

Spatio-Statistical Analysis of Pilgrims' Visit to Medina, Saudi Arabia

Issa M. Shair

Department of Geography,
King Saud University

Abstract

In the following pages the phenomenon of Muslim pilgrims' visit to Medina, Saudi Arabia is examined. Data on this problem was collected during field surveys by the writer in 1975 and 1976. The survey revealed that 43.1 percent of the pilgrims visited Medina before the pilgrimage, 46.1 percent after pilgrimage, 5.6 percent before and after it and 5.2 percent of the pilgrims were not able to visit Medina. The analysis has been statistically tested by chi-square (X^2) to determine to what extent the above-mentioned patterns differ from one country to another. It is concluded that among Algeria, Bahrain, Jordan, Lebanon, Palestine, Syria and Turkey, differences between observed and expected frequencies are significant.

Indroduction:

There are five pillars in the Islamic religion. These are profession of faith, prayer, alms-giving, fasting and **Hajj**, (pilgrimage to Mecca in Saudi Arabia). Every year, in the month of **Dhul-Hijjah**,¹ Muslims from all over the world, of different races and social classes, make a pilgrimage to Mecca. The Muslim pilgrimage (hereafter called the pilgrimage) involves a number of essential rites which must be performed in a specific order and manner based on the practices of the Prophet Muhammed.²

Either before or after the pilgrimage to Mecca most pilgrims, if they have time, pay a visit to the Mosque of the Prophet in Medina, located 277 miles north of Mecca. This visit is not a required part of the pilgrimage. To pray in the mosque which was founded by the Prophet

himself is perceived, however, to be meritorious. Some pilgrims try to visit Medina both before and after the pilgrimage.

The study and the analysis:

In 1973, Saudi Ministry of Interior (Kingdom of Saudi Arabia. 1974:3) made a survey to determine the effect foreign pilgrims had on Medina, when they made their visits, where and how long they stayed and how much they spent. This survey was conducted in Medina immediately before and after the 1392 A.H. (1973 A.D.) pilgrimage. It concluded that a total of almost one million pilgrims visited Medina during the 1392 A.H. (1973 A.D.) pilgrimage season. The general sources of pilgrims were as follows:

External pilgrims	636,000	66.4%
Saudi pilgrims	167,000	17.4%
Other pilgrims resident in Saudi Arabia	155,000	16.2%
Total	958,000	100.0%

In its summary of the Medina pilgrimage survey, the Ministry of Interior gave the following conclusions:

1. In the case of external pilgrims, approximately 11 percent visited Medina twice, i.e., before and after the pilgrimage. Approximately 40 percent visited Medina before and 48 percent after the pilgrimage. Virtually all external pilgrims performing the pilgrimage (about 99 percent) visited Medina.

2. Almost half of the external pilgrims who visited Medina travelled to the Saudi Kingdom by air (328,000). Of the remainder 3/5ths came by land and 2/5ths by sea. Sea and air travellers generally used buses and taxis for their journey to Medina, with sea travellers being more inclined to use buses.

3. Of the total Saudi Pilgrims 1/5th visited Medina both before and after the pilgrimage. Almost half (48 percent) of the Saudi Pilgrims visiting Medina had made three or more previous pilgrimages.

4. As would be expected, most of the resident pilgrims travelled by road. Cars and taxis accounted for 61 percent of the total with pick-up trucks, buses and other trucks accounting for most of the remainder.

5. The length of stay for most pilgrims visiting Medina was between seven and ten days. This length of stay applies to both before and after pilgrimage visits. The average duration of visits before the pilgrimage was ten days and after the pilgrimage eight days.

6. The general pattern of visits to Medina showed that Asian pilgrims stayed longer than Africans who, in turn, stayed longer than Arabs. Sea travellers tended to stay longest; road travellers next longest; with air travellers making the shortest stay.

Although the above-mentioned survey referred to some separate nationalities of foreign pilgrims visiting Medina, it did not discuss why pilgrims of certain countries chose to visit Medina before pilgrimage while others chose to visit it after the pilgrimage. This approach was attempted by the author in his 1975 pilgrimage survey when 466 pilgrims from twenty-five countries were interviewed (pilgrims from Saudi Arabia were not included in the survey). (Kingdom of Saudi Arabia; P. 5).

