Special Probability Distribution In Surah Al Falaq

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Abstract. Learn a subject which is not seem useful in daily life was really not interesting. How if it subject depends on religion, it will increase the motivation to study as worship spirit. All muslim known the Surah Al Falaq and they recite it daily since they were very young. In each verses in this surah tells us the concept of special probability distribution i.e Bernoulli, Binomial, Multinomial and Geometric distribution.

1. Preliminaries

Discussing the concept of mathematical statistics sometimes become scare because of it abstractness. Some people think that it concept just a mathematics, the concept of determining the result of calculation, but it more than that. Mathematical concept is beautiful, but mathematical statistics is more that what they known. Moreover we study it in relation to our religion. It will increase the spirit of worship to the Lord. It also provide deep understanding of the concept in our mind.

Increasing the awareness for each individuals when they understand the massage of their Lord, bring the knowledge became beautiful. Besides that, for educators like teachers and lecturer, it help them to realize the mathematical concept to the real-life and indeed their holy book. Like the concept of probability function and its probability distribution in Surah Al Falaq: 1-5. We try to research the mystery of it in relation to probability distribution and how to apply it means in daily life.

In the first part we discuss about probability distribution for several special cases. They are Bernoulli distribution, binomial distribution, geometric distribution and multinomial distribution. It will continuous by the knowledge of Surah Al Falaq, started from its asbabun nuzul until its tafseer-interpretation. And the third section, we discuss the probability distribution in Surah Al Falaq. And the last conclusion.

2. Special Probability Distribution

In some context, probability distribution shown by graph using histogram, or using table, sometimes using formula and the most specific ones is described using random variable. When we started the work from observation, it generated by several statistical experiments and it shown the similar behavior in general. It bring us to conclusion that discrete random variables associated to these accidents can be figured out by the same probability distribution and can be represented using a similar formula which construct the standard form.

Researchers need an important probability distribution to describe events which is countable as discrete random variables when it encountered in experiment or in several random real-life phenomena. The other important thing for statistician is probability distributions which describe most prominently
in statistical theory and applications. It needs parameters—the constants which is identity of a distribution function which explain it differs from the others.

We will show some leading special probability distribution, i.e Bernoulli, Binomial, Geometric and Multinomial distribution.

2.1 Bernoulli Distribution
An experiment name Bernoulli experiment has the following properties:
- There are repeated trials in each experiments.
- Each trial results in an outcome that may be classified as a success or a failure.
- The probability of success, denoted by $p$, remains constant from trial to trial.
- The repeated trials are independent.

**Definition:** A random variable $X$ has Bernoulli distribution and it random variable define as Bernoulli random variable if its probability mass function fulfill

$$f(x, p) = p^x (1 - p)^{1-x} \text{ for } x = 0,1$$

It experiment just generate the outcome “success” and “failure”. And all “success” and “failure” depends on the condition in the experiment or real-life phenomena.

2.2 Binomial Distribution
If we have a Bernoulli experiment, and it repeated $n$ times, the distribution function of it, construct the other distribution function namely Binomial. For simply, Binomial Distribution is repetition of Bernoulli Distribution.

**Definition:** Let $X$ random variable having Binomial Distribution and it refers as binomial random variable if and only if its probability distribution is given by

$$b(x, n, p) = \binom{n}{x} p^x (1 - p)^{n-x}, x = 0,1,2,...,n$$

If we generalize it, firstly consider the probability of “success” $x$ in $n$ trial and it remind $n - x$ of failure. As Bernoulli experiment, it have to be independent each other, so that we can multiply all probability related to each events. And probability of each success is $p$ and probability of each failure is $1 - p$.

2.3 Geometric Distribution
Another case explained the probability of “success” and “failed” is Geometric which is concentrated to the first success occurred. Suppose that independent experiments, each having probability $p$ of being a success, are performed until a success occurs.

**Definition:** If we let $X$ be the number of trials required until the first success, then $X$ is said to be a geometric random variable with parameter $p$.

$$g(x) = p(1 - p)^{x-1}, x = 1,2,3,...$$

And if we reach the $k$th success in a geometric trials, it will be the negative binomial distribution.

2.4 Multinomial Distribution
Multinomial distribution appears as immediate generalization of the binomial distribution when each trial has more than two possible outcomes, the probabilities of the respective outcomes are the same for each trials and also independent each other.

**Definition:** The random variables $X_1, X_2, ..., X_n$ have a multinomial distribution and they are referred to as multinomial random variable iff theory joint probability distribution is given by

$$f(x_1, x_2, ..., x_k; n; p_1, p_2, ..., p_k) = \binom{n}{x_1, x_2, ..., x_k} p_1^{x_1} p_2^{x_2} ... p_k^{x_k}$$

for $x_i = 0,1,...,n$ for each $i$, where $\sum_{i=1}^{k} x_i = n$ and $\sum_{i=1}^{k} p_i = 1$. 
The name for multinomial came from its coverage for different sub-events in an experiment. It covers event $E_1$ with probability of success $p_1$, event $E_2$ with probability of success $p_2$, and so on until $k$th event with probability $p_k$, and the core point is total probability for each sub-events is 1.

