

# Analyzing National Elections of Thailand in 2005, 2007, and 2011 – Graphical Approach

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## Abstract

*This study examines recent Thailand's national election on the last three occasions – 2005, 2007, and 2011. The voting results are analyzed and thematic maps, using a variable scale to clarify dense data plots, for the whole of Thailand are produced to display the majority vote in each province and coloured points representing winning candidates. The graphical results show that the number of winning candidates coincides with the percentage of majority votes in almost all provinces. The results from the 2007 and 2011 elections illustrate that there is a clear split between the North-East and the South-West, indicating the main competition of two major parties. The vote swings are estimated from 2005 to 2007 and 2007 to 2011, using a simple statistical analysis to distribute gain-loss proportion in the form of bubble plots. It shows that minor parties, gained benefit from the political turmoil in 2007, but lost their significant votes in 2011.*

**Keywords:** Thailand's National Election, Voting Analysis, Statistical Graphics, Thematic Map

## 1. Introduction

Since transforming into a democratic system in 1932, there have been 25 general elections in Thailand. The latest election was held on 3 July 2011. The last two constitutions of Thailand, of 2007 and 2009 (Asian Legal Information Institute, 2012), specify that voting in Thailand is compulsory for every Thai citizen aged 18 years of age or more. Moreover, the 1997 Constitution introduced a different election system from the past. Members of Parliament are determined by two forms of voting systems: party list vote and constituency vote. For each election, a voter is given two types of ballots for both voting systems. In the party list voting system, a party provides a list of candidates and a party with more than 5% of the total vote is considered an eligible party. The numbers of MPs for each eligible party are calculated using the proportion of total votes that the party receives. A constituency or district voting system is more straightforward. Voters can cast a vote to select directly a preferred candidate available in their electoral area. The introduction of the party list voting system is thought to add stability to the Thai political system and grown interest from Thai citizens in the election (Surarit, 1996). Remarkably, it is found that more voters turned out after the application of 1997 Constitution. There were less than 65% of turnout voters for general elections before 1997 (King Prajadhipok's Institute, 2010), whereas all elections after the introduction of 1997 Constitution showed a growth the treatment in percentage - 69.94% (2001), 72.56% (2005), 74.52% (2007) and 75.03% (2011), respectively (The Election Commission of Thailand, 2011).

A few studies concentrate on election results, but they mostly discuss the result of one election (Phatharathananuntha, 2008; Schafferer, 2009). In this study, we discuss the results of more than one election and present a simple but informative way to display results.

## 2. Thailand Elections from 2005 To 2011

There have been three official national elections between 2005 and 2011. According to the Election Commission of Thailand (2011), the numbers of MPs were different for these three elections. In the 2005 election, the total number of MPs was 500, divided into 400 for constituency seats and 100 for party list seats.

The overall number was reduced to 480 in 2007, (400 constituency seats and 80 party list seats). The number of MPs changed again in 2011, to 500 (375 constituency seats and 125 party list seats). For both the 2005 and 2011 elections, there was one seat per constituency, while the seats in one electoral district, in 2007, ranged from one to three, depending on the population in the area. In 2005 and 2007, there were 76 provinces in Thailand. Bueng Kan, the most northern province of the North-East region, was established in early 2011 by dividing Nong Khai into two provinces.

During the period, the coup d'état, the rallies, and the dissolution of political parties by the Constitutional Tribunal resulted in a change of political stability including parties involving in elections. These changes are displayed in Figure 1.

### 3. Methodology

Since the election result data are area-bound and there now 77 provinces in Thailand, the demonstration of election results as tables and numbers makes comparison difficult. However, the graphical displays can provide understanding of election outcomes in terms of trends in votes and changes in the political situation.

