Report on learning practice # 1

Analysis of univariate random variables

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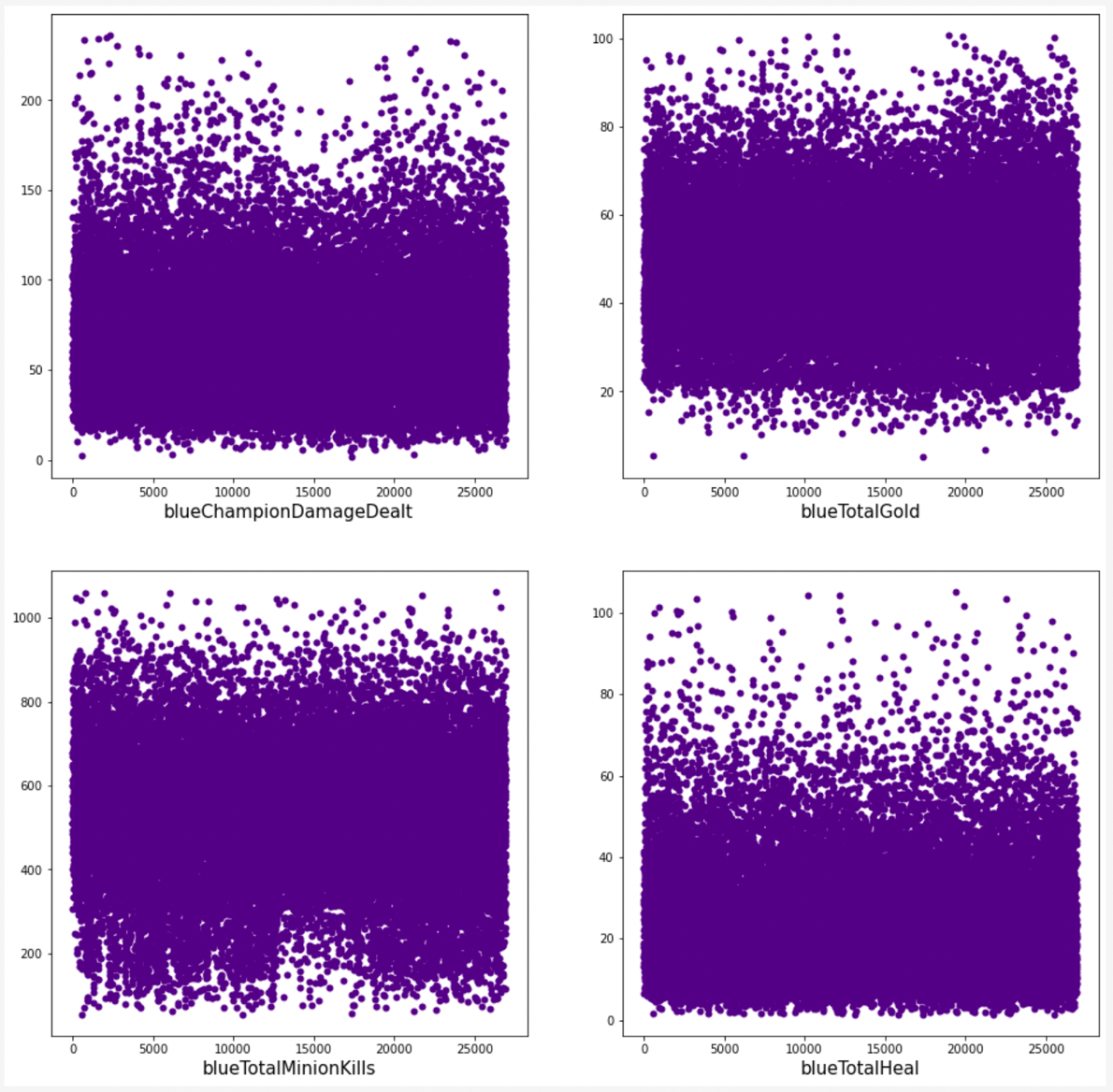
**1. Substantiation of chosen subsample:**