3. Surah Al Falaq

Surah Al Falaq is the 113th surah in Al Quran and it classified as Madanyyah Surah which is mean it down after hijrah of the holy prophet Muhammad ﷺ to Madinah [4]. It contains five verses. Depend on its name, Surat Al Falaq means at dawn. Surah Al Falaq and Surah An Naas known as Al Muawwidatain means two protector.

Based on it asbabun nuzul-cause the verses down, the mufassir-the men who translate the verses explain that asbabun nuzul of Surah Al Falaq because of magic done by a Jewish name Lubaib bin Al A’sham. When the holy prophet ﷺ in Madinah, someone made him think an hallucinations for several times. The effect for him, he do nothing, but his wife seen he done. He think came over his wife, but actually not [ ]. And the Allah bring down Surah Al Falaq for taking care us.

Surah Al Falaq [5,6]

1-Say: “I seek refuge with the Lord of the daybreak“

قُلْ أَعُوْذُ بِرَبِ الْفَلَقِ

2-“From the evil of what He has created“

وَمِنْ شَرِّ مَا خَلَقَ

3-“And from the evil of the darkness when it settles

وَمِنْ سَرِ غَاسِقٍ اِذَا وَقَبَ

4-“And from the evil of the blowers in knots,

وَمِنْ شَرِّ النَّفَّاثَاتِ فِيْ الْعُقَدِ

5-"And from the evil of the envier when he envies."

وَمِنْ سَرِ حَاسِدٍ اِذَاحَسَ

It tell us that all creature have to ask Allah for protection everywhere, every time because of crime. And at night many people forget their Lord and also at night crime happens. And many magic performed by women, because many activities they do for daily activity. Besides that, we have to tell protection to the Lord for hasad-envy for the envier.

4. Special Probability Distribution in Surah Al Falaq

4.1 Verses 1.

The word قُلْ is a command word (fi’il amr)- order us to do the work explain directly after read it word. قُلْ means say. What should we say? We have to say أَعُوْذُ بِرَبِ الْفَلَقِ. I seek refuge with the Lord of the daybreak. Means explained of this verses is the Lord is unique. There is no other God. It tells the absolute Bernoulli distribution with probability of success equals one for Allah-the Lord and equals zero otherwise. The number of God is also unique.

The word أَعُوْذُ بِرَبِ tells that our-the human and the other creature is very weak. So that we have to ask Lord to protect us. If we define $X$ as random variable define the ability of creature do everything, so $P(X = 1) = 0$ because of it weakness for which $x = 1$ is the capability of creature do everything. And vice versa if we see in the Lord side.

After that, in فَلَقَ construct form فَلَقَ means splitting, and السَّيْفَةُ الدِّيْسَةُ means splitting, and السَّيْفَةُ مُسْيَبَبَةَ [7] means split. It explain that it define the Bernoulli distribution for which $x = 1$ is divide into several, but in this case it divide night into dawn. So $P(X = 1)$ will not equals a half. Because the length of night and down is not equals. We knows that a third of night is called end of night, and from sunset to sunrise contains night and down. Moreover, it word also refers to daybreak, which is means an event occurs continuously, everyday. It describe god-fearing whether we will wake up or not after sleep. If god-fearing more we have, we will wake up to do down praying, otherwise continuous sleep. We also cannot define $p = 1$
for god-fearing, sometimes we fall over because Lord want. And it called nikmah-comfy. Because of its continuity, it will observed daily ($n \neq 1$) and refers to Binomial Distribution.

4.2 Verses 2

The translation of verses “from the evil what He has created” gives us knowledge the concept of multinomial distribution. For which we know many kinds of Allah’s creature and all of them contribute to give the evil to others. The total probability of evil is one which is constructed by the evil of each creature, like human, devil, animals, etc. We know the creature is countable but infinite. We can define the probability of human evil’s, the probability of animal’s evil, probability of devil’s evil, and other, and we sure that it total will be one, and it construct the series which is detail just known by the Lords. With the same analogy, we can count the number of human, animals, but we cannot count the number of unseen creature because of limitation of our knowledge.

How to omit the evil of creature is by asking the creator. So it also refers to Bernoulli distribution of probability of taking refuge from evil creatures with specified probability. Probability of success when asking the Lord for help from evil creatures is one and it is absolute.

4.3 Verses 3

It tells us that most of people forget their Lord at night. It tells us why most of crime happen at night. Human forget their Lord and their vision become lower at night. The Lord want human ask Him in the evening. The word "And from the evil of the darkness when it settles” means the concept of conditional events related to conditional probability distribution.

4.4 Verses 4

This verses describe that many women is the witch. They have many chance to magic the other. They prepare the dish, they wash the clothes, and many others. It explain Binomial Distribution by the perpetrator of magic which men and women. And probability of women done is greater than probability of men as perpetrator.

4.5 Verses 5

Number of envier is countable but unlimited. The closest friends, parents and other who love us can be envier for us, aware or not. And sometimes, they are envier accidentally. It also define the multinomial distribution as explain in Verses 2. Although envy is worst, but we can envy in two condition. The first envy to someone who have knowledge about the holy book and he/she applied in their life. The second is envy to a rich person who use his wealth to fight in Allah’s way.

5. Conclusion

Allah, our Lord gives many knowledge for us. Most of them have to expose by study hard. And each topic we discuss in science having relation to a verses in the holy book.

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