bayesian_stats_ch2

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```
# help(rpois)

df1 <- tibble(x = rpois(n = 100, lambda = 2.1),
              y = rpois(n = 100, lambda = 21),
              label = "n = 100")


df2 <- tibble(x = rpois(n = 1000, lambda = 2.1),
              y = rpois(n = 1000, lambda = 21),
              label = "n = 1000")

df3 <- tibble(x = rpois(n = 10000,lambda = 2.1),
                y = rpois(n = 10000, lambda = 21),
                label = "n = 10000")

df <- df1 %>%
  bind_rows(df2) %>%
  bind_rows(df3)

ggx <- df %>%
  ggplot(aes(x = x, fill = factor(label)))

ggy <- df %>%
  ggplot(aes(x = y, fill = factor(label)))

gg_x_pois <- ggx +
  geom_histogram() +
  facet_wrap(~factor(label)) +
  labs(title = "Poisson(lambda = 2.1)")
```

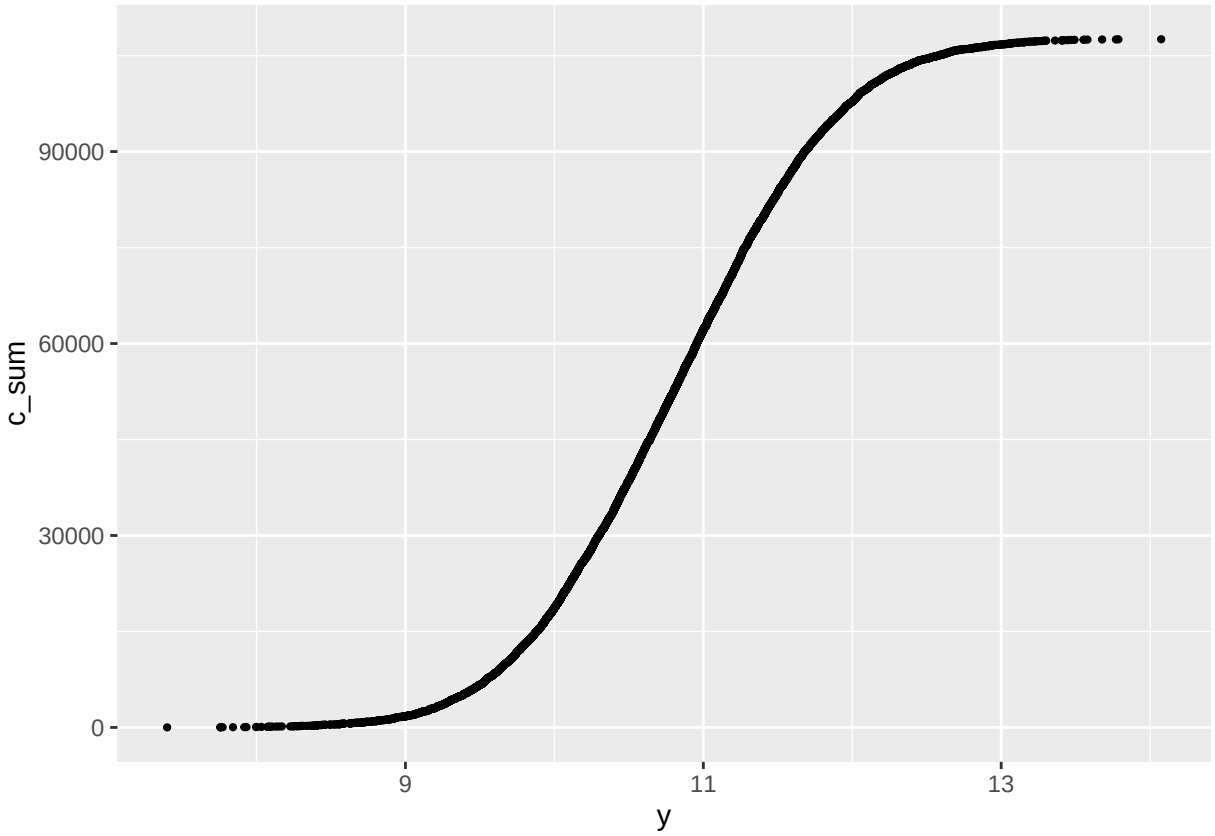
```r
gg_y_pois <- ggy +
  geom_histogram() +
  facet_wrap(~factor(label)) +
  labs(title = "Poisson(lambda = 21)")

p_load(cowplot, ggpubr)

