"OH SAY, WHOM WOULD YOU VOTE FOR?" SOME REMARKS ON HUNGARIAN ELECTORAL SYSTEM

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Election fraud and human errors have been existing ever since elections exist. We could see many different examples even at the last few elections in Hungary in spite of the fact that our voting system makes it impossible. Theoretically at least. Analysing the mass data of the elections we may find significant differences which ought to be explained somehow. If there is a natural explanation, let it be any kind, of the difference, there are no problems. The 13th district of Budapest is a good example for this case in the parliamentary election in 2010. If there are no such explanations, random errors or election fraud may be supposed. In this paper I show some examples to find such problematic places worth verifying.

Keywords: election fraud, data mining, data evaluation

We know that there are no persons without doing mistakes and errors. This is true, of course, even in case of the most benevolent, exhausted, precise people. It is a banality. In addition, what if somebody is not only imperfect but determined to doing some abuses?

Nowadays democracy itself and the democratic basis of our societies are axioms. Perfectly clean state of elections is a sine qua non term of democracy. Elections are also well regulated by law. So it is impossible to have election fraud or even human errors in the voting mechanism, theoretically. There can be no differences between theory and practice, at least theoretically. In practice there may be some difference. In this paper I try to attempt to find problematic electoral districts in case of our last parliamentary elections, held in the spring of 2010.

The title of this paper is a translation for the title of a famous Hungarian song by the late Illés band.

Electoral system

Our electoral system was changed short after the elections. Because I have examined the results of the last elections I will now explain the previous system, as the basis of the investigation.

Hungarian voters have two votes. One for an individual candidate and another one for a political party. Hungarian parliament has 386 members, 176 of them are elected as individual candidates, 152 become MP on the basis of
the votes for parties, while the remaining 58 become MP on the basis of a compensatory algorithm.

Hungary is divided into 176 electoral districts. In each of them exactly one individual candidate can be elected so 176 individual candidates can become members of parliament this way. Individual candidates can be independent (namely or in fact) of political parties, but most of them are candidates of a party or at least have the assistance of a party.

Electoral lists of political parties depend on the number of individual candidates the parties could manage, so it is possible that in different electoral districts one can chose from different sets of parties.

The 176 electoral districts are divided into 10,926 voting districts. About 600-1200 voters belong to each voting district. In all of the voting districts of the same electoral district voters have the same ballot-papers: they can chose from the same set of individual candidates and parties.

Sociological and political background

In 2010 in Hungary there were two strong, two semi-strong parties and some little ones. The strongest was the FIDESZ (Young Democrats), the second one was the MSZP (Socialists), the two semi-strong parties are the Jobbik (“The better”) and the LMP (“Politics may be different”). The little ones could reach less then 4% of the votes together.

The MSZP was the governing party between 2002 and 2010, during two parliamentary cycle. The MSZP could do a very narrow victory in 2002, and only a bit stronger one in 2006. By 2010 it lost most of its popularity and its supporters.

The MSZP is the oldest party in Hungary as it is the successor of the former MSZMP (Hungarian Socialist Workers’ Party, the communist party). The FIDESZ was founded in 1998. The Jobbik was established as a political party in October 2003 and the LMP in 2009, just before the elections.

It is a speciality that most of the voters give their vote for the individual candidate according to his/her party. This is a sociological speciality rooted in the circumstance that our society is atomized here in Hungary as well as in other ‘modern’ societies. In most cases the individual candidate is not enough known personally in his/her electoral district.

This can be observed in districts where the list of individual candidates contains the same set of parties than the electoral list of parties. If the structure of the two lists is different, the situation is not so simple. This behaviour of the voters is called as psychological (Michigan) model (Karácsony, 2008).

There can be, or better to say: there are many reasons of this behaviour and these reasons and their historical background should be investigated in further researches. Some of them are summarized and described in (Tóth, 2009).

What am I searching for?

According to the above discussed sociological and political background I was searching for “big” differences between the results of the individual candidates and the results of the corresponding party.

In our case a “big” difference should have a well defined reason. This reason can be sociological or political, which is the better case. The worse case is when this difference is caused by the error of a member of the vote counting committee while election fraud is the worst case.
Of course even big differences may be explained normally. Such a big difference was in the 13th district of Budapest, where the individual candidate of the MSZP could win in spite of the high unpopularity of his party (there were only two such winners in the whole country). Another example comes from the municipal election (2010 autumn) where the former mayor of Esztergom was beaten by 2/3 in spite of being the member of the most popular FIDESZ, while the individual candidates of the FIDESZ could win in all districts in Esztergom. In both cases the records of the candidates as former mayors were crucial.

There may be any other reasons, because there can be no guarantee for the uniform distribution of the voters. E.g. a building estate inhabited by old communists mostly or young liberals can highly influence the results in the local voting district.

