Original Research Article

The Evaluation of Kingdom of Saudi Arabia Governorate Size Distribution

ABSTRACT

The purpose of this paper is to examine the hierarchy of urban centers in Saudi governorates using the rank and size rule. Also, determine the primacy governorate. This study applied different methods to examine the possibility of a primate governorates within the law of the primate city, the primacy of index, rank and size rule, and four-city index. The census data for the years 2004, 2010, and 2014 were collected from GASTAT. The results show that the population concentrated in Al-Riyad, then Jiddah, followed by Makkah Al-Mokarammh. Moreover, the Al-Riyad governorate is the dominant primacy governorate in the urban hierarchy in Saudi Arabia.

1. INTRODUCTION

In Saudi Arabia and worldwide, governorates and urbanization growth depend not only on structural descriptions in sizes or economic statistics but also on factors such as rules, laws, and infrastructure. These factors affect the trends and the flow of the economy on the characteristics of each community. Some studies have examined the impact of these factors on governorates and urbanization center sizes and distributions (Fujita et al., 1995).

Theories and models such as central place theory, growth poles theory, communication theory, and the Jefferson and Zipf methods have been applied in several studies on urban and urbanization growth (Sangi, 2011). However, there is a lack of literature on the use of these theories and models for evaluating the size distribution of governorates in Saudi Arabia. Therefore, this study will apply some of these techniques to analyze the factor affecting the growth of governorates and rural areas.

Among the most important theories in urban growth and urbanization, first is the central place theory, proposed in 1933 by Walter Christaller, who designed a concept to determine the size, number, and distribution of cities. He concluded that there is a coherent sequence of central places in numbers and population sizes (Called Hexagonal System). Second, in 1955, Francois Perroux was the first to lay the foundation of the growth poles theory. The essence of this theory is that one or more regions have particular economic, social, and geographic features that make them the focus of development for other regions and affecting them so that they always turn to them. Then in 1958, Albert Hirschman came and added the concept of growing points, which means those areas in which the emergence of forces has a unique impact on the process of spatial focus of economic growth in the state. Third are the Jefferson and Zipf models. In 1939, Mark Jefferson used the concept of the first city as a phenomenon characteristic of the size of major cities in developing countries, but this does not mean that they do not exist in developed countries. Jefferson noted that, in every country in the world, there is a primary city that is the largest city in the country and is often the capital, has the largest size, and is the most populated and active. Other rules that have emerged to illustrate the relationship between the number and size of cities are the rank-size rule by George Zipf in 1949. The central premise of Zipf is that in every country there is a large city (a primary city) that is ranked first regarding population size, and the second, third, and the fourth largest cities are one-half, one-third, and one-fourth of the first city's size, respectively.

The objective of this study is to determine the characteristics of the urban system and changes that occurred in Saudi Arabia in 2004, 2010, and 2014. Therefore, several questions are addressed regarding the achievement of our objective.

    1) How regular is the rate and base size at the urban community level?
    2) What is the distribution disparity in the urban population?
    3) Is there a dominant governorate in the urban system of Saudi Arabia?

49 This paper is designed as follows. First, the background of the Saudi Arabia statistic is presents. After
50 that, data are discussed. Then, the methodology is offered that represents the indicators that we
51 used. Finally, the discussion of the result is followed by the conclusion.
52
53 **2. BACKGROUND:**

54 The area of Saudi Arabia is about 2 million sq. km. and represents about 70% of the Arabian
55 Peninsula, with a total number of 13 administrative regions, 118 governorates, and 1,377 central
56 cities. Moreover, the Eastern Region represents the largest area of Saudi Arabia, which represents
57 about 27.6%, while the Al-Baha region, comprising about 0.6%, represents the smallest area. On the
58 governorate sides, Al-Ahsa governorate is the largest governorates area in Eastern Region and Saudi
59 Arabia as a whole, which represents about 69% of the total region. While the smallest governorates
60 are Al-Hearth and Jazan, with an area of about 100 sq. km., On the population side, Saudi Arabia has
61 a total population of over 31 million people, with 67% Saudi citizens and 33% non-Saudi citizens. The
62 Makkah region had the most populated areas, because it is the holiest city in Islam. The Makkah
63 region represents about 26% of the Saudi Arabian area, while the northern border region has the
64 lowest population, with 1.2% (GASTAT, 2018).
65 However, due to the social and economic changes that occurred during the period 2001-2017, Saudi
66 Arabia has experienced significant urban expansion that has lead to rapid population growth in urban
67 areas, resulting in high urbanization. That is, the increase in the urban population was about 80% in
68 2001 to 83.5% in 2017, while the rural population declined from 20% in 2001 to 16.5% in 2017.
69 This increase was accompanied by unequal distribution of the population according to the size of
70 Saudi Arabia. Of the country's entire population, 26% concentrated in the Makkah Region, which is
71 7% of the kingdom's total area, and about 25% of the population concentrated in the Riyadh region,
72 which is 19% of the Kingdom area, while 15% of the population is located in the Eastern Region,
73 which is 28% of the total area of the Kingdom. The total population density of the Kingdom is about
74 15.8 persons per square kilometer. The most densely populated region is the Jazan region, with a
75 population density of about 118 persons per square kilometer, and the least densely populated region
76 is the northern border region, with a population density of about three persons per square kilometer.
77 The concentration of the urban populations from other regions leads to a range of economic and
78 social problems of rural areas being deprived of their productive human power, which adversely
79 affects rural development in general and agricultural development in particular. As these migrations
80 continue, the population distribution system of the city becomes disrupted. Random expansions
81 appear, and pressures on social and economic facilities and services increase through education,
82 transportation, housing, and consumption of electricity and water.
83 Saudi cities have grown to the point at which by 2010, there were 28 governorates with a population
84 of more than 100,000. The four cities with a population of more than a million people were Riyadh (5.1
85 million), Jeddah (3.8 million), Makkah (1.3 million), and Madinah (1.1 million people). Thus, the
86 proportion of the urban population in the kingdom increased to 48%, 77%, and 84% in 1974, 1993,
87 and 2010, respectively, and is expected to increase to 88% by 2025 (Al-Jarallah & Hind, 2014),
88 (GASTAT, 2018).

89 **3. DATA**

90 The data for the study is based on the population that is obtained from the General Authority for
91 Statistics in Saudi Arabia for 2004, 2010, and 2014. Also, other data sources will be obtained from
92 both previous studies and statistics reported by the General Authority for Statistics in Saudi Arabia.

93 **4. METHODOLOGY:**

94 According to the study objectives and based on the methods for studying the spatial distribution and
95 its changes, the methods proposed by London (1977), Rosen, Kenneth, and Resnick (1980), Meyer
96 (1986), Jefferson (1989), Gabaix (1999), Chaudhuri (2001), Ayasreh (2014), Chen et al. (2014), and
97 Kiani et al. (2014), were employed:
98   1- The Law of the Primate City: in 1939, Mark Jefferson produced the idea of interpreting the
99   concept of a major city in the urban system, which is often the capital that controls the rest of the
100   region. This city was concentrated in power, services, commercial and industrial activities, and
101   population, which leads to inflation at the expense of other cities.
102   2- The Primacy of Index: This measure determines the proportionality between the size of the
103   population of the first city on the one hand and the size of the population of the other city on the
104   other. The Primacy of Index = (number of people in first city 1 ÷ number of people in the nth city).

