Titanic analysis

By Krzysztof Kleszcz

Introduction

Explore the poignant story of the Titanic through this dataset. It contains detailed information about the passengers aboard the ill-fated ship, which sank on April 15, 1912, after striking an iceberg.📋

Columns:

- pclass - Ticket class
- survived - Whether the passenger survived the disaster
- name - Passenger's name
- sex - Passenger's gender
- age - Passenger's age
- sibsp - Number of siblings/spouses aboard
- parch - Number of parents/children aboard
- ticket - Ticket number
- fare - Ticket fare
- cabin - Cabin number
- embarked - Port of embarkation (C = Cherbourg, Q = Queenstown, S = Southampton)
- boat - Lifeboat number
- body - Body number (if the passenger did not survive and the body was recovered)
- home.dest - Destinati

Just in case, please see table of contents:

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1. General Data Overview 📊

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	pclass	survived	name	sex	age	sibsp	parch	ticket	fare	cabin	emb
960	3.0	0.0	Lemberopolous, Mr. Peter L	male	34.5	0.0	0.0	2683	6.4375	NaN	
902	3.0	0.0	Johnston, Mr. Andrew G	male	NaN	1.0	2.0	W./C. 6607	23.4500	NaN	
887	3.0	1.0	Johannesen-Bratthammer, Mr. Bernt	male	NaN	0.0	0.0	65306	8.1125	NaN	
487	2.0	0.0	Lingane, Mr. John	male	61.0	0.0	0.0	235509	12.3500	NaN	

We have 1,309 records and 14 columns, though not all columns are well-filled, such as "cabin" and "body."

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	pclass	survived	age	sibsp	parch	fare	bo
count	1309.000000	1309.000000	1046.000000	1309.000000	1309.000000	1308.000000	121.0000
mean	2.294882	0.381971	29.881135	0.498854	0.385027	33.295479	160.809
std	0.837836	0.486055	14.413500	1.041658	0.865560	51.758668	97.696
min	1.000000	0.000000	0.166700	0.000000	0.000000	0.000000	1.0000
25%	2.000000	0.000000	21.000000	0.000000	0.000000	7.895800	72.0000
50%	3.000000	0.000000	28.000000	0.000000	0.000000	14.454200	155.0000
75%	3.000000	1.000000	39.000000	1.000000	0.000000	31.275000	256.0000
max	3.000000	1.000000	80.000000	8.000000	9.000000	512.329200	328.0000

The most unique values that can be grouped are pclass, survived, sex, and embarked. 📊

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```
pclass          3
survived        2
name         1307
sex             2
age            98
sibsp           7
parch           8
ticket        929
fare          281
cabin         186
embarked        3
boat           27
body          121
home.dest     369
dtype: int64
```

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dtype: int64

Unique values:  pclass [ 1.  2.  3. nan]
Unique values:  survived [ 1.  0. nan]
Unique values:  sex ['female' 'male' nan]
Unique values:  embarked ['S' 'C' nan 'Q']
```

2. Analysis of Missing Values 🔎

The majority of missing values pertain to information about cabins, lifeboats, bodies, and future home destinations.

