**Analysis of dataset\_1, dataset\_2, dataset\_3:**

**what interesting stories do these data tell,**

**and what interesting insights do these data sets reveal?**

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1. **Dataset\_1 analysis method and results**

The data has been loaded into Excel, and the original is saved separately. The working file, containing calculations and charts, is saved independently. A column numbering string has been inserted to facilitate data filtering. Excel has successfully removed 26 duplicate entries with identical information in the 'Child Name,' 'Date of Birth (Child),' 'Registration Week,' 'Subject,' and 'Location' fields. This resulted in 1692 unique entries. A 'Sign' field has been added to provide a numeric indication of application or application withdrawal (refusals). Records with application withdrawal are marked with a unit for filtering and for separate analysis based on the field of applications or application withdrawals.

## **Step 1.** **Analysis of applications and application withdrawals**

1403 valid applications (83%) and 289 application withdrawals (17%) were determined.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Analyses of applications and application withdrawals | | | |  |
| Application withdrawals s289 - 17% | Application withdrawals | 289 | 17% |
| Applications  1403 - 83% | Valid applications | 1403 | 83% |
|  | All applications | 1692 | 100% |

*Figure 1.1. Analysis of valid applications and application withdrawals*

There are no recorded reasons for refusal of applications in the data. Analyzing these reasons can help reduce the number of Application withdrawal. When filling out a purchase requisition, consider adding a 'Reason' field. If this field is text-based, manual analysis is possible. Alternatively, for a selection field from a predefined list, automated analysis can be conducted.

## **Step 2. Analysis by Date of Birth**

In the 'Date of Birth (Child)' field, we have set the day-month-year format. If needed, you can change the format to year-month-day. We corrected any inaccurate dates and added a field to determine the child's age. The child's age was calculated using the formula = (TODAY() - D6)/365. The analysis results are presented in Table 1.1. In the table, we highlighted in green the ages of children with a high number of submitted applications, particularly those aged 4 to 9. Parents of 7-year-old children submitted the highest number of applications. *Table 1.1.*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Analysis of valid applications and application withdrawals by child's age | | | | | | |
| The age of the child | Number of all applications | Percentage of applications | Rank | Application withdrawals | Percentage of application withdrawals | Rank of application withdrawals |
| 1 year | 10 | 0,59% | 12 | 4 | 40% | 4 |
| 2 years | 6 | 0,35% | 13 | 5 | 83% | 2 |
| 3 years | 69 | 4,08% | 7 | 13 | 19% | 7 |
| 4 | 149 | 9% | 6 | 26 | 17% | 8 |
| 5 | 191 | 11% | 5 | 28 | 15% | 11 |
| 6 | 255 | 15% | 3 | 51 | 20% | 6 |
| ***7*** | ***394*** | ***23%*** | 1 | 57 | 14% | 12 |
| 8 | 286 | 17% | 2 | 36 | 13% | 13 |
| 9 | 192 | 11% | 4 | 32 | 17% | 9 |
| 10 | 66 | 4% | 8 | 19 | 29% | 5 |
| 11 | 26 | 2% | 10 | 3 | 12% | 14 |
| 12 | 19 | 1% | 11 | 3 | 16% | 10 |
| 14 | 1 | 0% | 14 | 1 | 100% | 1 |
| None (The data is undefined or incorrect) | 28 | 2% | 9 | 12 | 43% | 3 |
| Total: | 1692 | 100,00% |  |  |  |  |

In Table 1.1, the highest application withdrawal rates are highlighted in pink. These rates are observed for children under 2 (83%), 10 (29%), and 14 (100%) years old. For other age groups, the application withdrawal rate fluctuates slightly, ranging from a minimum of 12% to a maximum of 20%. Figure 1.2 depicts an analysis of age-related applications and application withdrawals.

*Figure 1.2. Applications and application withdrawals by child's age*

## **Step 3. Analysis by Registration Week**

An analysis of applications and application withdrawals based on the Registration Week. *Table 1.2.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Registration week | All applications | | Application withdrawals | |
| 20-24 Nov 2023 | 180 | 11% | 31 | 11% |
| 27 Now-1 Dec 2023 | 251 | 15% | 24 | 8% |
| 4-8 Dec 2023 | 243 | 14% | 28 | 10% |
| 11-15 Dec 2023 | 220 | 13% | 30 | 10% |
| 18-22 Dec 2023 | 338 | 20% | 62 | 21% |
| 25-29 Dec 2023 | 204 | 12% | 44 | 15% |
| 1-5 Jan 2024 | 171 | 10% | 38 | 13% |
| 8-12 Jan 2024 | 64 | 4% | 16 | 6% |
| not sure | 21 | 1% | 16 | 6% |
| Total | 1692 | 100% | 289 | 100% |

The charts in Figure 1.3 show the Registration week analysis.

*Figure 1.3. Analysis by Registration week*

The majority of applications were submitted between November 27 and December 22, 2023. The highest number of application withdrawals occurred between December 22, 2023, and January 5, 2024.

## **Step 4. Analysis by Subject**

We have identified the most interesting and popular Subject. Table 1.3 displays applications and application withdrawals related to these Subjects.

*Table 1.3.*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Analysis by Subject** | | | | | |
| Subject | Applications | | Application withdrawals | | |
| Quantity | Percentage | Quantity | Percentage of the total number | Percentage of the application number |
| Superhero science | 478 | 28% | 81 | 28% | 17% |
| Arctic science | 655 | 39% | 117 | 40% | 18% |
| Harry Potter science | 551 | 33% | 83 | 29% | 15% |
| None | 8 | 0,50% | 8 | 3% | 100% |
| Total: | 1692 | 100% | 289 | 100% |  |

Diagrams in Fig.1.4 show the distribution of applications and application withdrawals by Subject.