105   A primate city is one in which the value of this indicator is more than one, meaning that the
106   population of the first city exceeds the population of the second city by more than two times.
107   Rosen and Resnick (1980) define a primacy city using two measures. First, they use the ratio of
108   the largest city divided by the sum of the top five cities. Second, the ratio of the largest city is
109   divided by the sum of the top fifty cities.
110   3-   Rank and size rule: After studying some American cities, Zipf concluded that there is a
111   relationship between the order of the cities in the urban system and its population size (in
112   descending order) and is used to reveal the image of the existing urban system.
113   4-   Four-city index (Ginsburg index): This index suggests that the relationship of the first city to the
114   other cities must be taken into account using the next three cities as follows:

$$Four\ city\ index = \frac{largest\ city}{sum\ (next\ 3\ cities)}$$

115
116 The largest city dominates if the index approaches one. An index between 0.65-0.54 is superior,
117 between 0.54 and 0.41 is favorable, and less than 0.41 shows the least primary city.
118 **5. RESULT AND DISCUSSION:**
119 The most recent population census in Saudi Arabia was conducted in 2014, revealing a population of
120 30.4 million people. There were 24.9 million people concentrated in 30 governorates, with 82% of the
121 total population in Saudi Arabia.
122 A detailed comparison of the size and number of governorates shows that there were only 58
123 governorates with a population of 5,000 or more in 1974, which doubled to 117 in 2014. The urban
124 population also doubled from 315 thousand people in 1974 to 30.4 million people in 2014,
125 representing an increase of nearly 865% (GASTAT, 2018).
126 It is noteworthy that one of the most significant changes in the Saudi urban system is the emergence
127 of the governorates with more than one million residents during this period. While there were only
128 three governorates with a population of 1 million in 2004, in 2014 there were six governorates with
129 more than 1 million people. The number of governorates with more than 100,000 people numbered
130 about 41 in 2014, compared to only 35 governorates in 2004.
131 There was a difference in the distribution of urban population between governorates in 2004; 45% of
132 the urban population was distributed among five governorates, whereas 18% of the total urban
133 population in Saudi Arabia was concentrated in the capital, Al-Riyad, followed by Jiddah with 12%,
134 then Makkah Al-Mokarramah with 6%. The remaining 64% of the population lives in the rest of the
135 governorates.
136 In 2014, there was also a difference in the distribution of urban population to governorates. 47% was
137 distributed among the urban population in five governorates. 19% of the total urban population in
138 Saudi Arabia was concentrated in the capital, Al-Riyad, followed by Jiddah with 13%, then Makkah Al-
139 Mokarramah with 6%, while the rest of the population lived in the remaining governorates with a
140 percentage of 62%.
141 The twelve governorates (> 500000 people) will match the theory of Zipf in the future except for the
142 second governorate (Jiddah) if the growth of Al-Riyad governorate is to be lower than it was. The
143 results of the programs of future urban development plans help identify alternatives for urban growth
144 trends (Figure 1).
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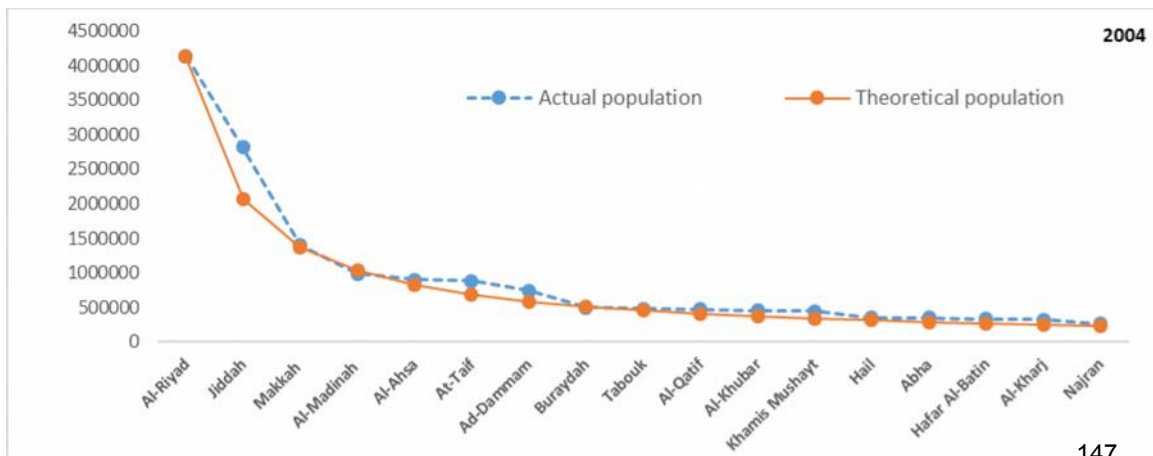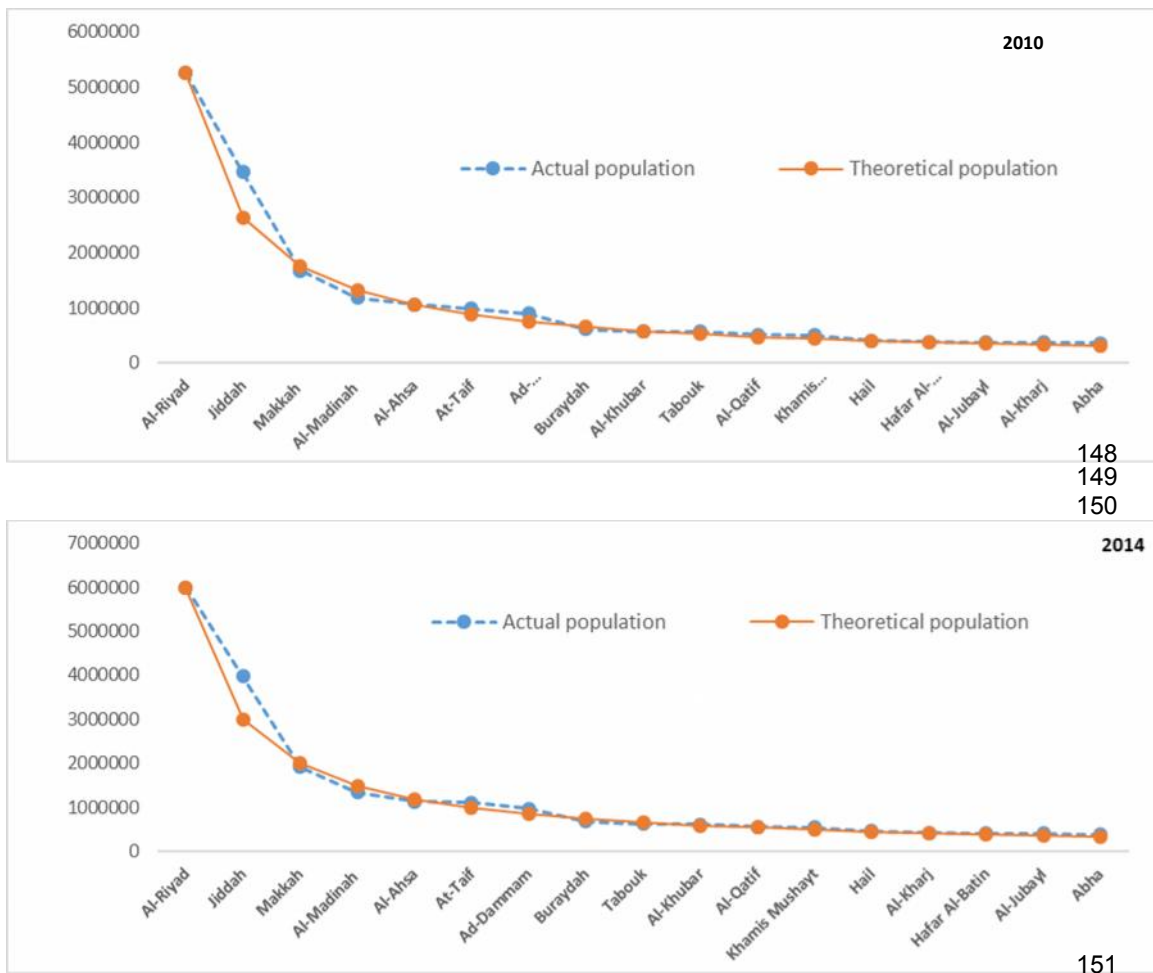
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Figure 1: Theoretical and actual population growth in Saudi Arabia in 2004, 2010 and 2014
154
155   The size of the population measures the relations between a governorate's rank and its size in the
156   urban system of the governorates. The governorates are arranged according to their sizes in
157   descending order, and the size of the governorates is represented on the vertical axis, while the
158   governorates are arranged on the horizontal axis. The relationship between the size of the
159   governorates and their rank in absolute numbers is shown in the form of a curved line, as the
160   logarithm; the relationship appears in the form of a straight line. The transformation of rank can be
161   obtained as follows:

$$\log\left(\frac{Population\ of\ governorate}{Rank\ order\ postition}\right)$$

162
$$= \log(popluation\ governorate) - b\ log(Rank\ order\ position)$$
163   A larger b means a steeper the slope of the linear curve (Chaudhuri, 2001). (Figure 2, 3, &4)

