

Analysis of the EU Parliament election in Poland

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We study the results of the EU Parliament election in 2014 in Poland.

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I. INTRODUCTION

II. METHODS

III. RESULTS AND DISCUSSION

In Figure 1 we present a two-dimensional histogram of the fraction of invalid votes vs. the number of voting cards in the urn.

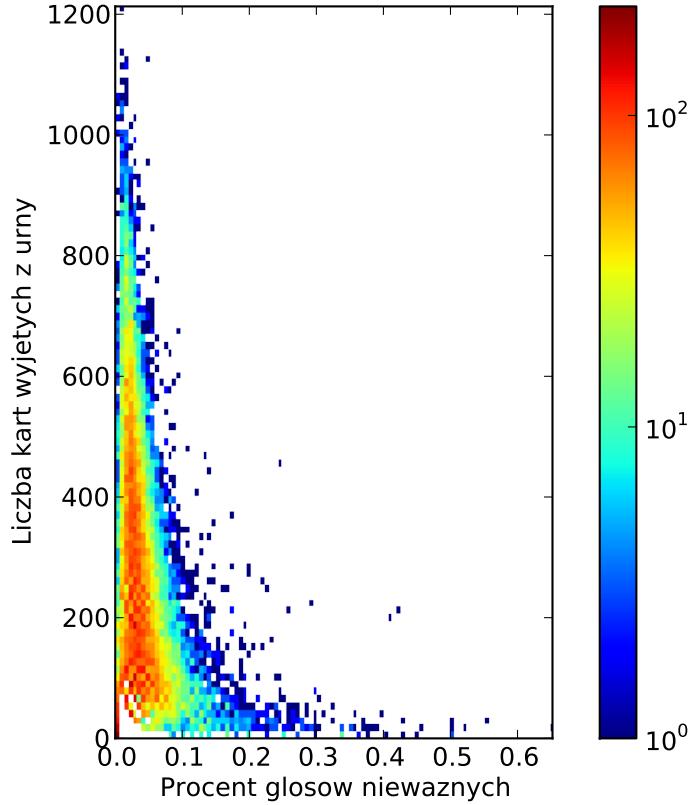


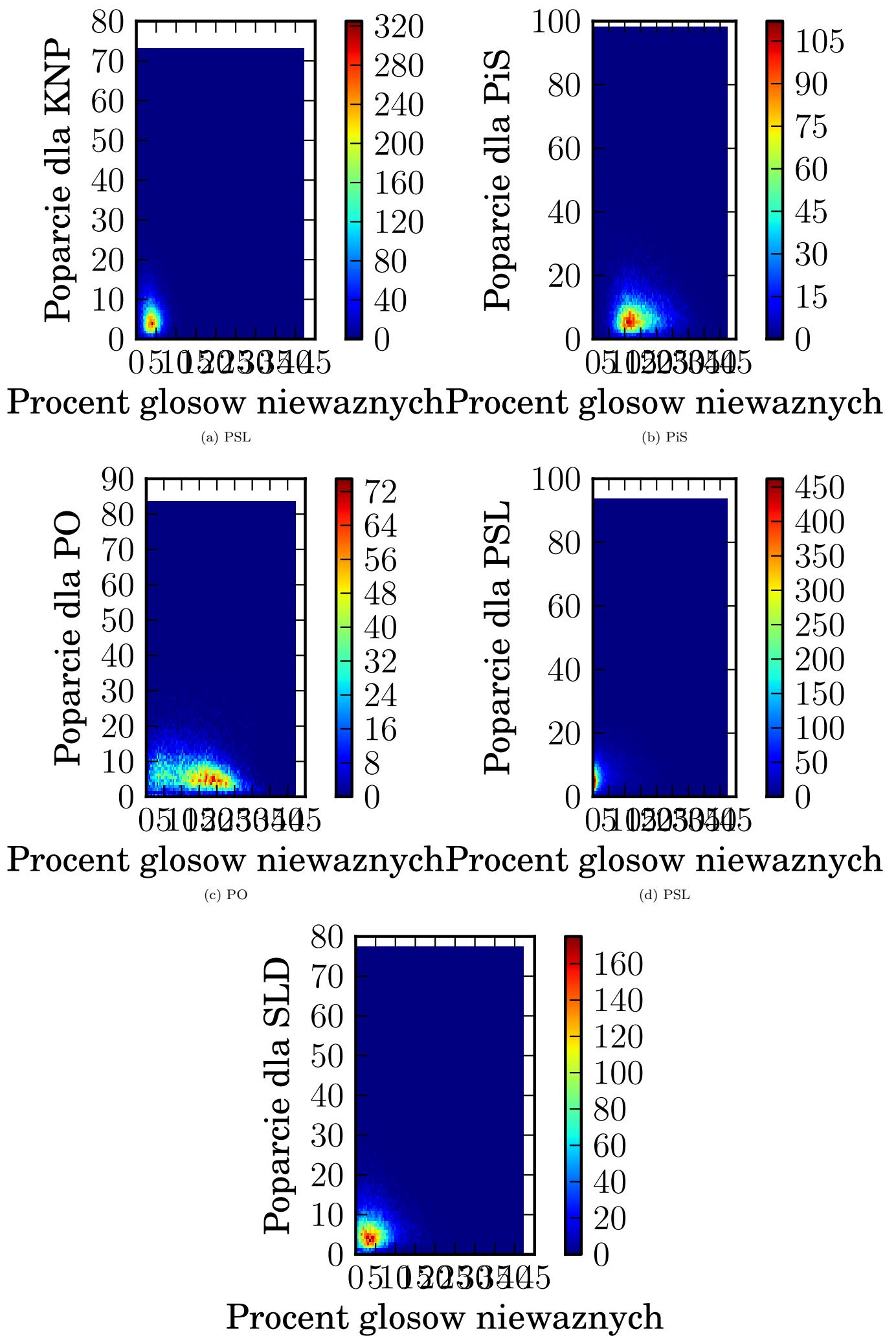
FIG. 1: Two-dimensional histogram of the number of voting cards. x-axis shows the fraction of invalid votes, y-axis shows the number of cards in the urn. The heat-map is in logarithmic scale.

Next, Figure 2 shows the histogram of the fraction of invalid votes, vs the fraction of votes for a given party. We do not see the characteristic signs of fraud . [citati](#)

Another interesting result is shown in Figure 3. We do not find the feature found in the Russian results, that is „comet tail” effect going towards the upper right corner. This suggested that the election was fair.

