

## The Effect of distance on voter behavior during 2015 Egyptian Parliament elections “Case study of Kafr El-Sheikh constituency”

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### Abstract

Voting is one of the simplest forms of participation in modern democracies, and thus one of the most researched topics in political science, as well as in political geography, what motivates people to participate or abstain from participating is a particularly relevant subject, if we can identify what motivates people to vote and what keeps them from voting, we might be able to set up elections in a way that encourages more people to vote, In this study, an important question was answered: Is there a correlation between distance and voting? The study concluded that there is a positive correlation between the number of polling stations and Turnouts is 0.521, and that the correlation between cost and Turnouts is 0.517, the study also concluded the correlation between the distance from the candidate’s hometown and Turnouts, and it was a negative relationship in the number of 29 candidates from their total number of 30 candidates

**Keywords:** Vote, distance, Elections, Egyptian Parliament, Kafr El-Sheikh

## 1. Introduction.

Considerable thought and energy continue to be directed towards proposals to increase voter turnout in Egypt. Not surprisingly, the proposed treatments depend entirely on the causes identified at the root of the problem, those who point accurately to high levels of cynicism and low levels of motivation sometimes suggest civic and voter education as a solution, but are usually undetermined about what form this education should take.

Some have recommended the practical step of simplifying voter registration procedures and making registration easier. From those who believe that what voters need is someone to mobilize them comes the recommendation for a stronger role for parties and campaigns. Including suggestions intended to help increase the level of competition in elections, such as campaign spending reforms aimed at helping competitors. Our thought was that the ongoing study of participation could benefit by using innovative methodologies to examine the geographic accessibility of polling places in Egypt. We believe that commuting to and from constituency locations can be a burden for potential voters, especially on busy weekdays in crowded urban areas when citizens are stressed by the demands of daily life: work, family and school. Some central areas are more accessible than others, and for harder-to-reach locations at least some people will conclude that the cost of access outweighs any benefit they might derive in terms of personal satisfaction from fulfilling a civic obligation (Joshua J Dyck & James J Gimble, 2005), (Kavianirad & Rasouli, 2014)

Voting is one of the most important ways in which individuals participate in modern democracies, and thus one of the most studied topics in geopolitics (election geography) (Bhatti, 2012), (Saei, 2020). The most pressing question is what motivates individuals to participate or what motivates them to abstain (Gimpel & Schuknecht, 2003). If we can identify the motives and impediments behind voting, we may be able to arrange the elections in a way that facilitates an increase in turnout especially if administrative decisions have an impact on the motivating factors. From a Downsian perspective, individuals decide whether or not to turn out based on the costs and benefits for voting (Joshua J Dyck & James G Gimpel, 2005).

Conversely, spatial polarization is at the heart of electoral geography: spatial voting patterns are characterized by strong polarization between different homogeneous regions.

In addition, this spatial polarization has been stable over time, whether we consider local or regional scales this spatial polarization has been stable over time, whether we consider local or regional scales (Agnew, 2014; Bussi & Badariotti, 2004; David & Van Hamme, 2011; Marissal, Lockhart, Van Hamme, & Vandermotten, 2007; Vandermotten & Vandeburie, 2007).

Most often the process of spatial polarization/homogeneity of electoral behavior is explained by the so-called neighborhood effect (MacAllister et al., 2001), As early as the 1930s, Tingsten (1937) noticed that, While studying the Swedish elections in Stockholm, people who lived in areas with a higher proportion of lower-class people were more likely to vote for the Socialist Party, without paying attention to their class.. In England, where the class cleavage is by far the most significant, this effect has been demonstrated by the fact that "people are more likely to vote with their class nationally if they live in a place where that class is politically dominant locally"(Johnston, 1990), (Roumina & Sadeghi, 2015), (Kaviani Rad, Sadeghi, & Hoseini, 2021)

Geographic polarization, The spatial focus of 'symmetric' voting behavior, is a phenomenon closely related to 'partisan polarization', and the intensification of ideological positions is fully understood, which is critical to understanding current electoral behavior.(Kinsella, McTague, & Raleigh, 2015), (Zarghani & Razavinejad, 2016), (Ghaffari & Zarrin Kaviani, 2011)

This paper aims to answer two critical questions, the first question is: Is there a relationship between the voter's proximity to the polling station and his voting behavior in the Kafr El-Sheikh district? The second question: Is there a relationship between the candidate's hometown and the voting behavior of voters?

## 2. Literature review.

Bhatti, Y (Bhatti, 2012). The author used a cross-sectional data set of approximately 2.3 million prospects, which includes distances between each household and assigned polling station, finding a significant effect of distance on propensity to vote. An individual who lives within five kilometers of a polling station has a ten percentage point lower tendency to turnout than an individual who lives next door. The relationship between distance and turnout was found to be approximately logarithmic. Moreover, The effect of distance seems to depend on the availability of cars in the family. The political implications of the findings are discussed in the held section.

J. J and Gimpel, J (Joshua J. Dyck & James G. Gimpel, 2005). The authors investigate how distance affects the costs associated with political participation. They assume that the geopolitical factors of a voter's residence do not only affect probability that They will vote, but whether the voter will choose between traditional polling on Election Day or unconventional means, such as casting an absentee vote by all, or going nearby.

Haspel, M., and Knotts, H (Haspel & Knotts, 2005). In this article, The authors discuss a new measure of voting costs using geographic information systems (GIS) tools to calculate the distance between residence and polling place for registered voters in the city of Atlanta. Using this measure to predict turnout at the individual level, the authors found that small differences in distance from polling can have a significant effect on voter turnout. We also find that delocting the polling place can affect the voting decision. In addition to providing a better understanding of voting costs, Our findings have key implications for the location of polling places and the effects of changing district boundaries.

Cantoni, E (Cantoni, 2020). The author makes highlight on the effects of voting costs, distance to a polling site - using geographic discontinuities. The opposite sides of the boundaries between polling districts are remarkably identical, except for their designated polling sites. This disruptive appointment results in radical changes in the distance voters travel to cast their ballots. In nine municipalities in Massachusetts and Minnesota, one standard deviation (0.245 miles) in increasing the distance reduced the number of votes cast by 2 to 5 percent in four elections. During non-presidential elections, the effects are three times greater in high minority areas than in low minority areas. Reynolds, D (Reynolds, 2017). The author discusses a one-pronged study of a fundamental problem facing geographers interested in developing models of electoral behavior—the most satisfactory way of integrating spatial and behavioral approaches given the kinds of data availability constraints commonly encountered in electoral geography. In an attempt to overcome this problem, a simple model has been developed and experimentally tested. The findings indicate that derivatives of the model have great potential in analyzes of political processes across space.

Tausanovitch, C., and Warshaw, C (Tausanovitch & Warshaw, 2018a, 2018b). The authors conclude that voters choose the candidate closest to each other. In contrast, most electoral studies have found that candidates' ideological moderation has little to do with voting margins, especially in a modern and polarized Congress, where citizens cast their vote "as if" based on proximity to parties rather than individual candidates.

Roumina, E., and Sadeghi, V (Roumina & Sadeghi, 2015). The authors try to emphasize that a person's hometown and place of life influence for a period on him and has a sense of belonging and makes a kind of mental relationship. Belonging to the place creates interests in the interest and as a result, deep emotional and psychological bonds arise between people in one of the cities of the Fars province that was affected by the relations of tribal life. Regading these relations, The pattern of political culture in this city has another

function of a spatially oriented tribe. Accordingly, tribal tendencies are an effective and important factor in the voting pattern of this city's candidates.

Kinsella et al. (Kinsella et al., 2015). This research makes highlight on the smallest political units, precincts, using a case study of the Greater Cincinnati Metropolitan Area. Districts collected presidential election data from 1976 through 2008, analyzed using spatial statistics, and mapped to examine the 32-year evolving geo-polarization theory. The results measured at the precinct-scale, shows an increased focus of partisan behavior and emphasizes the local-residential-spatial pattern of geographic polarization..

Muñoz, M. and Meguid, B (Muñoz & Meguid, 2021). The authors assert that polarization affects voters through their perceptions of alienation and apathy; The authors show that the effect of polarization depends on the voter's attitude toward party choices. They also present a new relative measure of polarization and test its effect on turnout in elections (French presidential). They found that the voter's attitude towards the popularity of the party's choices is an important indicator of the participation rate. If the parties are either far from the voter or indistinguishable from each other, there is little incentive to exit. Furthermore, party polarization leads to higher participation when the voter is close to one party and far from another.

### **2.1. Literature gaps and research contributions.**

Having reviewed the results of the literature survey, the following observations and gaps are highlighted: (i) Deventhougtheese number of published studies on voting, cost, and neighborhood effect on voting is increasing, there are few new papers are tackling distance and voting behavior. (ii) Although some studies address the problems of voting and electoral behavior. However, They are used in most statistical methods only without reference to GIS tools. Accordingly, there is an insufficient number of such studies that show the effect of distance and neighborhood on electoral behavior in the context of developing countries in Africa (Egypt) despite the importance of this analysis in making the developing world more democratic (Pishgahi Fard & Zohdi Goharpour, 2011)

### **3. Methodology**

The numerical analytical descriptive method was used to evaluate and test the research theory. Here, data collection methods depend on the library (books, papers, Journals, documjournalsblications, statistics, maps), fieldwork (interviews and observation), and the data of the National Elections Authority in Egypt, The behavioral method was taken in this paper.