*Figure 1.4. Applications and application withdrawals by Subject*

The topic with the highest number of applications is Arctic Science (39%). Following closely is Harry Potter Science (33%), and in third place is the theme of Superhero Science (28%). Arctic Science not only attracted the most applications but also experienced the highest number of application withdrawals.

## **Step 5. Analysis by Location**

Analysis of applications and application withdrawals by Location shows results in Table 1.4, chart in Figure 1.5. Most applications and application withdrawals received Location CENTRAL, NOWENA, WEST.

*Table 1.4.*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Location | Applications | | | Application withdrawals | | |
| Quantity | Percentage | | Quantity | Percentage of the total number | Percentage of the application number |
| CENTRAL | 477 | | 28% | 78 | 27% | 16% |
| EAST | 345 | | 20% | 61 | 21% | 18% |
| NOWENA | 459 | | 27% | 79 | 27% | 17% |
| **WEST** | 402 | | 24% | 66 | 23% | 16% |
| none | 9 | | 1% | 5 | 2% | 56% |
|  | 1692 | | 100% | 289 | 100% |  |

*Figure 1.5. Analysis of applications and application withdrawals by Location*

## **Step 6. Analysis by Timestamp**

|  |  |  |  |
| --- | --- | --- | --- |
| Analysis of applications by Timestamp | | |  |
| GTM+2 | 33 | 2,0% |
| GTM+3 | 455 | 26,9% |
| GTM+5 | 72 | 4,3% |
| GTM+6 | 1 | 0,1% |
| EET | 765 | 45,2% |
| none | 366 | 21,6% |
| Total | 1692 | 100,0% |

*Figure 1.6. Analysis by Timestamp*

The majority of applications originate from EET (45.2%) and GTM + 3 (26.9%). Approximately 21.6% of applicants did not specify a Timestamp during the application process.

## **Step 7. Analysis by Bus service**

The analysis of applications based on the **Bus Service** feature showed that 16% of applications require transportation on various days. For 80% of applications, transportation is not needed. 4% of applicants did not specify their preference.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Analysis of Bus service | | | | |  |
|  | Yes | No | none | Total: |
| Bus service | 266 | 1362 | 64 | 1692 |
| Total | 16% | 80% | 4% | 100% |

*Figure 1.7. Transport Requirements Analysis*

## **Step 8.** **Analysis by Special meal**

The analysis of data based on the Meal Preferences feature revealed the following distribution: Yes - No - None = 13% - 59% - 28%. 59% of applications do not require special meals, 13% do, and 28% of applicants did not specify their preference.

|  |  |  |  |
| --- | --- | --- | --- |
| Special meal request | | |  |
| Yes | 224 | 13% |
| No | 1000 | 59% |
| none | 468 | 28% |
| Total | 1692 | 100% |

*Figure 1.8. Analysis by Special meal*

## **Conclusions by dataset\_1**

1. Analysis of data on **applications** (83%) and **application withdrawals** *(*refusals) shows that the refusal rate is 17%. Unfortunately, there are no reasons for failures in the data. Analyzing the cause data could help identify the true reasons, address them, and reduce refusal rates. To achieve this, consider adding a 'Reason' field when completing an application. If this field is text-based, manual analysis is possible. Alternatively, for a selection from a predefined list, automatic analysis can be conducted.
2. Analysis of applications and application withdrawalsbased on **Date of Birth** revealed that the age group with the highest number of submitted applications is 4 to 9 years old. The highest number of applications came from parents of 7-year-old children. The primary advertising campaigns should be targeted specifically at these age groups of children and their parents. For older children, it is necessary to enhance the program of their activities.
3. The analysis of applications and refusals based on the **Registration Week** indicates that the highest number of applications was submitted between November 27 and December 22, 2023. The highest number of refusals occurred during the period from December 22, 2023, to January 5, 2024. The period of increased activity begins on November 27, and the period of decline starts on December 22. During the period of higher activity, prices can be increased, while during the period of lower activity, discounts should be applied.
4. The analysis of applications and refusals by **Subject** revealed that the highest number of applications were submitted for the topic of Arctic Science (39%). In the second position is Harry Potter Science (33%), and in third place is the Superhero Science theme (28%). The topics of Harry Potter Science and Superhero Science require further development and improvement.
5. The analysis of applications and refusals by **Location** revealed that the highest number of applications were submitted and refusals were received for the CENTRAL, NOWENA, and WEST locations. The fewest applications were submitted for the EAST, indicating that this location requires development and improvement.
6. The analysis of applications and refusals by **Timestamp** revealed that the majority of applications were submitted from EET (45.2%) and GTM+3 (26.9%). Approximately 21.6% of applicants did not specify a Timestamp during the application submission.
7. The analysis of applications based on the **Bus Service** feature showed that 16% of applications require transportation on various days. For 80% of applications, transportation is not needed. 4% of applicants did not specify their preference.
8. The analysis of data based on the Meal Preferences feature revealed the following distribution: Yes - No - None = 13% - 59% - 28%. 59% of applications do not require special meals, 13% do, and 28% of applicants did not specify their preference.
9. Начало формы

# **Analysis Results for Dataset\_2**

We removed 1 duplicate entry with identical data in the fields Child Name, Date of Birth (Child), Registration Week, and Location. We obtained 803 unique records.