Finally, in Figure 4 we show the „resonance” effect. We can see peaks for the fraction of votes equal to $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ for different parties. This effect is due to the bin size of the histogram and the fact that we can achieve the fraction of votes equal to $\frac{1}{2}$ in a number of ways, but to achieve the result $\frac{499}{1000}$ requires a very precise number of valid voting cards and number of people who voted for the given party. The number of histogram bins in this case is 1000, which gives a bin width of 0.1%. On the other hand, in Figure 5 we show the histograms with the number of bins equal to 127 giving a bin width 0.79%. Notice the „Putin resonance” are gone. This suggested that the effect can be partially explained by the histogram binning scheme.

IV. CONCLUSIONS



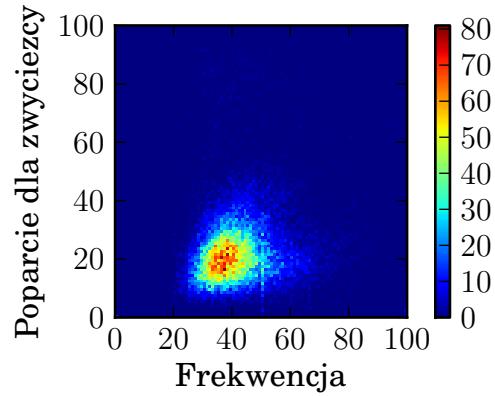


FIG. 3: The histogram of the voter turnout vs the percentage of votes for a winning party. Notice the lack of a „comet tail” effect which would suggest cheating.

