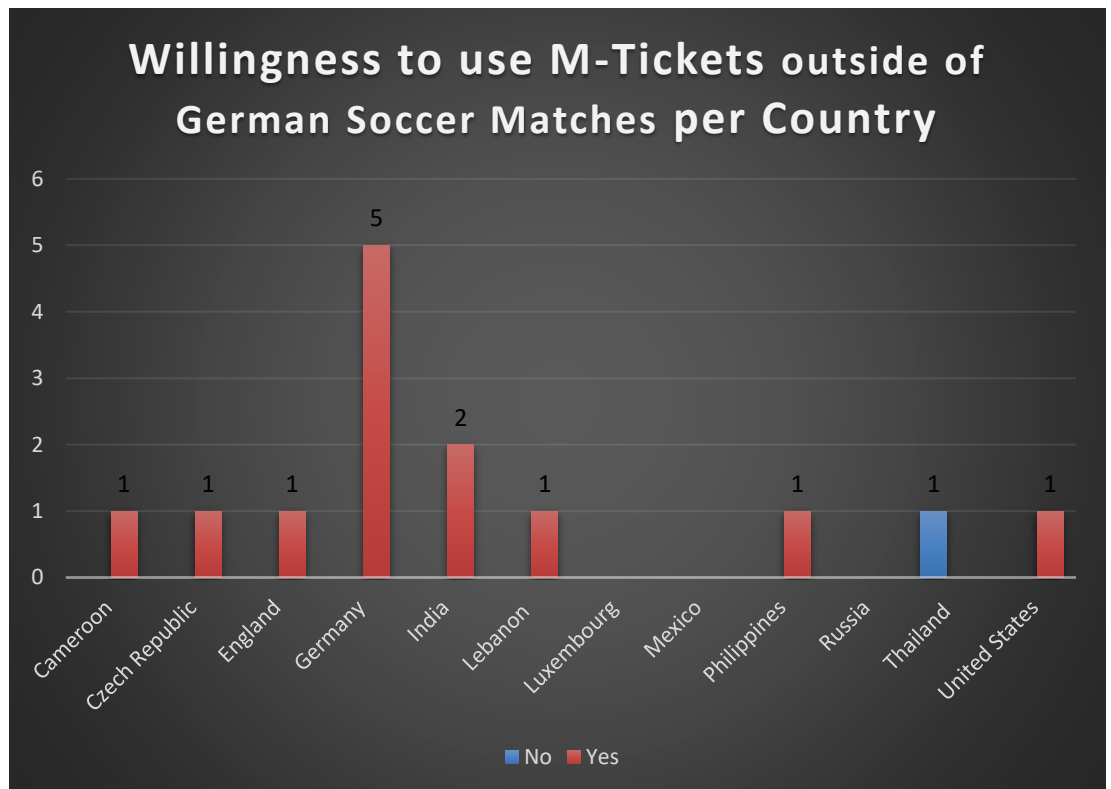


Fig. 57: Willingness to use M-Tickets outside of German Soccer Matches per Country¹⁵⁵

¹⁵⁵ See Analysis Report (Additional Charts).

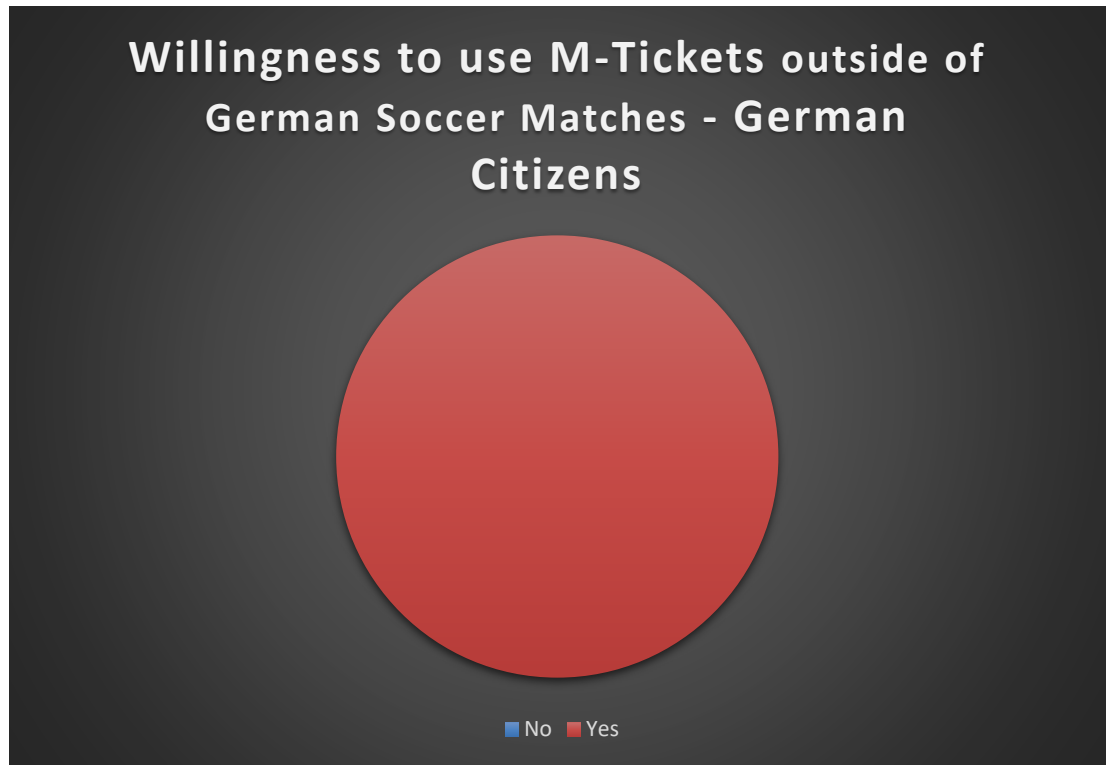


Fig. 58: Willingness to use M-Tickets outside of German Soccer Matches - German Citizens¹⁵⁶

