

Statistics in Noble Qur'an

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Abstract

The Noble Qur'an was revealed in Arabic to Prophet Mohammad, Peace Be Upon Him (PBUH) in 610 CE over 23 years. Recently, the scientific miracles in the Noble Qur'an are the most significant issues which have spread out significantly in different fields, especially in the natural sciences. This paper addresses the descriptive and inferential statistics, some statistical indications and evidences that are shown widely in Noble Qur'an. The most important purpose of this paper is to present and discuss some statistical subjects and concepts that have been shown frequently in many verses (ayas) in different chapters (suras) of the Noble Qur'an. We have shown that Noble Qur'an mentioned some important statistical subjects, such as measures of central tendency, spread, sampling, normal distribution, probabilities, and estimation in many verses. The study findings highlight the importance of the science of statistics and the role of statisticians in the building of Islamic law and civilization.

Keywords: Scientific Miracles; Noble Qur'an; Sampling Distributions; Descriptive Statistics; and Estimation.

1. Introduction

Peace and Blessings of Allâh be upon all the Prophets and Messengers, especially on Mohammed, the last of the Prophets, and on all who follow him in righteousness until the Day of Recompense.

Statistics is the science of obtaining, analyzing and interpreting data and has applications in almost every field. As such, it is a part of the daily life of every informed person and absolutely an essential tool for researchers of almost all disciplines. The Statistics is the branch of mathematics that transforms numbers into useful information for decision makers. Statistics provides a set of methods for analyzing the numbers; it provides a way of understanding and then reducing – but not eliminating- the variation that is part of any decision-making process [4].

The study of statistics has two major branches: descriptive statistics and inferential statistics. Descriptive statistics involves the organization, summarization, and display of data. Inferential statistics involves using a sample to draw conclusions about a population [3]. The Noble Qur'an is the word of Allah, the Almighty, a miracle which was revealed in Arabic to the Prophet Mohammad (PBUH) through the Angel of Revelation, Jibreel (Gabriel). The Noble Qur'an was revealed on 17th Ramadan, 13 years before the migration of the Prophet (PBUH) in 610 CE over 23 years until he died in 11 A.H. In the first thirteen years of the revelation, the (PBUH) Prophet was living in Mecca, in which two thirds of the Quran were revealed. Persecution then forced him to leave to Al-Madina, in what is known as the *Hijra* (immigration), where he lived the last ten years, in which the last third was revealed.

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The 114 chapters of the Noble Qur'an are not listed in the chronological order of their revelation. This special order, however, was inspired to the (PBUH) Prophet by Allah, so it is a genuine quality of the Noble Qur'an. Each chapter is described as either Makki or Madani, depending on whether the majority of its verses were revealed before or after the Hijra [2].

This paper is organized as follows. Section 2 shows numbers and the Word of "Statistics" in Noble Qur'an. Section 3 presents measures of central tendency and spread in Noble Qur'an; Section 4 demonstrates the Sampling and Sampling Distributions. Statistical Estimation in Noble Qur'an is shown in section 5; and Section 6 summarizes the important results.

2. Numbers and the Word of "Statistics" in Noble Qur'an

2.1. Numbers in Noble Qur'an

The longest chapter in the Noble Qur'an is chapter Al-Baqarah (286 verses), while the shortest chapter in the Quran is chapter Al-Kawthar (3 verses). The longest verse in the Noble Qur'an is the verse on debt which is verse No. 282 in chapter Al-Baqarah; it contains 129 words and 1010 letters. There are many shortest verses in the Quran, in which each contains 2 letters. There are located at the beginning of chapters Ghaafir, Fussilat, Ash-Shooraa, Az-Zukhruf, Ad-Dukhaan, Al-Jaathiyah, Al-Ahqaaf, Yaa Seen, and Taa Haa.

Table (2.1) gives some statistics about the chapters of Noble Qur'an. The total number of chapters is 114 with 86 (75.4%) chapters were revealed in Mecca and 28 (24.6%) chapters in Al-Madina. The mean number of verses per chapter for the Madani chapters (58.0) is higher than those of the Makki (53.6) and the total (54.7).

The standard deviation, skewness, and maximum are also the highest, while the median number of verses per chapter for the Madani chapters (29.0) is lower than those of the Makki (43.0) and the total (39.0). The distributions for both Madani and Makki chapters are skewed to the right (Skewness = 2.0 and 1.4, respectively). The Madani chapters have longer right tail than and Makki chapters; this means the Madani chapters have a larger number of chapters with small number of verses than those for Makki chapters.