## **Step 1. Analysis of applications and application withdrawals**

We have processed 631 valid applications (79%) and encountered 172 refusals (21%).

|  |  |  |  |
| --- | --- | --- | --- |
| Analyses of applications and application withdrawals (refusals) | | |  |
| Valid applications | 631 | 79% |
| Refusals | 172 | 21% |
| Total | 803 | 100% |

*Figure 2.1. Analysis of valid applications and application withdrawals*

## **Step 2. Analysis by Date of Birth**

The results of the analysis of applications by the age of the child are presented in Table 2.1. The age group with a high number of submitted applications (from 4 to 8 years) is highlighted in green in the table. The highest number of applications was submitted by parents of 7-year-old children (25.2%). Table 2.1.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Analysis of valid applications and application withdrawals by child's age | | | | | | |
| The age of the child | Number of all applications | Percentage of applications | Rank | Refusals | | |
| Total number | Percentage of the total number | Percentage of the application number |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 year | 4 | 0,5% | 11 |  |  | 0% |
| 3 years | 40 | 5,0% | 7 | 8 | 5% | 20% |
| 4 years | 102 | 12,7% | 5 | 21 | 12% | 21% |
| 5 years | 105 | 13,1% | 4 | 19 | 11% | 18% |
| 6 | 125 | 15,6% | 2 | 28 | 16% | 22% |
| 7 | 202 | 25,2% | 1 | 44 | 26% | 22% |
| 8 | 107 | 13,3% | 3 | 18 | 10% | 17% |
| 9 | 60 | 7,5% | 6 | 16 | 9% | 27% |
| 10 | 36 | 4,5% | 8 | 7 | 4% | 19% |
| 11 | 9 | 1,1% | 9 | 5 | 3% | 56% |
| 12 | 4 | 0,5% | 11 | 1 | 1% | 25% |
| 13 | 1 | 0,1% | 12 | 1 | 1% | 100% |
| none | 8 | 1,0% | 10 | 4 | 2% | 50% |
|  | 803 | 100,00% |  | 172 | 100% |  |

In Table 2.1, the highest rates of application refusals are highlighted in pink. Column 6 displays the percentage of refusals relative to their total number, while column 7 shows the percentage of refusals relative to the submitted applications. Parents of children aged 9 and 11-13 years’ experience the highest refusal rates. For other age groups, the refusal percentage varies insignificantly, ranging from a minimum of 17% to a maximum of 27%, with an average of 21%. Diagrams in Figure 2.2 illustrate the analysis of all applications and refusals by age.

*Figure 2.2. Analysis by the age of the child*

## **Step 3. Analysis by Registration Week**

The analysis of applications and refusals based on the Registration Week is presented in Table 2.2. Table 2.2.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Registration week | Total number of applications | | Refusals | | |
| Total number | Percentage of the total number | Percentage of the application number |
| 20-24 Nov 2023 | 104 | 13% | 18 | 10% | 17% |
| 27 Now-1 Dec 2023 | 100 | 12% | 22 | 13% | 22% |
| 4-8 Dec 2023 | 113 | 14% | 15 | 9% | 13% |
| 11-15 Dec 2023 | 108 | 13% | 28 | 16% | 26% |
| 18-22 Dec 2023 | 187 | 23% | 29 | 17% | 16% |
| 25-29 Dec 2023 | 65 | 8% | 24 | 14% | 37% |
| 1-5 Jan 2024 | 78 | 10% | 19 | 11% | 24% |
| 8-12 Jan 2024 | 35 | 4% | 5 | 3% | 14% |
| not sure | 13 | 2% | 12 | 7% | 92% |
| Total | 803 | 100% | 172 | 100% |  |

The diagrams in Figure 2.3 illustrate the analysis based on the Registration Week. Applications are highlighted in green. Refusals are indicated in a different color. The blue line represents the average level of refusals in these data.

*Figure* 2.3. Analysis of applications and refusals by Registration week

The growth in applications is identified from November 20-24 to December 18-22. The highest number of applications was submitted during the period of December 18-22, 2023. From December 25 onward, the number of applications decreases. The percentage of refusals varies in different weeks. The highest refusal rate (not sure) (92%) occurred during the period of December 25-29, 2023.

## **Step 4. Analysis by Subject**

In the dataset\_2, the Subject field is missing, so we were unable to determine the most interesting and in-demand topics.

## **Step 5. Analysis by Location**

An analysis of applications and refusals based on the Location field has been conducted. The results are presented in Table 2.3 and illustrated in the diagram in Figure 2.4. The highest number of applications was submitted for the locations CENTRAL, NOWENA, and WEST. Table 2.3.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Location | The number of applications | Percentage of applications | Refusals | | |
| The number of refusals | Percentage of the application number | Percentage of the total number |
| CENTRAL | 242 | 30% | 44 | 18% | 26% |
| EAST | 159 | 20% | 38 | 24% | 22% |
| NOWENA | 224 | 28% | 47 | 21% | 27% |
| WEST | 175 | 22% | 42 | 24% | 24% |
| none | 3 | 0% | 1 | 33% | 1% |
| Total | 803 | 100% | 172 |  | 100% |

*Figure* 2.4. Analysis of applications and refusals by Location

## **Step 6. Analysis by Timestamp**

The results of the analysis of applications and refusals based on the Timestamp are presented in Table 2.4 and Figure 2.5. Table 2.4.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Timestamp | The number of applications | Percentage of applications | Refusals | | |
| The number of refusals | Percentage of the application number | Percentage of the total number |
| GTM+2 | 338 | 42,1% | 66 | 20% | 38% |
| GTM+3 | 278 | 34,6% | 74 | 27% | 43% |
| GTM+4 | 1 | 0,1% | 1 | 100% | 1% |
| GTM+5 | 20 | 2,5% | 2 | 10% | 1% |
| GTM+6 | 1 | 0,1% | 0 | 0% | 0% |
| EET | 10 | 1,2% | 1 | 10% | 1% |
| none | 155 | 19,3% | 28 | 18% | 16% |
| Total | 803 | 100,0% | 172 |  | 100% |