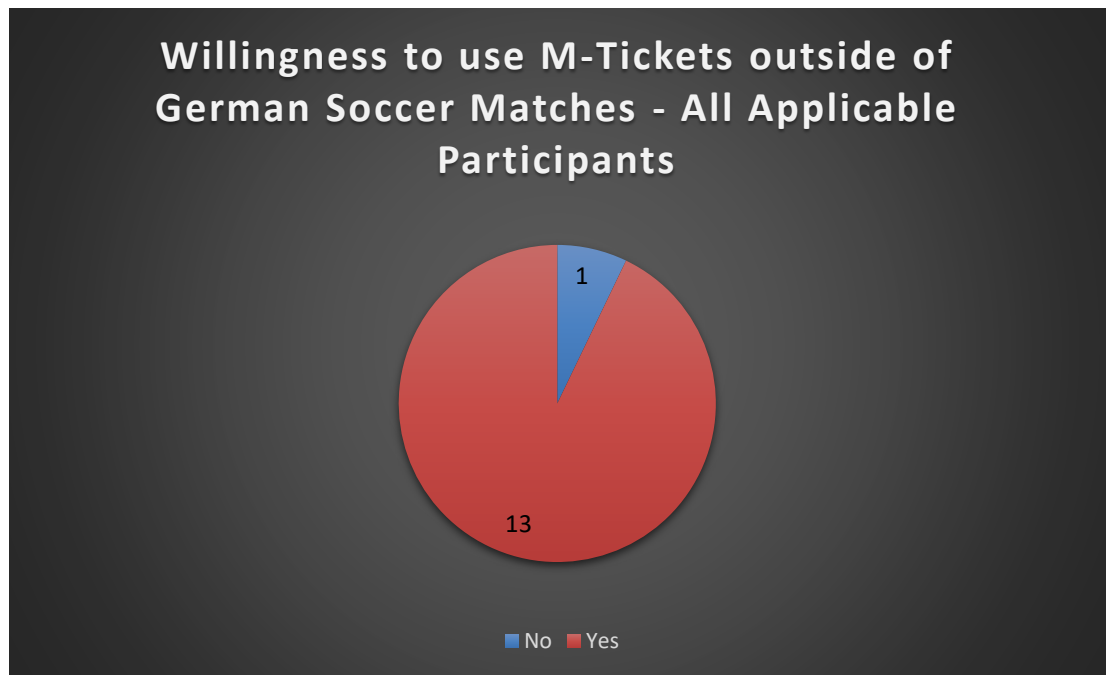


Fig. 59: Willingness to use M-Tickets outside of German Soccer Matches - All Applicable Participants¹⁵⁷

¹⁵⁶ See Analysis Report (Additional Charts).

¹⁵⁷ See Analysis Report (Additional Charts).

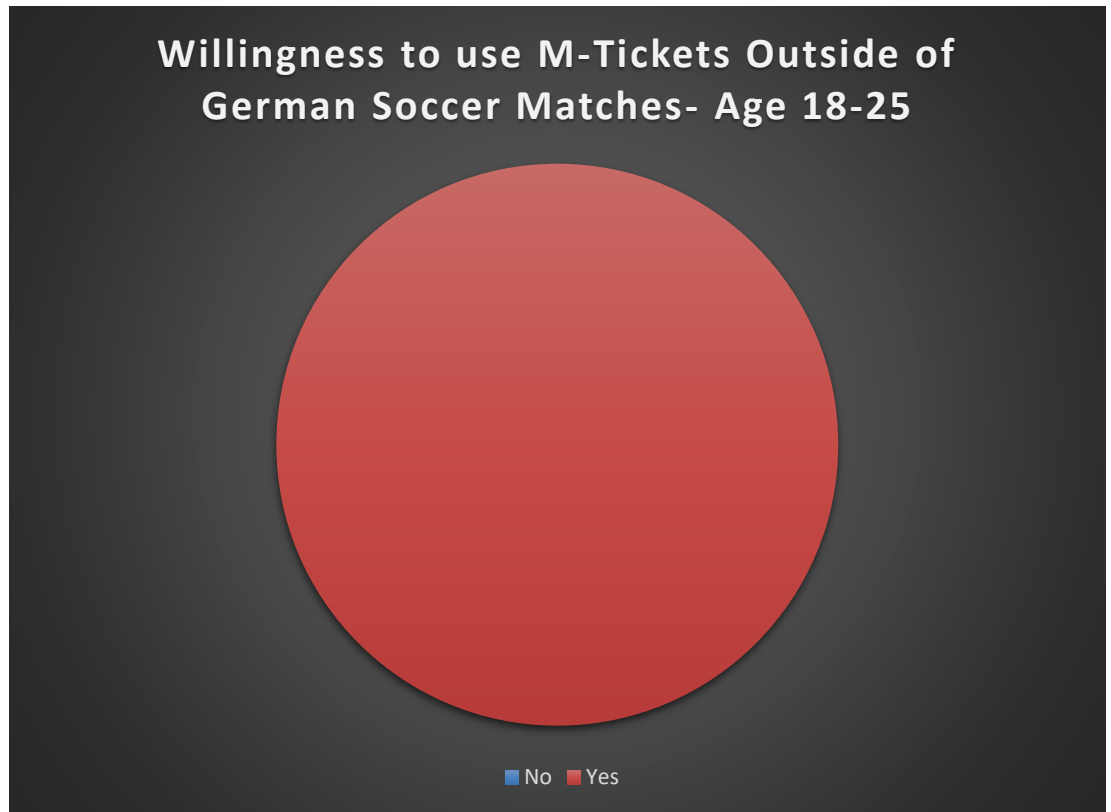


Fig. 60: Willingness to use M-Tickets Outside of German Soccer Matches- Age 18-25¹⁵⁸

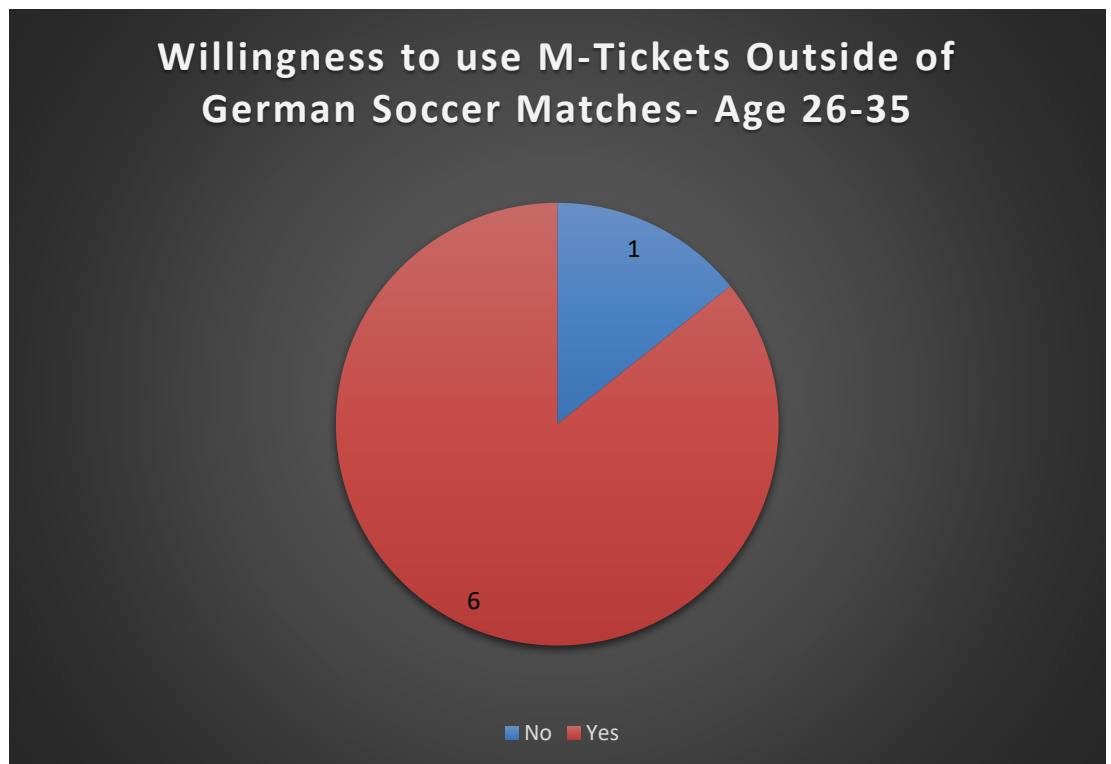


Fig. 61: Willingness to use M-Tickets Outside of German Soccer Matches- Age 26-35¹⁵⁹

¹⁵⁸ See Analysis Report (Additional Charts).

