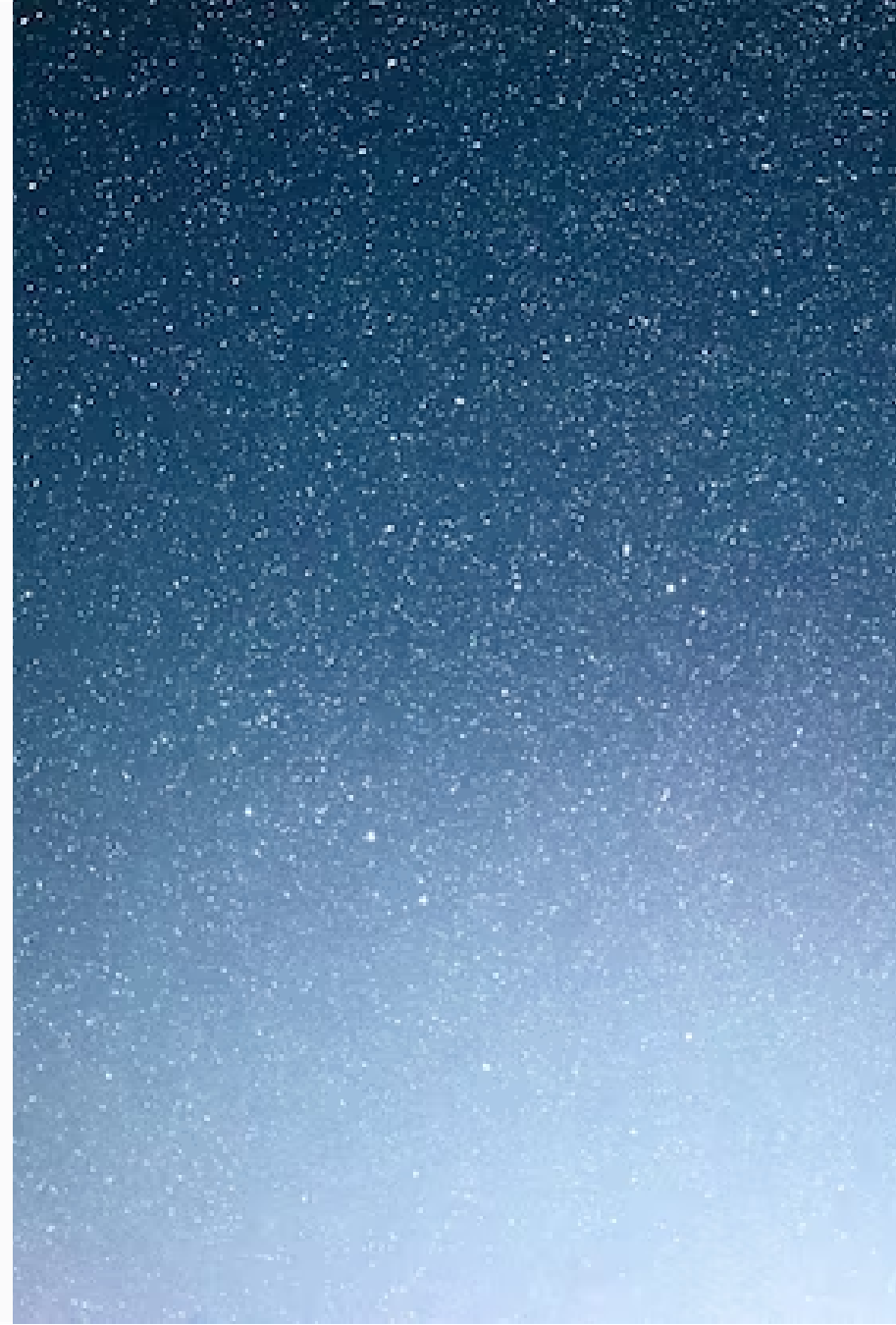


# Exploring Poisson Distribution


Welcome to the fascinating world of Poisson Distribution, where randomness meets predictability. In this presentation, we will dive into its properties, applications, and more!

**Management and Strategy Institute**



# Introduction to Poisson Distribution

Poisson Distribution is a probability distribution that models the number of events occurring within a fixed interval of time or space. It's commonly used to study rare events or phenomena with a constant average rate of occurrence.



# Properties and Characteristics of Poisson Distribution

- Events occur independently
- Average rate remains constant
- The probability of multiple events happening at the same time is negligible



# Formula for Poisson Distribution

The Poisson Distribution formula calculates the probability of observing a specific number of events within a given interval. It takes into account the average rate of occurrence and the desired number of events.

# Applications of Poisson Distribution in Real Life

## Network Traffic Analysis

Poisson Distribution helps analyze network traffic patterns, estimating the number of packets arriving at a router within a specific time frame.

## Call Center Management

By modeling customer arrivals using Poisson Distribution, call centers can optimize staffing levels and minimize customer waiting times.

## Radioactive Decay

Poisson Distribution is utilized to analyze the random decay of radioactive isotopes, estimating the number of particles decaying over a given period.

# Probability Calculations using Poisson Distribution

## 1 Find the Probability of an Exact Number of Events

With the Poisson formula, we can calculate the probability of observing a specific number of events in a given interval.

## 2 Calculate the Probability of Fewer or More Events

Poisson Distribution allows us to determine the likelihood of observing fewer or greater events than a certain threshold.

## 3 Estimate Waiting Times between Events

By analyzing event arrival rates, we can estimate waiting times between events, such as the time between customer arrivals at a store.

# Difference between Poisson and Normal Distribution

- Poisson Distribution models discrete events, while **Normal Distribution** models continuous data.
- Poisson Distribution deals with rare events, while Normal Distribution is effective for large sample sizes and continuous phenomena.
- Poisson Distribution has a fixed average rate, while Normal Distribution has a mean and a range of values.



# Conclusion and Takeaways

1

## Enhanced Predictability

Poisson Distribution equips us with a powerful tool to analyze and predict rare events in various fields.

2

## Real-World Applications

Understanding and applying Poisson Distribution opens doors to solving complex problems in areas like telecommunications, finance, and more.

3

## Explore Further

Continue your journey with Poisson Distribution by exploring advanced concepts like lambda optimization and compound Poisson processes.



# Applying Poisson Distribution in Six Sigma Projects

In Six Sigma projects, Poisson distribution is used to analyze and predict the occurrence of rare events, such as defects, errors, or accidents. By understanding the Poisson distribution, Six Sigma practitioners can effectively measure and improve process performance, ensuring quality and efficiency.

# Learn More

**[Lean Six Sigma Black Belt Certification](#)**

**[Six Sigma Resource Center](#)**