### **4. Study area**

According to Law No 202\2014 For the purpose hold country's lands were divided into (237) constituencies designated for the individual system, Kafr El-Sheikh Governorate has 11 constituencies, Kafr El-Sheikh district is one of them, This constituency is allocated two seats in the House of Representatives (NEA, 2021), Kafr El-Sheikh district is located in the Nile Delta in the Kafr El-Sheikh Governorate, bordered to the north by the districts of Hamoul, Riyadh, and Sidi Salem, and to the south by the Qutor district, To the east Mahalla al-Kubra, Bella, and the west, Desouq, Qalin, It extends between latitudes 31° 1' and 31° 16' North, and longitudes 30° 47 and 31° 5 East (Fig.1) It consists of 47 main villages. (CAPMAS, 2021)

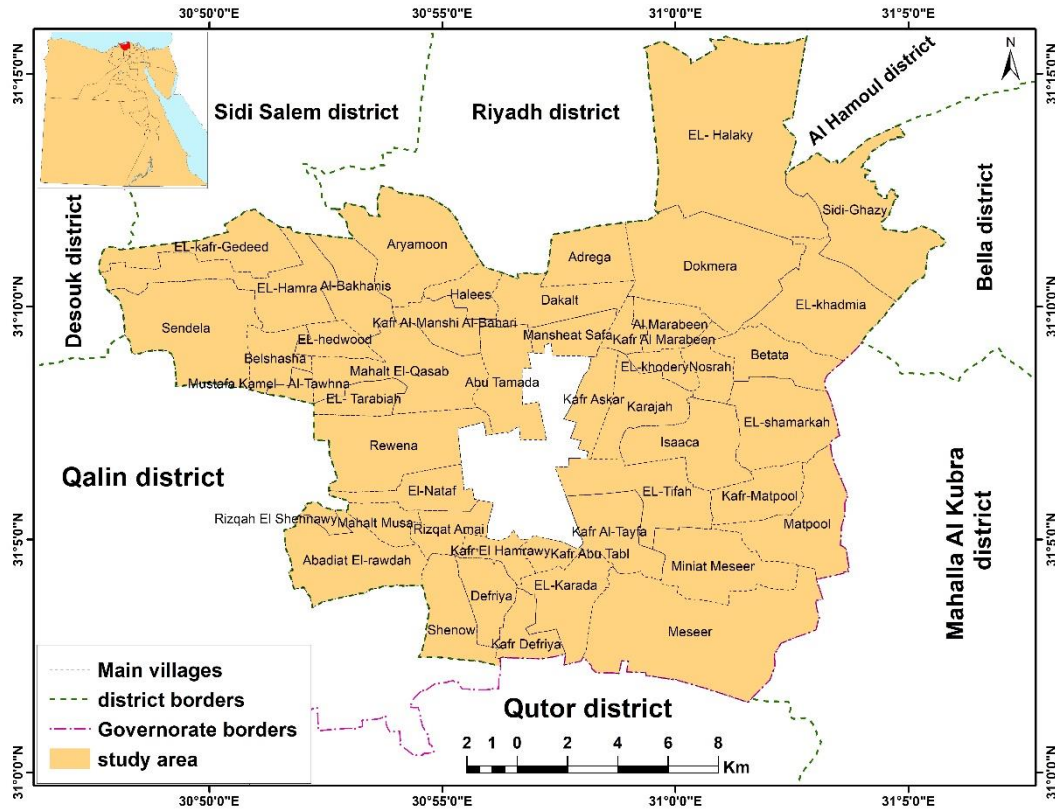


Fig. 1 Location of the studied area (Kafr El-Sheikh district 2015).

## 5. Result and Discussion

### 5.1. Distance, polling stations, and voting behavior

Gathering knowledge about political candidates, the time required to vote, the money spent driving to the polling station, and other factors all contribute to the cost of voting. The distance to the polling station is interesting since it has a direct impact on how easy it is to vote. Traveling long distances is simply not enjoyable for most people. Voting takes time and costs money in terms of bus fares, gasoline, and other expenses (Gimpel & Schuknecht, 2003). This may deter some people from voting because they have a long commute to the polling site.

Election data (number of polling stations - voting Turnouts - maximum distance between polling stations and urban areas) was obtained from the website of the National Elections Authority, as well as a map of the main villages was obtained through the website of the Central Agency for Public Mobilization and Statistics as mentioned in the introduction section.

A GPS device of its type (a hand-held Garmin GPS MAP 78) was used to now the coordinates of the polling stations, and due to the lack of detailed data for the coordinates of the voter, the distance from the polling stations to the maximum urban areas was measured in each Main village (Use ArcGIS 10.8.2 to measure distances), The voting turnouts for each main village were calculated by summing up the turnouts for each Sub-Electoral Commission.

The number of polling stations in Kafr El-Sheikh district in the 2015 Egyptian parliamentary elections reached about 61, most of which are schools (primary – secondary centers Dokmera is the most with five polling stations, while there are eight main villages without polling stations, for example (Rizqah El Shennawy, Kafr El Hamrawy, Mansheat Safa, Abu Tamada....) Table. 1

As for the maximum distance between urban areas and the nearest polling station, EL-kafr-Gedeed and EL-Hamra is farther the distances and therefore difficult for voters to reach, and this distance may lead to voters' reluctance to vote.

In terms of Turnouts, Kafr Defriya, Rewena, and Kafr-Matpool were the highest in voting, the number of polling stations in these villages increased, and the cost of moving the voter from his residence to the polling station was low.

A scatterplot is a type of data display that shows the relationship between two numerical variables. Each member of the dataset gets plotted as a point whose (x, y) (x, y) left parenthesis, x, comma, y, right parenthesis coordinates relate to its values for the two variables.

When the y variable tends to increase as the x variable increases, we say there is a positive correlation between the variables, When the y variable tends to decrease as the x variable increases, we say there is a negative correlation between the variable then there is no clear relationship between the two variables, we say there is no correlation between the two variables.

Table. 1: Main villages, Number of polling stations, the maximum distance between urban areas and the nearest polling station, and Turnouts in Kafr El-Sheikh district 2015.

Main villages	No polling stations	Max distance (Km)	Turnouts (%)	Main villages	No of ping stations	Max distance (Km)	Turnouts (%)
Kafr Tayfa	2	2.5	33.55	El-Nataf	1	0.3	35.81
Meseer	1	1.9	43.43	Rewena	1	1.8	55.02
EL-shamarkah	1	2.4	30.33	Rizqat Amai	1	0.8	39.13
Rizqah El Shennawy	-	2.5	-	Kafr Askar	1	2	47.9
Abadiat El-rawdah	1	2.7	37.79	Mansheat Safa	-	1.8	-
Shenow	2	1.7	50.02	Abu Tamada	-	2	-
Defriya	1	2	26.55	Kafr -Man Al-Bahari	1	2	34.76
Kafr El Hamrawy	-	0.9	-	Halees	-	0.4	-
Kafr Abu Tabl	2	2.5	33.74	Dakalt	2	1.3	52.58
Kafr Defriya	1	1.2	55.85	Adrega	1	3	39.36
EL-Karada	1	0.4	30.43	Dokmera	5	1.8	35.15
EL- Halaky	3	4.4	48.2	Kafr Al Marabeen	-	0.5	-
Sidi-Ghazy	4	2.5	55.9	Al Marabeen	2	1.5	48.92
Aryamoon	1	2.5	52.53	Nosrah	1	1	31.61
EL-kafr-Gedeed	2	3.8	29.16	EL-khodery	1	1	36.18
EL-Hamra	2	3.7	22.73	Karajah	3	1.9	31.46
Sendela	3	2.5	38.97	Isaaca	-	3.2	-
Belshasha	1	1	35.04	EL-khadmia	1	2	40.91
M. K - Al-Tawhna	1	0.3	28.22	EL-Tifah	1	4	42.52
Al-Bakhanis	2	2.3	24.81	Matpool	-	2.4	-
EL-hedwood	1	1.7	22.96	Betata	1	1.4	28.38
EL- Tarabiah	1	0.3	19.98	Kafr-Matpool	1	2.5	55.35
Mahalt El-Qasab	2	4	28.91	El-Nataf	1	2	47.9
Mahalt Musa	1	1.2	26.74				

Source: NEA. National Electoral Authority, available at <https://parliament2015.elections.eg/>

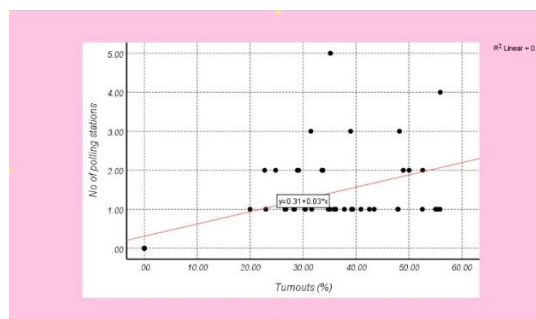
Pearson Correlation	1	.521**
Sig. (2-tailed)		.000
N	47	47
Pearson Correlation	.521**	1
Sig. (2-tailed)	.000	
N	47	47