¹⁵⁹ See Analysis Report (Additional Charts).

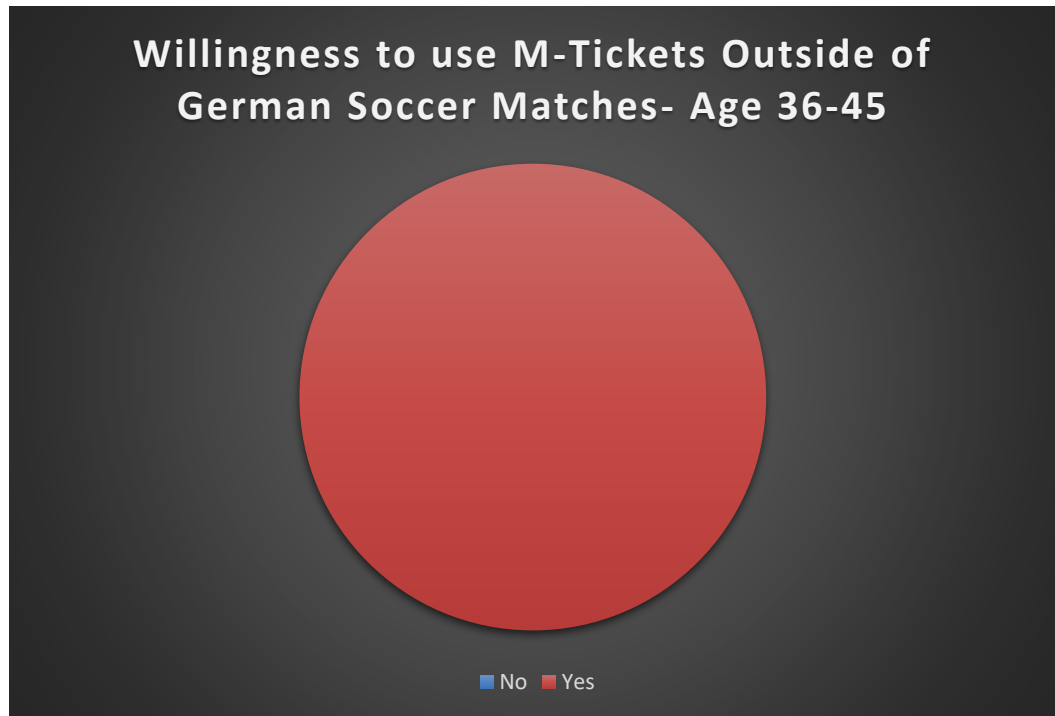


Fig. 62: Willingness to use M-Tickets Outside of German Soccer Matches- Age 36-45¹⁶⁰

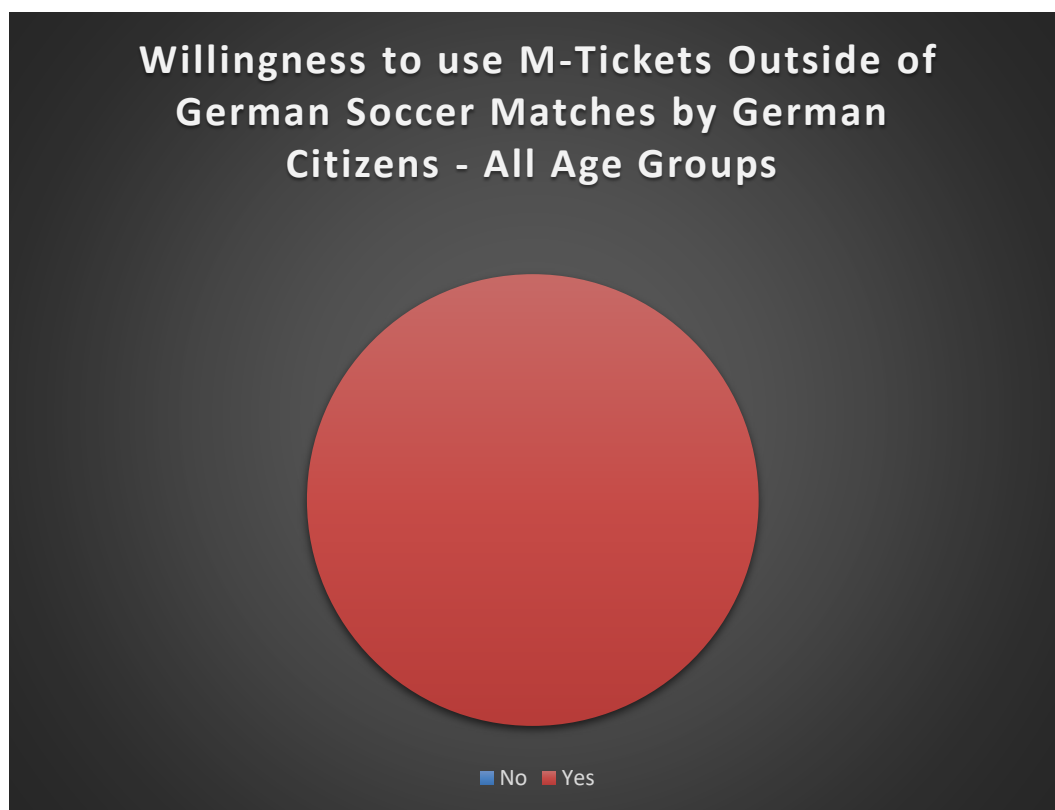


Fig. 63: Willingness to use M-Tickets Outside of German Soccer Matches by German Citizens - All Age Groups¹⁶¹

¹⁶⁰ See Analysis Report (Additional Charts).

¹⁶¹ See Analysis Report (Additional Charts).