# cowplot::plot_grid(gg_x_pois, gg_y_pois, align = "h")

gg_poisson <- ggpubr::ggarrange(gg_x_pois, gg_y_pois, nrow = 2, ncol = 1)
```

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

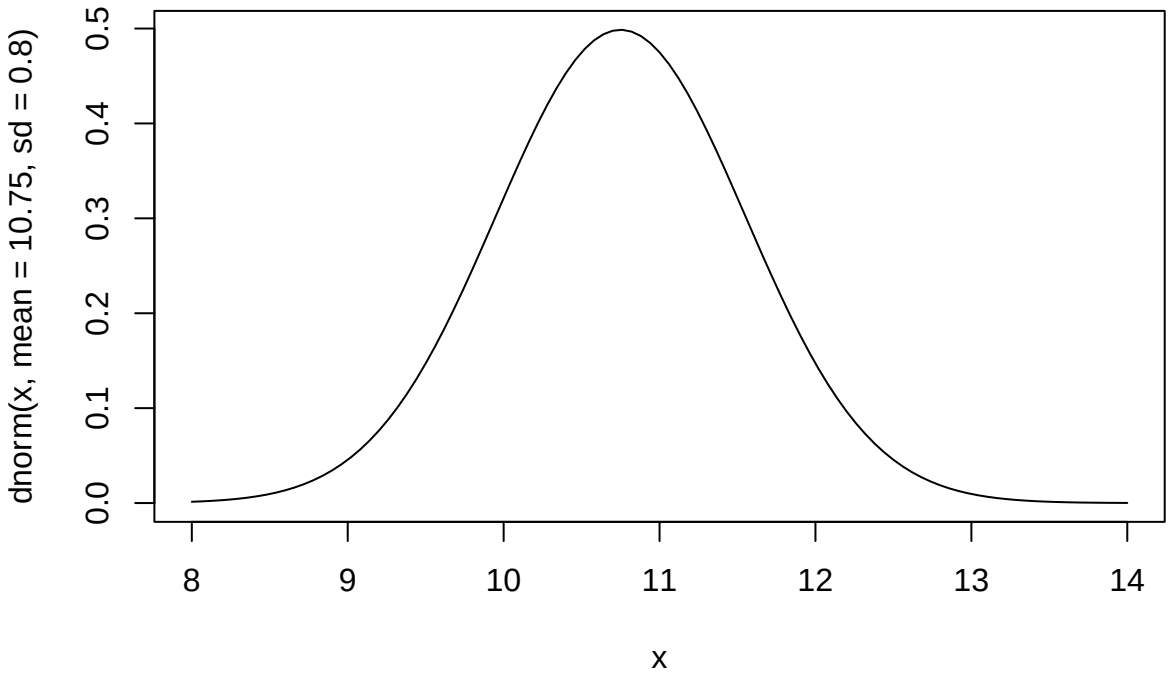
```r
ggsave(filename = "poisson_dist_ch2.png", plot = gg_poisson)
```

```
## Saving 6.5 x 4.5 in image
```

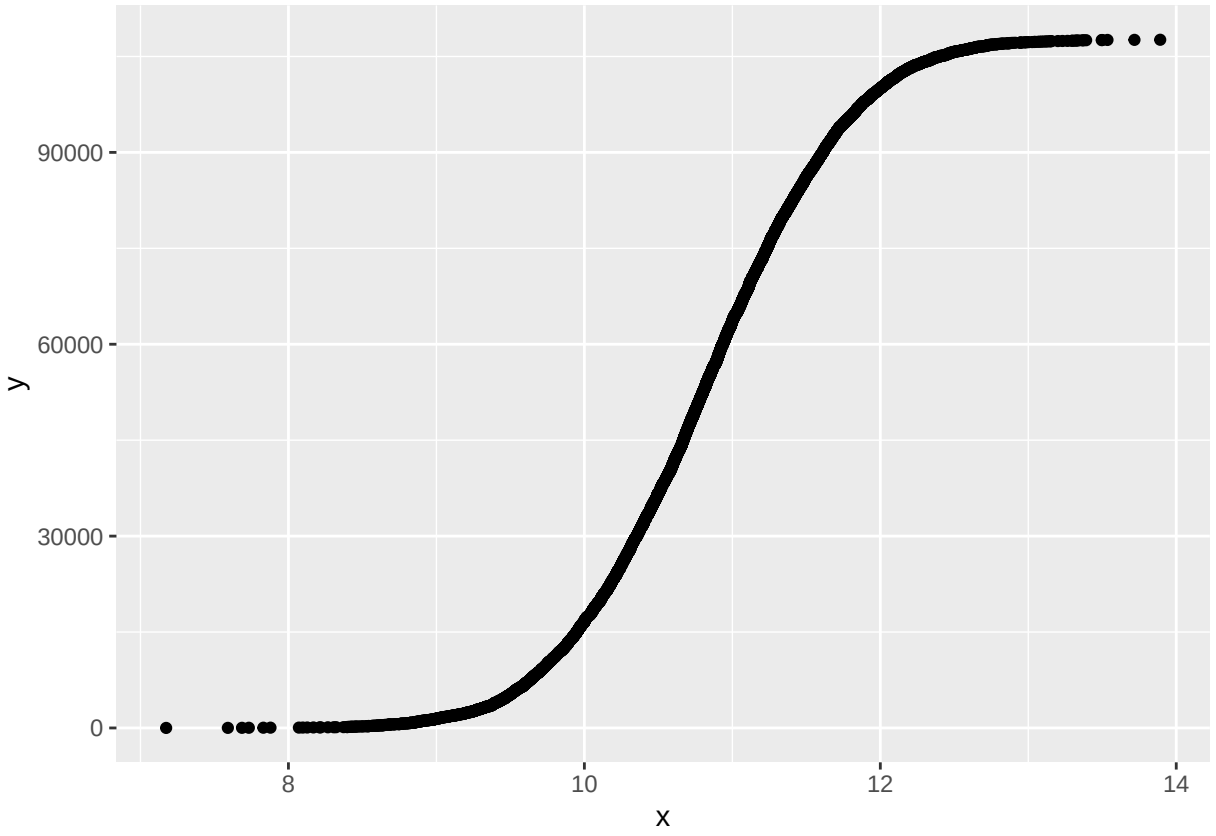
```r
y <- rnorm(n = 10000, mean = 10.75, sd = sqrt(0.8))