#### 3.1 Election data

The election data used in this study are retrieved from official election results maintained by The Election Commission of Thailand. These data cover three elections for the House of Representatives of Thailand in 2005, 2007, and, the most recent election in 2011. We consider only the results from constituency votes to focus on a directly elected numbers of members of parliament. Due to differences between electoral districts, numbers of constituencies and thus MPs in each election, we aggregate votes at provincial, regional, and federal levels instead of districts. All data are processed and all graphics are produced using the R statistical and graphical package, which is an open source software environment capable of analyzing cumulative data. Graphical presentations in this presentation are divided into two parts – thematic maps and bubble charts of swing votes.

#### 3.2 Thematic maps

To create each election result, total votes in each province are combined for every participating party. These totals are subsequently sorted and the party with the most votes in a province is selected. An individual color is assigned to all parties with elected candidates. Acknowledging a party's background and changes, we aim to continue coloring consistency for each corresponding party throughout all three elections. The color of a winning party for each province is thus filled in a matching area on the map of Thailand. The following process another adding points representing elected candidates in the corresponding province. Since the data are categorical, colored points of the same size are appropriate.

Figure 2 shows maps of Thailand with themes of majority votes in provinces and colored points of winning candidates in each province. The legends in the map sets also show percentages of total votes and numbers of elected MPs for the majority parties, while parties without a winning candidate are grouped as "others".

The maps exhibit the voting results as intended. However, there is a problem of displaying results for Bangkok and surrounding regions. Bangkok is the capital city of Thailand, and the country's administrative and economic centers are spread around Greater Bangkok, consisting of Bangkok and adjacent provinces – Nakhon Pathom, Nonthaburi, Pathum Thani, Samut Prakan, and Samut Sakhon. Greater Bangkok covers 6758 km<sup>2</sup> with more than 60 MPs representing the area for last three elections, comparing to Nakhon Ratchasima, the largest province of 20,494 km<sup>2</sup> in area, which accommodates around 15 representatives (Department of Provincial Administration, 2011). Consequently, it becomes clear in the maps that the plotted points, in Greater Bangkok, are crowded and almost undistinguished. One solution to this problem is to insert an inset map, magnifying around the area. However, an inset map requires additional space.

To solve this problem, we employ a variable-scale map to stretch the area of Greater Bangkok. Variable-scale mapping a technique used to focus on a certain area of the map by using a large-scale map at the focused area and a small-scale map for others. It can be implemented by decreasing the scale radically in a linear pattern from the center of the area to the end of perimeter (Fairbairn & Taylor, 1995).

This technique has been further adapted to use for many applications, includes, a navigation system for a small display device (Harrie, Sarjakoski, & Lehto, 2002) and a web-based map display for a mobile (Yamamoto, Ozeki, & Takahashi, 2009; Haunert & Sering, 2011).

In this study, we generate a scaling formula by denoting  $x$  as the longitude and  $y$  as the latitude, in UTM kilometers, of a point in the region on the Earth’s surface.  $x_0$  and  $y_0$  are coordinates of center of Bangkok. We then convert from Cartesian coordinates to Polar coordinates to retrieve radius distance ( $r$ ) and angular distance ( $\theta$ ) as follows:

$$r = \sqrt{(x - x_0)^2 + (y - y_0)^2} \text{ and } \theta = \text{atan2}(y, x)$$

The distance  $r$  for each map point is therefore increased to the stretched distance  $r_1$ . We define three original distance levels,  $a_1$ ,  $a_2$ , and  $a_3$ , and three stretched distance levels  $b_1$ ,  $b_2$ , and  $b_3$ , to convey the scaling gradually from the center of Bangkok with the distance above  $a_3$  remains unchanged. The calculations used for scaling are as follows:

$$r_1 = \begin{cases} (b_1 / a_1) \times r & \text{if } r \leq a_1 \\ b_1 + (b_2 - b_1) / (a_2 - a_1) \times (r - a_1) & \text{if } a_1 \leq r \leq a_2 \\ b_2 + (b_3 - b_2) / (a_3 - a_2) \times (r - a_2) & \text{if } a_2 \leq r \leq a_3 \end{cases}$$

Consequently the new Cartesian coordinates are:

$$x_1 = x_0 + r_1 \cos(\theta) \text{ and } y_1 = y_0 + r_1 \sin(\theta)$$

The radial scaling for three distance levels is shown in Figure 3.