7.5.8 General Ticket Preference

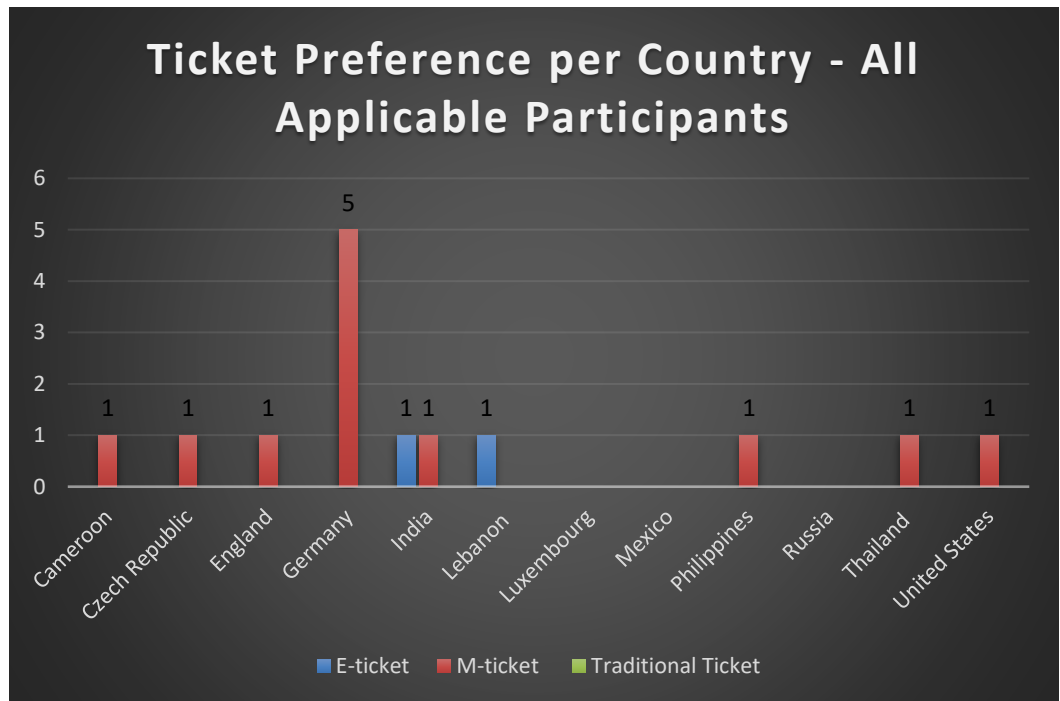


Fig. 64: Ticket Preference per Country - All Applicable Participants¹⁶²

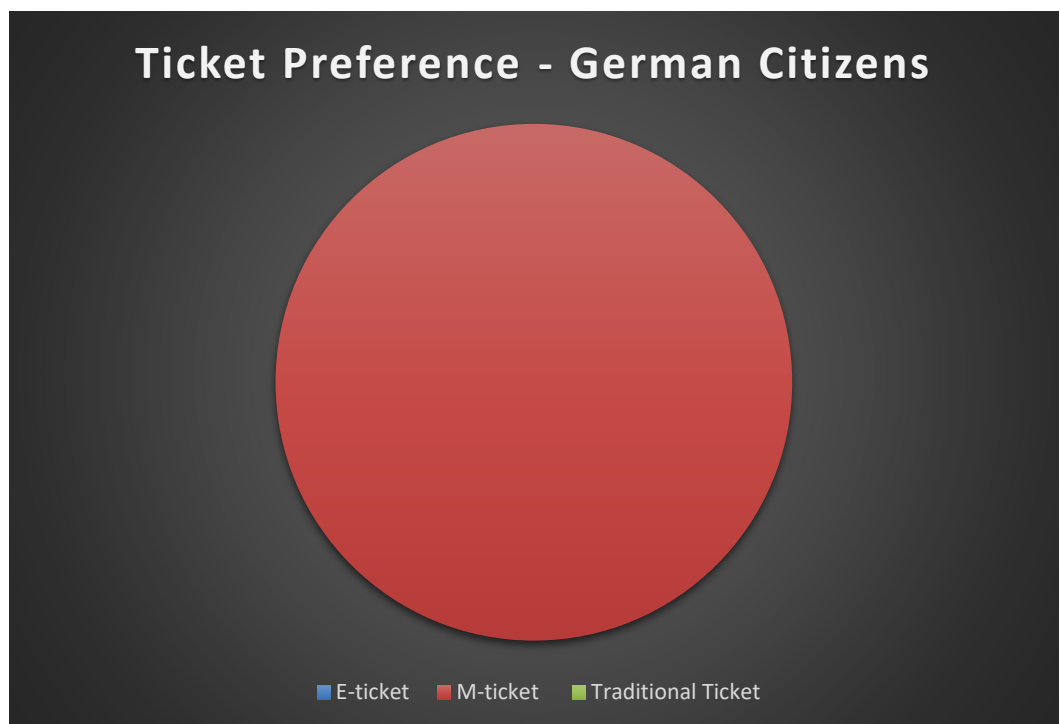


Fig. 65: Ticket Preference - German Citizens¹⁶³

¹⁶² See Analysis Report (Additional Charts).

¹⁶³ See Analysis Report (Additional Charts).