empirical_dist <- cumsum(sort(y))

df <- tibble(c_sum = empirical_dist,
             y = sort(y))

df %>%
  ggplot(aes(x = y, y = c_sum)) +
  geom_point(size = 0.8)
```




```
curve(dnorm(x, mean = 10.75, sd = 0.8), from = 8, to  = 14)
```



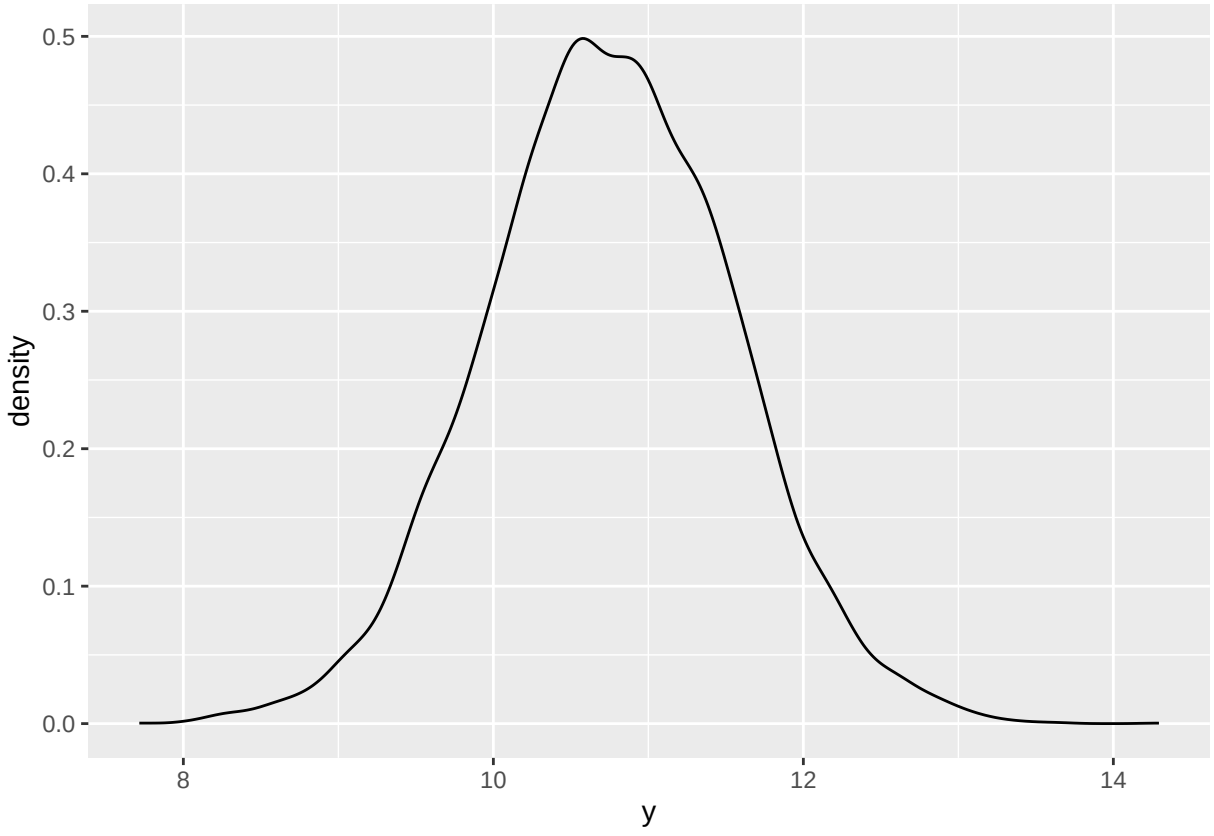
```r
cdf <- ecdf(rnorm(n = 10000, mean = 10.75, sd = 0.8))