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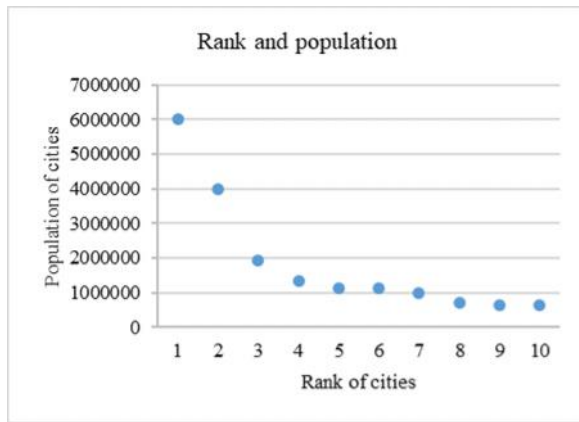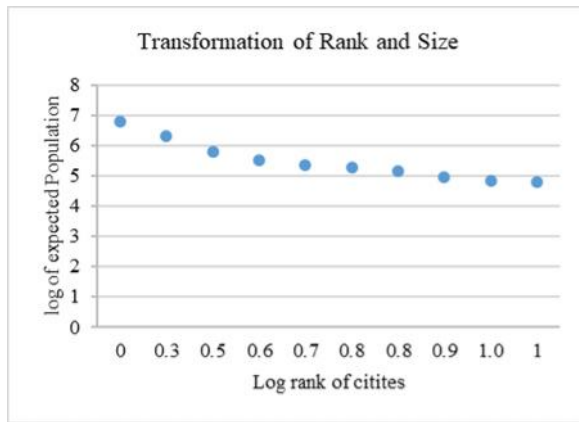
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168 **Figure 2: Rank and population of 10 cities of Saudi Arabia 2004**
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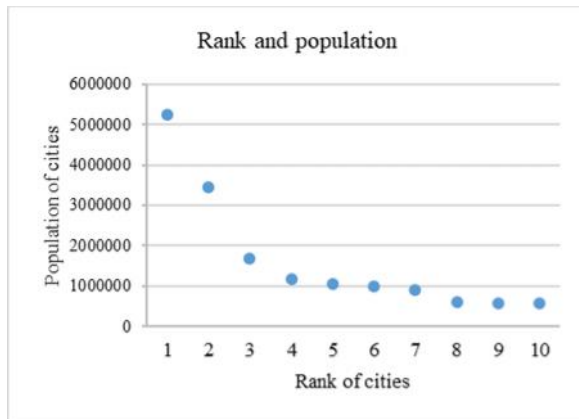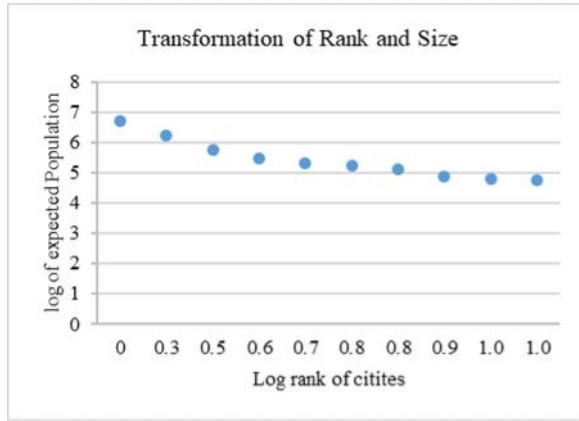
Figure 3: Rank and population of 10 cities of Saudi Arabia 2010
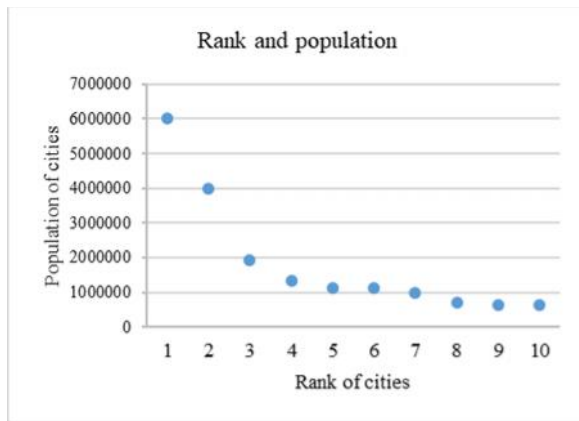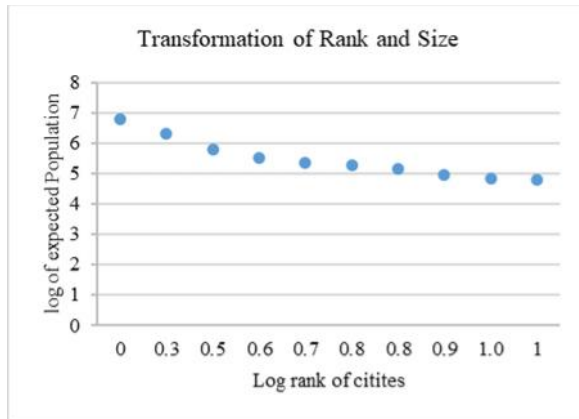
Figure 4: Rank and population of 10 cities of Saudi Arabia 2014

Based on the results of the rank-size law for the years 2004, 2010, and 2014, as shown in Tables (1), (2), and (3) in the Appendix, we found that the Saudi urban system balanced in the upper and lower volume levels of urban centers. When comparing the sizes of urban centers during those years, we note that the results vary between the years, during which the total percentages of the five urban centers were about 169% (after Al-Riyad governorate) of the proportions of the Zipf law in 2004, then they fell to 158% in 2010, and then they rose to 159% in 2014, which gives an indication of the lack of sensitivity.

193 However, the ratio decreased in the last five size governorates from 1.09% in 2004 to 0.98% in 2010
194 and then increased to 1.03% in 2014. This gives an indication of the decline in reducing the gap
195 between the upper and lower ranks within Saudi Arabia.
196 The first city law by Jefferson was applied to examine the possibility of a primary governorate in the
197 Saudi urban system. Table (1) shows the results of applying the first city law to urban centers based
198 on the results of the 2004, 2010, and 2014 censuses. According to Mark Jefferson's law, the first
199 governorate in Saudi Arabia, which is Al-Riyad, was a primacy governorate during the 2004, 2010,
200 and 2014 census years. The population of the second governorates, Jiddah, was 18% greater than
201 the governorate of Jefferson in 2004, 15.8% in 2010, and 16% in 2014. While the population of
202 Makkah Al-Mokarramah was 3.9% higher than that of the governorate of Jefferson in 2004, 1.9%
203 greater in 2010, and 2% greater in 2014.
204
205 **Table 1: Applied Mark Jefferson's law in the urban system in Saudi Arabia in 2004, 2010, and**
206 **2014**

City	The first city law in 2004		The first city law in 2010		The first city law in 2014		Assume rank by Jefferson law
	Population	Percent to city size	Population	Percent to city size	Population	Percent to city size	
Al-Riyad	4138329	100%	5254560	100%	5999434	100%	100%
Jiddah	2821371	68%	3456259	66%	3976368	66%	30%
Makkah Al-Mokarramah	1402944	34%	1675368	32%	1919909	32%	20%

207 *Source: Author created table based on data (General Authority for statistics (GASTAT). Kingdom of Saudi Arabia,*
208 *2018)*
209
210 Also, we used the two measures provided by Rosen and Resnick (1980). We did not find any new
211 results. The results shows that Al-Riyad was a dominant governorate in all measures followed by
212 Jiddah, Makkah Al-Mokarramah, and Al-Madinah (Appendix Table 4).
213 We apply the four-cities index, which attributes the size of the first governorate to the total size of the
214 governorates under analysis for the years 2004, 2010, and 2014 on the urban centers in Saudi
215 Arabia. According to the 2004 statistics, there is a reliable indicator of the dominance of Al-Riyad. The
216 remaining urban centers were represented by the ratio of the population size of Al-Riyad to the total of
217 the three governorates, followed by rank (Jiddah, Makkah Al-Mokarramah, Al-Madinah), which was
218 79% in 2004, while in 2010 and 2014, the index rose to 83%. In other words, the population of the
219 governorate of Al-Riyad has become more than half the population of the three communities together,
220 followed by rank. The Yale indicator did not consider the existence of other governorates competing
221 with Al-Riyad for the value of urban dominance, as evidenced by the approach of the index ratio of the
222 absolute one to the existence of the distribution of governorates closer to balance.
223 To measure the size of the imbalance in the network of urban governorates, we obtained the
224 expected or optimal size of the first governorate by dividing the total number of urban residents by the
225 total number of inverted rank numbers. In 2004, the total urban population reached 22.7 million
226 people, and in 2014 it was 30.4 million people. Therefore, the optimal size of the first governorate for
227 the year 2004 reached 4.1 million people, in 2010 reached 5.25 million people, and in 2014 reached
228 about 6 million people.
229 However, one can obtain the ideal governorate size of the first governorate by dividing the optimal
230 size of the first governorate on the rank of each governorate. Then one calculates the difference
231 between the size of the real population of the nth governorates and their ideal population size, and
232 then finds the total differences (positive or negative). Thus, the total positive and negative differences
233 between the actual and ideal size were -529,381 people in 2004, 1,002,908 in 2010, and about
234 1,675,953 people in 2014.
235 The governorates' distribution in Saudi Arabia can be described as follows. First, the governorates of
236 Al-Riyad and Jiddah represent 32% of the total Saudi Arabian population. These governorates
237 contributed to the emergence of what Mark Jefferson called the first city. If the size of Jiddah was
238 more than half of that of the first governorate, the rest of the governorates did not follow the Zipf
239 theory, which considers the size of the first governorate divided by the rank of the concerned
240 governorate. The spatial interaction of the capital governorate considers the rapid response of the
241 community to diverse development programs, the targeting of local and migrant workers in the first
242 stage of construction, the existence of higher education levels, and the embrace of all higher