### 3.4 Vote swings

Since the numbers of constituent MPs vary between provinces, regions, and the nation in all three elections, it is more preferable to compare the votes in percentage than in numbers. In this step, we estimate the percentages of the total vote transferred from one party to another from 2005 to 2007 and from 2007 to 2011. To achieve this outcome, the assumption is based on a concept of “one party’s loss equalling other parties’ gain”. Thus, the excess percentage of votes gained by the party from another in one election over the other election is proportionally distributed as follows:

$$(\text{Proportion gain of Party A}) = (\text{Total gain of party A}) \times \frac{(\text{Total loss of party B})}{(\text{Total loss of all parties})}$$

We demonstrate an example of this calculation in Figure 4, which shows percentage changes for each party from 2005 to 2007 for the whole Thailand. In this case, the diagonal terms are the minimum values of party’s percentages of candidate votes for 2005 and 2007. The Democrat Party gained 5.2% of votes in 2007 over 2005 and the fraction of this percentage is computed from the 18.9% loss of the Thai Rak Thai party, later becoming People’s Power, and 28% loss of all parties in 2007 over 2005. We use a similar calculation to achieve all percentage distributions. With a matrix arrangement being maintained, colored bubbles are then replaced the numerals and the sizes of the bubbles are compatible with the percentages of each term. Only four majority parties, in terms of percentages of votes, are illustrated, while the remaining parties are included in “others”.

### 3.5 Framework of Analysis

After producing thematic maps and vote swing graphics, we use these depictions to analyze the outcomes of the three elections by comparing voting results, both the numbers of MPs and percentages of votes, for the whole nation, regions, and particular provinces. The analysis also focuses on the trends and changes in popularity of participating parties, that won at least one seat in an election. We use thematic maps to link between parties and provinces as well as regions, whereas vote swings are employed to understand the patterns of exchanges of votes between parties.

## **4. Results**

### **4.1 Thematic maps**

The colored maps in Figure 5 present the majority votes and winning candidates in each province for the whole Thailand for the three elections in 2005, 2007, and 2011.

The background colors in each province in Figure 5 can be interpreted as the indication of popularity of parties in elections. In 2005 there was effecting a race between two parties. Thai Rak Thai party received a majority of votes in nearly all provinces in the upper part of the country, while the Democrat party won in all provinces in the lower part of the country. The only exception was Chart Thai party gained popularity in two provinces in the Central region. When considering the popularity in the whole country, Thai Rak Thai won 55.7% and this figure was greater than the votes of all other parties combined. In 2007 the Thai Rak Thai party became People's Power (PPP) and lost 19 of its previously won provinces (mainly in the Central region) to the Democrat (14), Chart Thai (4), and Pracharaj (1) parties. The overall percentage for the PPP parties was also reduced by approximately 19% and only 6.6% over those of the Democrat party. The situation the PPP, becoming Puea Thai, was then changed again in 2011, when it regained a higher percentage of votes overall.

In each province, super-imposed point show the numbers of elected MPs. For all three elections, overall associations between popularity and numbers of winning MPs were consistent. In 2005 and 2007, the party that secured the most votes in the province also had the largest number of elected MPs. This trend was as well followed in 2007 except for a few provinces, where the majority of votes did not match the number of elected MPs. There even were a few provinces where all MPs did not come from the most popular party. In such cases, differences between the popularity and the numbers of winning candidates can reflect close competition between parties in the area. This is confirmed by the smaller margins of voting percentages in 2007 to those of 2005 and 2011.

### **4.2 Bubble charts of vote swings**

In this section, we study the percentages of votes in Thailand as the allocations of loss-gain votes for the major parties in each pair of elections were shown in Figure 6.