*Figure 2.5. Analysis of applications and refusals by Timestamp*

## **Step 7. Analysis by Bus service**

The analysis of applications based on the need for Bus Service revealed that 19% of applications require transportation at different times. 1% of applicants did not specify their preference. For 80% of applications, transportation is not needed.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Analysis of Bus service | | | | |  |
| Bus service | Yes | No | none | Total: |
| 149 | 645 | 9 | 803 |

*Figure* 2.6. *Analysis of applications by Bus service*

## **Step 8. Analysis by Special meal**

The analysis of the need for a Special Meal showed the following results: Yes 12% – No 64% - None 24%. 64% of applications do not require a special meal, 12% do, and 24% did not specify their preference. The results are presented in Figure 2.7.

|  |  |  |  |
| --- | --- | --- | --- |
| Special meal request | | |  |
| Yes | 97 | 12% |
| No | 515 | 64% |
| none | 191 | 24% |
| Total | 803 | 100% |

*Figure* 2.7. *Analysis of applications by* Special meal

## **Conclusions by dataset\_2**

1. Analysis of data on **applications** (79%) and **application withdrawals** *(*refusals) shows that the refusal rate is 21%. Unfortunately, there are no reasons for failures in the data. Analyzing the cause data could help identify the true reasons, address them, and reduce refusal rates. To achieve this, consider adding a 'Reason' field when completing an application. If this field is text-based, manual analysis is possible. Alternatively, for a selection from a predefined list, automatic analysis can be conducted.
2. The analysis of applications and refusals based on the **Date of Birth** shows that the age group with a large number of submitted applications is 4-8 years. Parents of 7-year-old children submitted the highest number of applications. Main advertising campaigns should be directed towards these categories. Parents of children aged 9 and 11-13 years’ experience the highest refusal rates. For other age groups, the refusal percentage varies insignificantly – from a minimum of 17% to a maximum of 27%, with an average of 21%.
3. The analysis of applications and refusals based on the **Registration Week** shows an increase in applications from November 2 to December 22. The highest number of applications was submitted during the period from December 18 to 22, 2023. From December 25 onward, the number of applications decreases. The percentage of refusals varies in different periods. The highest refusal rate (not sure) (92%) occurred from December 25 to 29, 2023. The period of activity begins on November 2, and the decline period starts on December 25. During periods of higher activity, prices can be increased, and discounts can be offered during periods of lower activity.
4. In the dataset\_2, the Subject field is missing, so we were unable to determine the most interesting and in-demand topics.
5. The analysis of applications and refusals based on **Location** revealed that the highest number of applications and refusals were for the CENTRAL location (30%), followed by NOWENA (28%) and WEST (22%). The lowest number of applications was for EAST (20%). We have a percentage (33%) of refusals from those applicants who did not specify the location. There are significant refusals from WEST and EAST (24%). These locations may require updates, development, or improvement.
6. The analysis of applications and refusals based on **Timestamp** showed that the majority of applications (42.1%) and refusals (20%) were submitted from GTM+2. Applications from GTM+3 accounted for 34.6%, with refusals at 27%. 13.9% of applicants did not specify a Timestamp when submitting the application, and among them, we have an 18% refusal rate.
7. The analysis of applications based on the **Bus service** feature showed that 19% of applications require transportation at various times. 1% of applicants did not specify. For 80% of applications, transportation is not needed.
8. The analysis of data based on the **Meal Preferences** feature revealed that 64% of applications do not require special meals, 12% do, and 24% did not specify.

# **Analysis Results for Dataset\_2**

16 duplicate entries with identical data in the fields *Child Name, Date of birth (child), Registration week, Location* were removed. This resulted in 656 unique entries.

## **Step 1. Analysis of applications and application withdrawals**

We have processed 518 valid applications (79%) and encountered 138 refusals (21%).

|  |  |  |  |
| --- | --- | --- | --- |
| Analyses of applications and application withdrawals (refusals) | | |  |
| Valid applications | 518 | 79% |
| Refusals | 138 | 21% |
| Total | 656 | 100% |

*Figure 3.1. Analysis of valid applications and refusals*

## **Step 2. Analysis by Date of Birth**

Results of the data analysis by the child's age are presented in Table 3.1. The age range with a significant number of applications is highlighted in green (from 7 to 11 years old). The highest number of applications were submitted by parents of 8-9-year-old children (17.7% - 17.4%).

Table 3.1.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Analysis of valid applications and refusals by child's age | | | | | | |
| The age of the child | Number of all applications | Percentage of applications | Rank | Refusals | | |
| Total number | Percentage of the total number | Percentage of the application number |
| 1 year | 6 | 0,9% | 12 | 2 | 1% | 33% |
| 3 years | 1 | 0,2% | 15 | 0 | 0% | 0% |
| 5 years | 15 | 2,3% | 10 | 5 | 4% | 33% |
| 6 | 48 | 7,3% | 7 | 11 | 8% | 23% |
| 7 | 92 | 14,0% | 3 | 19 | 14% | 21% |
| 8 | 116 | 17,7% | 1 | 21 | 15% | 18% |
| 9 | 114 | 17,4% | 2 | 25 | 18% | 22% |
| 10 | 90 | 13,7% | 4 | 19 | 14% | 21% |
| 11 | 61 | 9,3% | 5 | 12 | 9% | 20% |
| 12 | 49 | 7,5% | 6 | 6 | 4% | 12% |
| 13 | 22 | 3,4% | 9 | 5 | 4% | 23% |
| 14 | 23 | 3,5% | 8 | 7 | 5% | 30% |
| 15 | 4 | 0,6% | 13 | 1 | 1% | 25% |
| 16 | 2 | 0,3% | 14 | 1 | 1% | 50% |
| none | 13 | 2,0% | 11 | 4 | 3% | 31% |
|  | 656 | 100,00% |  | 136 | 100% |  |

The highest number of refusals was recorded for 1 year, 3 years, and 14-16 years. 31% of refusals for an undefined age. The blue line in Figure 3.2 represents the average refusal rate in this dataset (21%).