Correlation is significant at the 0.01 level (2-tailed) \*\*

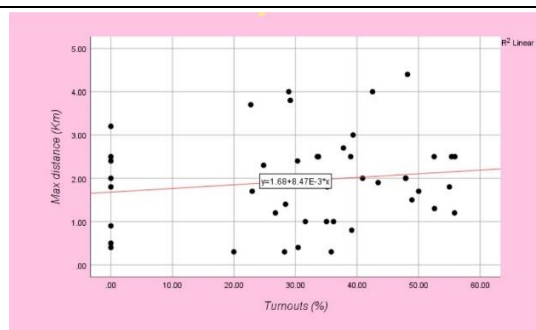
Pearson Correlation	1	.141
Sig. (2-tailed)		.344
N	47	47
Pearson Correlation	.141	1
Sig. (2-tailed)	.344	
N	47	47

Pearson Correlation	1	.517**
Sig. (2-tailed)		.000
N	47	47
Pearson Correlation	.517**	1
Sig. (2-tailed)	.000	
N	47	47

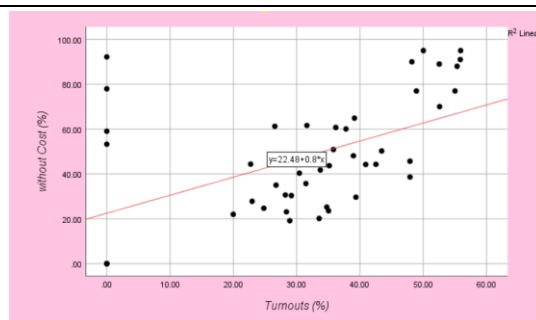
Correlation is significant at the 0.01 level (2-tailed) \*\*



(a)



(b)



(c)

Fig. 2 scatter graph and relationships between (a) Number of polling stations, and Turnouts (b) the maximum distance between urban areas and the nearest polling station, and Turnouts(c) voter cost and Turnouts in (Kafr El-Sheikh district 2015).

In this study, there is a positive correlation between the number of polling stations in each main village and the Turnouts, meaning that the more polling stations in each main village, the higher Turnouts Table. 1, Fig. (2 -3), there is a positive correlation between) the maximum distance urban areas and the nearest polling station, and Turnouts (also shown in Fig 2, and There is a positive relationship between costs and turnouts, which means that the fewer costs in each main village, the higher turnout

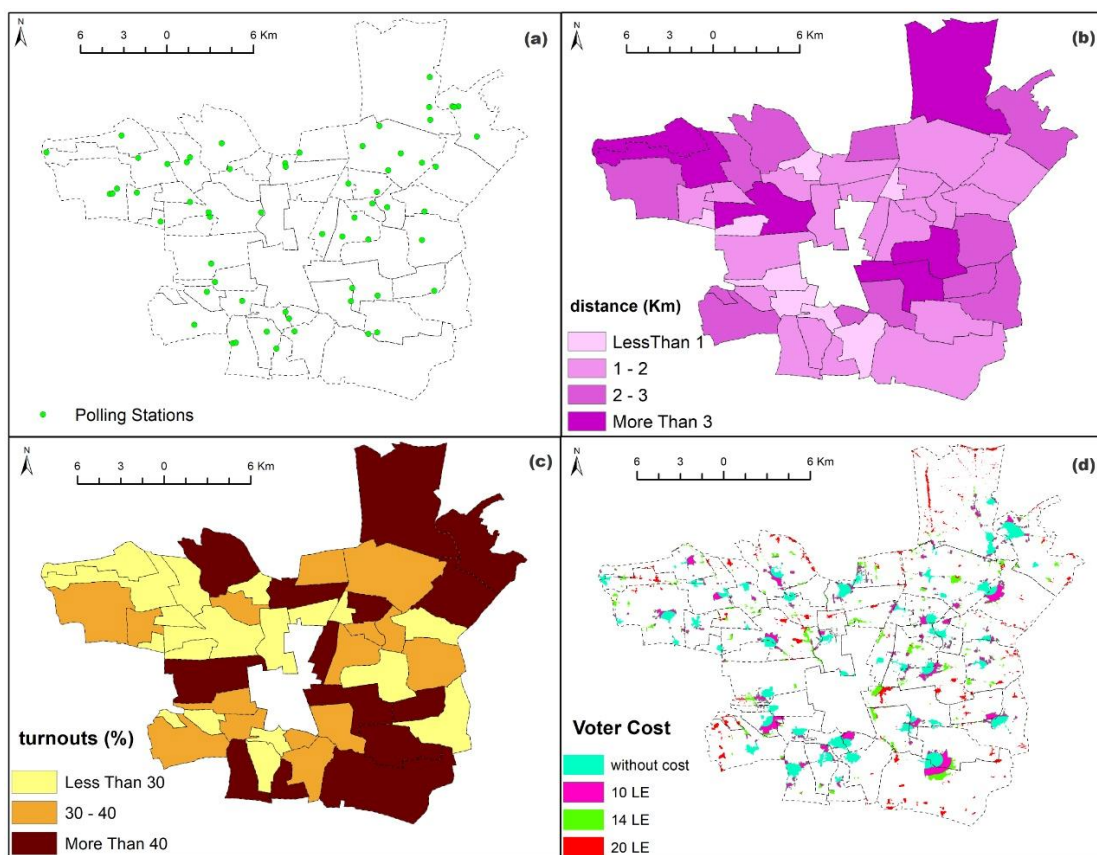


Fig.3 Distance and voting behavior (a) polling stations (b) the maximum distance between urban areas and the nearest polling station (c) Turnouts (d) voter cost in urban areas (Kafr El-Sheikh district 2015).

### 5.2. Distance, candidate's hometown, and voting behavior.

Representative democracy is built on the foundation of elections. Elections, on the other hand, can only be used as "instruments of democracy" if people participate. For decades, political scientists have been fascinated by the reasons why individuals vote and the sources of variance in voter turnout. Researchers looked at everything from age and gender to religious affiliation, occupation, income level, education level, and pure motivation in the voters. (Blais & Daoust, 2020; Chapman & Palda, 1983; Fauvelle-Aymar & François, 2006; Kostelka, Blais, & Gidengil, 2019; Leighley, 1995; McClendon & Riedl, 2015; Wolfinger, 1980).

The impact of the range of policy options accessible to voters, or party polarization, is understudied in turnout studies. The few studies that have looked into the impact of polarization on voter turnout have found mixed findings. Some studies have demonstrated that the dispersion of parties throughout the left-right spectrum is positively connected with aggregate levels of turnout, focusing primarily on the effect of voter apathy toward unpolarized parties. (Lee & Chow, 2013; Muñoz & Meguid, 2021), (Roumina & Sadeghi, 2015), (Kavianirad & Rasouli, 2014)

Downs (Downs, 1957) contends that vote choices are a function of the spatial proximity between the ideal points of voters and parties in An Economic Theory of Democracy. This geographical voting hypothesis was easily extended to the premise that voters should be more likely to vote for particular candidates who share their ideological inclinations, resulting in a large body of work in the field of spatial voting theory.



(e.g.,(Enelow & Hinich, 1984). Scholars suggest that voters support politicians whose spatial positions are on the same side of the political spectrum as their own in a similar line of research known as directional voting theory. (Rabinowitz & Macdonald, 1989) Both of these theories have one thing in common: they argue that individual candidates' positions should have an impact on citizens' voting decisions. "Surprisingly little direct evidence supporting [the spatial voting model's] fundamental assumptions" existed for many years. (Ansolabehere & Jones, 2010). However, the explosion of large-sample surveys in recent years has facilitated a renaissance in scholarship on voter behavior in congressional elections.

In this study, there were roughly 30 candidates in the Kafr El-Sheikh district. The author tries to address the following question: Is there a correlation between the vote results and the location of the candidates?

The number of candidate's hometown villages in the parliamentary elections in Kafr El-Sheikh district arrived just around 15, Meseer having the most (6), Sidi-Ghazy second (5), Dokmera third (3), Kafr-Matpool, Shenow, Kafr El Hamrawy, and Dakalt fourth (2), and Dakalt, Aryamoon, Karajah, Rewena, EL-Hamra, EL-khadmia, Mahalt Musa, Sendela, Kafr Defriya, and each village nominated only one candidate.

Figure 3 shows that: all the voters voted for their village candidate, as well as there is a polarization of voters in every candidate's hometown, as the majority of candidates give promises to their voters out of a desire for their interests.

The distance between the candidate's hometown and all the villages was measured and then the vote was calculated for each candidate in each village until the relationship between the distance and the vote was answered.