Political parties and independent individual candidates should (at least: ought to) know these local sociological-political circumstances. In other words they ought to know their districts and the people they want to stand for. If such a reason cannot be found one must assume some human errors including but not limited to simple counting errors, or, in the worst case, election fraud.

It can be decided how big a difference between the results should be in order not to consider it natural. If such a big difference occurs in a voting district where there are no known sociological-political reasons for that, the votes ought be re-counted.

**Data, data source and method I used**

The State Electoral Office publishes the atomic results of each of the 10,926 voting districts, included but not limited to the number of the:
- voters,
- voter-ballots in the ballot-box,
- invalid ballots,
- votes each candidate/party got.

These data can be found at [http://valasztas.hu](http://valasztas.hu) under 'Országgyűlési 2010' then 'Eredmények' then 'Szavazóköri eredmények'. Unfortunately the homepage has no English version. The above Hungarian terms stand for 'parliamentary in 2010', 'results' and 'results of voting districts', respectively (valasztas.hu, 2010).

Analysing the structure of the result pages I could write some shell scripts to download off-line the 10,926 html pages. Having these pages locally I wrote some more scripts to grep and cut the most important data out of these html pages.

These data are: Identifier of the electoral district and the voting district, the supporter parties of the individual candidates and the number of their votes, the members of the list of parties and their number of votes. There were some minor problems because the different writing methods of the same names but they could be solved easily.

These data were converted into a simple MySQL database in order to have the possibility to make different queries on them. The details of the necessary sql queries are not discussed here. SQL is well explained in (Kende & Nagy, 2005) in general and in specific to MySQL.
Results

In order to have the simplest possible model I investigated only districts where the set of the parties and the set of the parties of the individual candidates were the same. If the two sets are not the same, this inequality itself causes differences in the results.

Then I tried to find suitable constants to get only the most interesting places. I decided to use two constants: one for the number of votes and another for the proportion of the individual and list votes of the same party.

Only voting districts having more than 400 votes were taken into account, because the less the number of votes the bigger the random or natural differences may be. The difference between the individual votes and the list votes is ‘big enough’ if the proportion is bigger than 1,60 (or less then 0,62, depending on which one is the numerator and which is the denominator).

Table 1. Results – grey background shows interesting values

<table>
<thead>
<tr>
<th>identifier</th>
<th>district</th>
<th>votes</th>
<th>FIDESZ</th>
<th>MSZP</th>
<th>JOBBIK</th>
<th>LMP</th>
<th>MDF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BUDAPEST</td>
<td>570</td>
<td>0.90</td>
<td><strong>2.27</strong></td>
<td>1.22</td>
<td>4.31</td>
<td>0.16</td>
</tr>
<tr>
<td>1</td>
<td>BUDAPEST</td>
<td>581</td>
<td>0.84</td>
<td>1.55</td>
<td>2.00</td>
<td>1.17</td>
<td>0.52</td>
</tr>
<tr>
<td>1</td>
<td>BUDAPEST</td>
<td>549</td>
<td>0.90</td>
<td>0.60</td>
<td>0.86</td>
<td>NULL</td>
<td>NULL</td>
</tr>
<tr>
<td>1</td>
<td>BUDAPEST</td>
<td>809</td>
<td>0.92</td>
<td>0.63</td>
<td>0.89</td>
<td>NULL</td>
<td>NULL</td>
</tr>
<tr>
<td>1</td>
<td>BUDAPEST</td>
<td>657</td>
<td>0.90</td>
<td>0.65</td>
<td>0.95</td>
<td>NULL</td>
<td>NULL</td>
</tr>
<tr>
<td>1</td>
<td>BUDAPEST</td>
<td>822</td>
<td>0.88</td>
<td>0.65</td>
<td>1.00</td>
<td>NULL</td>
<td>NULL</td>
</tr>
<tr>
<td>11</td>
<td>JÁSZ-NAGYKUN-SZOLNOK</td>
<td>588</td>
<td>1.05</td>
<td>0.55</td>
<td>1.67</td>
<td>NULL</td>
<td>NULL</td>
</tr>
<tr>
<td>11</td>
<td>JÁSZ-NAGYKUN-SZOLNOK</td>
<td>440</td>
<td>1.03</td>
<td>0.61</td>
<td>1.13</td>
<td>NULL</td>
<td>NULL</td>
</tr>
<tr>
<td>12</td>
<td>KOMÁROM-ESZTERGOM</td>
<td>490</td>
<td>0.85</td>
<td><strong>1.81</strong></td>
<td>0.89</td>
<td>0.78</td>
<td>0.75</td>
</tr>
<tr>
<td>19</td>
<td>VESZPRÉM</td>
<td>666</td>
<td>0.92</td>
<td>0.65</td>
<td>0.92</td>
<td>NULL</td>
<td>NULL</td>
</tr>
<tr>
<td>20</td>
<td>ZALA</td>
<td>406</td>
<td>1.14</td>
<td><strong>0.47</strong></td>
<td>1.53</td>
<td>2.00</td>
<td>9.00</td>
</tr>
</tbody>
</table>

This proportion is not too interesting in case of little parties, because of the low number of votes they received this proportion can be, or usually is, distorted. See e.g. the lower right-hand corner: the value 2 is the second highest value not counting the value 9 in its neighbourhood. These extremely high values are calculated on the basis of only 1-22 votes, which is, of course, too little.