243 administrative bodies (health, education, finance, etc.) (Appendix Table 5). Second, the geographical
244 location of Al-Riyad has made it more polarizing for the rural population than in other governorates.
245 Al-Jarallah and Al Khatani (2014), Al-Jarallah (1996), and Al-Jukhaidab (2011) show that the
246 administrative concept based on considering Al-Riyad as the capital of Saudi Arabia has helped with
247 the rapid development of the governorate. This means that this development and the increase in the
248 population growth of Al-Riyad exceed the overall growth rate at the country level. Third, it was
249 expected that the breadth of Saudi Arabia and the multiplicity of its regions would contribute to the
250 application of the theory of rank size to its governorates. However, this did not happen due to the
251 different natural and human components of these regions.
252
253 **6. CONCLUSION:**

254 The total population of the kingdom increased by about eight times during the period of 1974-2014. At
255 the same time, the size and number of cities doubled. Moreover, the number of governorates with 1
256 million people increased from one governorate in 2004 to six in 2014. Furthermore, the number of
257 governorates with more than 100,000 people increased from 35 governorates in 2004 to 41
258 governorates in 2014. However, the total urban population in Saudi Arabia was concentrated in the
259 capital Al-Riyad, followed by Makkah Al-Mokarramah.
260 The results show that the twelve governorates under analysis (those with more than 500,000 people)
261 can match the theory of Zipf for the future except for the second governorate (Jiddah), if the growth of
262 Al-Riyad governorate will be lower than it has been in the past. The first city law by Jefferson
263 suggests that the first governorate in Saudi Arabia, Al-Riyad, was a primacy governorate during the
264 2004, 2010, and 2014 census years. The second governorate was deemed to be Jiddah, followed by
265 Makkah Al-Mokarramah.
266 Also, when we used the two measures provided by Rosen and Resnick (1980), the results show that
267 Al-Riyad was a dominant governorate in all measures followed by Jiddah, Makkah Al-Mokarramah,
268 and Al-Madinah.
269 Application of the four cities index reveals a reliable indicator of the dominance of Al-Riyad. The
270 remaining urban centers were represented by the ratio of the population size of Al-Riyad to the total of
271 the three governorates followed by rank (Jiddah, Makkah Al-Mokarramah, Al-Madinah), which was
272 79% in 2004, while in 2010 and 2014, the index rose to 83%.
273 We reach the conclusion that the concentration of urban populations compared to that of other
274 regions leads to a range of economic and social problems within the rural areas, as they are often
275 deprived of their productive human power, which adversely affects rural development in general and
276 agricultural development in particular. It is important to stimulate urban development in other
277 governorates in Saudi Arabia to achieve a balance in the distribution of the population rather than
278 concentrating the population in major governorates.
279
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APPENDIX

Table 1: Saudi Arabia Population Distribution Hierarchy for 2004

Governorate	Actual population	Rank	Rank by size	Rank by rule	Theoretical population	Deviation
Al-Riyad	4138329	1	1.000	1	4138329	0
Jiddah	2821371	2	0.682	0.50	2069164.5	-752207
Makkah Al-Mokarramah	1402944	3	0.339	0.33	1379443	-23501
Al-Madinah	995619	4	0.241	0.25	1034582.25	38963.25
Al-Ahsa	907734	5	0.219	0.20	827665.80	-80068.2
At-Taif	883538	6	0.214	0.17	689721.50	-193817
Ad-Dammam	745658	7	0.180	0.14	591189.86	-154468
Buraydah	505333	8	0.122	0.13	517291.13	11958.13
Tabouk	488365	9	0.118	0.11	459814.33	-28550.7
Al-Qatif	473454	10	0.114	0.10	413832.90	-59621.1
Al-Khubar	456559	11	0.110	0.09	376211.73	-80347.3
Khamis Mushayt	445750	12	0.108	0.08	344860.75	-100889
Hail	356770	13	0.086	0.08	318333.00	-38437
Abha	352303	14	0.085	0.07	295594.93	-56708.1
Hafar Al-Batin	338764	15	0.082	0.07	275888.60	-62875.4
Al-Kharj	323597	16	0.078	0.06	258645.56	-64951.4
Najran	265498	17	0.064	0.06	243431.12	-22066.9
Jazan	255340	18	0.062	0.06	229907.17	-25432.8
Yanbu Al-Bahr	249797	19	0.060	0.05	217806.79	-31990.2
Al-Qunfidhah	240944	20	0.058	0.05	206916.45	-34027.6
Al-Jubayl	224481	21	0.054	0.05	197063.29	-27417.7
Sabya	198086	22	0.048	0.05	188105.86	-9980.14
Sakaka	196690	23	0.048	0.04	179927.35	-16762.7
Ad-Duwadimi	190432	24	0.046	0.04	172430.38	-18001.6
Bishah	188246	25	0.045	0.04	165533.16	-22712.8
Muhayil	176336	26	0.043	0.04	159166.50	-17169.5
Arar	164823	27	0.040	0.04	153271.44	-11551.6
Unayzah	138543	28	0.033	0.04	147797.46	9254.464
Samtah	128447	29	0.031	0.03	142701.00	14254
Al-Qurayyat	124979	30	0.030	0.03	137944.30	12965.3
Abu Arish	123943	31	0.030	0.03	133494.48	9551.484
Ar-Rass	115881	32	0.028	0.03	129322.78	13441.78
Al-Majmaah	111668	33	0.027	0.03	125403.91	13735.91