Figure 6 shows the transferred votes for the whole country in a pair of elections. Between 2005 and 2007, TRT or PPP was the party which lost the most vote percentages, for the most of them, to other small parties and Pueapandin, respectively. Chart Thai was another party marginally losing votes. Democrat was the only continuing major party that gained the votes, mainly from PPP. Pueapandin was the new party in the 2007 election. It is interesting to see that Pueapandin benefited more from the fall of PPP than the disappearance of Mahachon. Small parties also gained higher shares of votes in 2007 mainly from PPP. Comparing 2011 to 2007, Puea Thai or PPP gained back a number of votes from Pueapandin and minor parties, while Democrats also gained slightly more votes from other parties. From 2007 to 2011, the newly established party like Poomjaithai did not gain votes from Puea Thai, but chiefly from discontinued Pueapandin and other parties. Chart Thai Pattana still experienced a downfall as its votes were taken away by others. Other small parties enjoyed a rise of votes in 2007, but faced considerably lower percentages in 2011.

### **4.3 Discussion**

The landslide victory of TRT in both numbers of MPs and popularity in 2005 made history of which one party was able to set up an autonomous cabinet. Yet the 2006 court dismissal of the party altered the situation. Even though its successor, PPP, had a majority of seats and overall votes, it lost a number of MPs and popularity to Democrat and the parting factions in 2007. The founding of Pueapandin, Ruamjaithai Chartpattana, Pracharaj, and Machimathipatai was the answer to escape a deadlock for some TRT members. It was a successful attempt as they could gain advantage in winning seats in the Parliament. Pueapandin was the most successful separated faction from TRT as it won 17 seats and 12 of them were from North-East region. Ruamjaithai Chartpattana and Pracharaj enjoyed a provincial level of achievement in Nakhon Ratchasima and Sakaew, respectively. Additionally, Machimathipatai realized its elected MPs, from the upper part of the country. When there was dissolution for PPP in late 2008, most of the members, supported by members from Pracharaj and some members of Pueapandin, formed the new party Puea Thai.

Like its predecessor, it won a majority of votes and MPs in the 2011 election, partially from votes from Pueapandin. A combination of Pueapandin and Ruamjai Thai Chartpattana did not appear to be profitable as its new formation, Chartpattana Pueapandin, was constrained with a smaller numbers of MPs, mainly in its previously won province, Nakhon Ratchasima. The court dismissal of PPP also contributed to two break-away parties, Poomjai Thai and Palangchon. Poomjai Thai seemed to be the more successful of the two as it won in a majority of votes in five provinces. The reason for this might be from the combination with banned Machimathipatai. For Palangchon, it was determined to be a provincial party and it was successful of doing that in Chonburi.

Chart Thai was an interesting phenomenon in Thai politics. In 2007, its addition of Mahachon, who won only two seats in the North-East region in the previous election, did not affect much on the overall percentages of votes and hence to popularity. Nevertheless, the party still won more MPs, mainly in Central region, and became third in terms of quantity of seats in 2007. However, as its popularity still declined in the 2011 election in almost all regions, the numbers of its elected MPs decreased significantly. This strangely coincided with the 2008 dismissal of Chart Thai, which later was reformed as Chart Thai Pattana. It is a well known fact that the party has a stronghold in Central region, partially in Suphanburi, where it has maintained success in all elections.

The Democrats were the only party that gained higher percentages of votes in every region at the latest elections. However, this increasing achievement was marginal compared to the percentages of Puea Thai in North and North-East regions. The numbers of constituency seats in these two regions were high enough to limit the Democrats to second place overall.