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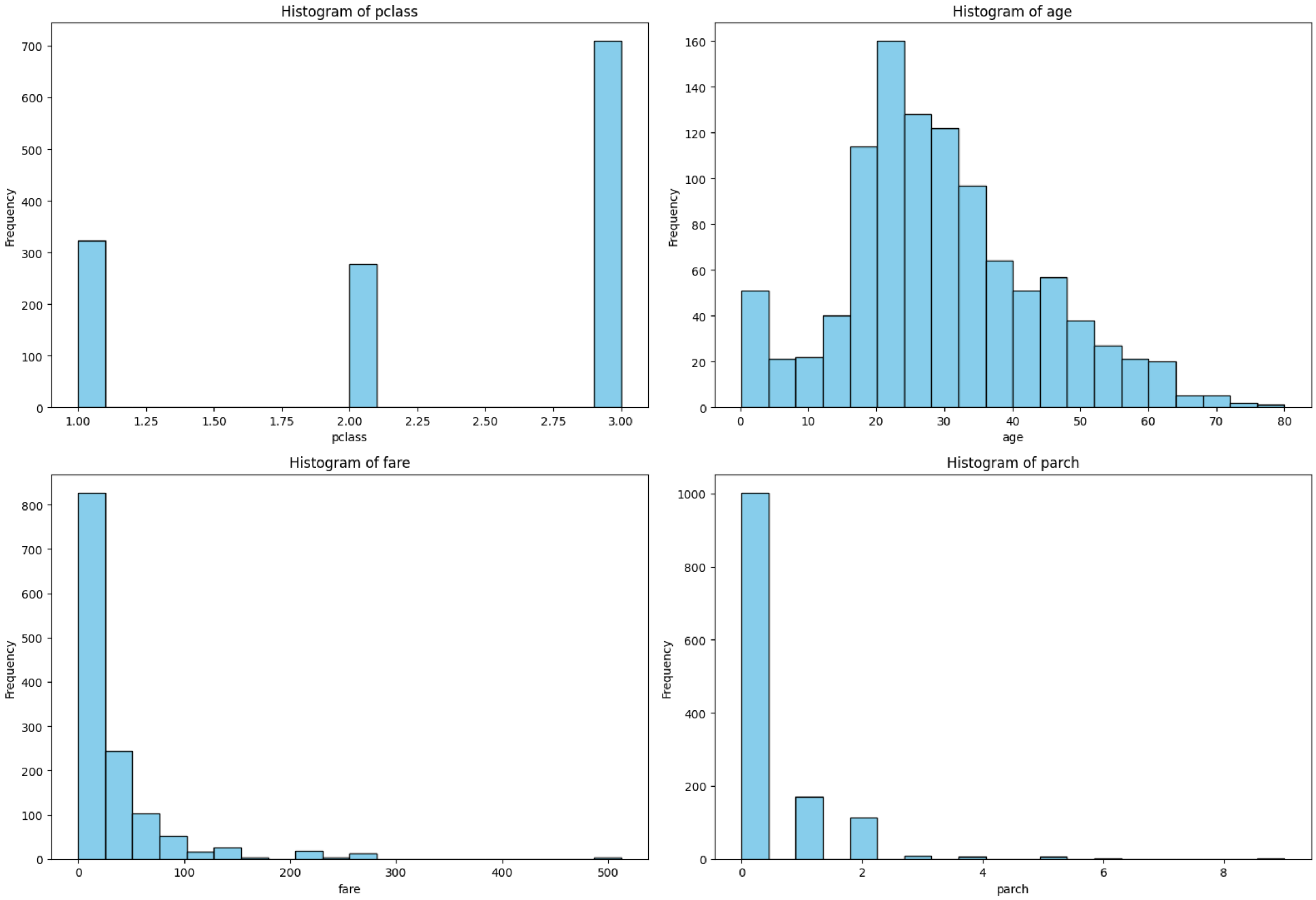
```
pclass          1
survived        1
name            1
sex             1
age           264
sibsp           1
parch           1
ticket          1
fare            2
cabin        1015
embarked        3
boat          824
body         1189
home.dest     565
dtype: int64
```

3. Single Value Analysis 📉

- The majority of passengers traveled in third class.
- Only around 450 passengers survived, while over 800 were lost.
- Most passengers were between 20 and 40 years old.
- Most passengers traveled without family or spouse.


Histogram of pclass
Frequency
0
100
200
300
400
500
600
700
1.00
1.25
1.50
1.75
2.00
2.25
2.50
2.75
3.00
pclass
Histogram of age
Frequency
0
20
40
60
80
100
120
140
160
0
10
20
30
40
50
60
70
80
age
Histogram of fare
Frequency
0
100
200
300
400
500
600
700
800
0
100
200
300
400
500
fare
Histogram of parch
Frequency
0
200
400
600
800
1000
0
2
4
6
8
parch

4. Data Transformation 🔄

- We will combine data about family and children into one table: family.
- We will remove tables with the most missing data, such as cabin, ticket, and body.
- These data points won't be particularly necessary for our analysis.
- We will replace the missing data with the median, the most frequent value, or the value "Unknown".

