```
set.seed(12345)
```

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set.seed(12345)
library(tidyverse)
```

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library(tidyverse)
mtcars
```

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4
Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4
Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1
Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2
Valiant	18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	1
Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	4
Merc 240D	24.4	4	146.7	62	3.69	3.190	20.00	1	0	4	2
Merc 230	22.8	4	140.8	95	3.92	3.150	22.90	1	0	4	2
Merc 280	19.2	6	167.6	123	3.92	3.440	18.30	1	0	4	4
Merc 280C	17.8	6	167.6	123	3.92	3.440	18.90	1	0	4	4
Merc 450SE	16.4	8	275.8	180	3.07	4.070	17.40	0	0	3	3
Merc 450SL	17.3	8	275.8	180	3.07	3.730	17.60	0	0	3	3
Merc 450SLC	15.2	8	275.8	180	3.07	3.780	18.00	0	0	3	3
Cadillac Fleetwood	10.4	8	472.0	205	2.93	5.250	17.98	0	0	3	4
Lincoln Continental	10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	4
Chrysler Imperial	14.7	8	440.0	230	3.23	5.345	17.42	0	0	3	4
Fiat 128	32.4	4	78.7	66	4.08	2.200	19.47	1	1	4	1
Honda Civic	30.4	4	75.7	52	4.93	1.615	18.52	1	1	4	2
Toyota Corolla	33.9	4	71.1	65	4.22	1.835	19.90	1	1	4	1
Toyota Corona	21.5	4	120.1	97	3.70	2.465	20.01	1	0	3	1
Dodge Challenger	15.5	8	318.0	150	2.76	3.520	16.87	0	0	3	2
AMC Javelin	15.2	8	304.0	150	3.15	3.435	17.30	0	0	3	2
Camaro Z28	13.3	8	350.0	245	3.73	3.840	15.41	0	0	3	4
Pontiac Firebird	19.2	8	400.0	175	3.08	3.845	17.05	0	0	3	2
Fiat X1-9	27.3	4	79.0	66	4.08	1.935	18.90	1	1	4	1