Table. 2: Candidates, their hometowns, and the correlation between voter turnout and distance to the candidate's hometown

Candidates	Candidate's hometown	Correlation	Candidates	Candidate's hometown	Correlation
Bdeer EL-Sayed	Dakalt	- 0.430**	Rafaat Hamdon	EL-Hamra	- 0.342*
Farag EL-Samahy	Meseer	-0.420**	EL-Shahat Ahmed	Sidi- Ghazy	- 0.415**
Hossam EL-Damrawy	Dokmera	- 0.490**	Mohamed Bazina	EL- khadmia	- 0.386**
Farag Taha	Sidi- Ghazy	- 0.423**	Hamed EL-Bastwisy	Kafr El Hamrawy	- 0.298*
Mazhar EL-Demery	Meseer	- 0.371*	Abd EL-Hamid Ebrahim	Mahalt Musa	- 0.300*
Kadry EL-Basuony	Aryamoon	- 0.465**	Esmail EL-Shwadfy	Sendela	- 0.392**
Sayed Abd EL-Rehman	Dokmera	- 0.198	Abd EL-Chalk Ghonim	Shenow	- 0.098
Ayman EL-Etraby	Meseer	-0.382**	Samy Ebrahim	Sidi- Ghazy	- 0.403**
Ebrahim Ali	Kafr- Matpool	- 0.304*	Mohamed EL-Gendy	Meseer	- 0.448**
Shokri Gendy	Karajah	+0.093	Medhat Zidan	Kafr Defriya	- 0.389**
Reda Zina	Shenow	- 0.332*	Hassan Helal	Kafr El Hamrawy	- 0.262
Atef Saker	Sidi- Ghazy	-0.484**	Youssef Ebrahim	Dakalt	- 0.314*
Mohamed Sehsah	Meseer	- 0.346*	Tarek EL-Mahdi	Sidi- Ghazy	- 0.126
Mostafa EL-Shrkawy	Rewena	- 0.365*	Mahmoud Hassan	Dokmera	- 0.437**
Mohamed Bastwisy	Kafr- Matpool	- 0.372**	Taha Galosh	Meseer	- 0.183

Source: NEA. National Electoral Authority, available at <https://parliament2015.elections.eg/>

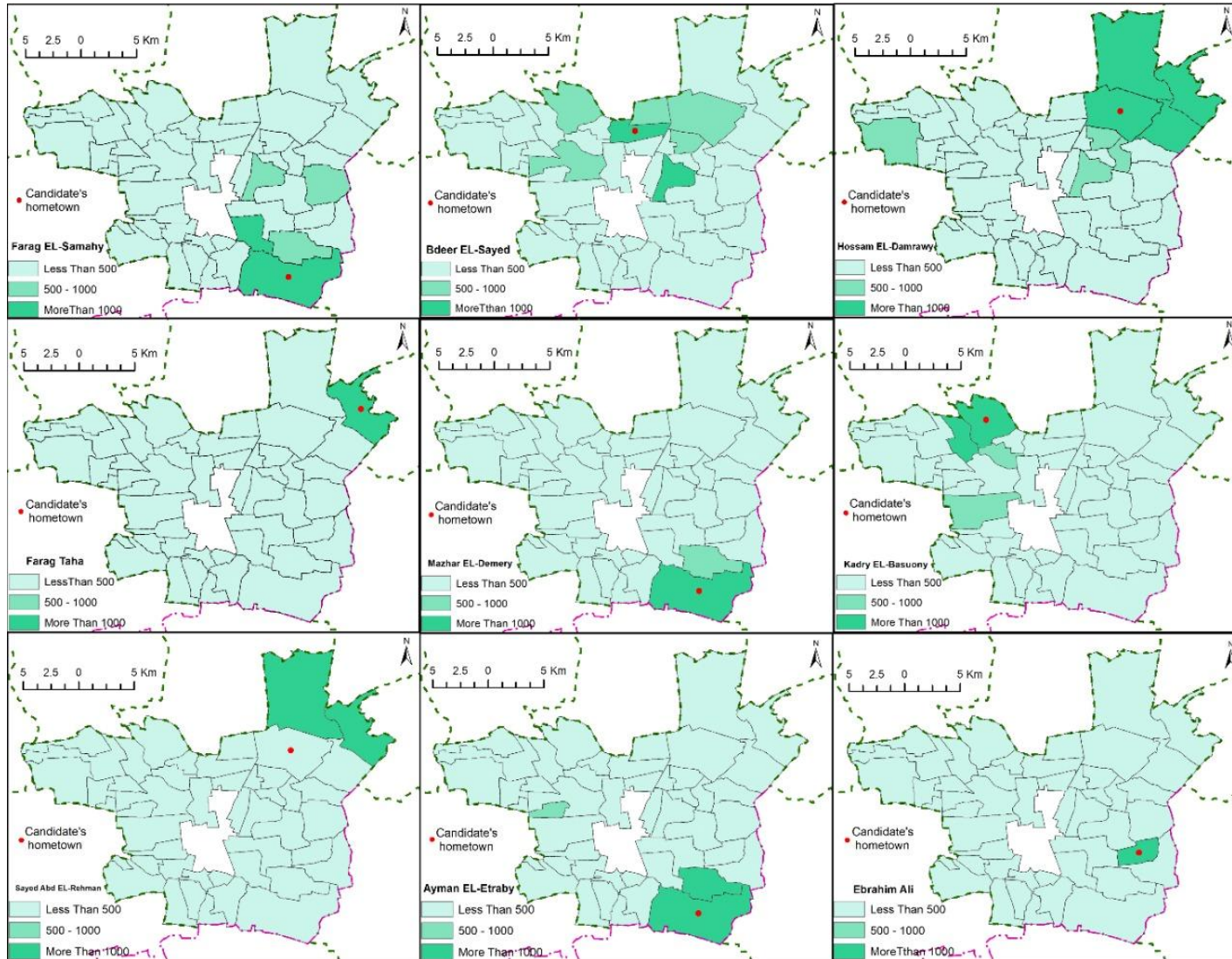


Figure. 4 Voting in each main village, the hometown of the candidates, and the polarization in the Kafr El-Sheikh district 2015

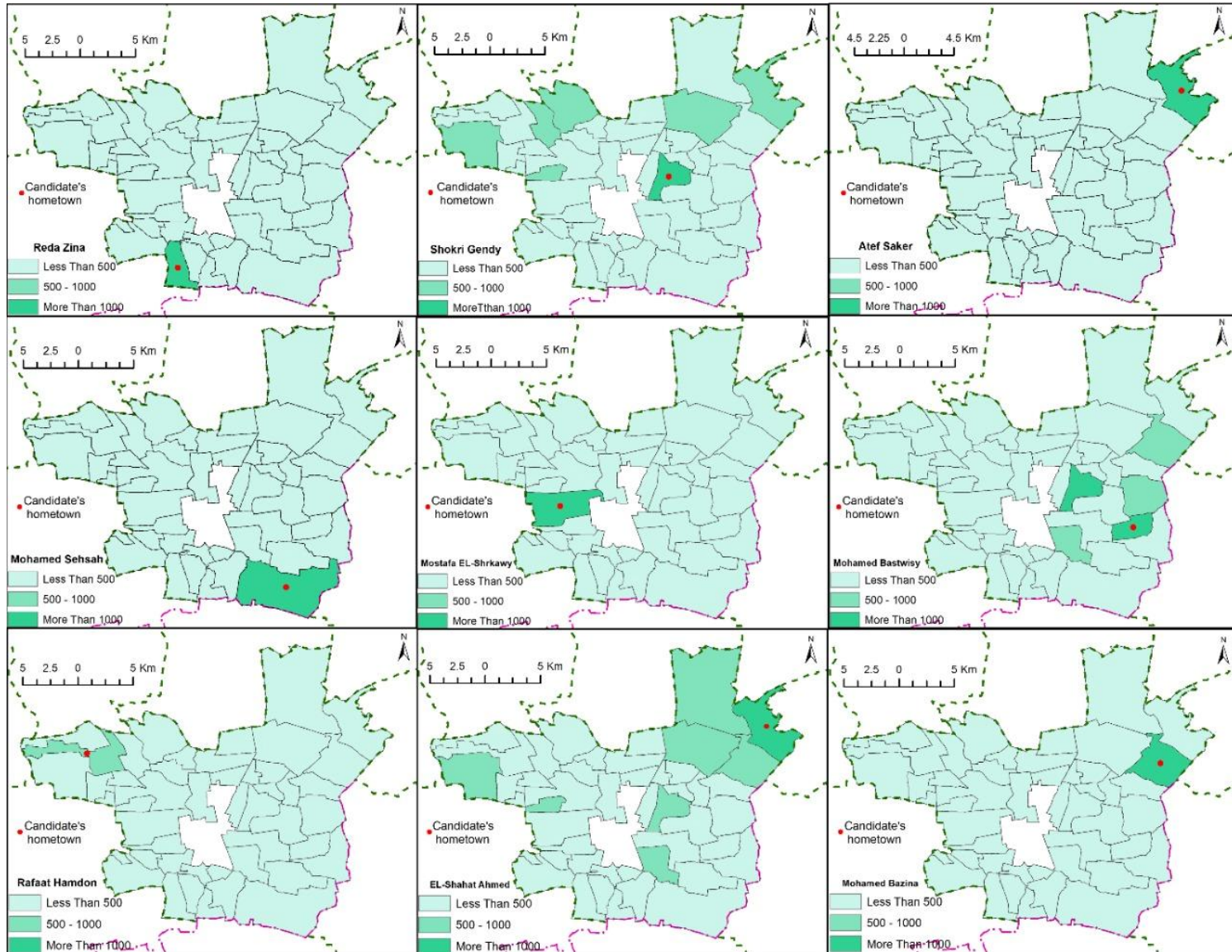


Fig. 4 (continued)