Table 2.1. Statistics of the number of chapters and verses in the Noble Qur'an

| Statistics | Makki chapters | Madani chapters | Total |
|------------------------|----------------|-----------------|---------------|
| Number of chapters (%) | 86 (75.4%) | 28 (24.6%) | 114 (100.0%) |
| Number of verses (%) | 4613 (76.0%) | 1623 (26.0%) | 6236 (100.0%) |
| Mean | 53.6 | 58.0 | 54.7 |
| Median | 43.0 | 29.0 | 39.0 |
| Standard Deviation | 47.8 | 68.2 | 53.2 |
| Skewness | 1.4 | 2.0 | 1.7 |
| Minimum | 3.0 | 3.0 | 3.0 |
| Maximum | 227.0 | 286.0 | 286.0 |

Table (2.2) shows some statistics of the number of letters and words in the Noble Qur'an. General statistics about the text of the Noble Qur'an are as follows:

The total number of letters in the Noble Qur'an is 330,709 distributed as 200,137 and 130,572 for Makki and Madani chapters respectively. The number of words without repetition in the Noble Qur'an is 42,257 distributed as 200,137 and 130,572 for Makki and Madani chapters respectively. The number of words in the entire Noble Qur'an is 77,797 which is distributed as 47,638 and 30,159 for Makki and Madani chapters, respectively.

The mean number of letters in the Noble Qur'an for the Madani chapters (4,663.3) is higher than those of the Makki (2,327.2) and the mean for the entire Noble Qur'an (2,901). Similarly, the mean number of Number of words without repetition in the Noble Qur'an for the Madani chapters (516) is higher than those of

the Makki (323.4) and the mean for the entire Noble Qur'an (370.7). In addition, the mean number of Number of words in the Noble Qur'an for the Madani chapters (1,077.1) is higher than those of the Makki (553.9) and the mean for the entire Noble Qur'an (682.4). More statistics results are shown in Table (2.2).

We could also deduce that the averages word length in the Noble Qur'an for Makki and Madani chapters are 4.20 and 4.33, respectively and 4.25 for the entire Noble Qur'an.

Table 2.2. Statistics of the number of letters and words in the Noble Qur'an

| Statistics | Number of letters | | | Number of words without repetition | | | Number of words | | |
|----------------|-------------------|-----------------|-----------|------------------------------------|-----------------|----------|-----------------|-----------------|----------|
| | Makki chapters | Madani chapters | Total | Makki chapters | Madani chapters | Total | Makki chapters | Madani chapters | Total |
| Mean | 2,327.2 | 4,663.3 | 2,901.0 | 323.4 | 516.0 | 370.7 | 553.9 | 1,077.1 | 682.4 |
| Median | 1,211.0 | 2,008.0 | 1,451.0 | 213.5 | 287.0 | 229.5 | 293.5 | 461.0 | 344.0 |
| Std. Deviation | 2,798.1 | 6,152.3 | 3,994.2 | 329.0 | 544.3 | 399.0 | 666.6 | 1,432.8 | 935.9 |
| Skewness | 1.9 | 2.2 | 2.9 | 1.4 | 1.8 | 1.9 | 1.9 | 2.2 | 2.9 |
| Minimum | 43.0 | 80.0 | 43.0 | 10.0 | 18.0 | 10.0 | 10.0 | 19.0 | 10.0 |
| Maximum | 14,435.0 | 26,249.0 | 26,249.0 | 1,558.0 | 2,279.0 | 2,279.0 | 3,341.0 | 6,140.0 | 6,140.0 |
| Sum | 200,137.0 | 130,572.0 | 330,709.0 | 27,810.0 | 14,447.0 | 42,257.0 | 47,638.030 | 159.0 | 77,797.0 |

There are many other statistics of the number of letters, words, verses in the Noble Qur'an. The reason for the various statistics is the controversy among scholars is due to the difference in their definition of a word, a letter, or the beginning of verses. Some scholars took the Basmalah (In the Name of Allah, the Most Gracious, the Most Merciful) into consideration when they counted the letters and words, while others did not.

To facilitate reading or memorizing, the Noble Qur'an is split into parts; it is divided into 30 equal parts each of which is known as Juzu' (part). Each part is, in turn, divided into two halves each of which is called hizb (section). Finally, each hizb is divided into four quarters. Therefore, the Noble Qur'an consists of 60 hizb or 240 quarters.