Porsche 914-2	26.0	4	120.3	91	4.43	2.140	16.70	0	1	5	2
Lotus Europa	30.4	4	95.1	113	3.77	1.513	16.90	1	1	5	2
Ford Pantera L	15.8	8	351.0	264	4.22	3.170	14.50	0	1	5	4
Ferrari Dino	19.7	6	145.0	175	3.62	2.770	15.50	0	1	5	6
Maserati Bora	15.0	8	301.0	335	3.54	3.570	14.60	0	1	5	8
Volvo 142E	21.4	4	121.0	109	4.11	2.780	18.60	1	1	4	2

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mtcars %>%
  rownames_to_column(var = "model")
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13	Merc 450SL	17.3	8	275.8	180	3.07	3.730	17.60	0	0	3	3
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18	Fiat 128	32.4	4	78.7	66	4.08	2.200	19.47	1	1	4	1
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```r
set.seed(12345)
library(tidyverse)
mtcars %>%
  rownames_to_column(var = "model") %>%
  ggplot()
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set.seed(12345)
library(tidyverse)
mtcars %>%
  rownames_to_column(var = "model") %>%
  ggplot() +
  aes(x = wt * 1000)
```
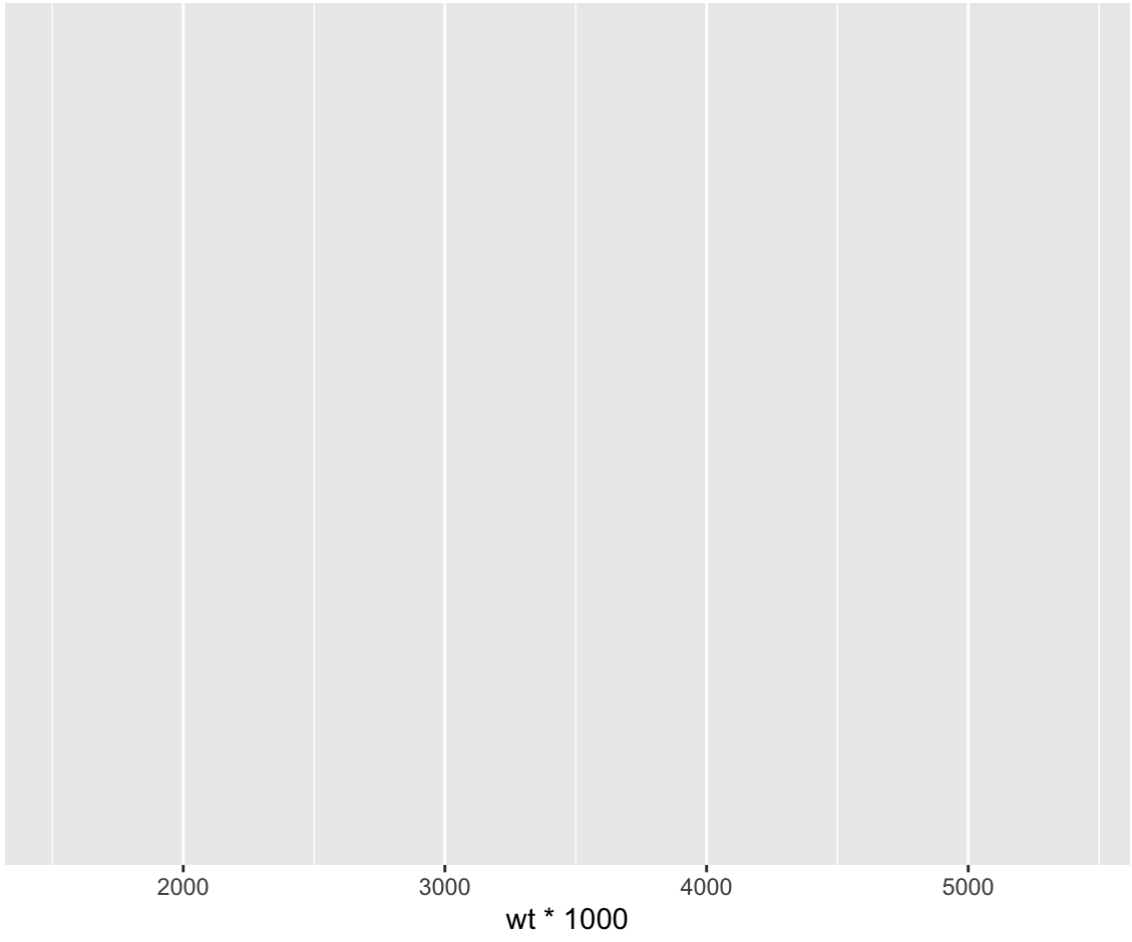
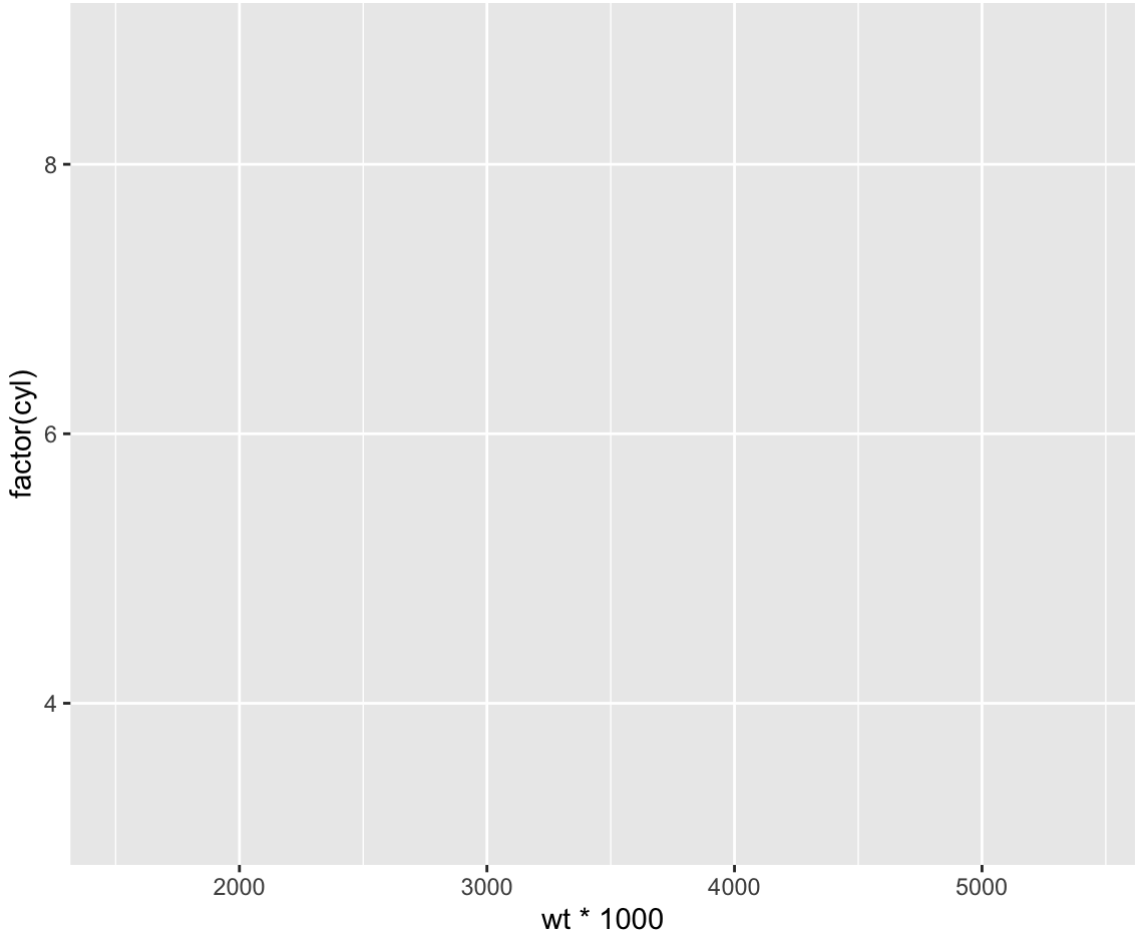