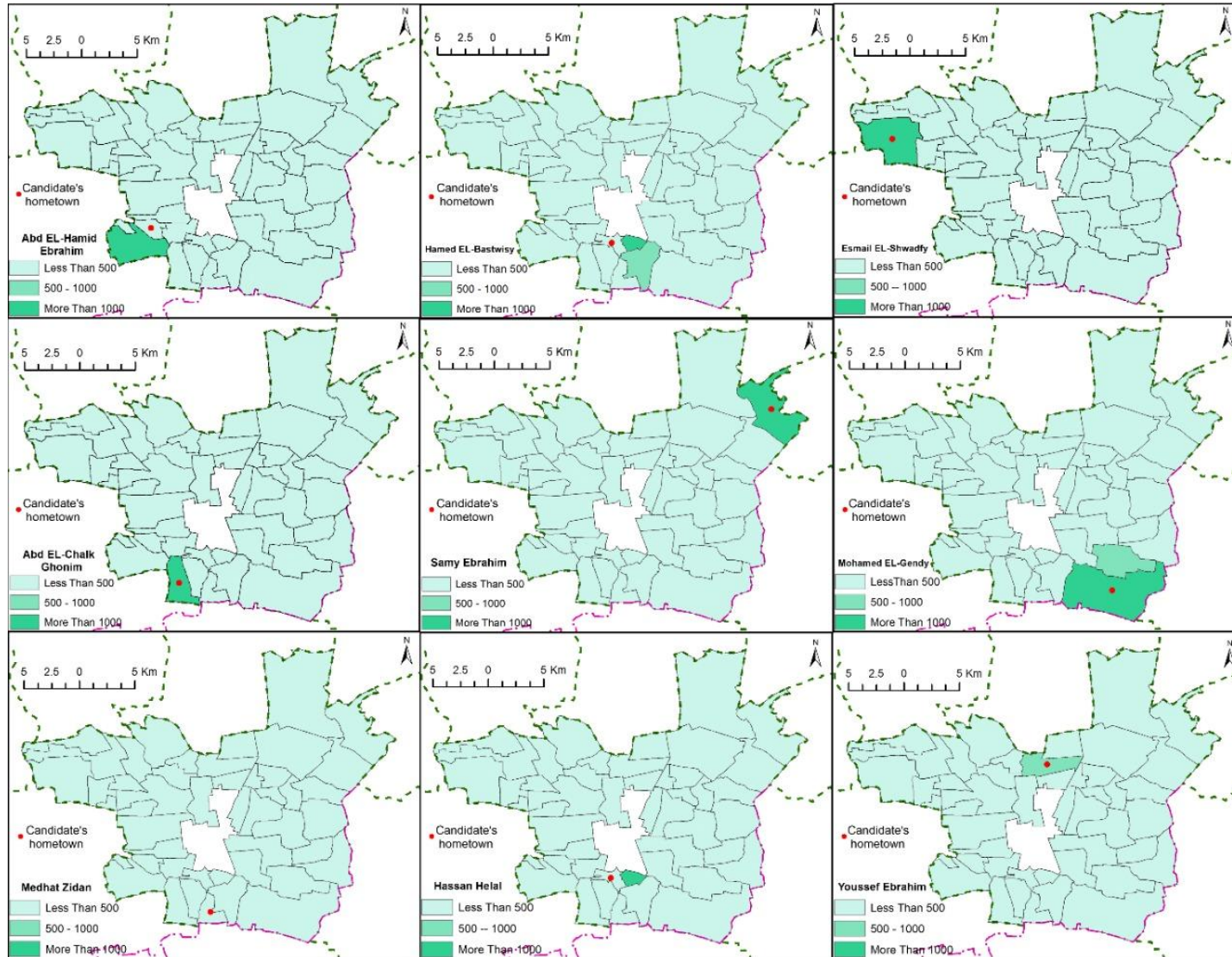


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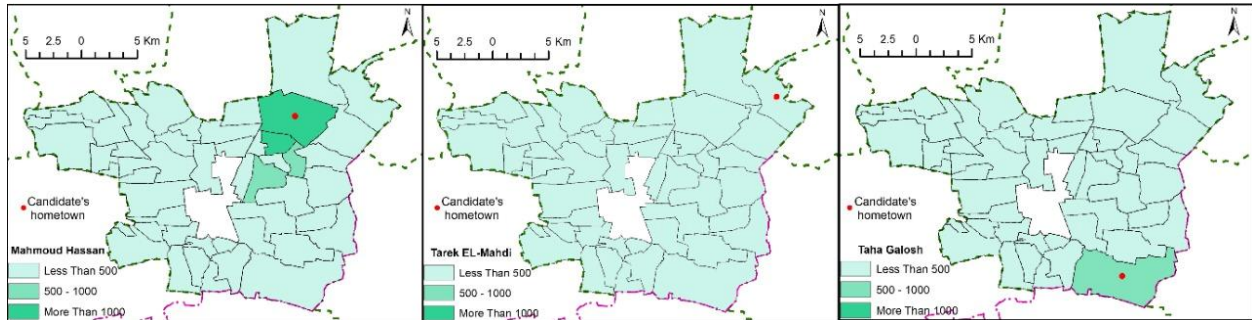


Fig. 4 (continued)

Considering the results of Pearson's Correlation Test that are presented in Table. 2, there is a negative significant correlation between distance from the candidate's hometown and voting (negative relationship in all candidates) except Shokri Gendy (positive significant correlation) This is because this candidate was recently transferred to his current hometown, and then there is no polarization for this candidate with a correlation coefficient (+0.093).

The highest negative correlation of the candidates was -0.490 for the candidate Hossam EL-Damrawy, and it was  $r^2$  linear (0.240), meaning that the lower the distance from the candidate's hometown, the higher the vote for this candidate

there is a negative significant correlation between voter turnout and distance to the candidate's hometown for each of (Bdeer EL-Sayed, Farag EL-Samahy, Hossam EL-Damrawy, Farag Taha, Mazhar EL-Demery, Kadry EL-Basuony, Ayman EL-Etraby, Ebrahim Ali, Reda Zina, Atef Saker, Mohamed Sehsah, Mostafa EL-Shrkawy, Mohamed Bastwisy, Rafaat Hamdon, EL-Shahat Ahmed, Mohamed Bazina, Hamed EL-Bastwisy, Abd EL-Hamid Ebrahim, Esmail EL-Shwadfy, Samy Ebrahim, Mohamed EL-Gendy, Medhat Zidan, Youssef Ebrahim, and Mahmoud Hassan) That means around 24 out of 30 candidates there was a negative significant correlation as the supplementary material file shows Appendix. See Fig. A

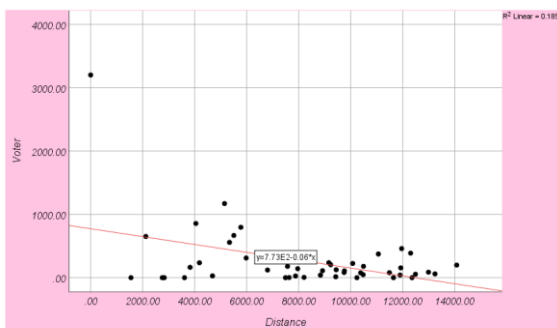
## 6. Conclusion.

In this study, the author tried to answer two questions, the first question is: Does the distance affect voting "the distance between voters and polling stations"? It has become clear that there is a positive correlation between the number of polling stations and voting, the greater the number of polling stations, the higher the vote, and there is a correlation Positive between the cost of voter transportation and voting, the higher the cost of voter transportation, the lower the vote. The second question: Is there a statistical correlation between distance and voting "the distance between the candidate's hometown and the voting results"? Through the results of the study, it became clear that the relationship is negative in 29 candidates, and this means that the farther we are from the candidate's hometown, the lower the vote for this candidate ,while only one candidate had a positive correlation.

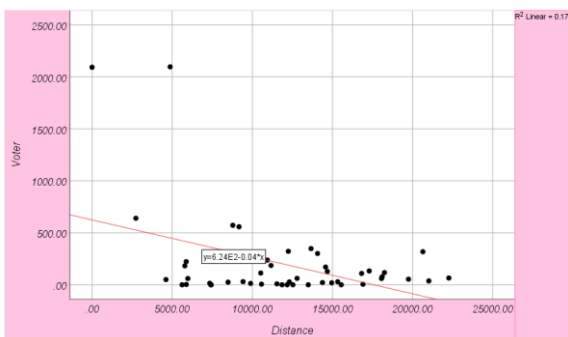
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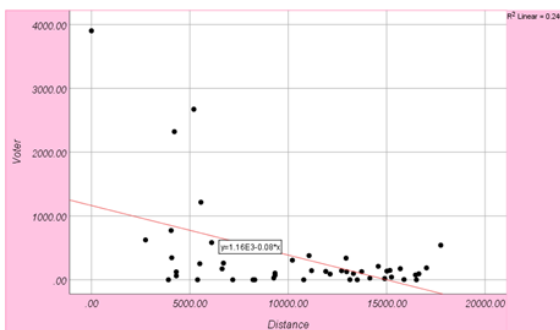
Appendix. See Fig. A1



**Bdeer EL-Sayed**



**Farag EL-Samahy**



**Hossam EL-Damrawy**

		Voter	Distance
Voter	Pearson Correlation	1	-.430**
	Sig. (2-tailed)		.003
	N	47	47
Distance	Pearson Correlation	-.430**	1
	Sig. (2-tailed)	.003	
	N	47	47

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Bdeer EL-Sayed**

		Voter	Distance
Voter	Pearson Correlation	1	-.420**
	Sig. (2-tailed)		.003
	N	47	47
Distance	Pearson Correlation	-.420**	1
	Sig. (2-tailed)	.003	
	N	47	47