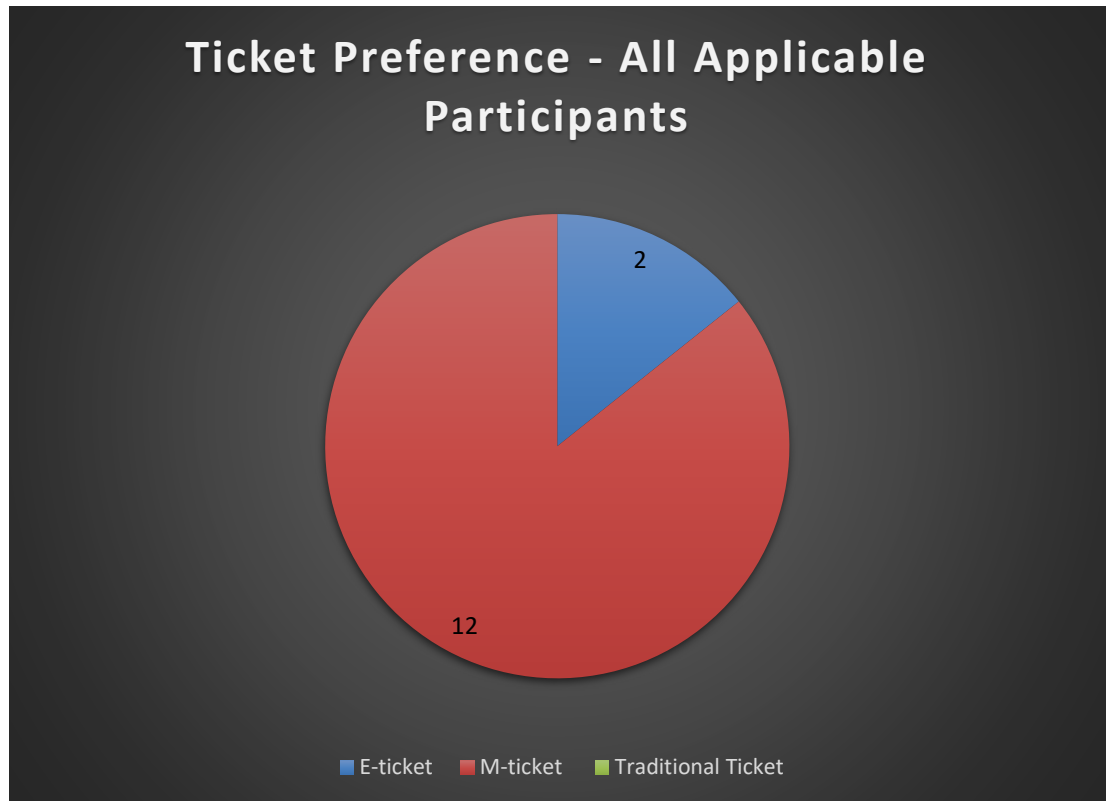


Fig. 66: Ticket Preference - All Applicable Participants¹⁶⁴

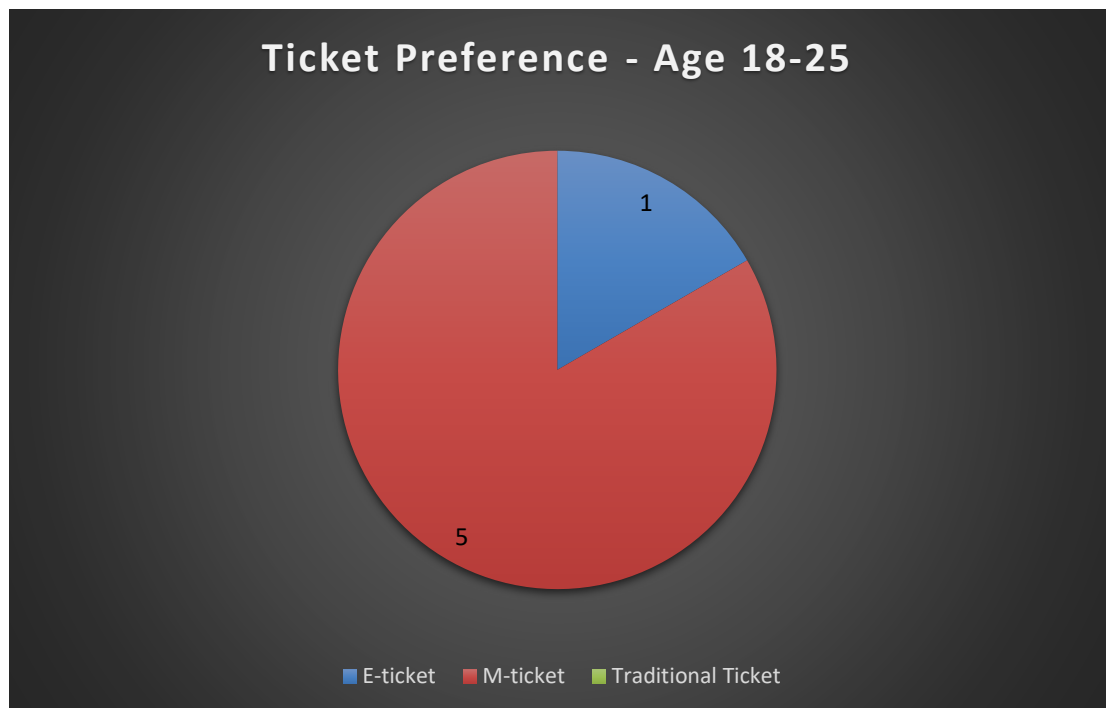


Fig. 67: Ticket Preference - Age 18-25¹⁶⁵

¹⁶⁴ See Analysis Report (Additional Charts).

¹⁶⁵ See Analysis Report (Additional Charts).