Изображение выглядит как стол

Автоматически созданное описание

*Pic.1. Short DS pandas presentation.*

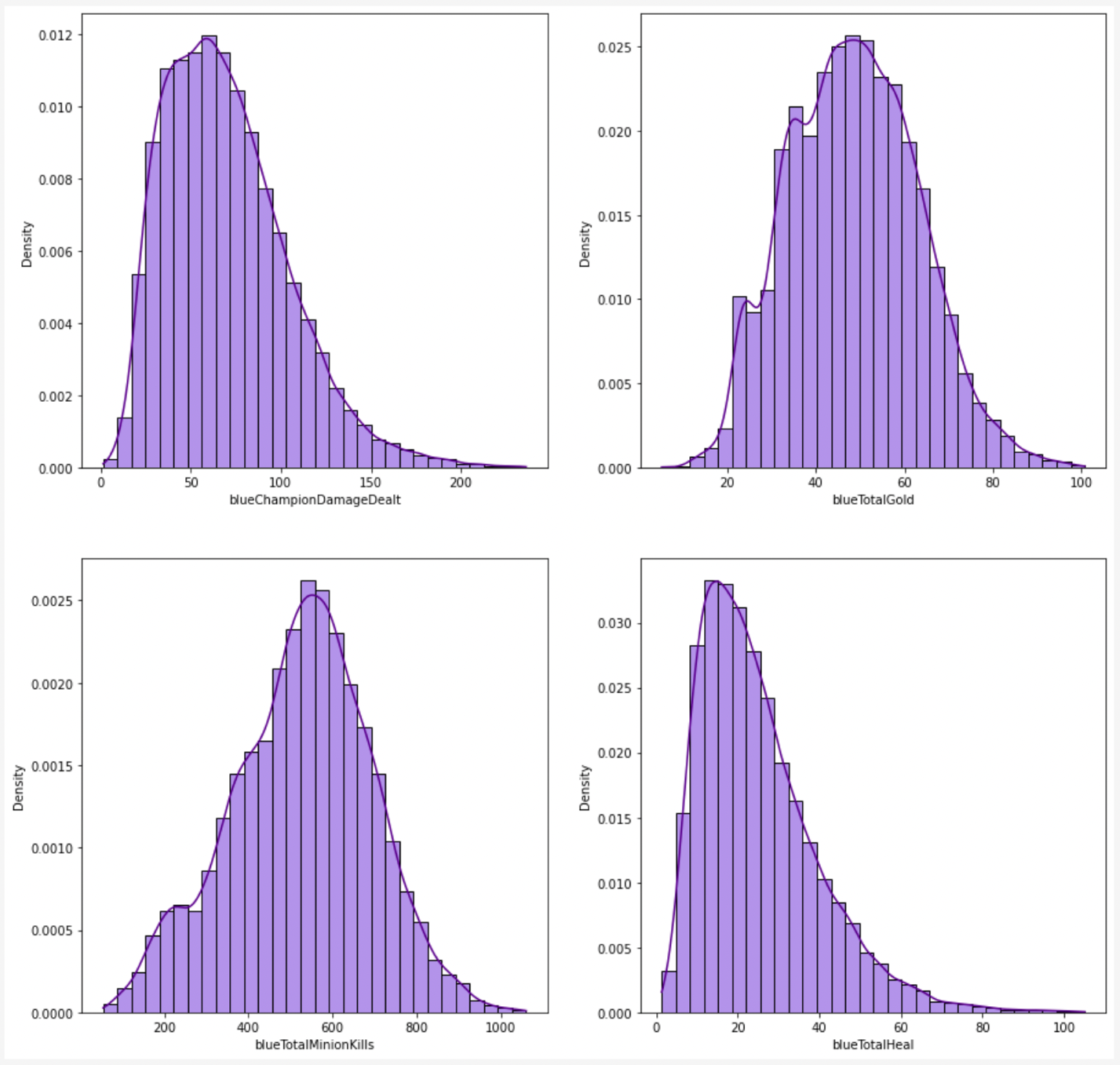
Our dataset is game statistics data from the League of Legends game for 2020 from rated games in the "master" rank. The dataset is built using Riot.API (open public API for various in-game parameters from online games from Riot Games). The dataset contains many statistical parameters of past matches, including damage done, in-game currency earned, data on victories and defeats, etc. More details can be found in the README.MD file in the datasets folder.