Governorate	Actual population	Rank	Rank by size	Rank by rule	Theoretical population	Deviation
Al-Lith	109953	34	0.027	0.03	121715.56	11762.56
Al-Quwayiyah	106690	35	0.026	0.03	118237.97	11547.97
Ahad Rifaydah	99175	36	0.024	0.03	114953.58	15778.58
Al-Ghazalah	94531	37	0.023	0.03	111846.73	17315.73
Al-Baha	93287	38	0.023	0.03	108903.39	15616.39
Wadi Ad-Dawasir	92714	39	0.022	0.03	106111.00	13397
Al-Majardah	89689	40	0.022	0.03	103458.23	13769.23
Al-Jumum	76026	41	0.018	0.02	100934.85	24908.85
Rafha	73363	42	0.018	0.02	98531.64	25168.64
Sharurah	72965	43	0.018	0.02	96240.21	23275.21
Ahad Al-Musarihah	70038	44	0.017	0.02	94052.93	24014.93
Afif	68678	45	0.017	0.02	91962.87	23284.87
Rabigh	68538	46	0.017	0.02	89963.67	21425.67
Balqarn	66656	47	0.016	0.02	88049.55	21393.55
Al-Mukhwah	64353	48	0.016	0.02	86215.19	21862.19
Az-Zulfi	62980	49	0.015	0.02	84455.69	21475.69
Al-Aridah	62841	50	0.015	0.02	82766.58	19925.58
Damad	62366	51	0.015	0.02	81143.71	18777.71
Biljurashi	61503	52	0.015	0.02	79583.25	18080.25
Ad-Diriyah	60860	53	0.015	0.02	78081.68	17221.68
Al-Khafji	60414	54	0.015	0.02	76635.72	16221.72
Al-Aflaj	60077	55	0.015	0.02	75242.35	15165.35
Sarat Abidah	59557	56	0.014	0.02	73898.73	14341.73
Rijal Alma	58875	57	0.014	0.02	72602.26	13727.26
Baysh	58269	58	0.014	0.02	71350.50	13081.5
Badr	58088	59	0.014	0.02	70141.17	12053.17
Al-Ula	57495	60	0.014	0.02	68972.15	11477.15
Qilwah	55456	61	0.013	0.02	67841.46	12385.46
Zahran Al-Janub	55314	62	0.013	0.02	66747.24	11433.24
Umluj	53749	63	0.013	0.02	65687.76	11938.76
Al-Mahd	53687	64	0.013	0.02	64661.39	10974.39
Al-Hinakiyah	52549	65	0.013	0.02	63666.60	11117.6
Al-Idabi	52515	66	0.013	0.02	62701.95	10186.95
Ad-Darb	52062	67	0.013	0.01	61766.10	9704.104
Khulays	49919	68	0.012	0.01	60857.78	10938.78
Ad-Dair	49239	69	0.012	0.01	59975.78	10736.78
Tathlith	48227	70	0.012	0.01	59118.99	10891.99
Al-Bukayriyah	47986	71	0.012	0.01	58286.32	10300.32
An-Namas	47811	72	0.012	0.01	57476.79	9665.792
Al-Harth	47073	73	0.011	0.01	56689.44	9616.438
Duba	46612	74	0.011	0.01	55923.36	9311.365
Al-Mandaq	45653	75	0.011	0.01	55177.72	9524.72
Khaybar	45489	76	0.011	0.01	54451.70	8962.697
Al-Badai	45283	77	0.011	0.01	53744.53	8461.532
Buqayq	44793	78	0.011	0.01	53055.50	8262.5
Al-Nuayriyah	44571	79	0.011	0.01	52383.91	7812.911
Ranyah	44229	80	0.011	0.01	51729.11	7500.113
Ras Tannurah	43413	81	0.010	0.01	51090.48	7677.481
Turubah	42654	82	0.010	0.01	50467.43	7813.427
Turayf	41785	83	0.010	0.01	49859.39	8074.386
An-Nabhaniyah	40908	84	0.010	0.01	49265.82	8357.821
Dawamat Al-Jandal	40069	85	0.010	0.01	48686.22	8617.224
Hawtat Bani Tamim	39834	86	0.010	0.01	48120.10	8286.105
Al-Wajh	38920	87	0.009	0.01	47567.00	8647
Baqa	38875	88	0.009	0.01	47026.47	8151.466
Al-Khurmah	38600	89	0.009	0.01	46498.08	7898.079

Governorate	Actual population	Rank	Rank by size	Rank by rule	Theoretical population	Deviation
Al-Midhnab	37174	90	0.009	0.01	45981.43	8807.433
Ash-Shinan	36706	91	0.009	0.01	45476.14	8770.143
Al-Muzahimiyah	35942	92	0.009	0.01	44981.84	9039.837
Tayma	35691	93	0.009	0.01	44498.16	8807.161
As-Sulayyil	34999	94	0.008	0.01	44024.78	9025.777
Shaqra	34725	95	0.008	0.01	43561.36	8836.358
Riyad Al-Khabra	29997	96	0.007	0.01	43107.59	13110.59
Al-Qari	29162	97	0.007	0.01	42663.19	13501.19
Al-Aqiq	28486	98	0.007	0.01	42227.85	13741.85
Haqil	28379	99	0.007	0.01	41801.30	13422.3
Rumah	25387	100	0.006	0.01	41383.29	15996.29
Uyun Al-Jiwa	23996	101	0.006	0.01	40973.55	16977.55
Hubuna	22941	102	0.006	0.01	40571.85	17630.85
Al-Asyah	22046	103	0.005	0.01	40177.95	18131.95
Qaryah Al-Ulya	20190	104	0.005	0.01	39791.63	19601.63
Duruma	19706	105	0.005	0.01	39412.66	19706.66
Khubash	18817	106	0.005	0.01	39040.84	20223.84
Al-Kamil	18468	107	0.004	0.01	38675.97	20207.97
Thadiq	15253	108	0.004	0.01	38317.86	23064.86
Farasan	13962	109	0.003	0.01	37966.32	24004.32
Yadamah	13889	110	0.003	0.01	37621.17	23732.17
Al-Hariq	13488	111	0.003	0.01	37282.24	23794.24
Ar-Rayth	13406	112	0.003	0.01	36949.37	23543.37
Thar	12935	113	0.003	0.01	36622.38	23687.38
Huraymila	12645	114	0.003	0.01	36301.13	23656.13
Al-Ghat	10269	115	0.002	0.01	35985.47	25716.47
Badr al-Janub	9515	116	0.002	0.01	35675.25	26160.25
Ash-Shimasiyah	8825	117	0.002	0.01	35370.33	26545.33
Al-Kharkhir	3785	118	0.001	0.01	35070.58	31285.58
Total	22678262		5	5.35	22148881.4	-529381

325 *Source: Author created table based on data (General Authority for statistics (GASTAT). Kingdom of Saudi Arabia,*
326 *2018)*
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330 **Table 2: Saudi Arabia Population Distribution Hierarchy for 2010**

Governorate	Actual population	Rank	Rank by size	Rank by rule	Theoretical population	Deviation
Al-Riyad	5254560	1	1	1	5254560	0
Jiddah	3456259	2	0.658	0.50	2627280	-828979
Makkah Al-Mokarramah	1675368	3	0.319	0.33	1751520	76152
Al-Madinah	1180770	4	0.225	0.25	1313640	132870
Al-Ahsa	1063112	5	0.202	0.20	1050912	-12200
At-Taif	987914	6	0.188	0.17	875760	-112154
Ad-Dammam	903597	7	0.172	0.14	750651.43	-152946
Buraydah	614093	8	0.117	0.13	656820	42727
Al-Khubar	578500	9	0.110	0.11	583840	5340
Tabouk	569797	10	0.108	0.10	525456	-44341
Al-Qatif	524182	11	0.100	0.09	477687.27	-46494.7
Khamis Mushayt	512599	12	0.098	0.08	437880	-74719
Hail	412758	13	0.079	0.08	404196.92	-8561.08
Hafar Al-Batin	389993	14	0.074	0.07	375325.71	-14667.3
Al-Jubayl	378949	15	0.072	0.07	350304	-28645
Al-Kharj	376325	16	0.072	0.06	328410	-47915
Abha	366551	17	0.070	0.06	309091.76	-57459.2
Najran	329112	18	0.063	0.06	291920	-37192
Yanbu Al-Bahr	298675	19	0.057	0.05	276555.79	-22119.2
Al-Qunfidhah	272424	20	0.052	0.05	262728	-9696
Sakaka	242813	21	0.046	0.05	250217.14	7404.143
Muhayil	228979	22	0.044	0.05	238843.64	9864.636
Sabya	228375	23	0.043	0.04	228459.13	84.13043
Ad-Duwadimi	217305	24	0.041	0.04	218940	1635
Bishah	205346	25	0.039	0.04	210182.4	4836.4
Samtah	201656	26	0.038	0.04	202098.46	442.4615
Abu Arish	197112	27	0.038	0.04	194613.33	-2498.67
Arar	191051	28	0.036	0.04	187662.86	-3388.14
Unayzah	163729	29	0.031	0.03	181191.72	17462.72
Jazan	157536	30	0.030	0.03	175152	17616
Al-Qurayyat	147550	31	0.028	0.03	169501.94	21951.94
Ar-Rass	133482	32	0.025	0.03	164205	30723
Al-Majmaah	133285	33	0.025	0.03	159229.09	25944.09
Al-Lith	128529	34	0.024	0.03	154545.88	26016.88
Al-Quwayiyah	126161	35	0.024	0.03	150130.29	23969.29
Ahad Rifaydah	113043	36	0.022	0.03	145960	32917
Ahad Al-Musarihah	110710	37	0.021	0.03	142015.14	31305.14
Wadi Ad-Dawasir	106152	38	0.020	0.03	138277.89	32125.89
Al-Majardah	103531	39	0.020	0.03	134732.31	31201.31
Al-Baha	103411	40	0.020	0.03	131364	27953
Al-Ghazalah	102588	41	0.020	0.02	128160	25572
Al-Jumum	92222	42	0.018	0.02	125108.57	32886.57
Rabigh	92072	43	0.018	0.02	122199.07	30127.07
Sharurah	85977	44	0.016	0.02	119421.82	33444.82
Rafha	80544	45	0.015	0.02	116768	36224
Afif	77978	46	0.015	0.02	114229.57	36251.57
Baysh	77442	47	0.015	0.02	111799.15	34357.15
Al-Aridah	76705	48	0.015	0.02	109470	32765
Al-Khafji	76279	49	0.015	0.02	107235.92	30956.92
Balqarn	74391	50	0.014	0.02	105091.2	30700.2
Ad-Diriyah	73668	51	0.014	0.02	103030.59	29362.59
Damad	71601	52	0.014	0.02	101049.23	29448.23