2.2. The Word of "Statistics" in Noble Qur'an

The meaning of the word of "statistics" has been found explicitly in Noble Qur'an and its various alternatives in eleven different verses (ayas), which are as follows: Almighty Allāh says:

- "And He gave you of all that you asked for, and if you would count the Blessings of Allah, never will you be able to *count them*. Verily! Man is indeed an extreme wrong-doer, - a disbeliever. [Noble Qur'an 14:34].
- "And if you would *count* the graces of Allah, never could you be able to *count* them. Truly! Allāh is Oft-Forgiving, Most Merciful." [Noble Qur'an 16:18].
- "And afterward We raised them up that We might know which of the two parties would best *calculate* the time that they had tarried." [Noble Qur'an 18:12].
- "... They will say: "Woe to us! What sort of Book is this that leaves neither a small thing nor a big thing, but has *recorded it with numbers*." [Noble Qur'an 18:49].
- "Verily, He knows each one of them, and has *counted* them a *full counting*." [Noble Qur'an 19:94].
- "... We have *recorded with numbers* (as a record) in a Clear Book." [Noble Qur'an 36:12].
- "... Allāh has kept *account of it*, while they have forgotten it. And Allāh is Witness over all things." [Noble Qur'an 58:6].

- "O Prophet (PBUH)! When you divorce women, divorce them at their 'Iddah (prescribed periods), and *count* (accurately) their 'Iddah (periods)." [Noble Qur'an 65:1].
- "... and He (Allah) keeps *count* of all things (i.e. He knows the exact number of everything)." [Noble Qur'an 72:28].
- "... He knows that you are unable to *count it* (unable to pray the whole night), so He has turned to you (in mercy)." [Noble Qur'an 73:20].
- "Everything have We *recorded* in a Book." [Noble Qur'an 78:29].

3. Measures of Central Tendency and Spread in Noble Qur'an

There are large number of numerical methods that are available to describe quantitative data sets. Most of these methods measure one of two data characteristics: The *central tendency* of the set of measurements - that is, the tendency of the data to cluster, or center, about certain numerical values. The most popular and best understood measure of central tendency for a quantitative data set is the mean. The *variability* of the set of measurements – that is, the spread of the data set. The most common measure of variability for a quantitative data set is the variance [5].

The meaning of average (mean) as a measure of central tendency has been found explicitly in Noble Qur'an in many verses. For examples, Almighty Allâh says:

"Thus We have appointed you a *middle* nation." [Noble Qur'an 2:143]. This verse indicates that: We guided you, O community of Muhammad (s), a midmost community, excellent and upright.

"... for its expiation feed ten poor persons, on a scale of the *average* of that with which you feed your own families." [Noble Qur'an 5:89]. This verse means that "the expiation thereof is the feeding of ten of the needy with the average (midmost) food, from which, you feed your families, that is, the closest or the principal (food you consume), neither better, nor worse."

The meaning of spread (variance) as a measure of dispersion has been found explicitly in Noble Qur'an in many verses. For example, Almighty Allâh says:

"... Had it been from other than Allah, they would surely have found therein much *contradictions*. [Noble Qur'an 4:82]. This verse roughly means that "If it had been from other than God surely they would have found therein much inconsistency, much contradiction (incongruity) in meaning and irregularity in arrangement."

4. Sampling and Sampling Distributions in Noble Qur'an

A random sample of n experimental units is a sample selected from the population in such a way that every different sample of size n has an equal chance of selection. A sampling distribution is a distribution of all of the possible values of a sample statistic for a given size sample selected from a population [4].

Sampling and sampling distributions are mentioned in the Noble Qur'an in many verses. In this section we introduce some indications for simple random samples, stratified and cluster samples.

Simple random samples have been found in other alternatives such as *some, party, part or group*. For example Almighty Allâh says:

"... You were not with them, when they *cast lots with their pens* as to which of them should be charged with the care of Maryam (Mary)." [Noble Qur'an 3:44]. This verse mentioned that for you were not with them, when they were casting quills, in the water, drawing their lots so that it be manifested to them, which of them should have charge of, (which of them should) bring up, Mary; nor were you with them, when they were disputing, about the custodianship of Mary, such that you might have known it and related it; but truly you know it only through revelation.