*Pic.2. Display Lab 1 used data.*

This Lab four of variables have been used. In our laboratory work, we analyze only the statistics of the "blue team".

**2. Plotting a non-parametric estimation of PDF in form of a histogram and using kernel density function (or probability law in case of discrete RV)**



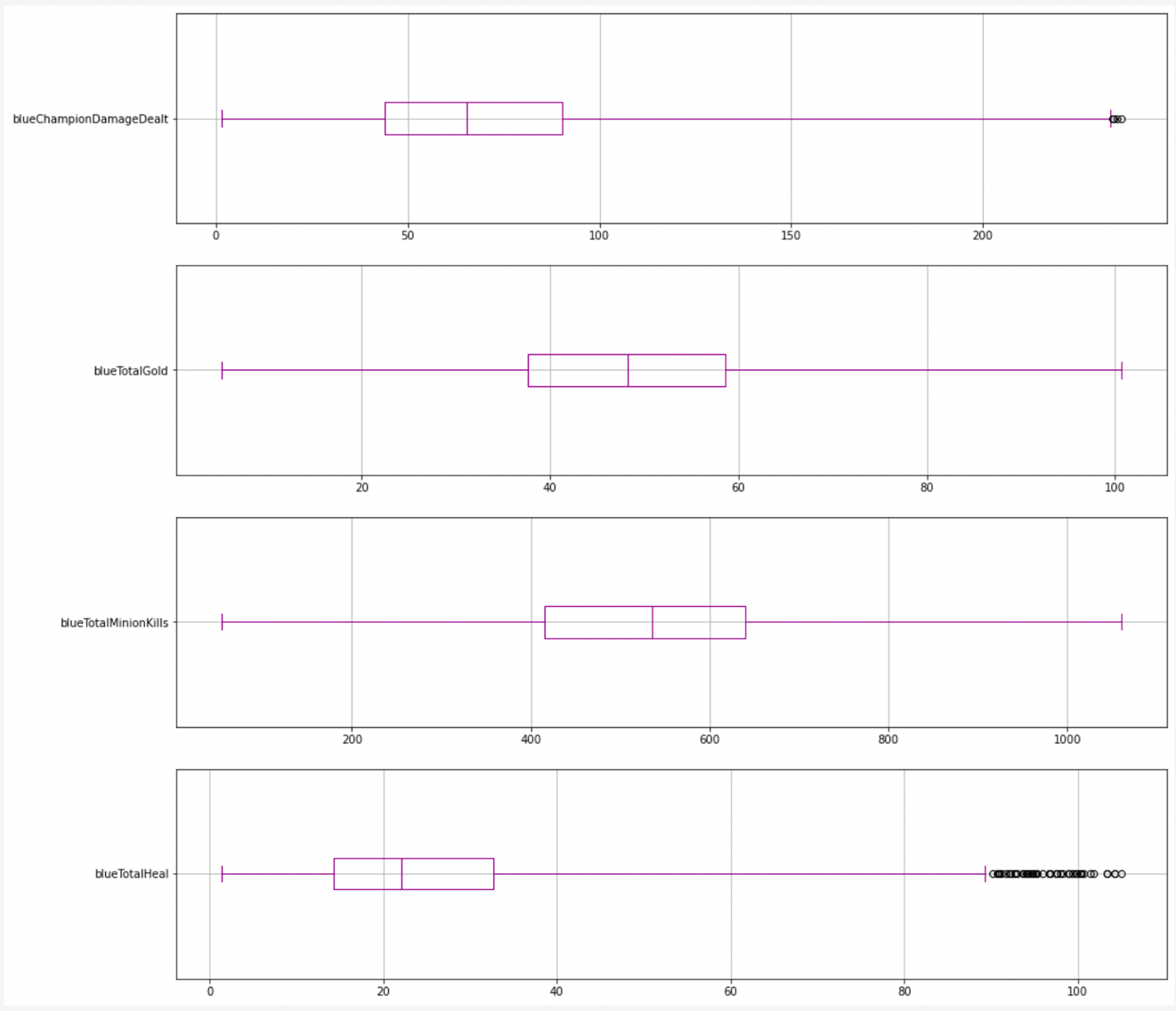
*Pic.3. Histogram and KDE.*

**3. Order statistics estimation and its representation as “box with whiskers” plot.**

Изображение выглядит как стол