```r
set.seed(12345)
library(tidyverse)
mtcars %>%
  rownames_to_column(var = "model") %>%
  ggplot() +
  aes(x = wt * 1000) +
  aes(y = factor(cyl))
```



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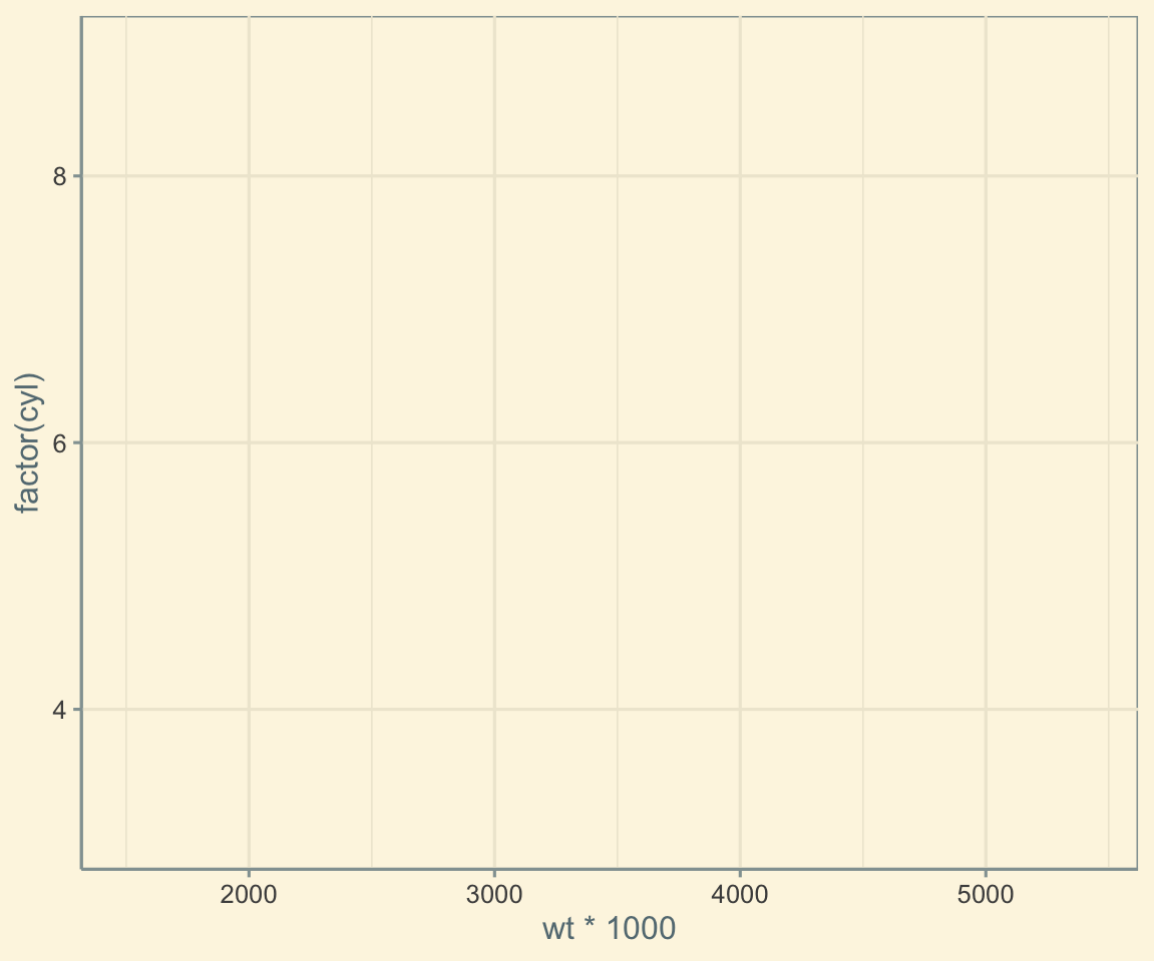
set.seed(12345)
library(tidyverse)
mtcars %>%
  rownames_to_column(var = "model") %>%
  ggplot() +
  aes(x = wt * 1000) +
  aes(y = factor(cyl)) +
  ggthemes::theme_solarized()
```



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set.seed(12345)