"*A party* of the people of the Scripture (Jews and Christians) wish to lead you astray ..." [Noble Qur'an 3:69]. This means there is a party of the People of the Scripture who yearn to make you go astray.

"... If We pardon *some* of you, We will punish others amongst you because they were *Mujrimun* (disbelievers, polytheists, sinners, criminals, etc.) [Noble Qur'an 9: 66]. This means if we forgive a party of you, because of its sincerity and its repentance, We will chastise another party because they were sinners', persisting in hypocrisy and mockery.

"It (Hell) has seven gates, for each of those gates is a *class assigned*." [Noble Qur'an 15:44]. This verse means that the Hell has seven gates (layers), in which each gate belongs an appointed portion of them.

" Verily! There was a *party* of My slaves..." [Noble Qur'an 23:109]. This means indeed there was a party of My servants — namely, the Emigrants — who would say, "Our Lord, we believe; therefore forgive us, and have mercy on us, for You are the best of the merciful".

"... And let a *party* of the believers witness their punishment. [Noble Qur'an 24:2]. This means that let the punishment for unmarried persons guilty of the illegal sexual intercourse be witnessed by a group of the believers — some say a group of three or four, as in the number of witnesses testifying to an act of fornication.

"... Then a *party* of them (hypocrites) turn away thereafter, such are not believers." [Noble Qur'an 24:47].

"Verily, Fir'aun (Pharaoh) exalted himself in the land and made its people sects, weakening (oppressing) a *group* among them ..." [Noble Qur'an 28:4]. This means Pharaoh had exalted himself in the land, the land of Egypt, and reduced its people into sects, groups, to serve him, oppressing a group of them.

"Yet they assign to *some* of His slaves a share with Him ..." [Noble Qur'an 43:15]. This means they assign to Him from among His own servants a part which is a sample of servants.

" Say (O Muhammad PBUH): It has been revealed to me that a *group* (from three to ten in number) of jinns listened (to this Qur'an).' [Noble Qur'an 72:1].

Stratified Random Samples (SRS) have been found in other alternatives in many verses, for examples Almighty Allâh says:

" And a *party* of the people of the Scripture say: "Believe in the morning in that which is revealed to the believers (Muslims), and reject it at the end of the day ..." [Noble Qur'an 3:72]. This means "this is an example of stratified samples where the people of the Scripture have two parties, one of them the Jews, say, to some among them, 'Believe in what has been revealed to those who believe, that is, the Qur'ân, at the beginning of the day, and disbelieve, in it, at the end of it.

"And if there is a *party* of you who believes in that with which I have been sent and a *party* who do not believe in it, then be patient until God judges between us..." [Noble Qur'an 7:87]. This another example of stratified samples where the Mankind has two parties, a party of you which believeth in that where with I have been sent, and there is a party which believeth not.

Cluster Random Samples have been found in many verses, for examples Almighty Allâh says:

"And it is not for the believers to go out to fight all together. Of every troop of them, a *party* only should go forth, that they (who are left behind) may gain sound knowledge in religion, and that they may warn their people when they return to them, so that they may beware." [Noble Qur'an 9:122]. This is an example of cluster sample where the mankind can be divided into believers and disbelievers, then a party, a group, of believers is selected to go forth and the remaining people who are left behind may gain sound knowledge in religion.

"So each, of those mentioned, We seized for his sin; and among them were some upon whom We unleashed a squall of stones and among them were some who were seized by the Cry and among them were some whom We made the earth swallow and among them were some whom We drowned..." [Noble Qur'an 29:40]. This is another example of stratified sample, in this verses, Allâh punished each of disbelievers for his sins and were divided into 4 groups: First group: the people of Lot whom Allâh unleashed a squall of stones, second group: Thamûd whom seized by the Cry, the third group people of Korah whom swallow, and the fourth group the people of Noah, Pharaoh and his people whom Allâh drowned them.

In addition, the meaning of Normal Distributions in Noble Qur'an was mentioned in Surah Al-Room as follows: "Allâh is He Who created you in weakness, then gave you strength after weakness, then after strength

gave you weakness and grey hair..." [Noble Qur'an 30:54]. This means God is the One Who created you from weakness, from a 'base fluid', then He ordained after, a second, weakness, which is the weakness of childhood, strength, that is, the strength of youth, then after strength He appointed weakness again and grey hair, the weakness of old age and the grey hairs of decrepitude.