Автоматически созданное описание

*Pic.4. Statistics estimation.*



*Pic.5. Variables’ boxplot visualization.*

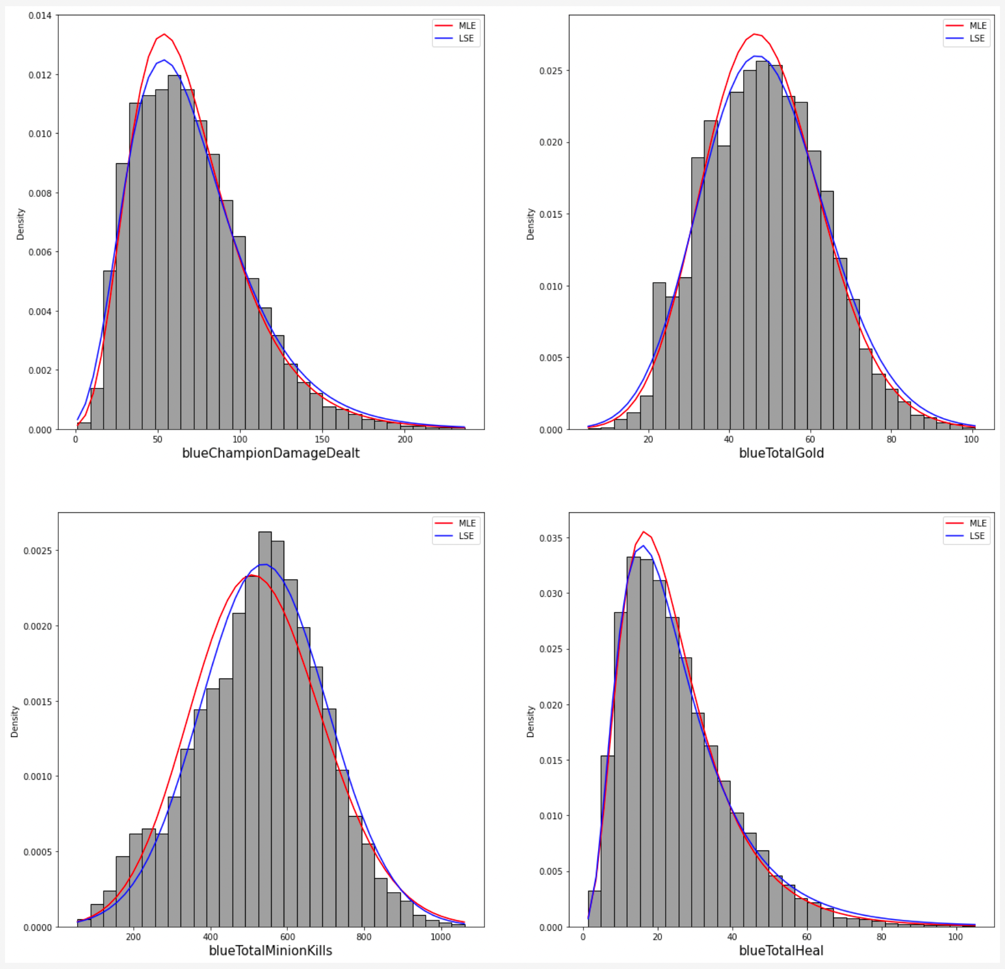
**4. Selection of theoretical distributions that best reflect empirical data and 5. Estimation of random variable distribution parameters using maximum likelihood technique and LS methods:**

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Автоматически созданное описание