Fewer parties winning at least one constituency seats can be seen in the three elections. The numbers of these particular parties were four, seven, and seven in 2005, 2007, and 2011, respectively, while the average of seat-winning parties from 1983 to 1996 was 12 (Hicken, 2002). The dominance in the Southern region confirms the Democrats status as the southern party (Pongsudhirak, 2005), while Puea Thai established itself as a northern and north-eastern party. The Democrats recent win in Bangkok and some provinces in the western part of Thailand, divides the nation into two parts in terms of political preferences. The North-East and South-West divisions set the country towards a two-party political system. The other minor parties then tend to become more provincial or local parties. It is suggested that these tendencies can be accredited to a better political conscientiousness among Thai voters (The Asia Foundation, 2011).

## **5. Conclusion**

We have shown that the employment of graphics instead of mere numeric data can be useful to analyze election results. As geographically bound data, the election results are suitable to be displayed in the form of maps. A variable-scale map provides an appropriate method for creating maps of electoral vote percentage results where districts vary substantially in area, and these maps can be enhanced using thematic bubble charts. The vote swing is also included in the study by using a simple calculation and simple bubble display to see transferred percentages among parties. Using the aforementioned tools, Thailand's election results from 2005 to 2007 can be summarized as follows:

- When comparing the majority of the votes and the number of MPs in all provinces, we found that most of them are consistent.
- The analysis also suggests that the competition was closer in 2007 and 2011 than in 2005 in North-East and Central regions.
- The North-East and South-West partition shows the development of two-party system in Thailand.

Further studies are needed to determine the most appropriate in the area of using geographical analysis of election data. Election results can also be presented using other types of maps, for example, a cartogram (Gastner, Shalizi, & Newman, 2005). It is also worthwhile to evaluate different statistical models that identify candidates and take into account demographic voting patterns within individual electorates for using in analysis of vote percentage swings from one election to the next.

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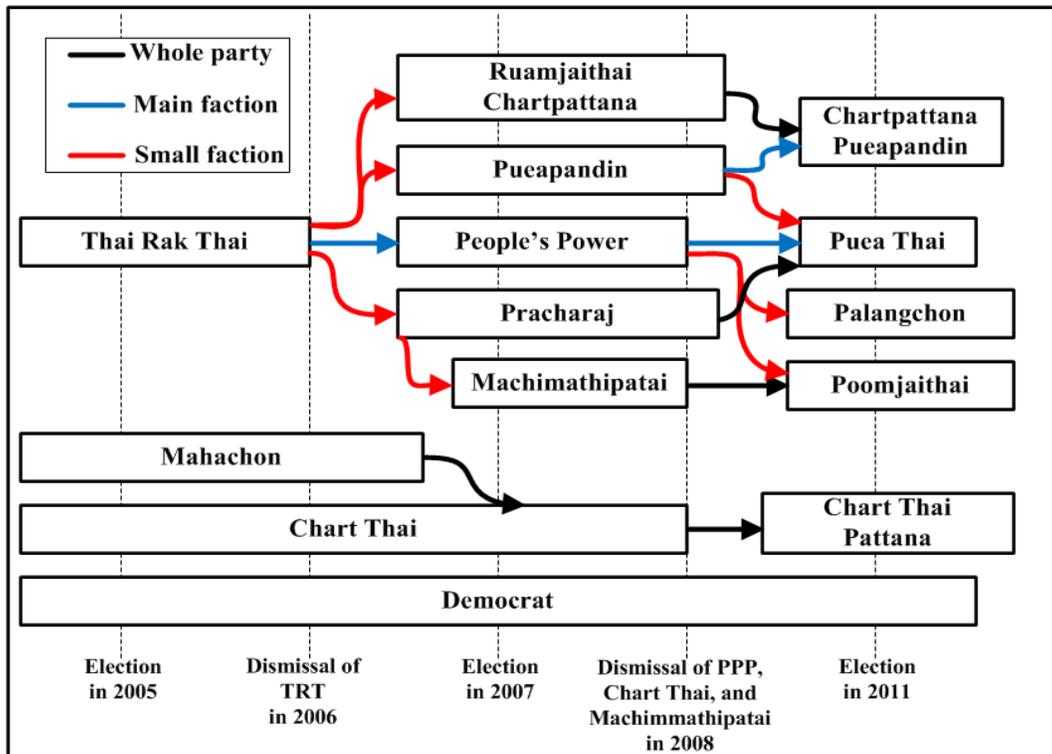