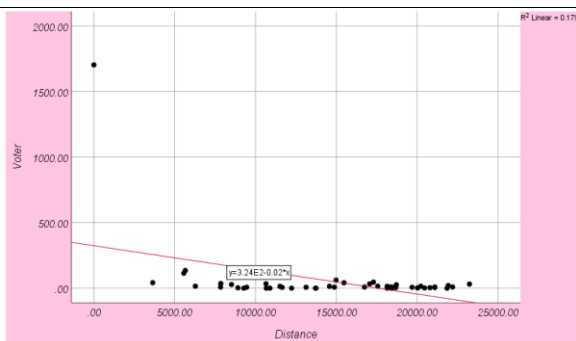
\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Farag EL-Samahy**

		Voter	Distance
Voter	Pearson Correlation	1	-.490**
	Sig. (2-tailed)		.000
	N	47	47
Distance	Pearson Correlation	-.490**	1
	Sig. (2-tailed)	.000	
	N	47	47

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Hossam EL-Damrawy**

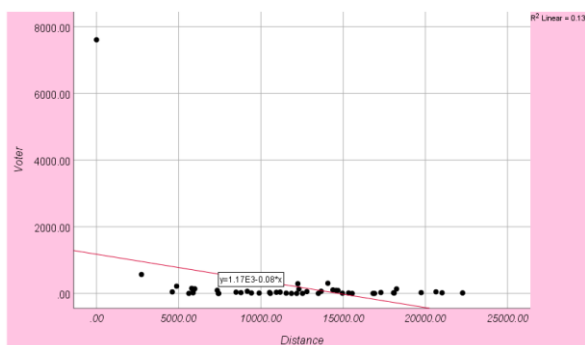


**Farag Taha**

		Voter	Distance
Voter	Pearson Correlation	1	-.423**
	Sig. (2-tailed)		.003
	N	47	47
Distance	Pearson Correlation	-.423**	1
	Sig. (2-tailed)	.003	
	N	47	47

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Farag Taha**

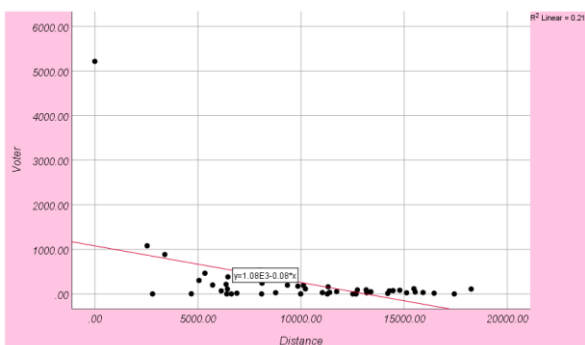


**Mazhar EL-Demery**

		Voter	Distance
Voter	Pearson Correlation	1	-.371*
	Sig. (2-tailed)		.010
	N	47	47
Distance	Pearson Correlation	-.371*	1
	Sig. (2-tailed)	.010	
	N	47	47

\*. Correlation is significant at the 0.05 level (2-tailed).

**Mazhar EL-Demery**

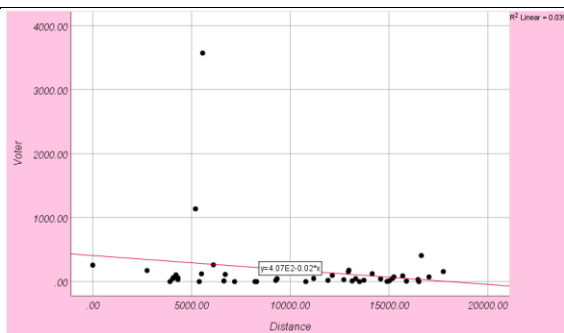


**Kadry EL-Basuony**

		Voter	Distance
Voter	Pearson Correlation	1	-.465**
	Sig. (2-tailed)		.001
	N	47	47
Distance	Pearson Correlation	-.465**	1
	Sig. (2-tailed)	.001	
	N	47	47

\*\* . Correlation is significant at the 0.01 level (2-tailed).

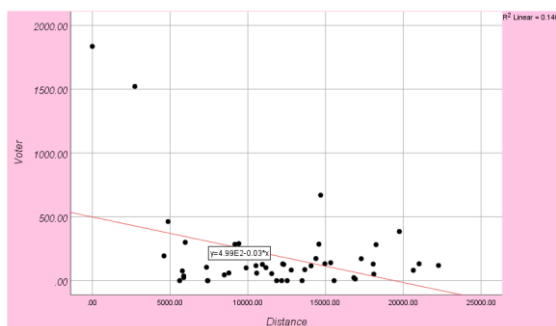
**Kadry EL-Basuony**



Sayed Abd EL-Rehman

		Voter	Distance
Voter	Pearson Correlation	1	-.198
	Sig. (2-tailed)		.182
	N	47	47
Distance	Pearson Correlation	-.198	1
	Sig. (2-tailed)	.182	
	N	47	47

Sayed Abd EL-Rehman

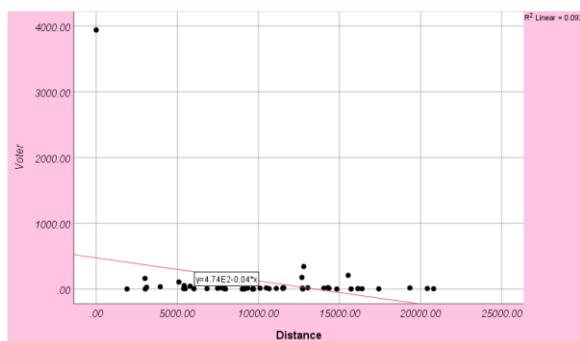


Ayman EL-Etraby

		Voter	Distance
Voter	Pearson Correlation	1	-.382**
	Sig. (2-tailed)		.008
	N	47	47
Distance	Pearson Correlation	-.382**	1
	Sig. (2-tailed)	.008	
	N	47	47

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Ayman EL-Etraby



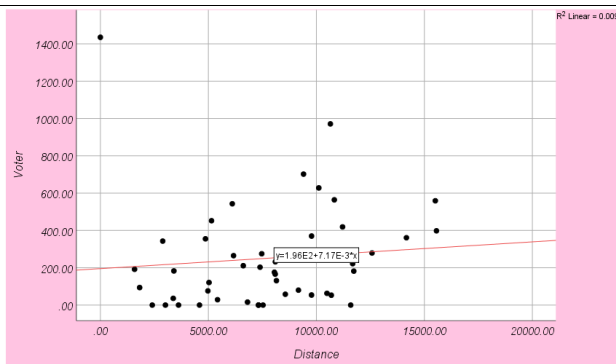
Ebrahim Ali

		Voter	Distance
Voter	Pearson Correlation	1	-.304*
	Sig. (2-tailed)		.037
	N	47	47
Distance	Pearson Correlation	-.304*	1
	Sig. (2-tailed)	.037	
	N	47	47

\* . Correlation is significant at the 0.05 level (2-tailed).

Ebrahim Ali

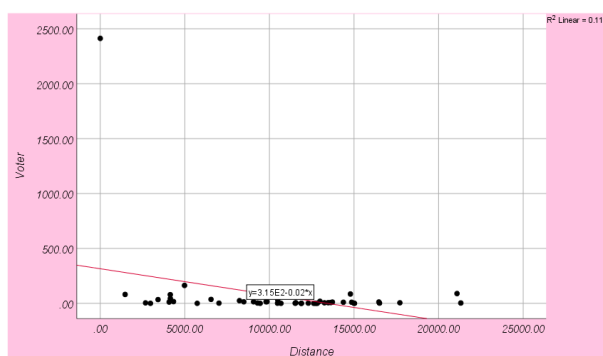




**Shokri Gendy**

		Voter	Distance
Voter	Pearson Correlation	1	.093
	Sig. (2-tailed)		.533
	N	47	47
Distance	Pearson Correlation	.093	1
	Sig. (2-tailed)	.533	
	N	47	47

**Shokri Gendy**

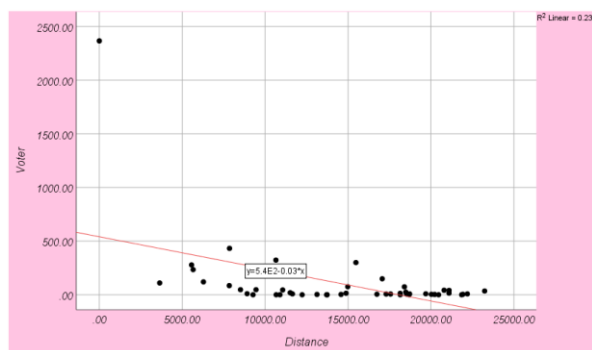


**Reda Zina**

		Voter	Distance
Voter	Pearson Correlation	1	-.332*
	Sig. (2-tailed)		.023
	N	47	47
Distance	Pearson Correlation	-.332*	1
	Sig. (2-tailed)	.023	
	N	47	47

\*. Correlation is significant at the 0.05 level (2-tailed).

**Reda Zina**

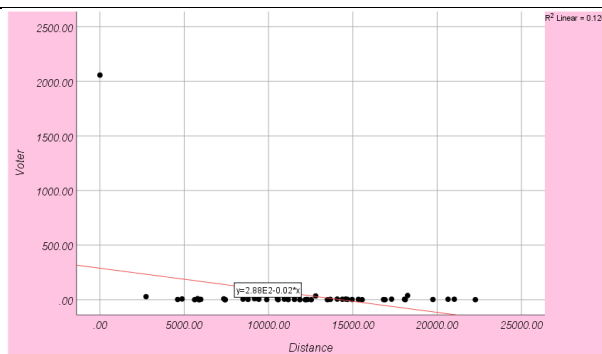


**Atef Saker**

		Voter	Distance
Voter	Pearson Correlation	1	-.484**
	Sig. (2-tailed)		.001
	N	47	47
Distance	Pearson Correlation	-.484**	1
	Sig. (2-tailed)	.001	
	N	47	47

\*\* Correlation is significant at the 0.01 level (2-tailed).