5. Statistical Estimation in Noble Qur'an

We usually estimate population parameters using either point estimates or interval estimates. A *point estimate* is a single number of a sample statistic, while a *confidence interval* estimates is a range of numbers constructed around the point estimate. The confidence interval provides additional information about the variability of the estimate and provides more information about a population characteristic than does a point estimate.

The meaning of statistical estimation (Point and interval estimation) has been frequently found in Noble Qur'an in many verses.

Here are some examples for point estimation in the Noble Qur'an. Almighty Allâh says:

"Yes, if you hold on to patience and piety, and the enemy comes rushing at you; your Lord will help you with *five thousand* angels having marks of distinction." [Noble Qur'an 3:125].

" And indeed We sent Noah to his people, and he stayed among them a *thousand years less fifty years* ..." [Noble Qur'an 29:14]. This verse means that Noah remained among his people a thousand-less-fifty years; the point estimate in this case is 950 years in which Noah calling his people to affirm God's Oneness, but they denied him.

"In a *few years* the decision of the matter, before and after is only with Allah..." [Noble Qur'an 30: 4]. In this verse few years means three to ten years; so this an interval estimation of [3-10].

" Allâh it is He Who has created the heavens and the earth, and all that is between them in *six Days*..." [Noble Qur'an 32:4]. The point estimate in this verse is *six days*, the first of which was Sunday and the last of which was Friday, in which Allâh is created the heavens and the earth, and that which is between them.

" He arranges every affair from the heavens to the earth; then it will go up to Him, in one Day, the space whereof the measure is a *thousand years* of your reckoning (i.e. reckoning of our present world's time)." [Noble Qur'an 32:5]. This is an indication of point estimation in the world "thousand years" which is a time required that God directs the command from the heaven to the earth, then it ascends, then the command and the direction returns, to Him in a day whose measure is a thousand years by your reckoning, in this world.

"... the angels and the *Ruh-Spirit-* (Gabriel) ascend to Him in a Day the measure whereof is *fifty thousand* years. [Noble Qur'an 70:4].

"... Any one of them wishes that he could be given a life of a *thousand* years..." [Noble Qur'an 2:96]. This means the people most covetous of life, any one of them would love that he might be given life for a thousand years he might be given life.

The interval estimation in the Noble Qur'an is mentioned in some verses. For examples, Almighty Allâh says:

"The likeness of those who expend their wealth in the way of God is as the likeness of a grain of corn that sprouts *seven* ears, in every ear a *hundred* grains: likewise what they expend will be *multiplied seven hundred times*; so God multiplies, even more than this, for whom He will; God is Embracing, in His bounty, Knowing, those who deserve such multiplications." [Noble Qur'an 2:261]. This is an example of interval estimation, since a grain which grows seven years, in every year a hundred grains. Allâh gives increase manifold to whom He will. This means one grain has 700 grains or more, in other words, a grain has (700,∞) grains.

" And We sent Yunus (Jonah) to a hundred thousand (people) or even more." [Noble Qur'an 37:147]. This is another example of interval estimation; it means we sent Yunus to hundred thousand or, in fact, more, in other words, we sent Yunus to (100000,100000+ε) people, ε is a positive integer for the word "more" .

" *Half* of it, or a *little less* than that. Or a *little more*; and recite it carefully, in a measured tone." [Noble Qur'an 73:3-4]. This verse means that a half of it, is an example of point estimation, or reduce of it, of the half, a little, up to a third, this means an interval estimation of $(1/3, 1/2-\epsilon)$ of the whole night, or add to it, up to two third, this means an interval estimation of $(1/2+\epsilon, 2/3)$ of the whole night.

" Verily, your Lord knows that you do stand (to pray at night) a *little less than two-thirds* of the night, or *half the night*, or a *third of the night ...*" [Noble Qur'an 73:20]. This an example of three interval estimations as follows: a little less than two-thirds of the night, means $(2/3-\epsilon, 2/3)$, or half the night, means $(1/2-\epsilon, 1/2)$, or a third of the night, means $(1/3-\epsilon, 1/3)$. The combination of three intervals is $(1/3-\epsilon, 2/3)$ of the night.

6. Concluding Remarks

This paper has investigated the statistics science in Noble Qur'an. We have shown that some of the statistical definitions and concepts are found explicitly in many verses in different chapters of the Noble Qur'an. We have addressed some statistical indications such as measures of central tendency, spread, sampling, normal distribution, probabilities, and estimation in many verses.

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