

Likelihood Function, example

CSU, Chico Math 314

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Gamma Distribution

With pen and paper or LaTeX, derive the maximum likelihood estimator for the scale *scale* of the gamma distribution, $\Gamma(\text{shape} = 3, \text{scale})$.

```
## sample from known population  
X <- rgamma(1001, shape=3, scale=7) # shape=3, scale=7  
## then forget we know where data came from  
## and estimate parameter scale
```

Gamma Distribution

With R, generate data from $\Gamma(\text{shape} = 3, \text{scale} = 7)$, and then use `optim` to estimate *shape* and *scale* via the log-likelihood function for the gamma distribution.

```
## sample from known population  
X <- rgamma(1001, shape=3, scale=7) # shape=3, scale=7  
## then forget we know where data came from  
## and estimate parameters shape and scale
```