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  aes(x = wt * 1000) +
  aes(y = factor(cyl)) +
  ggthemes::theme_solarized() +
  geom_boxplot(fill = "snow2")
```

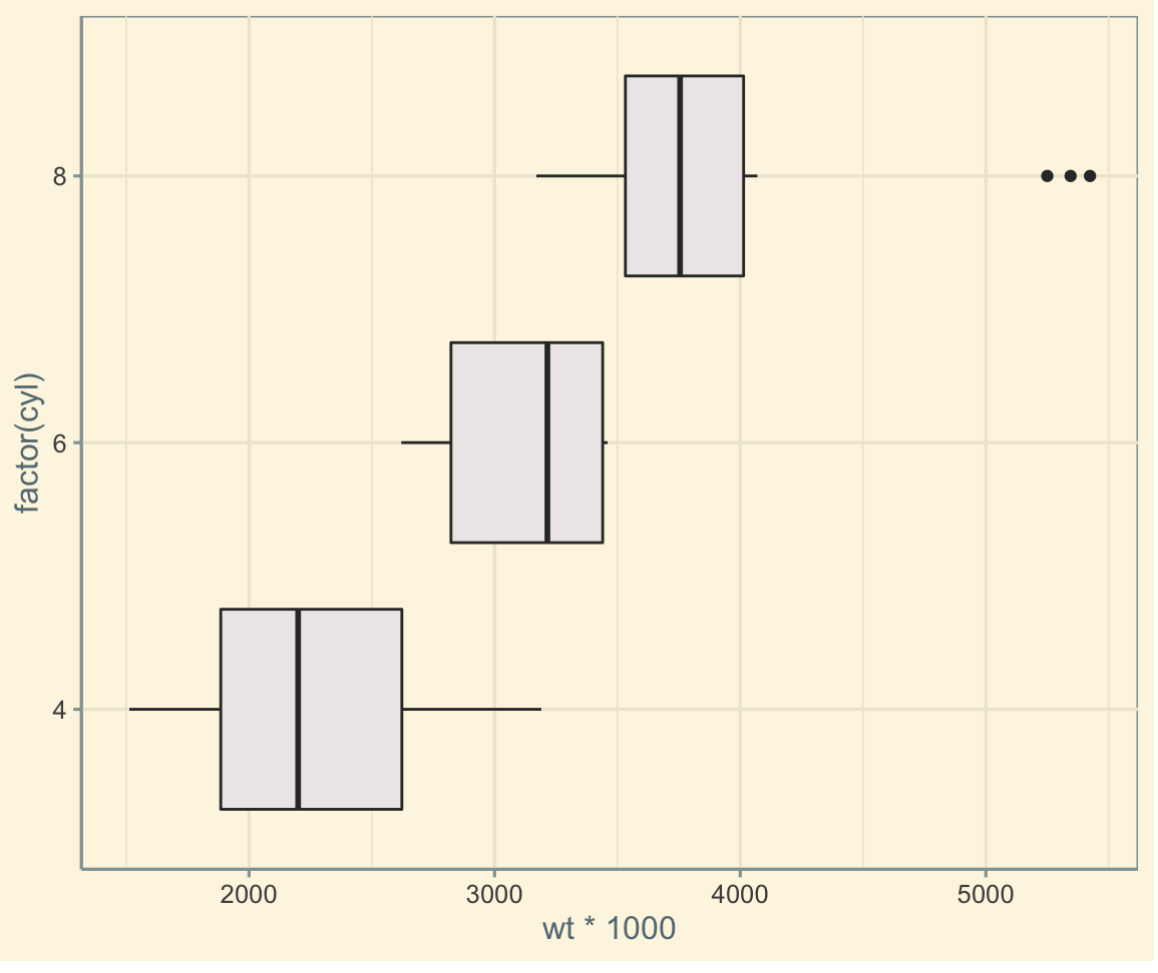

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  geom_jitter(height = .2, alpha = .8,
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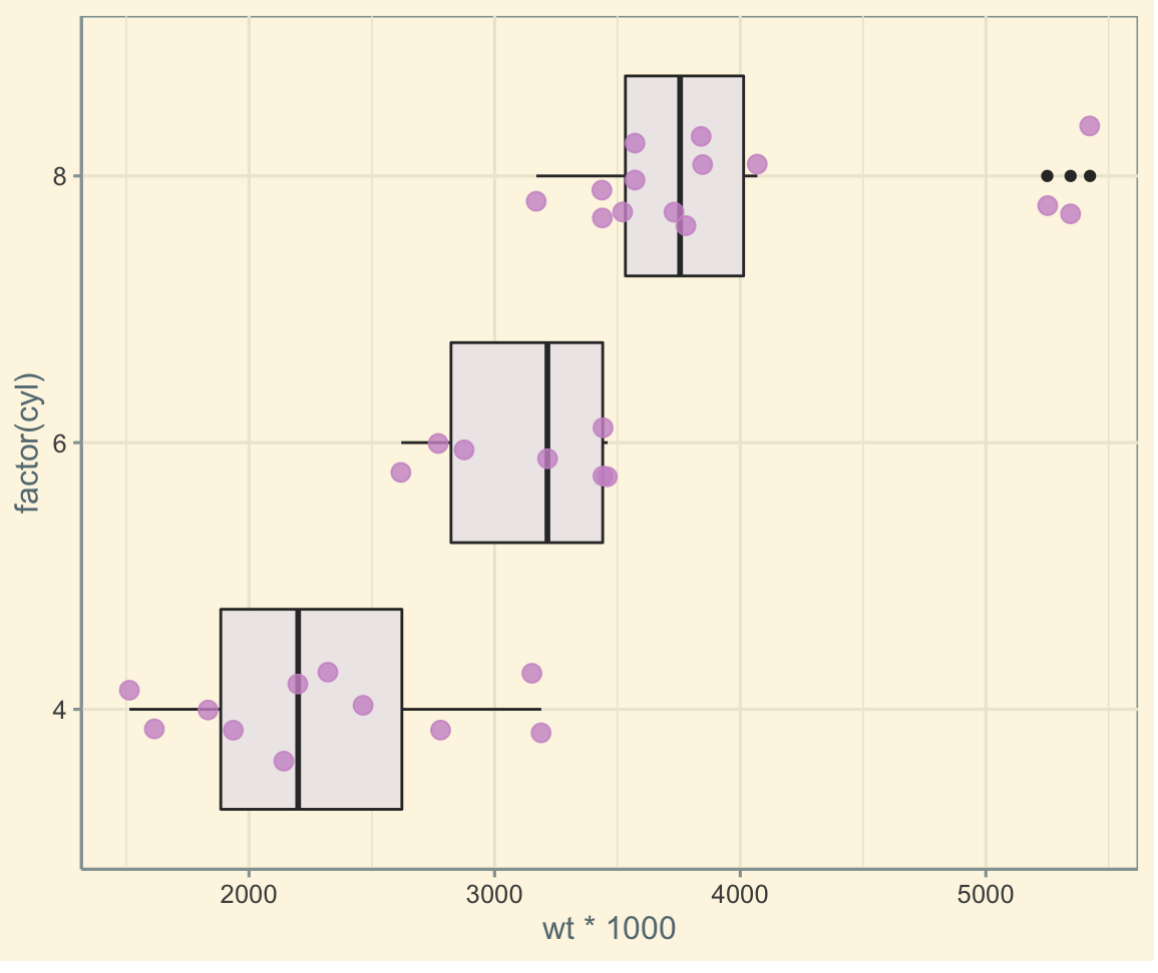

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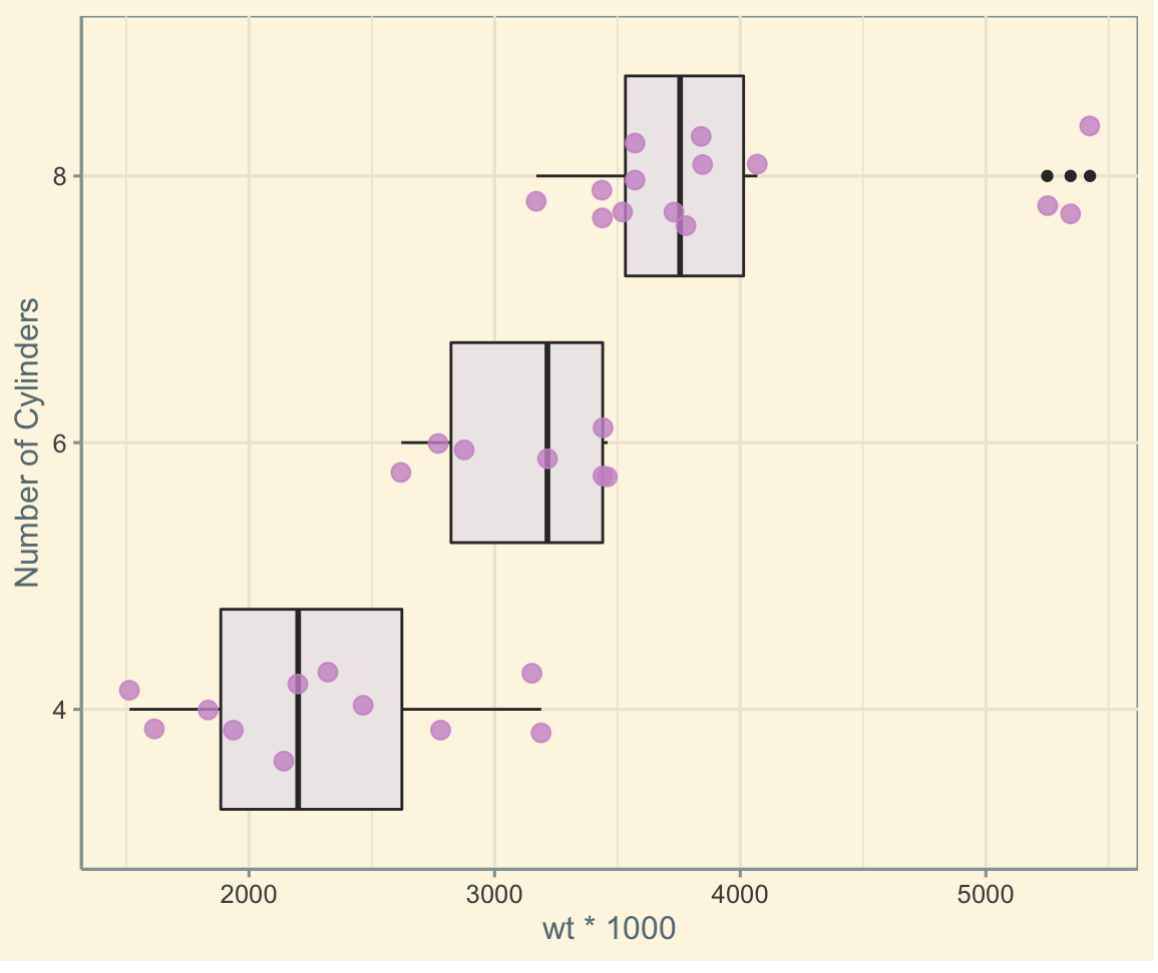
  labs(y = "Number of Cylinders")
```