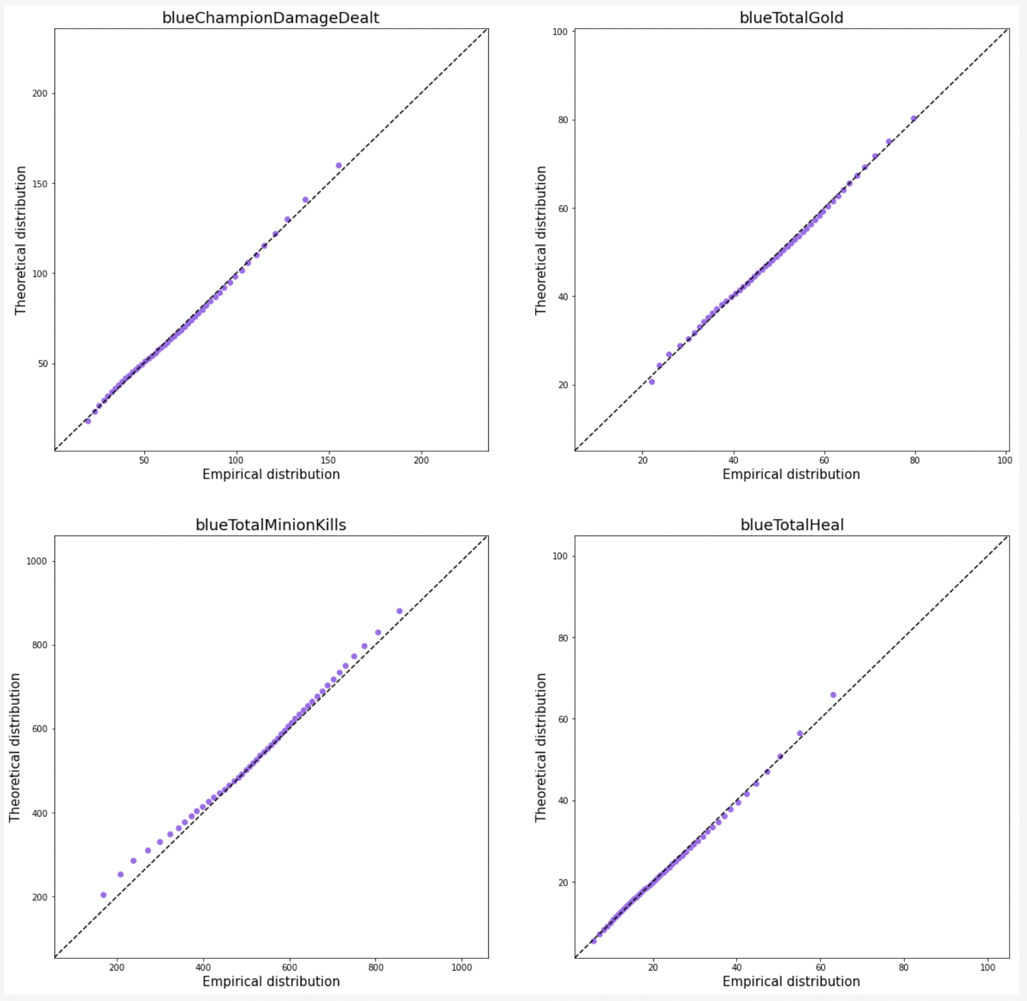
*Pic.6. Parametric representation of MLE and LSE.*

This table shows the coefficients calculated using the MLE and LSE algorithms.



*Pic.7. Hist MLE and LSE visualization.*

**6. Validation of empirical and theoretical distributions using quantile biplots.**



*Pic.8. QQ biplots.*

**7. Statistical tests (2 at least).**

For statistical test we used Kstest and CramerVonMises functions.

Изображение выглядит как стол

Автоматически созданное описание

*Pic.9. Statistical tests.*

**Source code:**

* The full repository with all the labs: <https://github.com/vandosik/M-M-MSA>
* The repo with Datasets and additional used Data info: <https://github.com/vandosik/M-M-MSA/tree/master/Datasets>
* The Lab 1 ipynb file: <https://github.com/vandosik/M-M-MSA/blob/master/Lab_1/lab_1.ipynb>

We recommend to use the first link because our GitHub project has README file with similar links and instructions which is really easy to use.

Изображение выглядит как текст

Автоматически созданное описание