*Figure 3.2. Analysis of applications and refusals by child's age*

## **Step 3. Analysis by Registration Week**

Results of analysis of applications and refusals by **Registration week** are shown in Table 3.2 and in Figure 3.3. Table 3.2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Registration week | Total number of applications | | Valid applications | Refusals | | |
| Total number | Percentage of the total number | Percentage of the application number |
| 20-24 Nov 2023 | 93 | 14% | 81 | 12 | 9% | 13% |
| 27 Now-1 Dec 2023 | 108 | 16% | 90 | 18 | 13% | 17% |
| 4-8 Dec 2023 | 90 | 14% | 73 | 17 | 12% | 19% |
| 11-15 Dec 2023 | 94 | 14% | 78 | 16 | 12% | 17% |
| 18-22 Dec 2023 | 130 | 20% | 99 | 31 | 22% | 24% |
| 25-29 Dec 2023 | 64 | 10% | 48 | 16 | 12% | 25% |
| 1-5 Jan 2024 | 41 | 6% | 25 | 16 | 12% | 39% |
| 8-12 Jan 2024 | 21 | 3% | 18 | 3 | 2% | 14% |
| not sure yet | 15 | 2% | 6 | 9 | 7% | 60% |
| Total | 656 | 100% | 518 | 138 | 100% |  |

The highest number of applications is marked in green, and the highest number of refusals is marked in pink. Diagrams in Figure 3.3 show the analysis by Registration week. More applications are identified from November 20-24 to December 18-22. The highest number of applications was submitted from December 18-22, 2023. The number of applications decreases from December 25-29.

*Figure 3.3 Analysis of applications and refusals by Registration week*

The blue line indicates the average refusal rate in these data (21%). The highest refusals, marked as 'not sure' (60%), occurred during the period from January 1-5, 2024.

## **Step 4. Analysis by Subject**

In the dataset\_3, the Subject field is missing, so we were unable to determine the most interesting and in-demand topics.

## **Step 5. Analysis by Location**

The results of the analysis of applications and refusals by location are shown in Table 3.3, and the diagram is presented in Figure 3.4. The highest number of applications was submitted for CENTRAL, NOWENA, and WEST. The lowest number of applications was for EAST. The highest number of refusals occurred for EAST, NOWENA, and WEST. Table 3.3.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Location | The number of applications | Percentage of applications | Refusals | | |
| The number of refusals | Percentage of the application number | Percentage of the total number |
| CENTRAL | 175 | 27% | 30 | 17% | 22% |
| EAST | 146 | 22% | 28 | 19% | 20% |
| NOWENA | 162 | 25% | 34 | 21% | 25% |
| WEST | 172 | 26% | 45 | 26% | 33% |
| none | 1 | 0,2% | 1 | 100% | 1% |
| Total | 656 | 100% | 138 |  | 100% |

*Figure 3.4. Analysis of applications and refusals by Location*

## **Step 6. Analysis by Timestamp**

Analysis of applications and refusals by Timestamp is presented in Table 3.4 and Figure 3.5. The highest number of applicants are from the GMT+5 time zone, while the highest number of refusals are from the GMT+3 time zone.

Table 3.4.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Timestamp | The number of applications | Percentage of applications | Refusals | | |
| The number of refusals | Percentage of the application number | Percentage of the total number |
| GTM+2 | 68 | 10,4% | 14 | 21% | 10,1% |
| GTM+3 | 31 | 4,7% | 8 | 26% | 5,8% |
| GTM+5 | 462 | 70,4% | 103 | 22% | 74,6% |
| none | 95 | 14,5% | 13 | 14% | 9,4% |
| Total | 656 | 100,0% | 138 |  | 100% |
|  |  |  |  |  |  |

*Figure 3.5. Diagram of applications and refusals by Timestamp*

## **Step 7. Analysis by Bus service**

Analysis of applications by the **Bus service** feature showed that 13.4% of applications require transportation at various times (Fig.3.6). For 85% of applications, transportation is not needed. 1% of applicants did not specify.

|  |  |  |  |
| --- | --- | --- | --- |
| Analysis of Bus service | | |  |
| Yes | No | none |
| 88 | 560 | 8 |
| 13.4% | 85.4% | 1.2% |

*Figure 3.6. Analysis of applications by Bus service*

## **Step 8. Analysis by Special meal**

The analysis of data by the Meal Preferences feature showed that 12.5% of applications require various dietary restrictions. 59% of applications do not require dietary restrictions, and 28.5% of applicants did not specify.

|  |  |  |  |
| --- | --- | --- | --- |
| Meal Preferences | | |  |
| Yes | 82 | 12,5% |
| No | 387 | 59,0% |
| none | 187 | 28,5% |
| Total | 656 | 100% |

*Figure 3.7. Analysis of applications by Meal Preferences*

## **Step 9. Analysis by AM – PM**

The results of the analysis of applications based on the child's stay time (AM – PM) are shown in Figure 3.8.

|  |  |  |  |
| --- | --- | --- | --- |
| AM - PM | | |  |
| AM | 186 | 28% |
| PM | 117 | 18% |
| AM-PM | 340 | 52% |
| none | 13 | 2% |
| Total | 656 | 100% |

*Figure 3.8. Analysis of applications by the child's stay time*

The majority of applications were submitted for the AM-PM period (52%). Specifically, 28% were submitted in the AM and 18% in the PM. In total, this constitutes 80% of children in the AM period and 70% in the PM period. The decrease in the number of children in the PM period is 10%. Therefore, the workload for the staff and the need for other resources also decrease by 10%.

