

LECTURE 16: CONTINUOUS PROBABILITY DISTRIBUTIONS

- I. Uniform Distribution
 - a. *Uniform distribution*—Each outcome has the same likelihood of appearing. Its distribution has a rectangular shape.
 - i. Its mean is $\mu = \frac{Max+Min}{2}$
 - ii. Its standard deviation is $\sigma = \sqrt{\frac{(Max-Min)^2}{12}}$
- II. Exponential Distribution
 - a. *Exponential probability distribution*—a continuous distribution used to measure the time between events of interest. Examples:
 - i. Average number of minutes between customers;
 - ii. Average hours it takes to install a new sink;
 - iii. Average years between business failures.
 - b. Characteristics
 - i. Right skewed;
 - ii. Only described by μ (normal distributions need μ and σ); and
 - iii. Values cannot be negative.
 - c. Like a Poisson distribution, exponential distributions are defined by λ , or the average number of occurrences in an interval. Exponential distributions use this variable to describe time *between* occurrences.

$$\sigma = \mu = \frac{1}{\lambda}$$

- i. Note that because $\mu = \sigma$, we only need μ to define a particular exponential function. And because μ comes from λ ...