**Atef Saker**

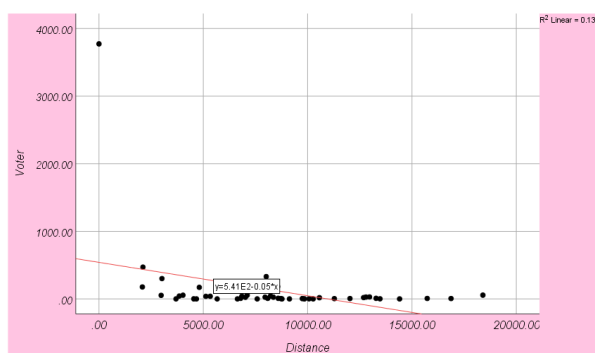


**Mohamed Sehsah**

		Voter	Distance
Voter	Pearson Correlation	1	-.346*
	Sig. (2-tailed)		.017
	N	47	47
Distance	Pearson Correlation	-.346*	1
	Sig. (2-tailed)	.017	
	N	47	47

\*. Correlation is significant at the 0.05 level (2-tailed).

**Mohamed Sehsah**

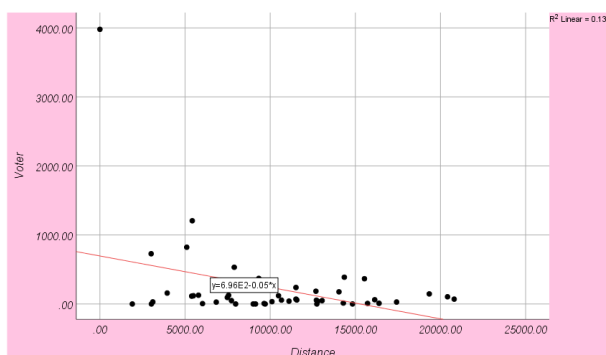


**Mostafa EL-Shrkawy**

		Voter	Distance
Voter	Pearson Correlation	1	-.365*
	Sig. (2-tailed)		.012
	N	47	47
Distance	Pearson Correlation	-.365*	1
	Sig. (2-tailed)	.012	
	N	47	47

\*. Correlation is significant at the 0.05 level (2-tailed).

**Mostafa EL-Shrkawy**

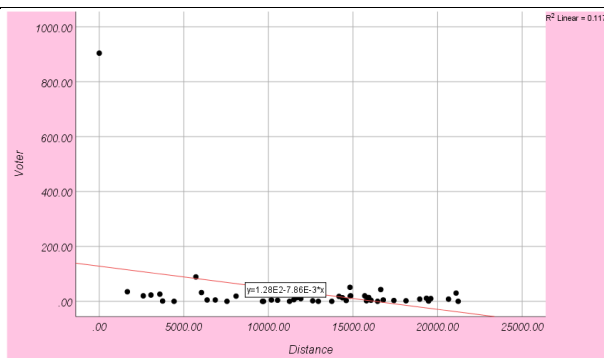


**Mohamed Bastwisy**

		Voter	Distance
Voter	Pearson Correlation	1	-.372**
	Sig. (2-tailed)		.010
	N	47	47
Distance	Pearson Correlation	-.372**	1
	Sig. (2-tailed)	.010	
	N	47	47

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Mohamed Bastwisy**

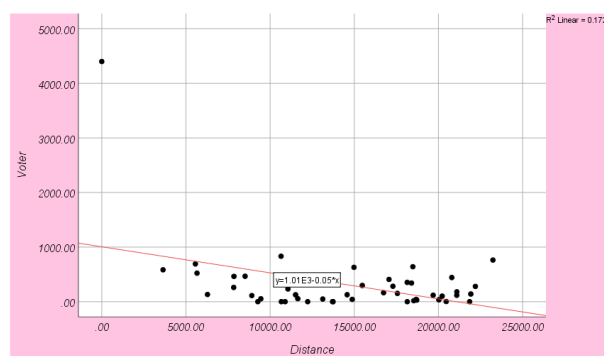


**Rafaat Hamdon**

		Voter	Distance
Voter	Pearson Correlation	1	-.342*
	Sig. (2-tailed)		.019
	N	47	47
Distance	Pearson Correlation	-.342*	1
	Sig. (2-tailed)	.019	
	N	47	47

\*. Correlation is significant at the 0.05 level (2-tailed).

**Rafaat Hamdon**

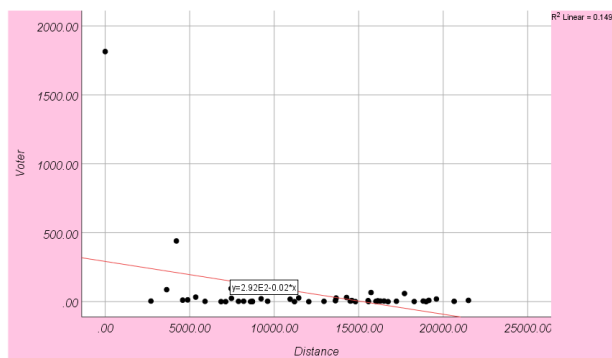


**EL-Shahat Ahmed**

		Voter	Distance
Voter	Pearson Correlation	1	-.415**
	Sig. (2-tailed)		.004
	N	47	47
Distance	Pearson Correlation	-.415**	1
	Sig. (2-tailed)	.004	
	N	47	47

\*\* Correlation is significant at the 0.01 level (2-tailed).

**EL-Shahat Ahmed**

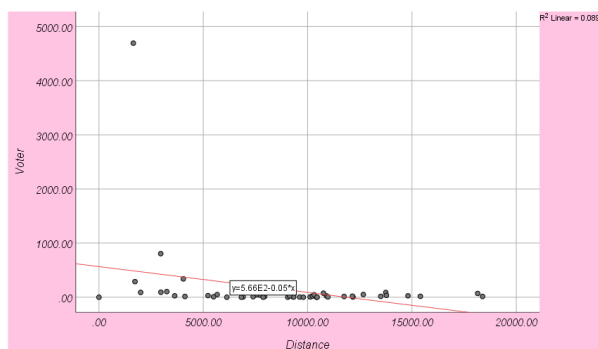


**Mohamed Bazina**

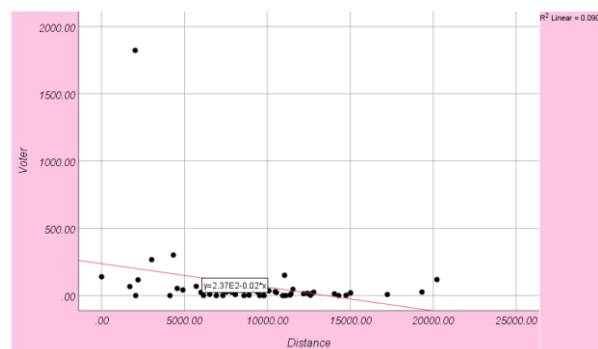
		Voter	Distance
Voter	Pearson Correlation	1	-.386**
	Sig. (2-tailed)		.007
	N	47	47
Distance	Pearson Correlation	-.386**	1
	Sig. (2-tailed)	.007	
	N	47	47

\*\* Correlation is significant at the 0.01 level (2-tailed).

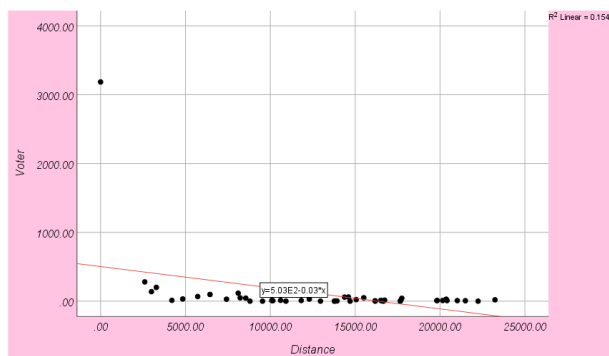
**Mohamed Bazina**



**Hamed EL-Bastwisy**



**Abd EL-Hamid Ebrahim**



**Esmail EL-Shwadfy**

		Voter	Distance
Voter	Pearson Correlation	1	-.298*
	Sig. (2-tailed)		.042
	N	47	47
Distance	Pearson Correlation	-.298*	1
	Sig. (2-tailed)	.042	
	N	47	47

\*. Correlation is significant at the 0.05 level (2-tailed).