## **Conclusions by dataset\_3**

1. Analysis of all **applications** and **refusals** showed that refusals make up 21%. The dataset lacks reasons for refusals, which could be analyzed to reduce their quantity. When filling out an application, it would be possible to add a "Reason" field. If this field is text, it can be analyzed manually. If, however, this field is in the form of a dropdown list for selection, it can be analyzed automatically.
2. Analysis of applications and refusals by **Date of Birth** showed that the age group with a significant number of applications is 7 - 11 years old. Parents of 8-9-year-old children submitted the highest number of applications. Main advertising campaigns should be directed towards these categories of children and their parents. Parents of children aged 1 year, 3 years, and 14-16 years most frequently decline applications. Additional data are needed to analyze the reasons for these refusals. For other age groups, 6-13 years old, the refusal rate varies slightly, ranging from a minimum of 12% to a maximum of 23%, with an average of 21%.
3. Analysis of applications and refusals by **Registration Week** indicated an increase in applications from November 20 to December 18-22. The highest number of applications was submitted during the period of December 18-22, 2023. From December 25 onwards, the number of applications decreases. The highest percentage of refusals, marked as "not sure" (60%), occurred during the period from January 1 to January 5, 2024. The period of activity begins on November 20, and the decline phase starts on December 25. During the active period, prices could be increased, while discounts could be offered during less active periods.
4. In the dataset\_3, the Subject field is missing, so we were unable to determine the most interesting and in-demand topics.
5. Analysis of applications and refusals by **Location** revealed that the highest number of applications were submitted for CENTRAL (27%), NOWENA (25%), and WEST (26%). The highest number of refusals occurred for EAST, NOWENA, and WEST. The lowest number of applications (22%) and the highest number of refusals (19%) were recorded for EAST. Locations NOWENA, WEST, and especially EAST, may require updates, development, or improvements.
6. Analysis of applications and refusals by **Timestamp** showed that the majority of applicants were from the GMT+5 time zone (70.4%), with the highest number of refusals from the GMT+3 time zone (26%).
7. Analysis of applications based on the **Bus service** feature revealed that 13.4% of applications require transportation at different times. Transportation is not needed for 85% of applications, and 1% of applicants did not specify their transportation preference.
8. Analysis of data on **Meal Preferences** revealed that 12.5% of applications have various dietary restrictions. 59% of applications do not require dietary restrictions, and 28.5% of applicants did not specify their preferences.
9. The majority of applications were submitted for the **AM-PM period** (52%). Specifically, 28% were submitted in the AM and 18% in the PM. In total, this constitutes 80% of children in the AM period and 70% in the PM period. The decrease in the number of children in the PM period is 10%. Therefore, the workload for the staff and the need for other resources also decrease by 10%.

# **General conclusions for Dataset\_1, Dataset\_2 and Dataset\_3**

1. Analysis of all applications and refusals for dataset\_1, dataset\_2, dataset\_3 revealed the lowest refusal rate for dataset\_1 (17%) and an identical rate for dataset\_2 and dataset\_3 (21%)."

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. Dataset\_1 | | | 2. Dataset\_2 | | | 3. Dataset\_3 | | |
| Applications | 1403 | 83% | Applications | 631 | 79% | Applications | 518 | 79% |
| Refusals | 289 | 17% | Refusals | 172 | 21% | Refusals | 138 | 21% |
| Total | 1692 |  | Total | 803 |  | Total | 656 |  |

1. Analysis of applications and refusals based on **Date of Birth** shows that the highest number of applications and refusals falls within the effective age range of 1 to 16 years. Parents of younger and older children submit fewer applications. The effective midpoint (highlighted in green) for dataset\_1, dataset\_2 is identified as **4-9 years**, while for dataset\_3, it is **7-11 years**. The peak number of applications for dataset\_1, dataset\_2 occurs at **7 years**, and for dataset\_3, it is **8-9 years**.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. dataset\_1 | | | 2. dataset\_2 | | | 3. dataset\_3 | | |
| The age of the child | Number of all applications | Percentage of applications | The age of the child | Number of all applications | Percentage of applications | The age of the child | Number of all applications | Percentage of applications |
| 1 year | 10 | 0,59% | 1 year | 4 | 0,5% | 1 year | 6 | 0,9% |
| 2 years | 6 | 0,35% | 2 years |  |  | 3 years | 1 | 0,2% |
| 3 years | 69 | 4,08% | 3 years | 40 | 5,0% | 5 years | 15 | 2,3% |
| 4 | 149 | 9% | 4 | 102 | 12,7% | 6 | 48 | 7,3% |
| 5 | 191 | 11% | 5 | 105 | 13,1% | 7 | 92 | 14,0% |
| 6 | 255 | 15% | 6 | 125 | 15,6% | **8** | **116** | **17,7%** |
| **7** | **394** | **23%** | **7** | **202** | **25,2%** | **9** | **114** | **17,4%** |
| 8 | 286 | 17% | 8 | 107 | 13,3% | 10 | 90 | 13,7% |
| 9 | 192 | 11% | 9 | 60 | 7,5% | 11 | 61 | 9,3% |
| 10 | 66 | 4% | 10 | 36 | 4,5% | 12 | 49 | 7,5% |
| 11 | 26 | 2% | 11 | 9 | 1,1% | 13 | 22 | 3,4% |
| 12 | 19 | 1% | 12 | 4 | 0,5% | 14 | 23 | 3,5% |
| 14 | 1 | 0% | 13 | 1 | 0,1% | 15 | 4 | 0,6% |
| 15 |  |  |  |  |  | 16 | 2 | 0,3% |
| none | 28 | 2% | none | 8 | 1,0% | none | 13 | 2,0% |
| Total | 1692 | 100,00% |  | 803 | 100,00% |  | 656 | 100,00% |