The analysis was statistically tested by chi-square to determine to what extent the patterns of visit to Medina (before or after the pilgrimage) differ from one country to another. The chi-square (X^2) is a measure of the discrepancy between observed and expected frequencies.⁽³⁾ The X^2 value is calculated as:

$$X^2 = \sum \frac{(f_o - f)^2}{f}$$

Where Σ = sum of

f_o = observed frequency

f = expected frequency

In this research, it is expected that individual countries would not affect these different patterns. Therefore, the expected frequency of a certain pattern for an individual country is proportional to the total frequency for that pattern for all countries. In other words, it is assumed that there are no significant differences between such frequencies. This is called the null hypothesis (H_o). Using the chi-square we will test whether we would reject our hypothesis or accept it. We would also test if there is any degree of association between the patterns and the individual countries.

Based on table 1 our expectation would be that from any given country, we should expect 43.13 percent of pilgrims who visit Medina before the pilgrimage, 46.14 percent after the pilgrimage, 5.58 percent before and after it and 5.15 percent of pilgrims who will not be able to visit Medina. Table 1 gives the expected as well as the observed values for all nationalities. The X^2 is calculated as 49.81. The degree of freedom (d.f.) is $(25-1)(4-1) = 72$. X^2 table from chaum's **Outline of Theory and problems of Statistics** (1961 : 345) shows that X^2 .975 = 50.48. This indicates that if we reject the H_o then there are about 975 chances in a thousand that we are wrong. Therefore, we cannot reject the H_o at the .975 significance level. The coefficient of contingency is calculated as

.3108 which means there is a clear association between the individual countries and the patterns of visits to Medina.

Table 1
Patterns of Visits to Medina: Observed, Expected,
Chi-Square and Coefficient of Contingency Values

Countries	of Respondents	Before Pilgrimage	Before Pilgrimage	After Pilgrimage (fo)	After Pilgrimage (f)	Before & After (fo)	Before & After (f)	Will Not Be Able (fo)	Will Not Be Able (f)	Chi-Square (X ²)
Algeria	23	6	9.9	14	10.6	1	1.3	2	1.2	3.23
Bahrain	13	4	5.6	7	6.0	—	.7	2	.7	3.74
Egypt	30	14	12.9	12	13.8	2	1.7	2	1.5	.54
India	16	6	6.9	9	7.4	1	.9	—	.8	1.28
Indonesia	17	6	7.3	9	7.8	1	1.0	1	.9	.42
Iraq	21	9	9.1	11	9.7	—	1.2	1	1.1	1.38
Iran	15	5	6.5	9	6.9	—	.8	1	.8	1.84
Jordan	21	13	9.1	6	9.7	2	1.2	—	1.1	4.71
Kuwait	17	7	7.3	8	7.8	1	1.01	—	.9	.03
Lebanon	15	10	6.5	3	6.9	1	.8	1	.8	4.20
Libya	22	9	9.5	11	10.2	1	1.2	1	1.1	.13
Morocco	20	8	8.6	9	9.2	1	1.1	2	1.0	1.05
Nigeria	18	6	7.8	10	8.3	1	1.0	1	.9	.78
Oman	15	5	6.5	8	6.9	1	.8	1	.8	.63
Pakistan	21	8	9.1	11	9.7	1	1.2	1	1.1	.34
Palestine	16	9	6.9	5	7.4	2	.9	—	.8	3.56
Qatar	14	5	6.0	8	6.5	1	.8	—	.7	1.27
Somalia	17	7	7.3	8	7.8	—	.9	2	.9	2.26
S. Yemen	14	5	6.0	7	6.5	1	.8	1	.7	.37
Sudan	25	8	10.8	14	11.5	2	1.4	1	1.3	1.60
Syria	24	16	10.3	7	11.1	1	1.3	—	1.2	5.93
Tunisia	18	8	7.8	7	8.3	1	1.0	2	.9	1.55
Turkey	19	13	8.2	4	8.8	2	1.1	—	1.0	7.17
U.A.Emirates	13	5	5.6	6	6.0	1	.7	1	.7	.32
Yemen	22	9	9.5	12	10.2	1	1.2	—	1.1	1.48
Grand Total	466									
Total		201	201.0	215	215.0	26	26.0	24	24.0	49.81
% to Grand										
Total		43.13		46.14		5.58		5.15		

$$\text{Coefficient of Contingency (C)} = \sqrt{\frac{X^2}{X^2 - N}} = 0.3108$$

$$* X^2 = \sum_f \frac{(f_o - f)^2}{f}$$

Source: Author Field Syrvey 1975

Turkey, Syria, Jordan, Lebanon, Bahrain, Palestine and Algeria are the largest contributors to the X^2 which is based on Table 1. Their X^2 values are: 7.17, 5.93, 4.71, 4.20, 3.74, 3.56, and 3.23 respectively.