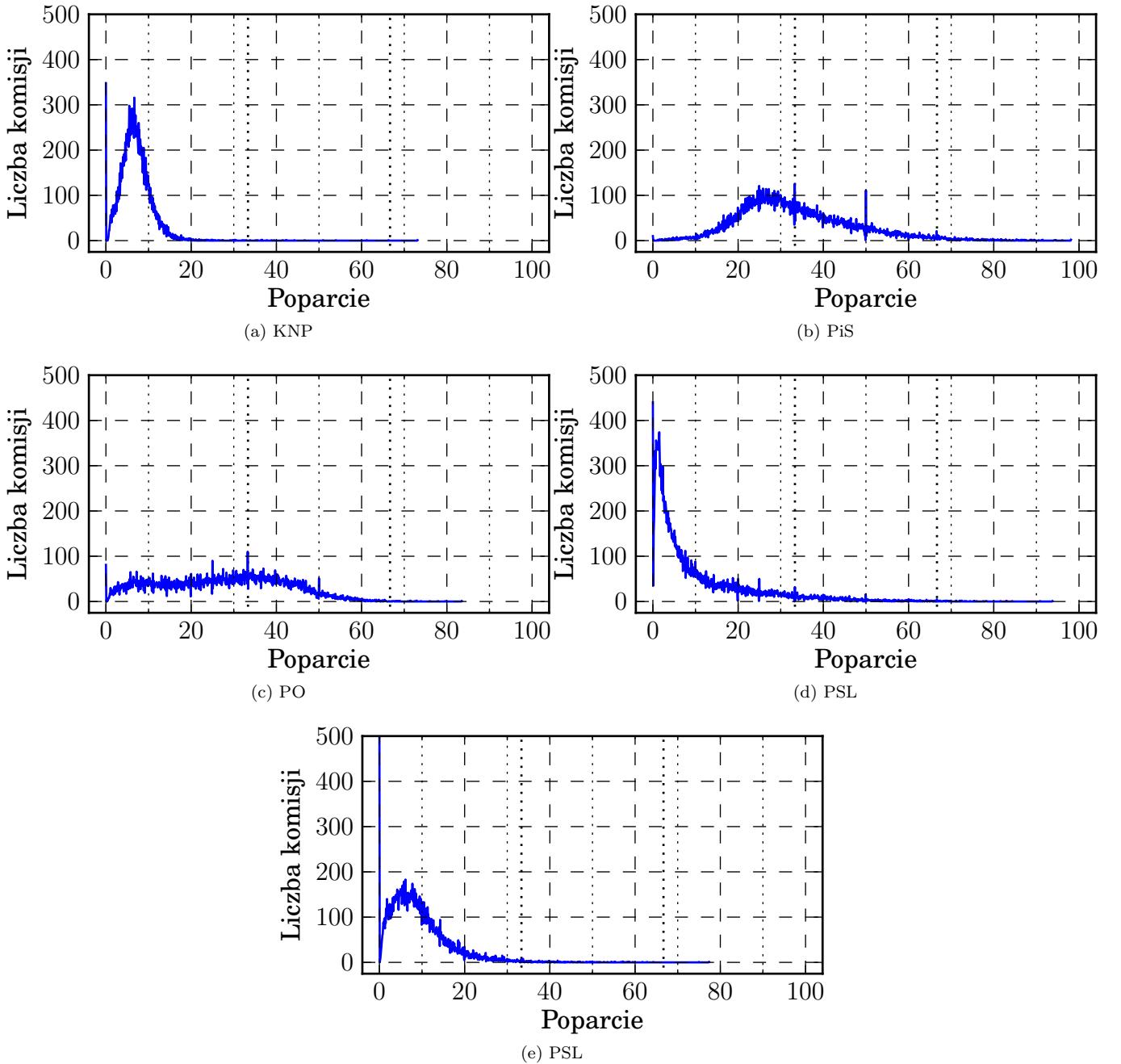


FIG. 4: The histogram of fraction of votes for a given party. Panel ???: KNP, panel (b): PiS, panel (c): PO, (d): PSL, (e): SLD. Histogram bin size is 0.1%.