	pclass	survived	name	sex	age	sibsp	parch	ticket	fare	cabin	e
1092	3.0	0.0	Oreskovic, Mr. Luka	male	20.0	0.0	0.0	315094	8.6625	NaN	
699	3.0	0.0	Cacic, Mr. Luka	male	38.0	0.0	0.0	315089	8.6625	NaN	
845	3.0	1.0	Hakkarainen, Mrs. Pekka Pietari (Elin Matilda ...	female	24.0	1.0	0.0	STON/O2. 3101279	15.8500	NaN	
519	2.0	0.0	Norman, Mr. Robert Douglas	male	28.0	0.0	0.0	218629	13.5000	NaN	
909	3.0	1.0	Jussila, Mr. Eiriik	male	32.0	0.0	0.0	STON/O 2. 3101286	7.9250	NaN	
229	1.0	1.0	Penasco y Castellana, Mrs. Victor de Satode (M...	female	17.0	1.0	0.0	PC 17758	108.9000	C65	

5. Analysis of Relationships Between Data 🔍

We can observe that nearly every woman in first and second class survived. On the other hand, far fewer men survived compared to women.

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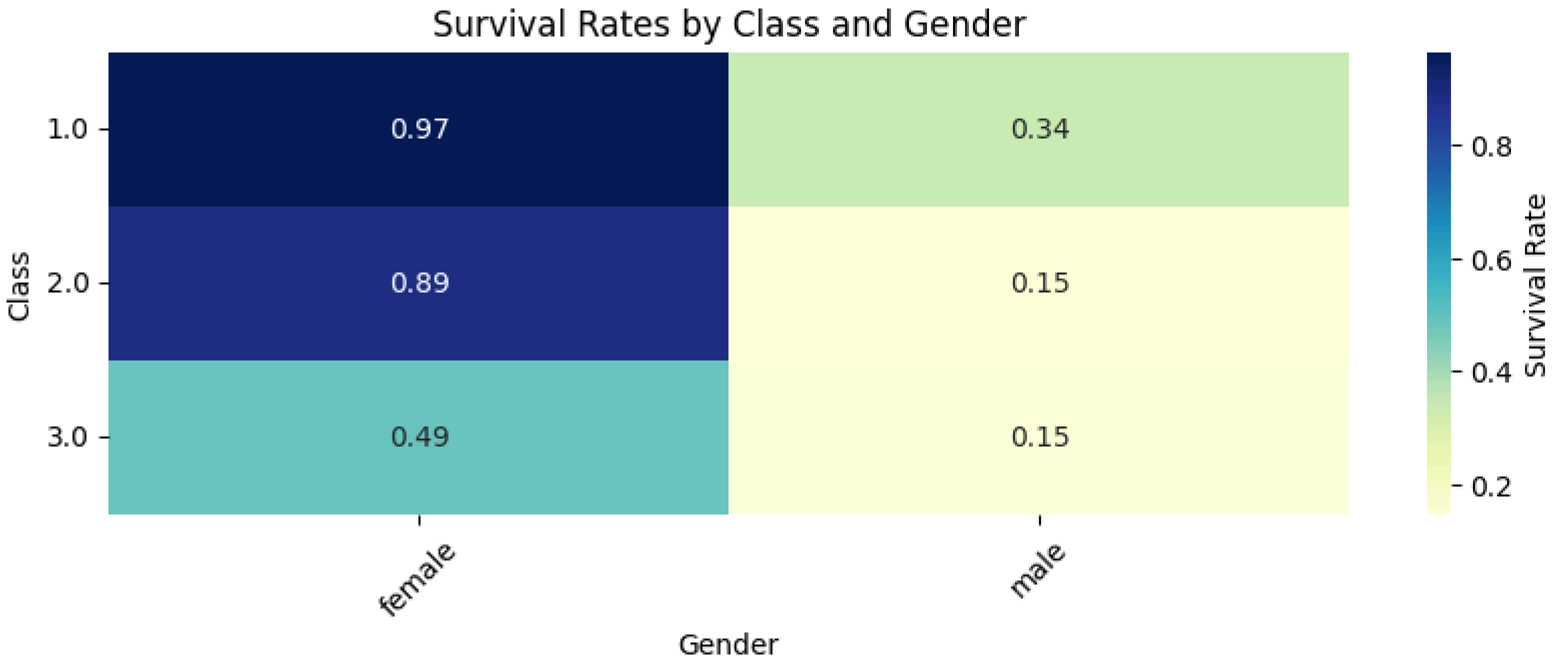