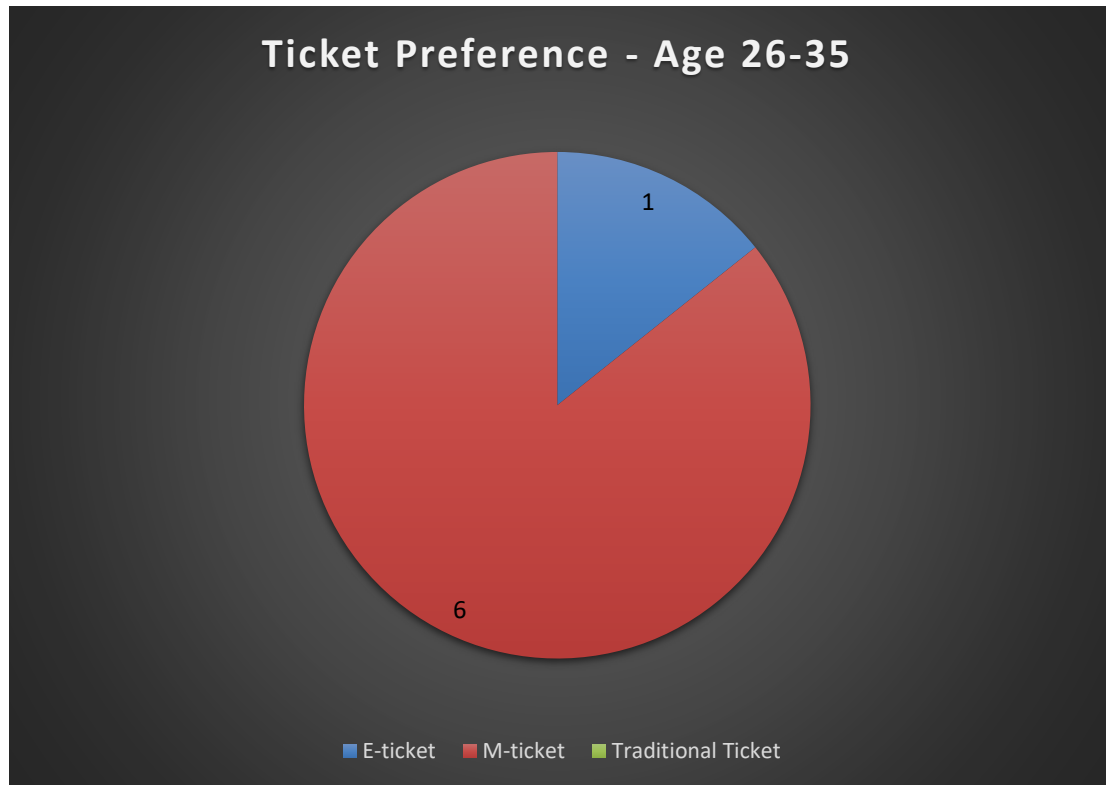


Fig. 68: Ticket Preference - Age 26-35¹⁶⁶

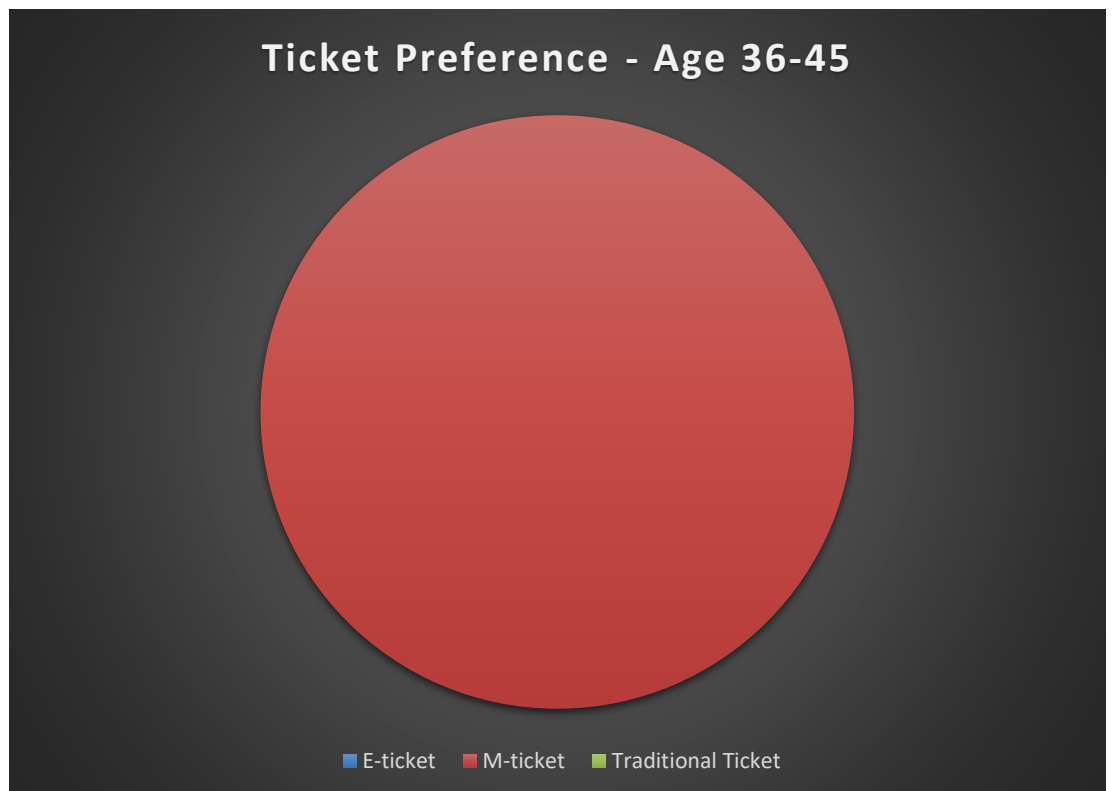
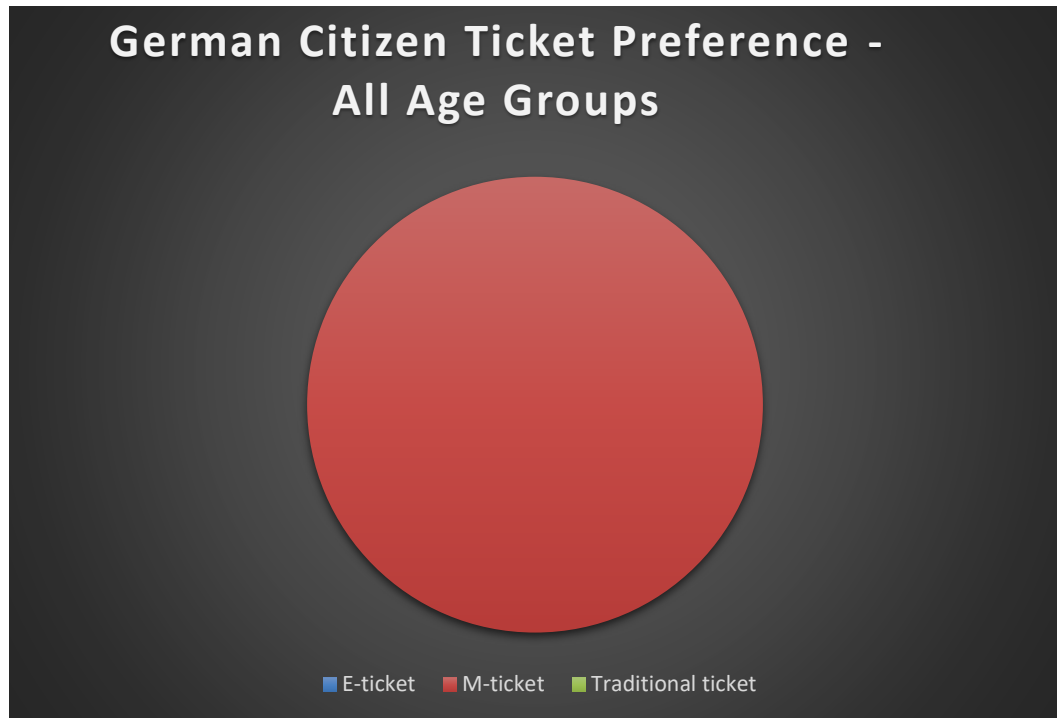


Fig. 69 Ticket Preference - Age 36-45¹⁶⁷

¹⁶⁶ See Analysis Report (Additional Charts).

¹⁶⁷ See Analysis Report (Additional Charts).

Fig. 70: German Citizen Ticket Preference - All Age Groups¹⁶⁸

7.5.9 General Ticket Preference Explanation

Tab. 6: General Explanation of Ticket Preference¹⁶⁹

| Please quickly explain why you prefer M-tickets, E-tickets, or the traditional method of ticketing. // Bitte erkläre kurz, warum du M-Tickets, E-Tickets oder die traditionelle Ticket-Variante bevorzugst. |
|---|
| Easy to get and can't be misplaced easily |
| Easy as I have my phone with me at all times. |
| M-tickets ensure that I have my ticket on me at all times. We've all heard of someone that has forgotten their tickets at home, I believe this will help reduce that. |
| Because of the easy accessibility of the Ticket. Today's phones are more of a data hub rather than a communication device and I like having all my tickets and other necessities centralized and readily available. |
| It's easy and better for the environment |
| Es ist einfacher und unkompliziert |
| Due to its convenience |
| It is easier for handling and can be used at any time, anywhere. |
| Safely carried along everywhere without the fear of loosi it |
| Fast, hands Free, no chances to lose it, accurate and easy to get |
| M-tickets are very convenient to buy from several apps and scan using QR codes |
| Because i dont need paper and it convenient |
| Mobile phone is always accessible so it should be easier to work with. |
| |

¹⁶⁸ See Analysis Report (Additional Charts).

¹⁶⁹ See Analysis Report (Additional Charts).