It was expected that the proportions of "the before" and "the after" patterns of visit to Medina should be 43.12 percent and 16.14 percent respectively for all nationalities. "The before and after pattern" was expected to be 5.58 percent and "the will not be able" pattern 5.15 percent. The observed percentages for the above respective four patterns, however, are 68.42 percent, 21.05 percent, 10.53 percent and zero percent in the case of Turkey; 66.67 percent, 29.17 percent, 4.16 percent and zero percent in the case of Syria; 61.92 percent, 28.57 percent, 9.52 percent and zero percent in the case of Jordan; 66.67 percent, 20 percent, 6.67 percent and 6.66 percent in the case of Lebanon; 30.77 percent, 53.85 percent, zero percent and 15.38 percent in the case of Bahrain; 56.25 percent, 31.25 percent, 12.50 percent and zero percent in the case of Palestine; and 26.08 percent, 60.87 percent, 4.35 percent and 8.70 percent in the case of Algeria (Table 2).

Table 2
Percentage of Observed Values (fo) to Total
Respondents: Largest Contributors to the X^2

Countries	Before Pilgrimage	After Pilgrimage	Before & After	Will Not Be Able
Turkey	68.42*	21.05	10.53	—
Syria	66.67	29.17	4.16	—
Jordan	61.91	29.57	9.52	—
Lebanon	66.67	20.00	6.67	6.66
Bahrain	30.77	53.85	—	15.38
Palestine	56.25	31.25	12.50	—
Algeria	26.08	60.87	4.35	8.70

$$* \text{ i.e. } 68.42 = \frac{13}{19} \times 100$$

The deviations between the above expected and observed percentages would mean that more pilgrims from Turkey, Syria, Jordan, Lebanon and Palestine than the expected visited Medina before the pilgrimage. On the other hand, more pilgrims from Bahrain and Algeria than the expected visited Medina after the pilgrimage. More pilgrims than the expected from Turkey, Jordan, Lebanon and Palestine visited

Medina before the pilgrimage and were planning to do so after it. More pilgrims than the expected, especially from Bahrain and Algeria, were not planning to go to Medina.

It seems that the geographical location of a country plays a big role in determining the patterns of visits to Medina. All pilgrims travelling overland from countries which are located to the north of Medina, that is Turkey, Syria, Jordan, Lebanon and Palestine, have to pass through Medina in order to go to Mecca. Therefore, more pilgrims from these countries tend to visit Medina before the pilgrimage. Pilgrims from other countries prefer to do the pilgrimage first and then make the Medina visit. After the pilgrimage many pilgrims from countries located to the north of Medina may stop and pay another visit to the Mosque of the Prophet. Many pilgrims, mainly from more distant countries, may not have a chance to visit Medina. The percentage of pilgrims visiting Medina from these countries is therefore relatively low.

The test led to the conclusion that among the above-mentioned seven countries, differences between observed and expected frequencies are significant. Additional studies with much larger samples of visitors to Medina from various nations, however, would be desirable to test further the validity of the findings.

According to Saudi sources, the 950,000 pilgrims who visited Medina in 1973 A.D. (1392 A.H.) are expected to increase to about 1,888,250 by 1990 A.D. (Kingdom of Saudi Arabia, 1974: 59). This great number of visitors may be counter-balanced by implementing a number of procedures so that pilgrims from every part of the Muslim world will feel that it is possible to visit Medina.

FOOTNOTES

1. **Dhul-Hijjah** is the 12th month in the Muslim Calendar known as **Hijrah** which refers to Muhammed's departure from Mecca to Medina on July 16, 622 A.D. (A.H. means after **Hijrah**).
2. For details see "Events" in **The Newsmagazine of the Middle East**, December 3, 1976, no. 5. pp. 49 - 51. See also H. Gibb and J. Kramers, **Shorter Encyclopaedia of Islam**, Leiden: Brill, 1953.
3. For more on the use of the Chi-Square see: Hubert M Blalock, **Social Statistics**, New York: Mc Graw Hill Book Company, 1972, pp. 275 - 287.

BIBLIOGRAPHY

"Events" In the *Newsmagazine of the Middle East*, December 3, 1976, No. 5

Gibb, H. and Kramers, J. *Shorter Encyclopaedia of Islam*. Leiden: Brill, 1953.

Kingdom of Saudi Arabia, Ministry of Interior. *The Hadj, Medina Survey*, 1393 A.H. (1973 A.D.), Final Report, May 1974.

Spiegel Murray R. Chaum, . *Outline of Theory and Problems of Statistics*. New York: Chaum Publishing Company, 1961.

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