Figure 1: Timeline of changes in main political parties in Thailand from 2005-2011

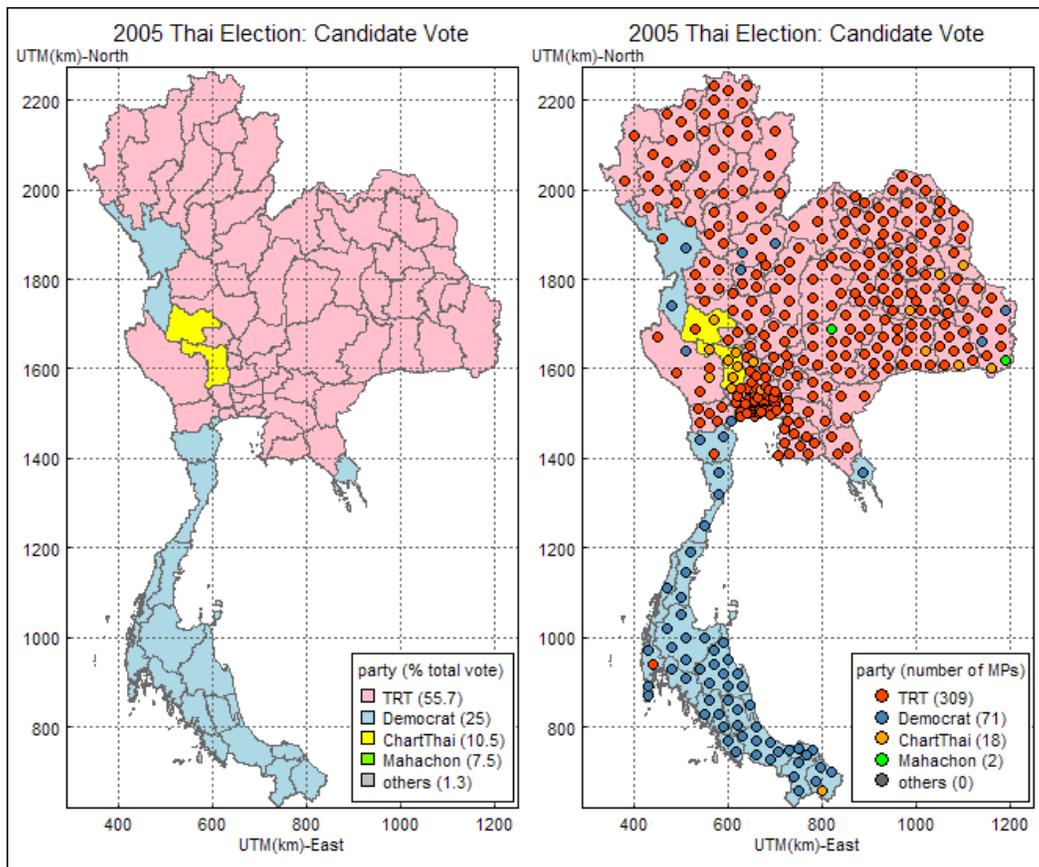


Figure 2: Maps of Thailand with the coloring themes for parties winning percentages of votes, and colored dots of parties winning MPs in each province.