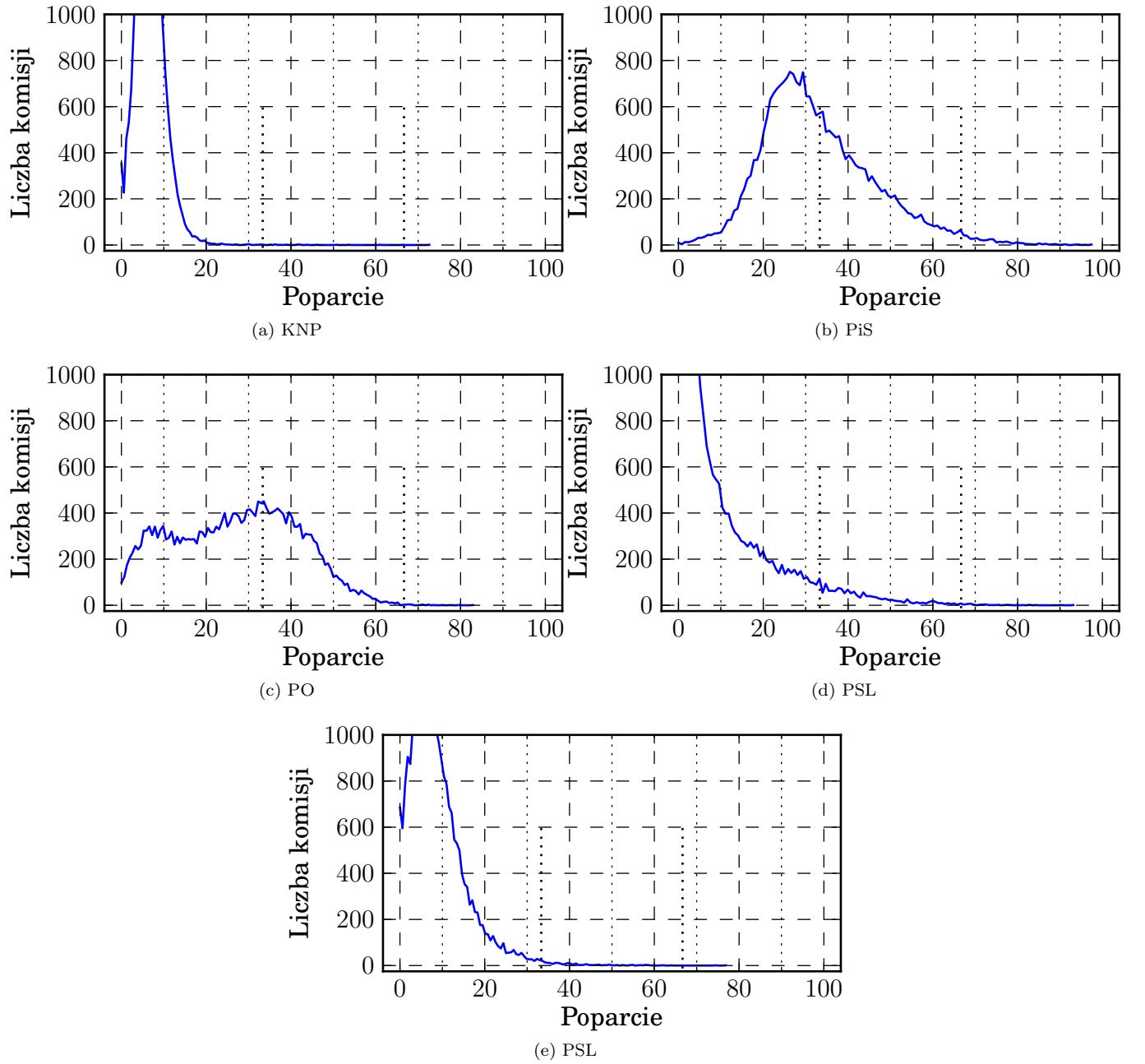


FIG. 5: The histogram of fraction of votes for a given party. Panel ???: KNP, panel (b): PiS, panel (c): PO, (d): PSL, (e): SLD. Histogram bin size is 0.79%.