The most frequent refusals occurred for applications for younger (1, 2, 5 years) and older (10-14 years) children.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| refusals for dataset\_1 | | | | refusals for dataset\_2 | | | | refusals for dataset\_3 | | | |
| The age of the child | total number | Percentage of the total number | Percentage of the application number | The age of the child | total number | Percentage of the total number | Percentage of the application number | The age of the child | total number | Percentage of the total number | Percentage of the application number |
| 1 year | 4 | 1% | 40% | 1 year |  |  | 0% | 1 year | 2 | 1% | 33% |
| 2 | 5 | 2% | 83% | 3 | 8 | 5% | 20% | 3 | 0 | 0% | 0% |
| 3 | 13 | 4% | 19% | 4 | 21 | 12% | 21% | 5 | 5 | 4% | 33% |
| 4 | 26 | 9% | 17% | 5 | 19 | 11% | 18% | 6 | 11 | 8% | 23% |
| 5 | 28 | 10% | 15% | 6 | 28 | 16% | 22% | 7 | 19 | 14% | 21% |
| 6 | 51 | 18% | 20% | **7** | 44 | 26% | 22% | **8** | 21 | 15% | 18% |
| **7** | 57 | 20% | 14% | 8 | 18 | 10% | 17% | **9** | 25 | 18% | 22% |
| 8 | 36 | 12% | 13% | 9 | 16 | 9% | 27% | 10 | 19 | 14% | 21% |
| 9 | 32 | 11% | 17% | 10 | 7 | 4% | 19% | 11 | 12 | 9% | 20% |
| 10 | 19 | 7% | 29% | 11 | 5 | 3% | 56% | 12 | 6 | 4% | 12% |
| 11 | 3 | 1% | 12% | 12 | 1 | 1% | 25% | 13 | 5 | 4% | 23% |
| 12 | 3 | 1% | 16% | 13 | 1 | 1% | 100% | 14 | 7 | 5% | 30% |
| 14 | 1 | 0% | 100% | 14 |  |  |  | 15 | 1 | 1% | 25% |
| 15 |  |  |  |  |  |  |  | 16 | 1 | 1% | 50% |
| none | 12 | 4% | 43% | none | 4 | 2% | 50% | none | 4 | 3% | 31% |
| Total | 289 | 100% |  |  | 172 | 100% |  |  | 138 | 100% |  |

1. Analysis of applications and refusals by **Registration week** revealed the peak period with a high number of applications from November 20 to December 22. The highest number of applications was submitted during the period from December 18 to December 22, 2023.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1. dataset\_1 | | | 2. dataset\_2 | | 3. dataset\_3 | |
| Registration week | All applications | Percentage of applications | All applications | Percentage of applications | All applications | Percentage of applications |
| 20-24 Nov 2023 | 180 | 11% | 104 | 13% | 93 | 14% |
| 27 Now-1 Dec 2023 | 251 | 15% | 100 | 12% | 108 | 16% |
| 4-8 Dec 2023 | 243 | 14% | 113 | 14% | 90 | 14% |
| 11-15 Dec 2023 | 220 | 13% | 108 | 13% | 94 | 14% |
| **18-22 Dec 2023** | **338** | **20%** | **187** | **23%** | **130** | **20%** |
| 25-29 Dec 2023 | 204 | 12% | 65 | 8% | 64 | 10% |
| 1-5 Jan 2024 | 171 | 10% | 78 | 10% | 41 | 6% |
| 8-12 Jan 2024 | 64 | 4% | 35 | 4% | 21 | 3% |
| not sure | 21 | 1% | 13 | 2% | 15 | 2% |
| Total | 1692 | 100% | 803 | 100% | 656 | 100% |

From December 25 onwards, the number of applications decreases. The highest percentage of refusals (not sure) is marked in pink color (60-92%).

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. dataset\_1, average 17% refusals | | | | | 2. dataset\_1, 21% | | | | 3. dataset\_1, 21% | | | |
| Registration week | Refusals: total number | Percentage of the total number | Percentage of the application number | Refusals: total number | | Percentage of the total number | Percentage of the application number | Refusals: total number | | Percentage of the total number | Percentage of the application number |
| 20-24 Nov 2023 | 31 | 11% | 17% | 18 | | 10% | 17% | 12 | | 9% | 13% |
| 27 Now-1 Dec 2023 | 24 | 8% | 10% | 22 | | 13% | 22% | 18 | | 13% | 17% |
| 4-8 Dec 2023 | 28 | 10% | 12% | 15 | | 9% | 13% | 17 | | 12% | 19% |
| 11-15 Dec 2023 | 30 | 10% | 14% | 28 | | 16% | **26%** | 16 | | 12% | 17% |
| 18-22 Dec 2023 | 62 | 21% | 18% | 29 | | 17% | 16% | 31 | | 22% | 24% |
| 25-29 Dec 2023 | 44 | 15% | 22% | 24 | | 14% | 37% | 16 | | 12% | 25% |
| 1-5 Jan 2024 | 38 | 13% | 22% | 19 | | 11% | 24% | 16 | | 12% | **39%** |
| 8-12 Jan 2024 | 16 | 6% | **25%** | 5 | | 3% | 14% | 3 | | 2% | 14% |
| not sure | 16 | 6% | **76%** | 12 | | 7% | **92%** | 9 | | 7% | **60%** |
| Total | 289 | 100% |  | 172 | | 100% |  | 138 | | 100% |  |

Dataset\_2 has the highest rate of application refusals, while dataset\_1 has the lowest.

The period of increased application submissions starts on November 20, and the decrease occurs from December 25. During the peak period, prices could be raised, while discounts could be offered during the less active period.