7.6 Hypothesis Testing Analysis

| | | |
|--|--------------|----------------------------|
| Null hypothesis | | |
| H0: $\mu \leq 50\%$ of people are willing to use m-tickets for a German professional soccer match. | | |
| Alternative hypothesis | | |
| H1: $\mu > 50\%$ of people are willing to use m-tickets for a German professional soccer match. | | |
| sample size | 50 | number of all participants |
| items of interest | 32 | all yes responses |
| sample mean (\bar{x}) | 0.64 | =32/50 |
| population mean (μ) | 0.5 | of H0 |
| standard deviation | 0.484873221 | =STDEV(D28:D77) |
| level of significance (α) | 0.05 | |
| p-value | 0.020592304 | =1-NORM.S.DIST(C17,TRUE) |
| z-test statistic | 2.041666667 | =(C12-C13)/C18 |
| standard error of mean | 0.068571429 | =C14/SQRT(C10) |
| rejection area (lower critical value) | -1.644853627 | =NORM.S.INV(C15) |
| rejection area (upper critical value) | 1.644853627 | =C19*-1 |
| z-stat is > upper critical value | | |
| p-value < alpha | | |
| H0 rejected and hypothesis H1 accepted | | |

Fig. 71: Analysis of Null Hypothesis¹⁷⁰

¹⁷⁰ See Analysis Report (Hypothesis Testing).

List of References and Sources

Amtrak. eTicketing - Your Ride is Just a Barcode Away. Online: <https://beta.amtrak.com/eticketing-your-ride-is-just-a-barcode-away?amtrak=031520a3f7z6>. [last access date: 2020-May-01].

Beers, Brian (2020): P-Value Definition. Online: <https://www.investopedia.com/terms/p/p-value.asp>. [last access date: 2020-April-30].

Better Life Index. Germany. Online: <http://www.oecdbetterlifeindex.org/countries/germany/>. [last access date: 2020-April-30].

Bleacher Report (2008): The Top 15 Soccer Goal Celebrations. Online: <https://bleacherreport.com/articles/58257-the-top-15-soccer-goal-celebrations>. [last access date: 2020-April-29].

Blue Corona (2019): 75+ MOBILE MARKETING STATISTICS FOR 2020 AND BEYOND. Online: <https://www.bluecorona.com/blog/mobile-marketing-statistics/>. [last access date: 2020-April-29].

Bundesliga (2019): Bundesliga tickets in 2019/20. Online: <https://www.bundesliga.com/en/bundesliga/news/tickets-2019-20-bayern-munich-borussia-dortmund-schalke-rb-leipzig-5342>. [last access date: 2020-April-30].

Cambridge Dictionary (2020): e-ticket. Online: <https://dictionary.cambridge.org/us/dictionary/english/e-ticket>. [last access date: 2020-April-29].

Central Intelligence Agency (2020): The World Factbook. Online: <https://www.cia.gov/library/publications/the-world-factbook/geos/gm.html>. [last access date: 2020-May-01].

Cochrane, Rupert (2020): 5 ways that going paperless is good for the environment. Online: <https://www.docusign.co.uk/blog/going-paperless-good-for-environment/>. [last access date: 2020-May-01].

Crosscountry. What if my mobile phone battery has run out when I board the train and I can't show my M-ticket? Online: https://crosscountry.custhelp.com/app/answers/detail/a_id/5026/related/1. [last access date: 2020-May-01].

Dave, Rushil (2010): Privacy in Mobile-ticketing. Online: <http://www.cse.hut.fi/en/publications/B/11/papers/dave.pdf>. [last access date: 2020-May-01].

DeMichele, Thomas (2019): Competitive Sports Have Always Been Popular in the U.S. Online: <http://factmyth.com/factoids/competitive-sports-have-always-been-popular-in-the-us/>. [last access date: 2020-April-29].

Denzin, Norman/ Lincoln, Yvonna. (1994): Handbook of Qualitative Research. Sage Publications Inc. Thousand Oaks, CA,

Devault, Gigi (2020): Qualitative and Quantitative Research Methods. Online: <https://www.thebalancesmb.com/choosing-between-qualitative-and-quantitative-methods-2297137>. [last access date: 2020-April-29].

Devins, Sabine (2017): Why Germans are so private about their data. Online: <https://www.handelsblatt.com/today/handelsblatt-explains-why-germans-are-so-private-about-their-data/23572446.html?ticket=ST-965450-aisvWacmYLPenuSE1CYg-ap3>. [last access date: 2020-April-30].

Etickets.ca. Concert, sports & theater ticket coupon codes. Online: <https://www.etickets.ca/offers/>. [last access date: 2020-May-02].

European Commission (2012): Germany, a world leader in technology, engineering and innovation. Online: <https://ec.europa.eu/digital-single-market/en/news/germany-world-leader-technology-engineering-and-innovation>. [last access date: 2020-April-30].

Event Espresso. Check-in attendees by scanning event tickets or looking them up with a mobile app. Online: <https://eventespresso.com/features/mobile-ticketing-apps/>. [last access date: 2020-May-01].

Farber, Barry (2020): With Change Comes Opportunity. Online: <https://barryfarber.com/media/columnist/with-change-comes-opportunity/>. [last access date: 2020-April-29].

FC Bayern (2020): FAQs - Frequently Asked Questions. Online: <https://fcbayern.com/en/tickets/info/faq>. [last access date: 2020-April-29].

Financial Football News (2018): Premier League 2018 Financial Review – Matchday Revenue. Online: <https://financialfootballnews.com/premier-league-2018-financial-review-matchday-revenue/>. [last access date: 2020-April-29].

Fisher, Eric/Muret, Don (2015): Teams make their case for mobile ticketing. Online: <https://www.sportsbusinessdaily.com/Journal/Issues/2014/04/28/In-Depth/Mobile-ticketing.aspx>. [last access date: 2020-May-02].

Gough, Christina (2020a): 1. German football Bundesliga total attendance 2018/19. Online: <https://www.statista.com/statistics/282978/total-attendance-german-football-bundesliga/>. [last access date: 2020-April-29].

Gough, Christina (2020b): Revenue of the German Bundesliga from 2008/09 to 2018/19, by segment. Online: <https://www.statista.com/statistics/282813/revenue-segmentation-german-bundesliga-soccer/>. [last access date: 2020-April-29].

Grater, Tom (2020): Germany's Top Soccer League Could Return As Early As May 9. Online: <https://deadline.com/2020/04/german-soccer-league-return-early-may-9-1202915947/>. [last access date: 2020-April-29].

Hanin, Georges-Alexandre (2015): E-TICKETS VS M-TICKETS, DIFFERENCE AND BENEFITS FOR CONSUMERS. Online: <https://blog.mobiloft.com/blog/e-tickets-vs-m-tickets-difference-and-benefits-for-consumers>. [last access date: 2020-April-29].

Herzberger, Liza/Lensdorf, Lars (2019): German Bundestag approves 2nd German Data Protection Adaptation Act ("2nd DSAnpUG"): Summary of significant changes for German data protection laws. Online: <https://www.insideprivacy.com/eu-data-protection/german-bundestag-approves-2nd-german-data-protection-adaptation-act-2nd-dsanpug-summary-of-significant-changes-for-german-data-protection-laws/>. [last access date: 2020-May-01].

IamExpat Media. Salary, payslips & minimum wage in Germany. Online: <https://www.iamexpat.de/career/working-in-germany/salary-payslip-german-minimum-wage>. [last access date: 2020-April-30].