**Hamed EL-Bastwisy**

		Voter	Distance
Voter	Pearson Correlation	1	-.300*
	Sig. (2-tailed)		.041
	N	47	47
Distance	Pearson Correlation	-.300*	1
	Sig. (2-tailed)	.041	
	N	47	47

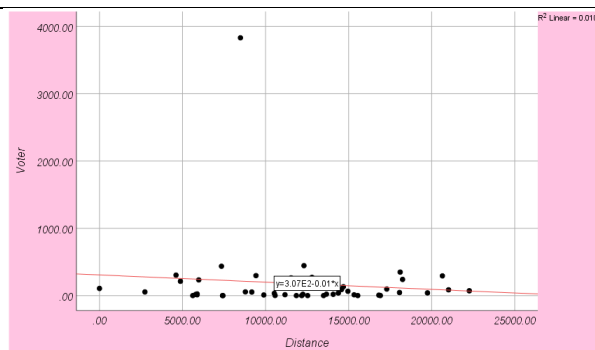
\*. Correlation is significant at the 0.05 level (2-tailed).

**Abd EL-Hamid Ebrahim**

		Voter	Distance
Voter	Pearson Correlation	1	-.392**
	Sig. (2-tailed)		.006
	N	47	47
Distance	Pearson Correlation	-.392**	1
	Sig. (2-tailed)	.006	
	N	47	47

\*\* . Correlation is significant at the 0.01 level (2-tailed).

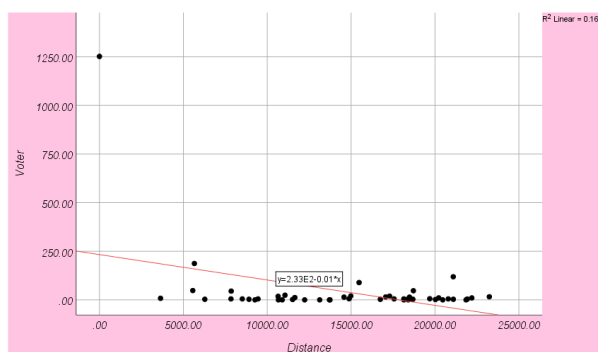
**Esmail EL-Shwadfy**



**Abd EL-Chalk Ghonim**

		Voter	Distance
Voter	Pearson Correlation	1	-.098
	Sig. (2-tailed)		.510
	N	47	47
Distance	Pearson Correlation	-.098	1
	Sig. (2-tailed)	.510	
	N	47	47

**Abd EL-Chalk Ghonim**

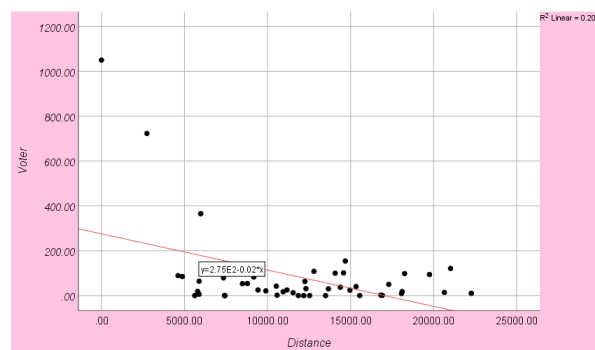


**Samy Ebrahim**

		Voter	Distance
Voter	Pearson Correlation	1	-.403**
	Sig. (2-tailed)		.005
	N	47	47
Distance	Pearson Correlation	-.403**	1
	Sig. (2-tailed)	.005	
	N	47	47

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Samy Ebrahim**

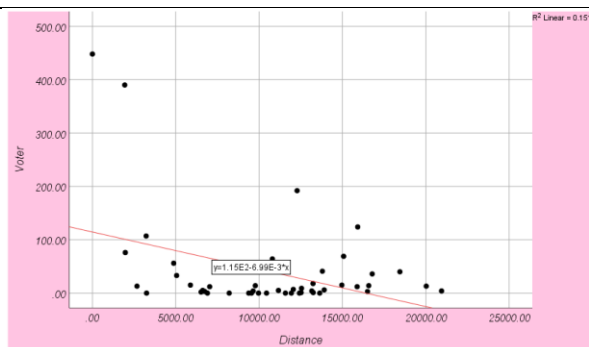


**Mohamed EL-Gendy**

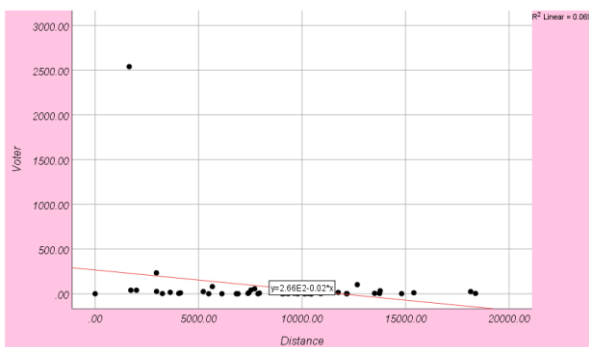
		Voter	Distance
Voter	Pearson Correlation	1	-.448**
	Sig. (2-tailed)		.002
	N	47	47
Distance	Pearson Correlation	-.448**	1
	Sig. (2-tailed)	.002	
	N	47	47

\*\* . Correlation is significant at the 0.01 level (2-tailed).

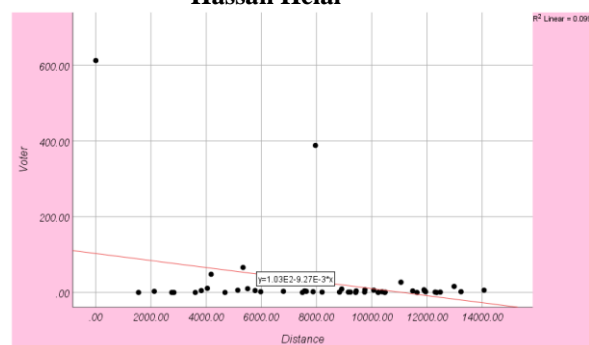
**Mohamed EL-Gendy**



**Medhat Zidan**



**Hassan Helal**



**Youssef Ebrahim**

		Voter	Distance
Voter	Pearson Correlation	1	-.389**
	Sig. (2-tailed)		.007
	N	47	47
Distance	Pearson Correlation	-.389**	1
	Sig. (2-tailed)	.007	
	N	47	47

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Medhat Zidan**

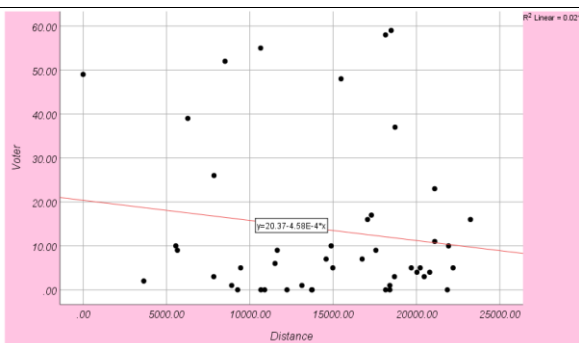
		Voter	Distance
Voter	Pearson Correlation	1	-.262
	Sig. (2-tailed)		.075
	N	47	47
Distance	Pearson Correlation	-.262	1
	Sig. (2-tailed)	.075	
	N	47	47

**Hassan Helal**

		Voter	Distance
Voter	Pearson Correlation	1	-.314*
	Sig. (2-tailed)		.032
	N	47	47
Distance	Pearson Correlation	-.314*	1
	Sig. (2-tailed)	.032	
	N	47	47

\* . Correlation is significant at the 0.05 level (2-tailed).

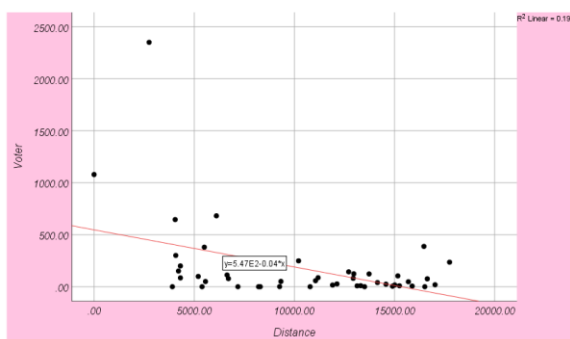
**Youssef Ebrahim**



**Tarek EL-Mahdi**

		Voter	Distance
Voter	Pearson Correlation	1	-.146
	Sig. (2-tailed)		.328
	N	47	47
Distance	Pearson Correlation	-.146	1
	Sig. (2-tailed)	.328	
	N	47	47

**Tarek EL-Mahdi**

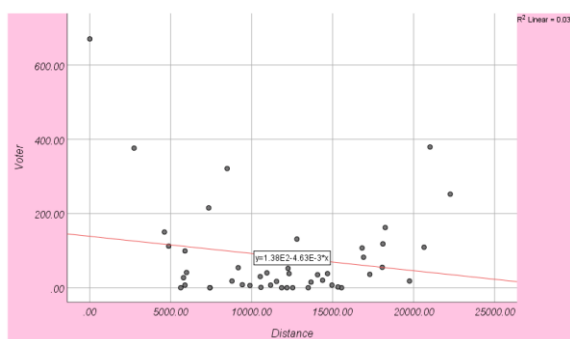


**Mahmoud Hassan**

		Voter	Distance
Voter	Pearson Correlation	1	-.437**
	Sig. (2-tailed)		.002
	N	47	47
Distance	Pearson Correlation	-.437**	1
	Sig. (2-tailed)	.002	
	N	47	47

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Mahmoud Hassan**



**Taha Galosh**

		Voter	Distance
Voter	Pearson Correlation	1	-.183
	Sig. (2-tailed)		.219
	N	47	47
Distance	Pearson Correlation	-.183	1
	Sig. (2-tailed)	.219	
	N	47	47

**Taha Galosh**

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