Начало формы

1. In dataset\_2, dataset\_3 the **Subject** field is missing, so it was not possible to determine the most interesting and demanded topics. In the dataset\_1, the analysis of the Subject field shows the highest number of applications (and refusals) for the *Arctic science* theme (39%). In the second place is *Harry Potter science* (33%), and in the third place is *Superhero* *science* (28%). The themes of *Harry Potter science* and *Superhero science* require further development and improvement.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Analysis of Subject, dataset\_1** | | | | | |
| **Subject** | Applications | Percentage of applications | Refusals | Percentage of the total number | Percentage of the application number |
| Superhero science | 478 | 28% | 81 | 28% | 17% |
| Arctic science | 655 | 39% | 117 | 40% | 18% |
| Harry Potter science | 551 | 33% | 83 | 29% | 15% |
| None | 8 | 0,50% | 8 | 3% | 100% |
| Total | 1692 | 100% | 289 | 100% |  |

1. Analysis of applications and refusals by Location revealed that the highest number of applications were submitted for CENTRAL, NOWENA, and WEST.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Dataset\_1 | | | Dataset\_2 | | Dataset\_3 | |
| Location | Applications | Percentage of applications | Applications | Percentage of applications | Applications | Percentage of applications |
| CENTRAL | 477 | 28% | 242 | 30% | 175 | 27% |
| EAST | 345 | 20% | 159 | 20% | 146 | 22% |
| NOWENA | 459 | 27% | 224 | 28% | 162 | 25% |
| WEST | 402 | 24% | 175 | 22% | 172 | 26% |
| none | 9 | 1% | 3 | 0% | 1 | 0% |
| Total | 1692 | 100% | 803 | 100% | 656 | 100% |

CENTRAL has the least number of refusals. The least number of applications and the highest number of refusals are observed for EAST. Locations NOWENA, WEST, and particularly EAST require updates, development, or improvement.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dataset\_1 | | | | Dataset\_2 | | | Dataset\_3 | | |
| Location | Refusals | Percentage of the application number | Percentage of the total number | Refusals | Percentage of the application number | Percentage of the total number | Refusals | Percentage of the application number | Percentage of the total number |
| CENTRAL | 78 | 16% | 27% | 44 | 18% | 26% | 30 | 17% | 22% |
| EAST | 61 | 18% | 21% | 38 | 24% | 22% | 28 | 19% | 20% |
| NOWENA | 79 | 17% | 27% | 47 | 21% | 27% | 34 | 21% | 25% |
| WEST | 66 | 16% | 23% | 42 | 24% | 24% | 45 | 26% | 33% |
| none | 5 | 56% | 2% | 1 | 33% | 1% | 1 | 100% | 1% |
|  | 289 |  | 100% | 172 |  | 100% | 138 |  | 100% |

1. Analysis of applications and refusals by Timestamp showed that the majority of applicants are from the EET, GMT+3, and GMT+5 time zones.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Dataset\_1 | | | Dataset\_2 | | Dataset\_3 | |
| Timestamp | Applications | Percentage of applications | Applications | Percentage of applications | Applications | Percentage of applications |
| GTM+2 | 33 | 2,0% | 338 | 42,1% | 68 | 10,4% |
| GTM+3 | 455 | 26,9% | 278 | 34,6% | 31 | 4,7% |
| GTM+4 |  |  | 1 | 0,1% |  |  |
| GTM+5 | 72 | 4,3% | 20 | 2,5% | 462 | 70,4% |
| GTM+6 | 1 | 0,1% | 1 | 0,1% |  |  |
| EET | 765 | 45,2% | 10 | 1,2% |  |  |
| none | 366 | 21,6% | 155 | 19,3% | 95 | 14,5% |
| Total | 1692 | 100,0% | 803 | 100,0% | 656 | 100,0% |

1. Analysis of applications based on the Bus service feature revealed that 13.4% to 19% of applicants require transportation at different times. For 80-85% of applications, transportation is not needed. 1-4% of applicants did not specify their transportation needs.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Analysis of Bus service in dataset\_1 | | | | Analysis of Bus service in dataset\_2 | | | | Analysis of Bus service in dataset\_3 | | | |
| Yes | No | none | Total: | Yes | No | none | Total: | Yes | No | none | Total: |
| 266 | 1362 | 64 | 1692 | 149 | 645 | 9 | 803 | 88 | 560 | 8 | 656 |
| 16% | 80% | 4% | 100% | **19%** | 80% | 1% | 100% | 13,4% | 85,4% | 1,2% | 100,0% |
|  | | | |  | | | |  | | | |

1. Analysis of data based on the Meal Preferences feature showed that 12-13% of applications have various dietary restrictions. 59-64% of applications do not require dietary restrictions, while 24-28% did not specify their preferences.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Special meal request in dataset\_1 | | | Special meal request in dataset\_2 | | | Meal Preferences in dataset\_3 | | |
| Yes | 224 | 13% | Yes | 97 | 12% | Yes | 82 | 12,5% |
| No | 1000 | **59%** | No | 515 | **64%** | No | 387 | **59,0%** |
| none | 468 | 28% | none | 191 | 24% | none | 187 | 28,5% |
| Total | 1692 | 100% | Total | 803 | 100% | Total | 656 | 100% |
|  | | |  | | |  | | |

1. In datasets dataset\_1 and dataset\_2, the AM-PM field is missing, so it was not possible to determine the most effective time. In dataset\_3, the AM-PM field is present. Analysis of this field shows that the majority of applications were submitted for the AM-PM period (52%). Specifically, 28% were submitted in the AM and 18% in the PM. In total, this constitutes 80% of children in the AM period and 70% in the PM period. The decrease in the number of children in the PM period is 10%. Therefore, the workload for the staff and the need for other resources also decrease by 10%.

|  |  |  |  |
| --- | --- | --- | --- |
| AM - PM | | |  |
| AM | 186 | 28% |
| PM | 117 | 18% |
| AM-PM | 340 | 52% |
| none | 13 | 2% |
| Total | 656 | 100% |