Governorate	Actual population	Rank	Rank by size	Rank by rule	Theoretical population	Deviation
Al-Mukhwah	70664	53	0.013	0.02	99142.64	28478.64
Az-Zulfi	69294	54	0.013	0.02	97306.67	28012.67
Ad-Darb	69134	55	0.013	0.02	95537.45	26403.45
Al-Aflaj	68201	56	0.013	0.02	93831.43	25630.43
Sarat Abidah	67120	57	0.013	0.02	92185.26	25065.26
Rijal Alma	65406	58	0.012	0.02	90595.86	25189.86
Biljurashi	65223	59	0.012	0.02	89060.34	23837.34
Al-Ula	64591	60	0.012	0.02	87576.00	22985
Badr	63468	61	0.012	0.02	86140.33	22672.33
Zahran Al-Janub	63119	62	0.012	0.02	84750.97	21631.97
Al-Mahd	62511	63	0.012	0.02	83405.71	20894.71
Umluj	61162	64	0.012	0.02	82102.50	20940.5
Al-Idabi	60799	65	0.012	0.02	80839.38	20040.38
Ras Tannurah	60750	66	0.012	0.02	79614.55	18864.55
Al-Hinakiyah	59326	67	0.011	0.01	78426.27	19100.27
Tathlith	59188	68	0.011	0.01	77272.94	18084.94
Ad-Dair	58494	69	0.011	0.01	76153.04	17659.04
Qilwah	58246	70	0.011	0.01	75065.14	16819.14
Al-Bukayriyah	57621	71	0.011	0.01	74007.89	16386.89
Al-Badai	57164	72	0.011	0.01	72980.00	15816
Khulays	56687	73	0.011	0.01	71980.27	15293.27
An-Namas	54119	74	0.010	0.01	71007.57	16888.57
Buqayq	53444	75	0.010	0.01	70060.80	16616.8
Al-Nuayriyah	52340	76	0.010	0.01	69138.95	16798.95
Duba	51951	77	0.010	0.01	68241.04	16290.04
Dawamat Al-Jandal	49646	78	0.009	0.01	67366.15	17720.15
Turayf	48929	79	0.009	0.01	66513.42	17584.42
Khaybar	48592	80	0.009	0.01	65682.00	17090
An-Nabhaniyah	47744	81	0.009	0.01	64871.11	17127.11
Al-Mandaq	47235	82	0.009	0.01	64080.00	16845
Ranyah	45942	83	0.009	0.01	63307.95	17365.95
Al-Wajh	44570	84	0.008	0.01	62554.29	17984.29
Al-Midhnab	44043	85	0.008	0.01	61818.35	17775.35
Turubah	43947	86	0.008	0.01	61099.53	17152.53
Hawtat Bani Tamim	43300	87	0.008	0.01	60397.24	17097.24
Al-Khurmah	42223	88	0.008	0.01	59710.91	17487.91
Ash-Shinan	41641	89	0.008	0.01	59040.00	17399
Shaqra	40541	90	0.008	0.01	58384.00	17843
Baqa	40157	91	0.008	0.01	57742.42	17585.42
Al-Muzahimiyah	39865	92	0.008	0.01	57114.78	17249.78
As-Sulayyil	36383	93	0.007	0.01	56500.65	20117.65
Tayma	36199	94	0.007	0.01	55899.57	19700.57
Al-Aqiq	35629	95	0.007	0.01	55311.16	19682.16
Riyad Al-Khabra	34497	96	0.007	0.01	54735.00	20238
Al-Qari	31480	97	0.006	0.01	54170.72	22690.72
Haqil	27856	98	0.005	0.01	53617.96	25761.96
Uyun Al-Jiwa	26544	99	0.005	0.01	53076.36	26532.36
Al-Asyah	26336	100	0.005	0.01	52545.60	26209.6
Qaryah Al-Ulya	24634	101	0.005	0.01	52025.35	27391.35
Duruma	24429	102	0.005	0.01	51515.29	27086.29
Khubash	22133	103	0.004	0.01	51015.15	28882.15
Al-Kamil	21419	104	0.004	0.01	50524.62	29105.62
Hubuna	20400	105	0.004	0.01	50043.43	29643.43

Governorate	Actual population	Rank	Rank by size	Rank by rule	Theoretical population	Deviation
Ar-Rayth	18961	106	0.004	0.01	49571.32	30610.32
Al-Harth	18586	107	0.004	0.01	49108.04	30522.04
Farasan	17999	108	0.003	0.01	48653.33	30654.33
Thadiq	17165	109	0.003	0.01	48206.97	31041.97
Yadamah	16851	110	0.003	0.01	47768.73	30917.73
Thar	16047	111	0.003	0.01	47338.38	31291.38
Huraymila	15324	112	0.003	0.01	46915.71	31591.71
Al-Hariq	14750	113	0.003	0.01	46500.53	31750.53
Al-Ghat	14405	114	0.003	0.01	46092.63	31687.63
Rumah	11267	115	0.002	0.01	45691.83	34424.83
Badr al-Janub	11117	116	0.002	0.01	45297.93	34180.93
Ash-Shimasiyah	10605	117	0.002	0.01	44910.77	34305.77
Al-Kharkhir	4015	118	0.001	0.01	44530.17	40515.17
Total	27120189		5	5.35	28123097	1002908

331 *Source: Author created table based on data (General Authority for statistics (GASTAT). Kingdom of Saudi Arabia,*
332   *2018)*
333

334 **Table 3: Saudi Arabia Population Distribution Hierarchy for 2004**

Governorate	Actual population	Rank	Rank by size	Rank by rule	Theoretical population	Deviation
Al-Riyad	5999434	1	1	1	5999434	0
Jiddah	3976368	2	0.663	0.50	2999717	-976651
Makkah Al-Mokarramah	1919909	3	0.320	0.33	1999811.33	79902.33
Al-Madinah	1341432	4	0.224	0.25	1499858.50	158426.5
Al-Ahsa	1136935	5	0.190	0.20	1199886.80	62951.8
At-Taif	1109846	6	0.185	0.17	999905.67	-109940
Ad-Dammam	975841	7	0.163	0.14	857062.00	-118779
Buraydah	692540	8	0.115	0.13	749929.25	57389.25
Tabouk	638958	9	0.107	0.11	666603.78	27645.78
Al-Khubar	626247	10	0.104	0.10	599943.40	-26303.6
Al-Qatif	559263	11	0.093	0.09	545403.09	-13859.9
Khamis Mushayt	549006	12	0.092	0.08	499952.83	-49053.2
Hail	464251	13	0.077	0.08	461494.92	-2756.08
Al-Kharj	425296	14	0.071	0.07	428531.00	3235
Hafar Al-Batin	416832	15	0.069	0.07	399962.27	-16869.7
Al-Jubayl	411668	16	0.069	0.06	374964.63	-36703.4
Abha	392509	17	0.065	0.06	352907.88	-39601.1
Najran	371097	18	0.062	0.06	333301.89	-37795.1
Yanbu Al-Bahr	337746	19	0.056	0.05	315759.68	-21986.3
Al-Qunfidhah	304392	20	0.051	0.05	299971.70	-4420.3
Sakaka	273416	21	0.046	0.05	285687.33	12271.33
Sabya	257347	22	0.043	0.05	272701.55	15354.55
Ad-Duwadimi	244328	23	0.041	0.04	260844.96	16516.96
Muhayil	244134	24	0.041	0.04	249976.42	5842.417
Samtah	226623	25	0.038	0.04	239977.36	13354.36
Abu Arish	221030	26	0.037	0.04	230747.46	9717.462
Bishah	219322	27	0.037	0.04	222201.26	2879.259
Arar	214221	28	0.036	0.04	214265.50	44.5
Unayzah	185133	29	0.031	0.03	206877.03	21744.03
Jazan	178207	30	0.030	0.03	199981.13	21774.13
Al-Qurayyat	165629	31	0.028	0.03	193530.13	27901.13
Al-Majmaah	150586	32	0.025	0.03	187482.31	36896.31
Ar-Rass	150210	33	0.025	0.03	181801.03	31591.03
Al-Lith	143579	34	0.024	0.03	176453.94	32874.94
Al-Quwayiyah	141904	35	0.024	0.03	171412.40	29508.4

