

Analiza rozkładu empirycznego II

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Task 1: Parametric based measures The table below shows the results of the last stage of the 2018 Russia World Cup. Use the information in the table to answer the questions.

| | | | |
|----------------|----------|-------------|-------|
| Final | France | Croatia | 4 : 2 |
| 3rd place | Belgium | England | 2 : 0 |
| Semi-finals | Croatia | England | 1 : 1 |
| | France | Belgium | 1 : 0 |
| Quarter-finals | Russia | Croatia | 2 : 2 |
| | Sweden | England | 0 : 2 |
| | Brazil | Belgium | 1 : 2 |
| | Uruguay | France | 0 : 2 |
| 1/8-finals | Colombia | England | 1 : 1 |
| | Sweden | Switzerland | 1 : 0 |
| | Belgium | Japan | 3 : 2 |
| | Brazil | Mexico | 2 : 0 |
| | Croatia | Denmark | 1 : 1 |
| | Spain | Russia | 1 : 1 |
| | Uruguay | Portugal | 2 : 1 |
| | France | Argentina | 4 : 3 |

Source: FIFA.com

- (a) Create a frequency table (*szereg rozdzielczy*) where x is the number of goals scored in match.
- (b) Is the distribution skewed to the right? Visualize the frequencies and compute the relevant statistic.
- (c) Is the match between France and Argentina an outlier in terms of the total number of goals?

Task 2: Quartile based methods Below, we provide information on the time required by Polish workers (divided by their gender) to arrive to their place of work. Using these data please complete the tasks

| Time | Men | Women |
|------------|-------|-------|
| up to 15 | 0.338 | 0.414 |
| up to 30 | 0.384 | 0.382 |
| up to 45 | 0.130 | 0.109 |
| up to 60 | 0.071 | 0.058 |
| up to 90 | 0.041 | 0.026 |
| 90 or more | 0.036 | 0.011 |

Source: Table 2.9 from Central statistical office (2015), *Time Use Survey 2013: Part 1*, Zakład Wydawnictw Statystycznych, Warsaw, Poland.

- (a) Is it true that the median male worker commutes longer to work than the median female worker?
- (b) Imagine that one respondents indicated that it takes 57 minutes to get to work. Please find to what percentile of the distribution he/she belongs (consider both cases).
- (c) Is the worker from the previous point an outlier? Consider both cases (male/female worker)