Huber, Andreas (2016): Marketing. 3. Aufl. München: Vahlen Verlag.

IATA (2008): E-ticketing. Online: <https://www.iata.org/en/programs/stb/e-ticketing/>. [last access date: 2020-April-29].

Kidd, Robert (2019): German Bundesliga Is World's Best Supported League By Attendance, Says Report. Online: <https://www.forbes.com/sites/robert-kidd/2019/04/11/german-bundesliga-is-worlds-best-supported-league-by-attendance-says-report/#4efe76146b2b>. [last access date: 2020-April-29].

Kinnersley, Jack (2019): Borussia Dortmund revealed as club with highest attendance in world football with a huge average of 80,000... while Manchester United come in second ahead of Barcelona. Online: <https://www.dailymail.co.uk/sport/football/article-6928015/Borussia-Dortmund-revealed-club-highest-attendance-world-football-huge-average.html>. [last access date: 2020-April-30].

Laerd Statistics. Standard Deviation. Online: <https://statistics.laerd.com/statistical-guides/measures-of-spread-standard-deviation.php>. [last access date: 2020-April-29].

Lee, Admond (2019): Online: <https://towardsdatascience.com/p-values-explained-by-data-scientist-f40a746cfc8>. [last access date: 2020-April-30].

MacDonald, Maisie (2018): Mobile Ticketing: What Are The Benefits? Online: <https://www.livestyled.com/single-post/2018/08/31/Mobile-Ticketing-What-Are-The-Benefits>. [last access date: 2020-May-02].

MASHABLE BRAND X FOR EPSON (2018): How far home printing has come in fewer than four decades will astound you. Online: <https://mashable.com/article/history-of-home-printing/?europe=true>. [last access date: 2020-April-29].

Melendez, Steven (2017). 6 Ways To Protect Your Smartphone E-Tickets From Hackers. Online: <https://www.fastcompany.com/40484779/6-ways-to-protect-your-smartphone-e-tickets-from-hackers>. [last access date: 2020-May-01].

Mohr, J. P. (2004): Stroke: Pathophysiology, diagnosis, and management. Churchill Livingstone. 6th ed. New York

OECD. Green growth in action: Germany. Online: <https://www.oecd.org/germany/greengrowthinactiongermany.htm>. [last access date: 2020-April-30].

Passenger (2017): Benefits of mobile ticketing in public transport. Online: <https://www.discoverpassenger.com/2017/01/23/benefits-of-mobile-ticketing/>. [last access date: 2020-May-02].

Purplepass. SHOULD YOU BE USING DIGITAL OR PHYSICAL EVENT TICKETS? Online: <http://blog.purplepass.com/should-you-be-using-digital-or-physical-event-tickets/>. [last access date: 2020-May-02].

Roos, Dave. How Mobile Ticketing Works. Online: <https://computer.howstuffworks.com/how-mobile-ticketing-works.htm>. [last access date: 2020-May-02].

Rumsey, Deborah J. (2020): What a p-Value Tells You about Statistical Data. Online: <https://www.dummies.com/education/math/statistics/what-a-p-value-tells-you-about-statistical-data/>. [last access date: 2020-April-30].

Rushin, Steve (2019): The Death of Paper Tickets and the Stories They Leave Behind. Online: <https://www.si.com/mlb/2019/09/12/baseball-tickets-los-angeles-dodgers-opening-day>. [last access date: 2020-May-02].

Shoultes, Seth (2018): What is the history of event ticketing systems? Online: <https://eventpresser.com/history-event-ticketing-systems/>. [last access date: 2020-April-29].

Sheth, Himani (2017): The Evolution of Event Ticketing. Online: <https://medium.com/hubilo-official-blog/the-evolution-of-event-ticketing-d3041d6419a9>. [last access date: 2020-April-29].

Siidharth, Kalla/Wilson, Lyndsay. Standard Error of the Mean. Online: <https://explorable.com/standard-error-of-the-mean>. [last access date: 2020-April-30].

Statista Research Department (2019): Number of mobile phone users in Germany from 2011 to 2019. Online: <https://www.statista.com/statistics/274744/forecast-of-mobile-phone-users-in-germany/>. [last access date: 2020-April-30].

Statistics How To (2020): Z-Score: Definition, Formula and Calculation. Online: <https://www.statisticshowto.com/probability-and-statistics/z-score/>. [last access date: 2020-April-30].

talkSport (2020): Coronavirus in sport: All the events cancelled or postponed including Premier League, Euro 2020, Olympics, The Open, Wimbledon and Anthony Joshua fight. Online: <https://talksport.com/football/fa-cup/682305/coronavirus-sport-cancelled-postponed-premier-league-euro-2020-olympics-wimbledon-anthony-joshua/>. [last access date: 2020-April-29].

The Old Vic (2018): A BRIEF HISTORY OF TICKETING. Online: <https://www.oldvictheatre.com/news/2018/01/a-brief-history-of-ticketing>. [last access date: 2020-April-29].

TheTicketingBusiness (2019): HOFFENHEIM ADDS MOBILE TICKETING OPTION. Online: <https://www.theticketingbusiness.com/2019/02/19/hoffenheim-adds-mobile-ticketing-option/>. [last access date: 2020-May-02].

Ticketmaster. What is Mobile Entry? Online: https://help.ticketmaster.com/s/article/What-is-Mobile-Entry?language=en_US. [last access date: 2020-May-02].

Treadwell (2019): *Criminological Ethnography: An Introduction*. SAGE Publications Ltd. Staffordshire University, UK.

Verdict (2017): The smartphone turns 25: here are the five major milestones of the device. Online: <https://www.verdict.co.uk/smartphone-invented-25-years/>. [last access date: 2020-April-29].

Virgin Trains. What happens if I forget or lose my e-ticket?. Online: https://tram-ticketininsupport.custhelp.com/app/answers/detail/a_id/2845/~/what-happens-if-i-forget-or-lose-my-e-ticket%3F. [last access date: 2020-May-01].

Von Walter, Axel (2019): Germany: Data Protection 2019. Online: <https://iclg.com/practice-areas/data-protection-laws-and-regulations/germany>. [last access date: 2020-April-30].

Wade, Betsy (1997): E-Tickets Begin To Catch On. Online: <https://www.nytimes.com/1997/08/10/travel/e-tickets-begin-to-catch-on.html>. [last access date: 2020-April-29].

Worldometer (2017): GDP by Country. Online: <https://www.worldometers.info/gdp/gdp-by-country/>. [last access date: 2020-April-30].

Declaration

Affirmation

This thesis was written by me independently, and I have given indication of sources whenever content was taken directly or indirectly from other sources or media. Verbatim and analogous quotes have been indicated as such. Furthermore, I confirm that there is no factual concurrence with any dissertation, final paper or thesis that I may have submitted within the scope of any previous studies. This thesis has not been submitted to any other institution or individual within the framework of an examination.

Place, Date May 02, 2020

Signature

A handwritten signature in black ink, appearing to be 'C. M. ...', written over the printed word 'Signature'.