Governorate	Actual population	Rank	Rank by size	Rank by rule	Theoretical population	Deviation
Ahad Al-Musarihah	124049	36	0.021	0.03	166650.94	42601.94
Ahad Rifaydah	120578	37	0.020	0.03	162146.86	41568.86
Wadi Ad-Dawasir	119685	38	0.020	0.03	157879.84	38194.84
Al-Baha	116413	39	0.019	0.03	153831.64	37418.64
Al-Ghazalah	114219	40	0.019	0.03	149985.85	35766.85
Al-Majardah	110390	41	0.018	0.02	146327.66	35937.66
Rabigh	104621	42	0.017	0.02	142843.67	38222.67
Al-Jumum	103842	43	0.017	0.02	139521.72	35679.72
Sharurah	96271	44	0.016	0.02	136350.77	40079.77
Rafha	90155	45	0.015	0.02	133320.76	43165.76
Afif	87232	46	0.015	0.02	130422.48	43190.48
Baysh	87087	47	0.015	0.02	127647.53	40560.53
Al-Aridah	85812	48	0.014	0.02	124988.21	39176.21
Ad-Diriyah	83766	49	0.014	0.02	122437.43	38671.43
Al-Khafji	81892	50	0.014	0.02	119988.68	38096.68
Damad	80584	51	0.013	0.02	117635.96	37051.96
Balqarn	79457	52	0.013	0.02	115373.73	35916.73
Al-Mukhwah	78944	53	0.013	0.02	113196.87	34252.87
Az-Zulfi	77971	54	0.013	0.02	111100.63	33129.63
Ad-Darb	77945	55	0.013	0.02	109080.62	31135.62
Al-Aflaj	76591	56	0.013	0.02	107132.75	30541.75
Biljurashi	73248	57	0.012	0.02	105253.23	32005.23
Al-Ula	72539	58	0.012	0.02	103438.52	30899.52
Sarat Abidah	71559	59	0.012	0.02	101685.32	30126.32
Badr	70804	60	0.012	0.02	99990.57	29186.57
Al-Mahd	69888	61	0.012	0.02	98351.38	28463.38
Rijal Alma	69714	62	0.012	0.02	96765.06	27051.06
Umluj	68370	63	0.011	0.02	95229.11	26859.11
Al-Idabi	67871	64	0.011	0.02	93741.16	25870.16
Zahran Al-Janub	67324	65	0.011	0.02	92298.98	24974.98
Al-Hinakiyah	66123	66	0.011	0.02	90900.52	24777.52
Ras Tannurah	65685	67	0.011	0.01	89543.79	23858.79
Al-Bukayriyah	65194	68	0.011	0.01	88226.97	23032.97
Ad-Dair	65180	69	0.011	0.01	86948.32	21768.32
Qilwah	64890	70	0.011	0.01	85706.20	20816.2
Al-Badai	64587	71	0.011	0.01	84499.07	19912.07
Khulays	63445	72	0.011	0.01	83325.47	19880.47
Tathlith	63155	73	0.011	0.01	82184.03	19029.03
Duba	58362	74	0.010	0.01	81073.43	22711.43
An-Namas	57922	75	0.010	0.01	79992.45	22070.45
Buqayq	57387	76	0.010	0.01	78939.92	21552.92
Al-Nuayriyah	56056	77	0.009	0.01	77914.73	21858.73
Dawamat Al-Jandal	55861	78	0.009	0.01	76915.82	21054.82
Turayf	54921	79	0.009	0.01	75942.20	21021.2
Khaybar	54217	80	0.009	0.01	74992.93	20775.93
An-Nabhaniyah	53255	81	0.009	0.01	74067.09	20812.09
Al-Mandaq	52690	82	0.009	0.01	73163.83	20473.83
Ranyah	51411	83	0.009	0.01	72282.34	20871.34
Al-Wajh	49918	84	0.008	0.01	71421.83	21503.83
Al-Midhnab	49589	85	0.008	0.01	70581.58	20992.58
Turubah	49269	86	0.008	0.01	69760.86	20491.86
Hawtat Bani Tamim	48849	87	0.008	0.01	68959.01	20110.01
Al-Khurmah	47362	88	0.008	0.01	68175.39	20813.39
Ash-Shinan	46858	89	0.008	0.01	67409.37	20551.37
Shaqra	45893	90	0.008	0.01	66660.38	20767.38
Al-Muzahimiyah	45438	91	0.008	0.01	65927.85	20489.85

Governorate	Actual population	Rank	Rank by size	Rank by rule	Theoretical population	Deviation
Baqa	45140	92	0.008	0.01	65211.24	20071.24
As-Sulayyil	40983	93	0.007	0.01	64510.04	23527.04
Tayma	40613	94	0.007	0.01	63823.77	23210.77
Al-Aqiq	39955	95	0.007	0.01	63151.94	23196.94
Riyad Al-Khabra	38716	96	0.006	0.01	62494.10	23778.1
Al-Qari	35220	97	0.006	0.01	61849.84	26629.84
Rumah	31678	98	0.005	0.01	61218.71	29540.71
Haqil	31162	99	0.005	0.01	60600.34	29438.34
Uyun Al-Jiwa	30097	100	0.005	0.01	59994.34	29897.34
Al-Asyah	29546	101	0.005	0.01	59400.34	29854.34
Duruma	27859	102	0.005	0.01	58817.98	30958.98
Qaryah Al-Ulya	26472	103	0.004	0.01	58246.93	31774.93
Khubash	24708	104	0.004	0.01	57686.87	32978.87
Al-Kamil	23931	105	0.004	0.01	57137.47	33206.47
Hubuna	22914	106	0.004	0.01	56598.43	33684.43
Ar-Rayth	21042	107	0.004	0.01	56069.48	35027.48
Al-Harth	20623	108	0.003	0.01	55550.31	34927.31
Farasan	20096	109	0.003	0.01	55040.68	34944.68
Thadiq	19387	110	0.003	0.01	54540.31	35153.31
Yadamah	18836	111	0.003	0.01	54048.95	35212.95
Thar	17932	112	0.003	0.01	53566.38	35634.38
Huraymila	17518	113	0.003	0.01	53092.34	35574.34
Al-Hariq	16548	114	0.003	0.01	52626.61	36078.61
Al-Ghat	16521	115	0.003	0.01	52168.99	35647.99
Badr al-Janub	12406	116	0.002	0.01	51719.26	39313.26
Ash-Shimasiyah	11860	117	0.002	0.01	51277.21	39417.21
Al-Kharkhir	4467	118	0.001	0.01	50842.66	46375.66
Total	30433807		5	5.35	32109760.25	1675953

335 *Source: Author created table based on data (General Authority for statistics (GASTAT). Kingdom of Saudi Arabia,*
336 *2018)*
337

338 **Table 4: Measure of Primacy city in Saudi Arabia for 2014**

Governorate	Actual population	Primacy I	Rank I	Primacy II	Rank II
Al-Riyad	5999434	0.4174	1	0.2206	1
Jiddah	3976368	0.2766	2	0.1462	2
Makkah Al-Mokarramah	1919909	0.1336	3	0.0706	3
Al-Madinah	1341432	0.0933	4	0.0493	4
Al-Ahsa	1136935	0.0791	5	0.0418	5
At-Taif	1109846	0.0772	6	0.0408	6
Ad-Dammam	975841	0.0679	7	0.0359	7
Buraydah	692540	0.0482	8	0.0255	8
Tabouk	638958	0.0445	9	0.0235	9
Al-Khubar	626247	0.0436	10	0.0230	10
Al-Qatif	559263	0.0389	11	0.0206	11
Khamis Mushayt	549006	0.0382	12	0.0202	12
Hail	464251	0.0323	13	0.0171	13
Al-Kharj	425296	0.0296	14	0.0156	14
Hafar Al-Batin	416832	0.0290	15	0.0153	15
Al-Jubayl	411668	0.0286	16	0.0151	16
Abha	392509	0.0273	17	0.0144	17
Najran	371097	0.0258	18	0.0136	18
Yanbu Al-Bahr	337746	0.0235	19	0.0124	19
Al-Qunfidhah	304392	0.0212	20	0.0112	20
Sakaka	273416	0.0190	21	0.0101	21