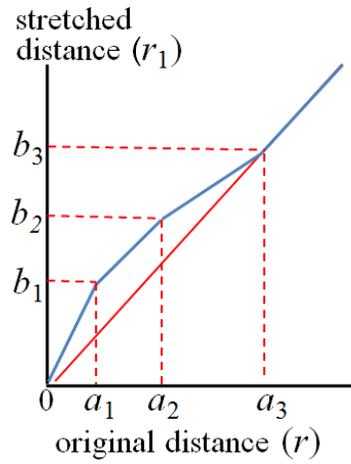


Figure 3: Radial scaling used in creating variable-scale map.

| candidate vote totals: 2005-2007 |      |            |           |            |        |            |            |
|----------------------------------|------|------------|-----------|------------|--------|------------|------------|
| percent                          | ppp  | democratic | chartThai | pueaPandin | others | total 2005 | loss 05-07 |
| TRT                              | 36.8 | 3.5        | 0.0       | 6.1        | 9.2    | 55.7       | 18.9       |
| democratic                       | 0.0  | 25.0       | 0.0       | 0.0        | 0.0    | 25.0       |            |
| chartThai                        | 0.0  | 0.3        | 8.9       | 0.5        | 0.8    | 10.5       | 1.6        |
| mahachon                         | 0.0  | 1.4        | 0.0       | 2.4        | 3.7    | 7.5        | 7.5        |
| others                           | 0.0  | 0.0        | 0.0       | 0.0        | 1.3    | 1.3        |            |
| total 2007                       | 36.8 | 30.2       | 8.9       | 9.1        | 15.0   | 100.0      |            |
| gain 05-07                       |      | 5.2        |           | 9.1        | 13.7   |            | 28.0       |

$3.5 = 5.2 \times 18.9 / 28.0$

Figure 4: A simple calculation for the proportion of votes swings between two elections