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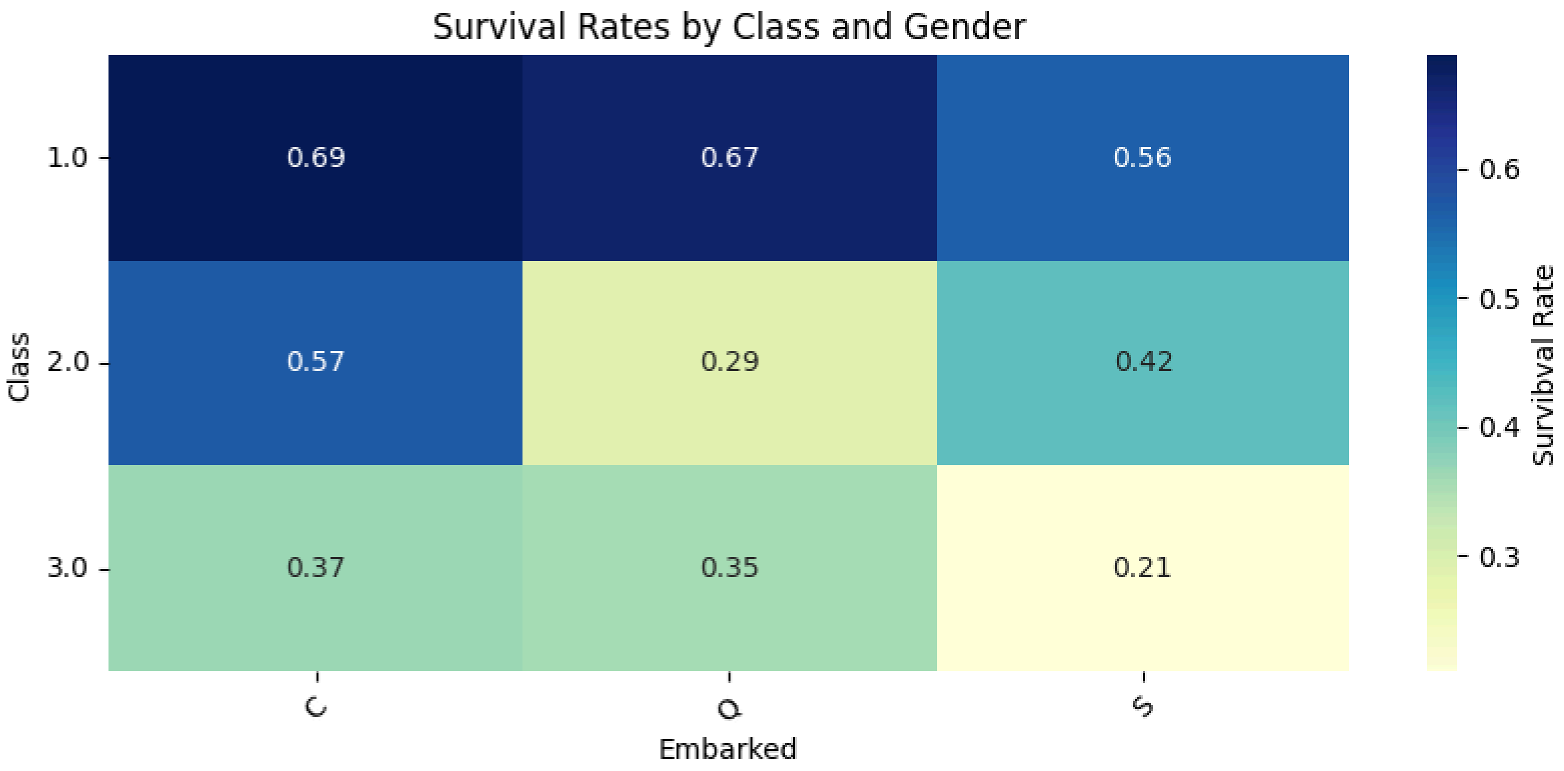
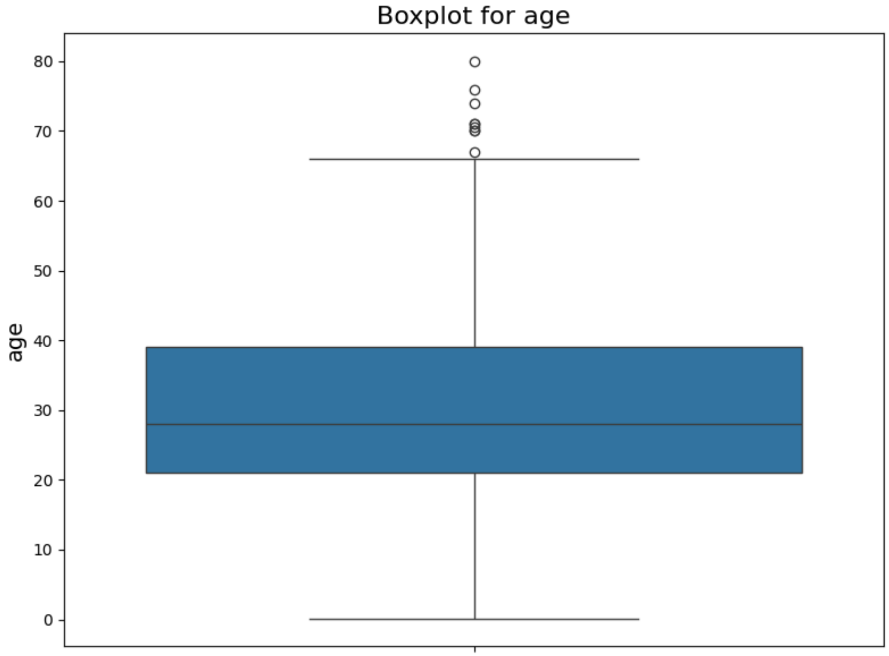
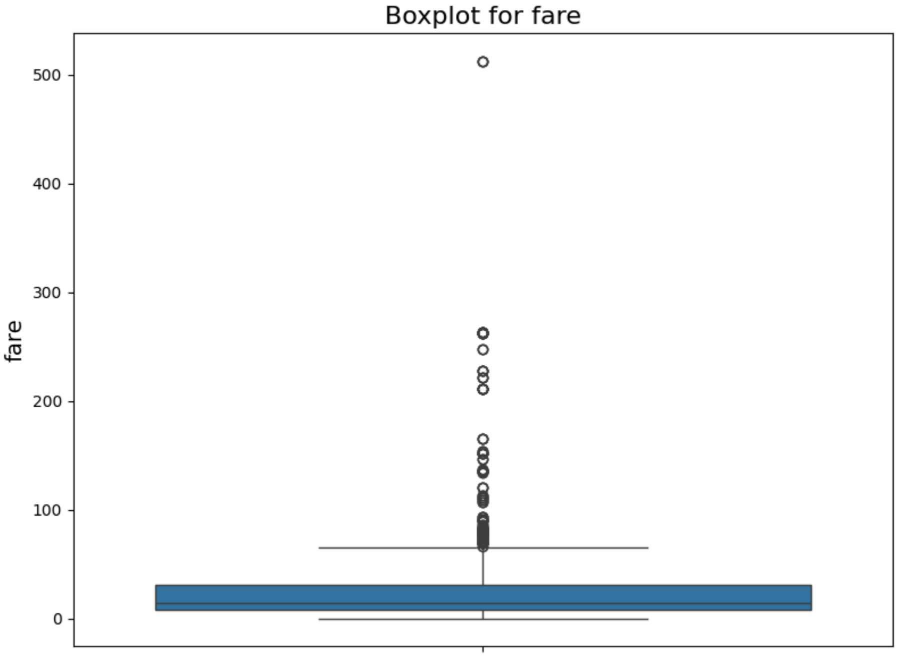


6. Analysis of Outliers 📊

- We can observe that the more expensive the ticket, the higher the chance of survival.
- The most outliers were found in the first class, specifically regarding ticket prices.


Boxplot for age
age
0
10
20
30
40
50
60
70
80


Boxplot for fare
fare
0
100
200
300
400
500

7. Analysis Summary 📋

- The data turned out to be somewhat inconvenient for analysis due to many missing values.
- This led to the necessity of data transformation by calculating averages or transforming columns.
- About 33% of the passengers survived.
- We can observe that nearly every woman in first and second class survived.
- The highest chances of survival were for those who embarked from port C.
- We can observe that the more expensive the ticket, the higher the chance of survival.
- The most outliers were found in the first class, specifically regarding ticket prices.

Thank you for your attention! 🎉 Your interest and time mean a lot.