Governorate	Actual population	Primacy I	Rank I	Primacy II	Rank II
Sabya	257347	0.0179	22	0.0095	22
Ad-Duwadimi	244328	0.0170	23	0.0090	23
Muhayil	244134	0.0170	24	0.0090	24
Samtah	226623	0.0158	25	0.0083	25
Abu Arish	221030	0.0154	26	0.0081	26
Bishah	219322	0.0153	27	0.0081	27
Arar	214221	0.0149	28	0.0079	28
Unayzah	185133	0.0129	29	0.0068	29
Jazan	178207	0.0124	30	0.0066	30
Al-Qurayyat	165629	0.0115	31	0.0061	31
Al-Majmaah	150586	0.0105	32	0.0055	32
Ar-Rass	150210	0.0105	33	0.0055	33
Al-Lith	143579	0.0100	34	0.0053	34
Al-Quwayiyah	141904	0.0099	35	0.0052	35
Ahad Al-Musarihah	124049	0.0086	36	0.0046	36
Ahad Rifaydah	120578	0.0084	37	0.0044	37
Wadi Ad-Dawasir	119685	0.0083	38	0.0044	38
Al-Baha	116413	0.0081	39	0.0043	39
Al-Ghazalah	114219	0.0079	40	0.0042	40
Al-Majardah	110390	0.0077	41	0.0041	41
Rabigh	104621	0.0073	42	0.0038	42
Al-Jumum	103842	0.0072	43	0.0038	43
Sharurah	96271	0.0067	44	0.0035	44
Rafha	90155	0.0063	45	0.0033	45
Afif	87232	0.0061	46	0.0032	46
Baysh	87087	0.0061	47	0.0032	47
Al-Aridah	85812	0.0060	48	0.0032	48
Ad-Diriyah	83766	0.0058	49	0.0031	49
Al-Khafji	81892	0.0057	50	0.0030	50
Damad	80584	0.0056	51	0.0030	51
Balqarn	79457	0.0055	52	0.0029	52
Al-Mukhwah	78944	0.0055	53	0.0029	53
Az-Zulfi	77971	0.0054	54	0.0029	54
Ad-Darb	77945	0.0054	55	0.0029	55
Al-Aflaj	76591	0.0053	56	0.0028	56
Biljurashi	73248	0.0051	57	0.0027	57
Al-Ula	72539	0.0050	58	0.0027	58
Sarat Abidah	71559	0.0050	59	0.0026	59
Badr	70804	0.0049	60	0.0026	60
Al-Mahd	69888	0.0049	61	0.0026	61
Rijal Alma	69714	0.0048	62	0.0026	62
Umluj	68370	0.0048	63	0.0025	63
Al-Idabi	67871	0.0047	64	0.0025	64
Zahran Al-Janub	67324	0.0047	65	0.0025	65
Al-Hinakiyah	66123	0.0046	66	0.0024	66
Ras Tannurah	65685	0.0046	67	0.0024	67
Al-Bukayriyah	65194	0.0045	68	0.0024	68
Ad-Dair	65180	0.0045	69	0.0024	69
Qilwah	64890	0.0045	70	0.0024	70
Al-Badai	64587	0.0045	71	0.0024	71
Khulays	63445	0.0044	72	0.0023	72
Tathlith	63155	0.0044	73	0.0023	73
Duba	58362	0.0041	74	0.0021	74
An-Namas	57922	0.0040	75	0.0021	75

Governorate	Actual population	Primacy I	Rank I	Primacy II	Rank II
Buqayq	57387	0.0040	76	0.0021	76
Al-Nuayriyah	56056	0.0039	77	0.0021	77
Dawamat Al-Jandal	55861	0.0039	78	0.0021	78
Turayf	54921	0.0038	79	0.0020	79
Khaybar	54217	0.0038	80	0.0020	80
An-Nabhaniyah	53255	0.0037	81	0.0020	81
Al-Mandaq	52690	0.0037	82	0.0019	82
Ranyah	51411	0.0036	83	0.0019	83
Al-Wajh	49918	0.0035	84	0.0018	84
Al-Midhnab	49589	0.0034	85	0.0018	85
Turubah	49269	0.0034	86	0.0018	86
Hawtat Bani Tamim	48849	0.0034	87	0.0018	87
Al-Khurmah	47362	0.0033	88	0.0017	88
Ash-Shinan	46858	0.0033	89	0.0017	89
Shaqra	45893	0.0032	90	0.0017	90
Al-Muzahimiyah	45438	0.0032	91	0.0017	91
Baqa	45140	0.0031	92	0.0017	92
As-Sulayyil	40983	0.0029	93	0.0015	93
Tayma	40613	0.0028	94	0.0015	94
Al-Aqiq	39955	0.0028	95	0.0015	95
Riyad Al-Khabra	38716	0.0027	96	0.0014	96
Al-Qari	35220	0.0025	97	0.0013	97
Rumah	31678	0.0022	98	0.0012	98
Haqil	31162	0.0022	99	0.0011	99
Uyun Al-Jiwa	30097	0.0021	100	0.0011	100
Al-Asyah	29546	0.0021	101	0.0011	101
Duruma	27859	0.0019	102	0.0010	102
Qaryah Al-Ulya	26472	0.0018	103	0.0010	103
Khubash	24708	0.0017	104	0.0009	104
Al-Kamil	23931	0.0017	105	0.0009	105
Hubuna	22914	0.0016	106	0.0008	106
Ar-Rayth	21042	0.0015	107	0.0008	107
Al-Harth	20623	0.0014	108	0.0008	108
Farasan	20096	0.0014	109	0.0007	109
Thadiq	19387	0.0013	110	0.0007	110
Yadamah	18836	0.0013	111	0.0007	111
Thar	17932	0.0012	112	0.0007	112
Huraymila	17518	0.0012	113	0.0006	113
Al-Hariq	16548	0.0012	114	0.0006	114
Al-Ghat	16521	0.0011	115	0.0006	115
Badr al-Janub	12406	0.0009	116	0.0005	116
Ash-Shimasiyah	11860	0.0008	117	0.0004	117
Al-Kharkhir	4467	0.0003	118	0.0002	118
Total	30433807	2.12		1.12	

339 *Source: Author created table based on data (General Authority for statistics (GASTAT). Kingdom of Saudi Arabia,*
340 *2018)*

341 **Table 5: The distribution region of population, health, establishment, and employees in Saudi**
342 **Arabia in 2014**

Region	Population			Health		Establishments by Sector			Total Employees		
	Saudi	Non-Saudi	total	Health Care Centers	Hospital	Government	Private	Total	Saudi	Non-Saudi	total
Riyadh	4745101	2994469	7739570	424	47	479	114,859	115,338	1,154,980	3140187	4,295,167
Makkah	4612740	3445606	8058346	331	40	174	94,620	94,794	616,357	1954783	2,571,140
Madinah	1396780	635130	2031910	162	20	88	26,619	26,707	135,068	343190	478,258
Al-Qaseem	1027163	339775	1366938	177	18	73	30,583	30,656	119,263	407108	526,371
Eastern	3196126	1474332	4670458	250	35	174	70,280	70,454	556,749	1734088	2,290,837
Aseer	1773994	385680	2159674	334	27	96	27,032	27,128	148,531	320196	468,727
Tabouk	734491	156453	890944	83	11	44	9,734	9,778	56,366	103078	159,444
Hail	547226	133858	681084	105	12	42	10,845	10,887	51,884	137208	189,092
Northen Borders	294443	63147	357590	47	9	32	4,082	4,114	25,714	49374	75,088
Jazan	1228636	309213	1537849	178	21	58	8,606	8,664	73,675	121089	194,764
Najran	444112	120969	565081	68	11	39	10,474	10,513	48,156	143123	191,279
Al-Baha	389327	76788	466115	105	10	36	5,226	5,262	34,206	51302	85,508
Al-Jouf	384767	105673	490440	61	13	44	6,602	6,646	38,369	74709	113,078
Total	20774906	10241093	31015999	2325	274	1379	419562	420941	3061397	10883335	13944732

343 *Source: General Authority for statistics (GASTAT). Kingdom of Saudi Arabia, 2018.*