df <- tibble(x = sort(rnorm(n = 10000, mean = 10.75, sd = 0.8)), y = cumsum(x))

df %>%
  ggplot(aes(x = x, y = y)) +
  geom_point()
```



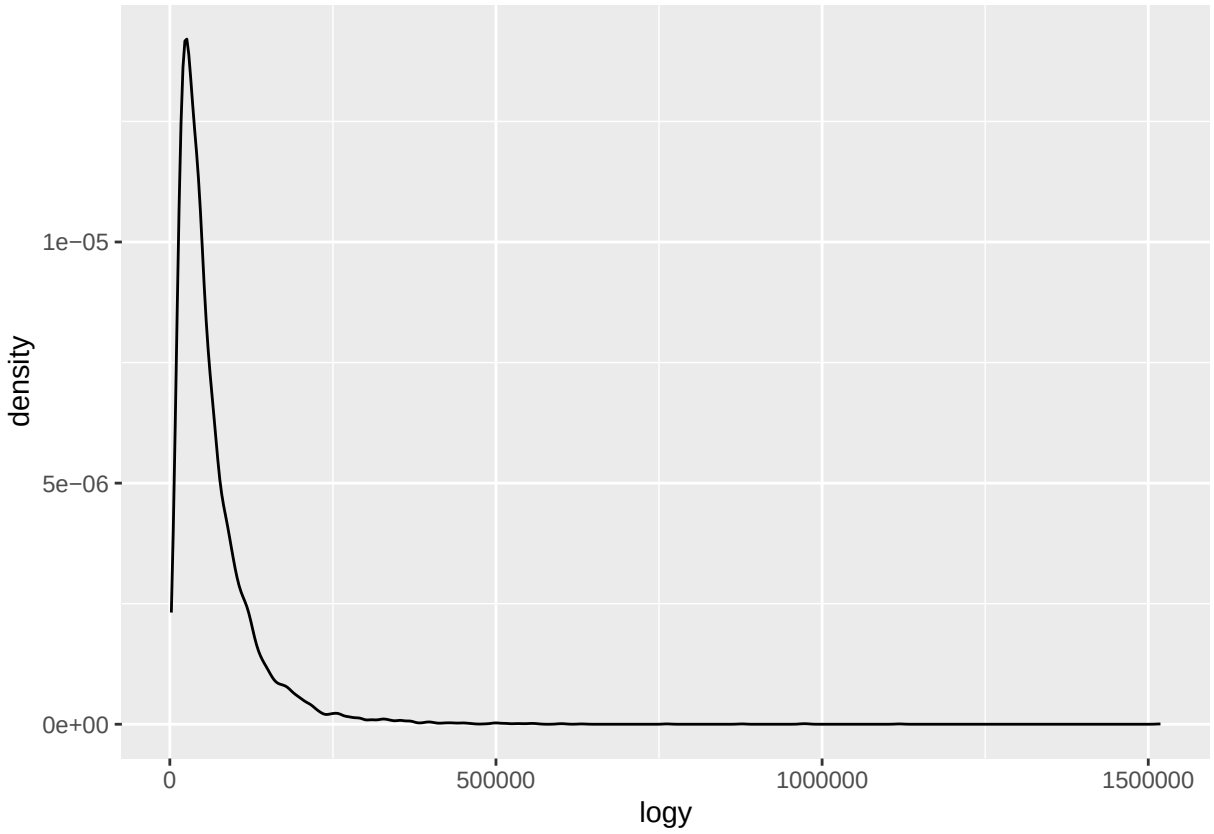

```r
# help(ecdf)
# help(dnorm)
```

```r
n =10000

df <- tibble(y = rnorm(n = n, mean = 10.75, sd = 0.8),
             logy = rlnorm(n = n, meanlog = 10.75, sdlog = 0.8),
             d = dnorm(y),
             c = cumsum(d))

df %>%
  ggplot(aes(x = y)) +
```

```
  geom_density()
```




```
df %>%
  ggplot(aes(x = logy)) +
  geom_density()
```




```
# help(pnorm)
```