In the first row the value of 2.27 is the highest (not counting the above explained ones), but in this district one of the individual candidates was Zoltán Király of MDF. He is an emblematic figure who took a well-known part in changing the political system in Hungary as a member of the MDF. He got 134 votes as an individual candidate while his party got only 21. So in this case we found a natural explanation of the distortion of the data.

On the other hand, see row no. 9, 'Komárom-Esztergom'. The value of the proportion of the individual and list votes of 1.81 is extremly high, it means that the unpopular MSZP could get nearly two times more votes as a party as its individual candidate could, while the popular FIDESZ, which won the elections by more than 2/3, got significantly less votes as a party than its individual candidate. It is more interesting, that Mr Meggyes personally was unpopular as the mayor of Esztergom (and was beaten about to 2/3 in the elections in autumn). See Table 2.
Table 2. Results data in the 19th district in Komárom-Esztergom

<table>
<thead>
<tr>
<th>party</th>
<th>candidate</th>
<th>individual</th>
<th>list</th>
<th>diff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIDESZ</td>
<td>Meggyes</td>
<td>253</td>
<td>216</td>
<td>-37</td>
</tr>
<tr>
<td>JOBBIK</td>
<td>Balogh</td>
<td>71</td>
<td>63</td>
<td>-8</td>
</tr>
<tr>
<td>LMP</td>
<td>Bátyikné</td>
<td>41</td>
<td>32</td>
<td>-9</td>
</tr>
<tr>
<td>MDF</td>
<td>Jónás</td>
<td>40</td>
<td>30</td>
<td>-10</td>
</tr>
<tr>
<td>MSZP</td>
<td>Winkfein</td>
<td>85</td>
<td>154</td>
<td>69</td>
</tr>
</tbody>
</table>

Here all but one parties got significantly less (11-25%) votes as their individual candidates and all these differences went to the list votes of the MSZP. Having relatives living there about for fifty years I can state that there are no easy sociological or political reasons which could explain these differences. In Komárom-Esztergom this is the only voting district among the 29 where such a big difference exists. See Figure 1.

Figure 1. Results of voting districts no. 1-29 in Komárom-Esztergom

Had I been the competent person of these parties I would have proposed the re-counting of the votes in voting districts like this.

Educational aspects

Being a teacher I must call the attention that the problem discussed above is not only that of the quality of democracy but that of the education as well. Our age is called information age for not only the amount of the data stored digitally increases day by day, but our dependency of these data stored in computers as well. So it seems to be very important to teach our children not only theoretical stuff but practical adaptions and examples of theories, too. Among such circumstances database management both in theory and in practice ought to be taught in a comprehensive way, not only in the higher education but in the secondary as well. The young generation ought to learn the theoretical background as well as the practical applications. You cannot call the students' attention to such problems too early, because investigating the skills and knowledge of the students in the fields of computer sciences not only in Hungary but in Central Europe as well we find an alarming situation (Kiss, 2012).
ICT in general, practical database management, data mining and modelling, as the basis of data mining and processing, is an ever-changing field, not only an educational but an economical challenge as well.

The significance of cheating in the higher education varies in a wide range. The prevalence of academic cheating is about 88% in the Eastern European countries while 5% in Scandinavia (Farkas & Orosz, 2012). In such circumstances to change the attitude would need a long time while using examples and tasks which are not only interesting but, being applied ones, make students unable to cheat. As elections are always 'hot material' it seems to be a good possibility to use voting data for analysing in a simplified manner.

It is also a useful possibility to use such analysing exercises as project tasks for small groups of students in a rather complex way, i.e. to leave the modelling phase for them, too. This may be interesting in countries where project work is a traditional part of the higher education and in countries where changes in technological education are in progress, where a transition from the traditional craft-based technological education to the project-based education of technologies takes place in these years to develop the students' skills related with projects, information search, collection and analysis, knowledge of materials, etc. (Zygaitiene & Kepaliene, 2012) This means that teachers have to use modern techniques not only as the frame of teaching but as the contents of it as well.

Summary

Mathematics and/or statistics give us another tool which can help us to find possible problematic voting districts. The model I applied is a very simple one. This model ought to be developed a lot, of course, then it could be useful in warranting error-free elections. If cellphone companies can develop mathematical models having less than 1% error in predicting the churn, then we have more possibilities even in the field of investigation of election results than I showed above. This is useful not only in strengthening the democracy itself but it may serve as effective examples of different complexity.

References