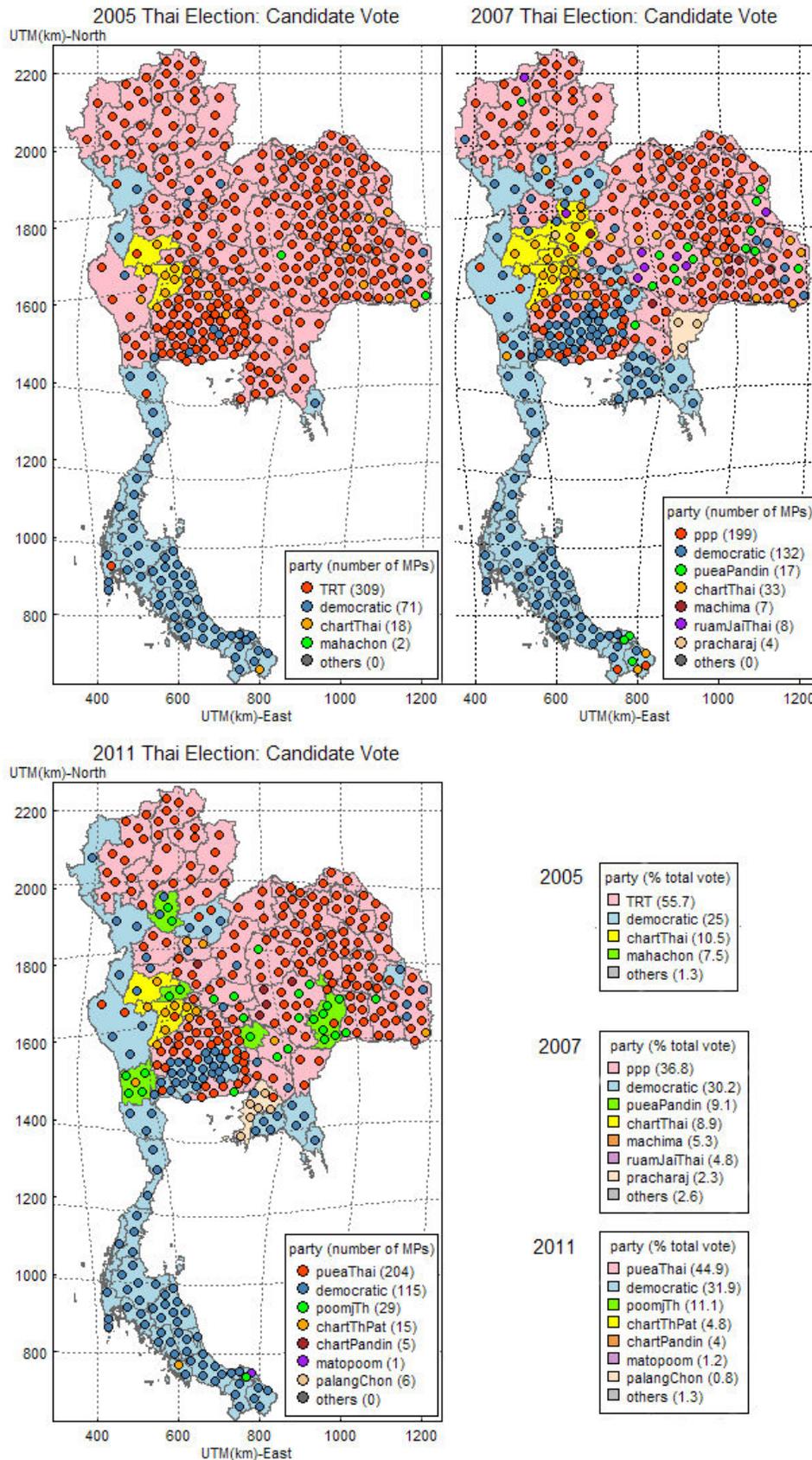


Figure 5: Representation of the numbers of MPs in a form of colored dots, comparing majority votes using background colors for each province in 2005, 2007, and 2011 elections

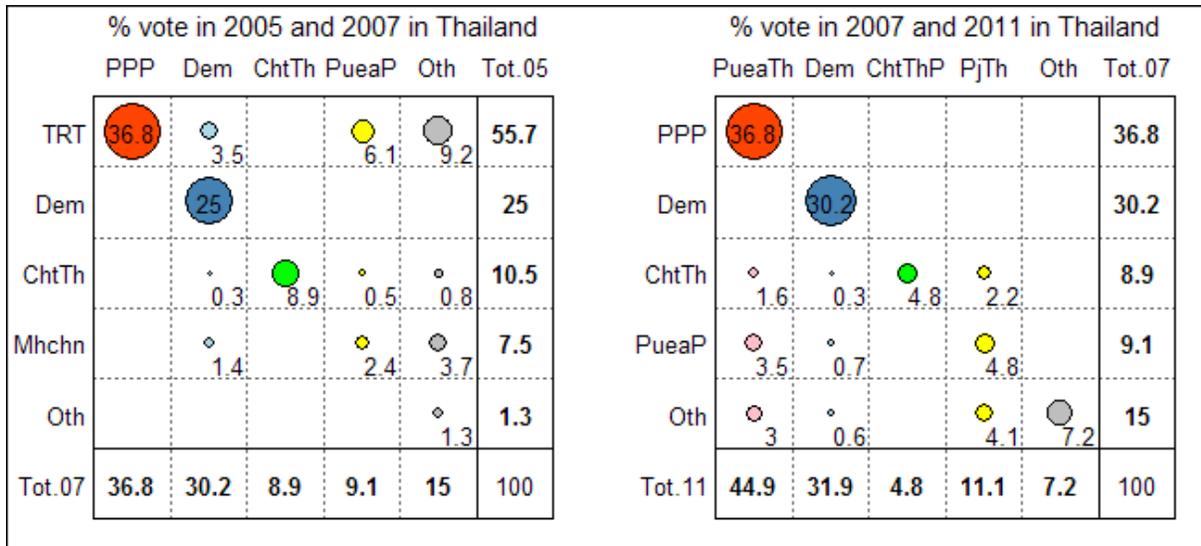


Figure 6: The transferred percentages of votes between participating parties in Thailand in a pair of 2005 and 2007 elections, and in a pair of 2007 and 2011 elections