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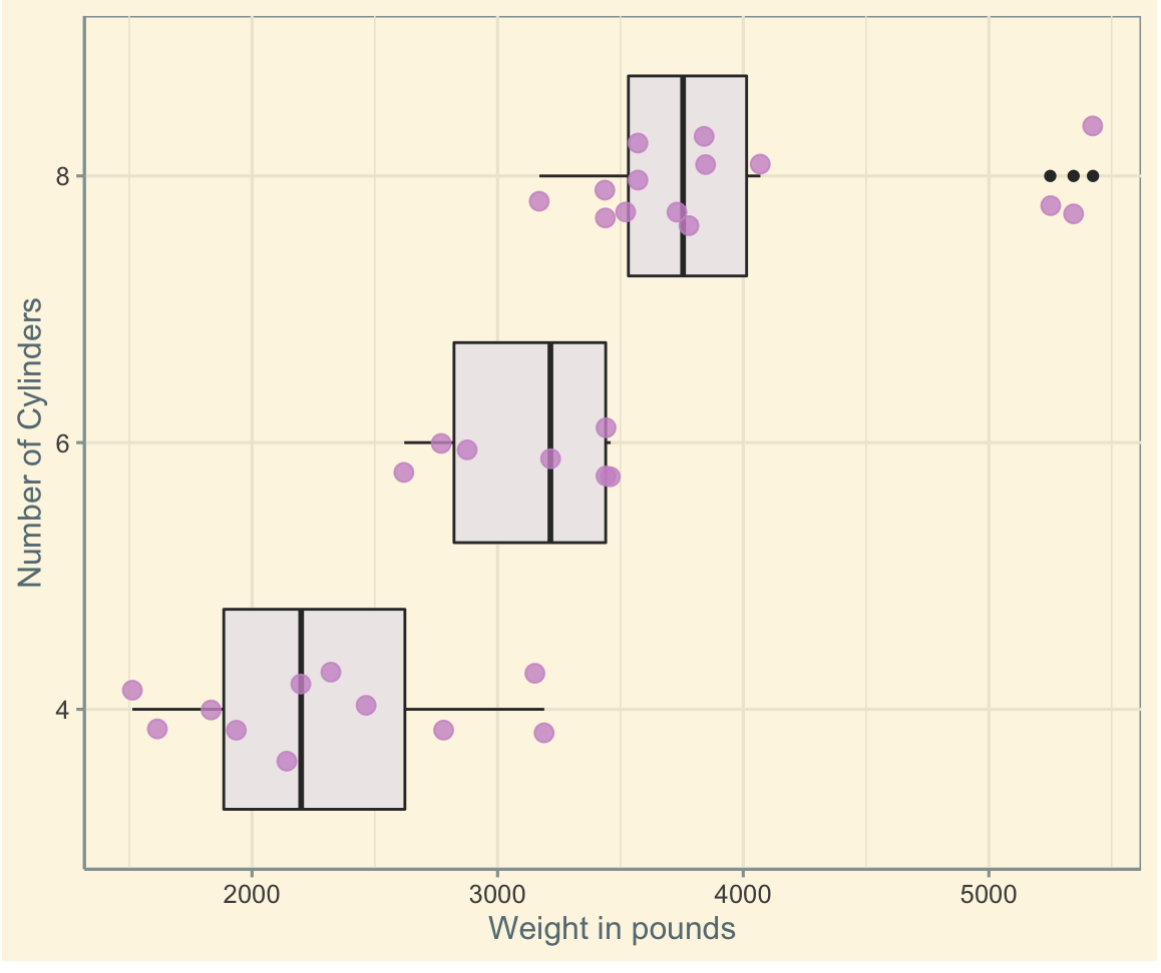

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  labs(y = "Number of Cylinders") +
  labs(x = "Weight in pounds") +
  labs(title = "How do number of cylinders and model
```

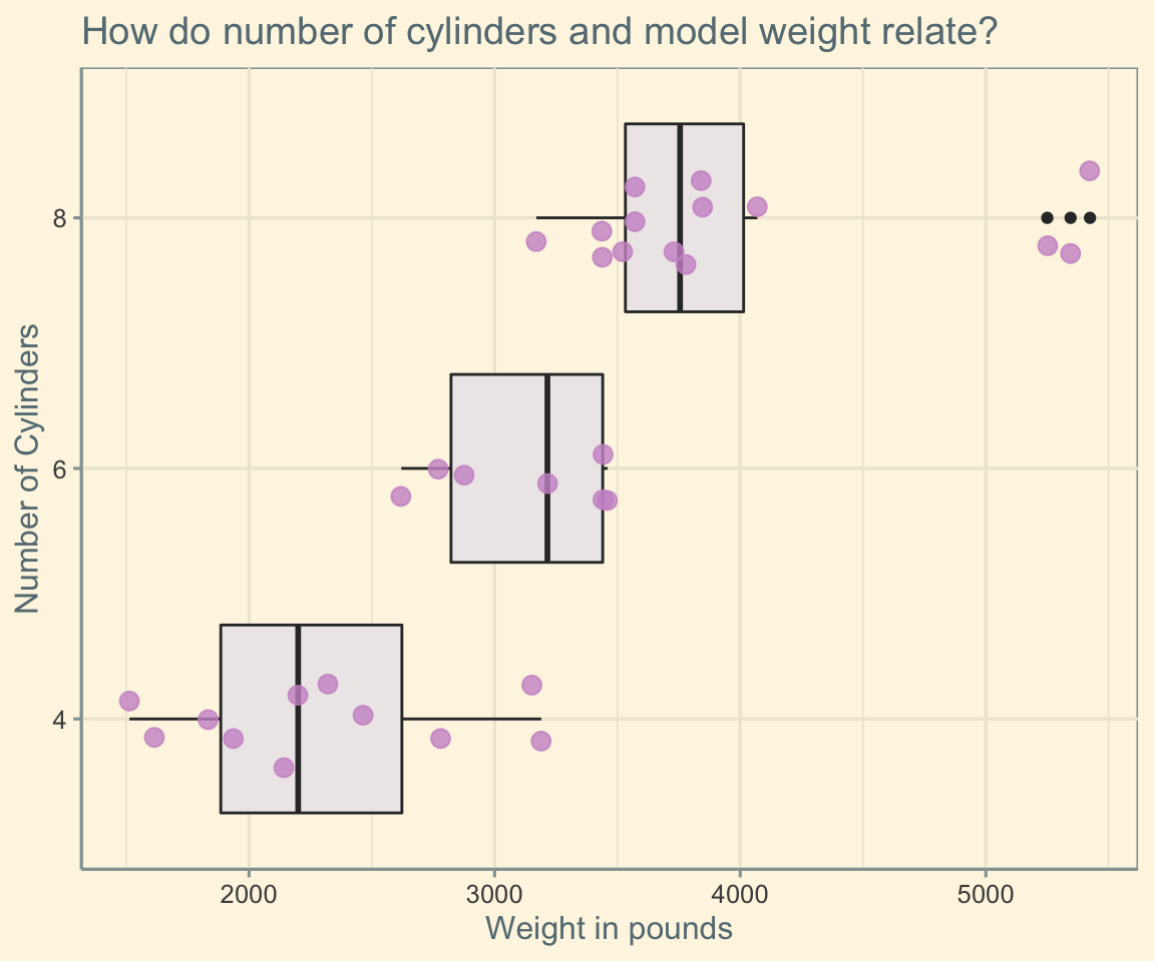

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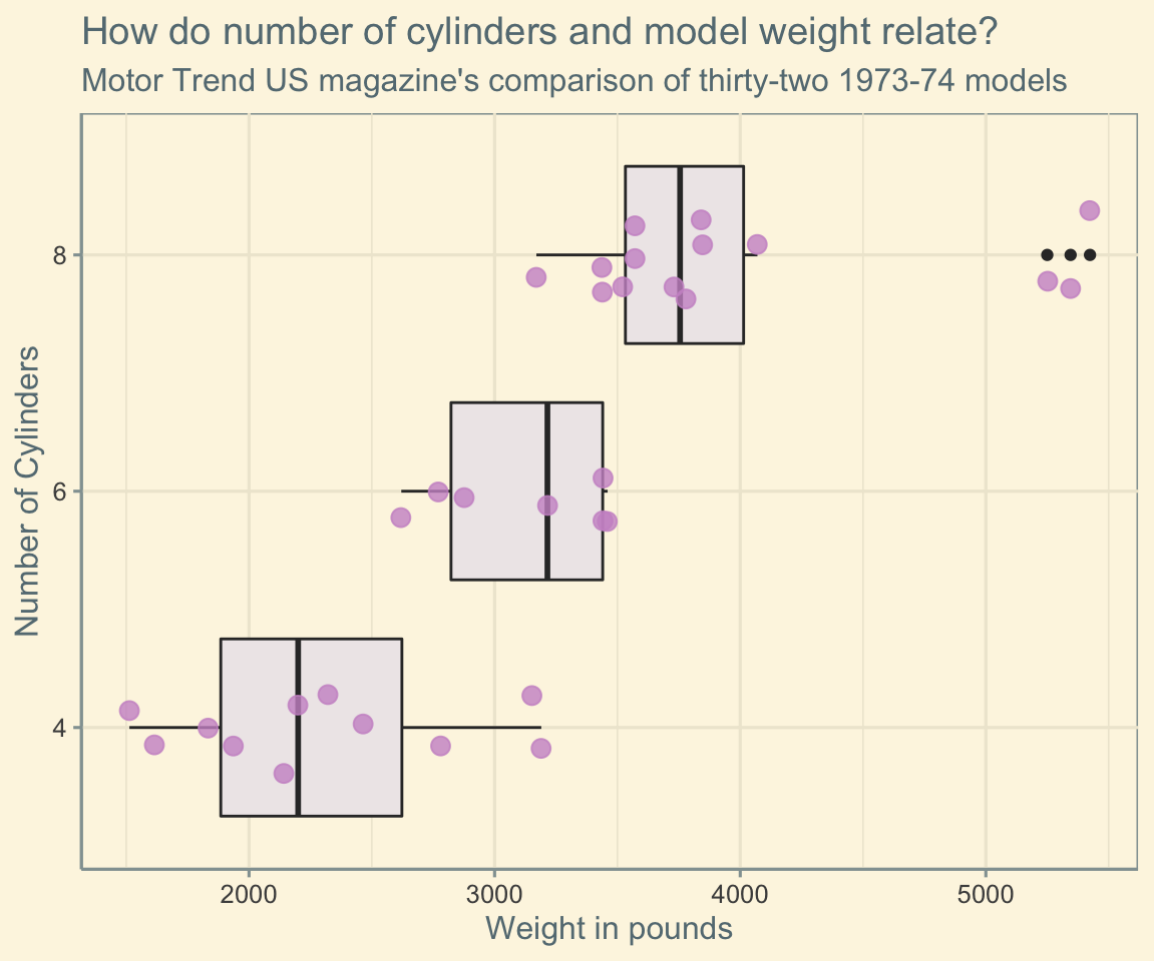

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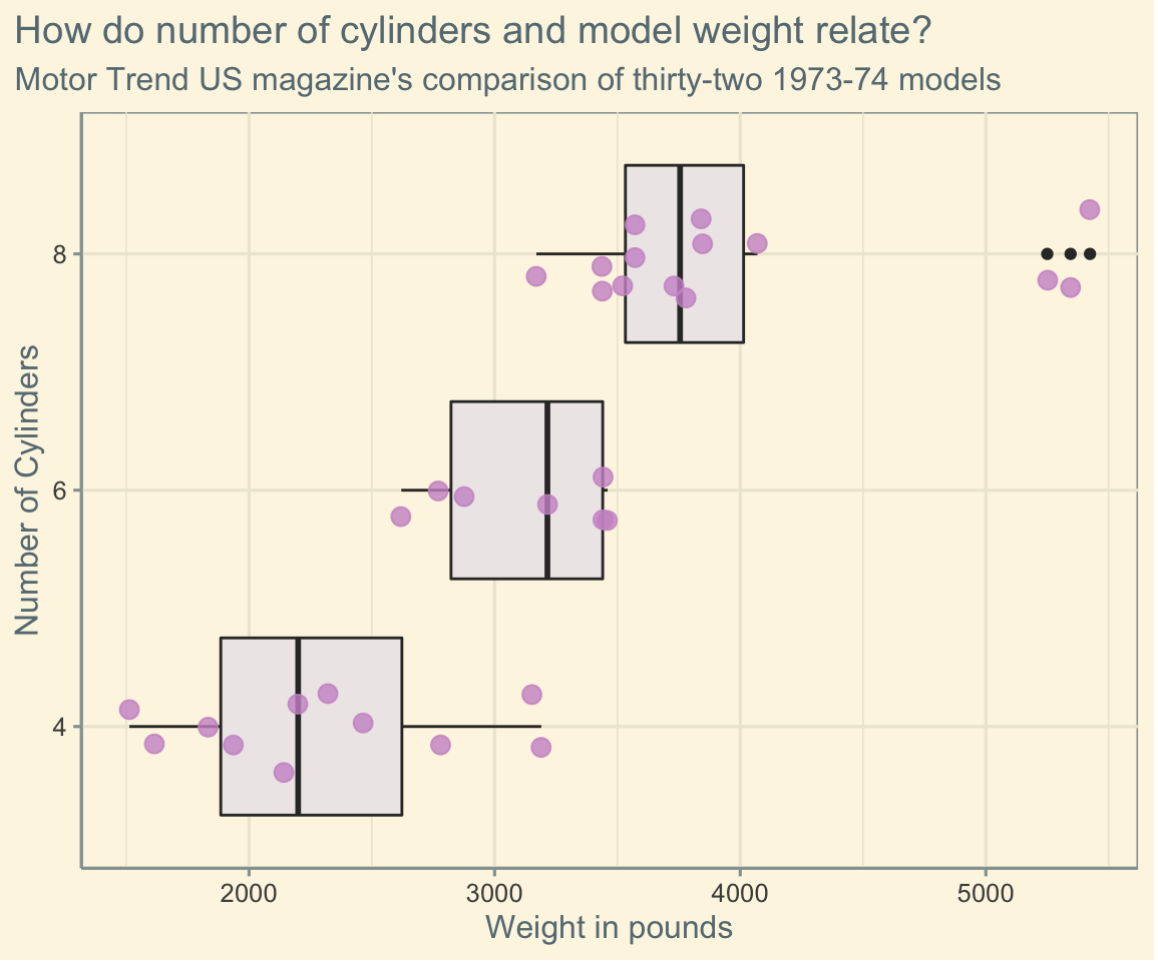

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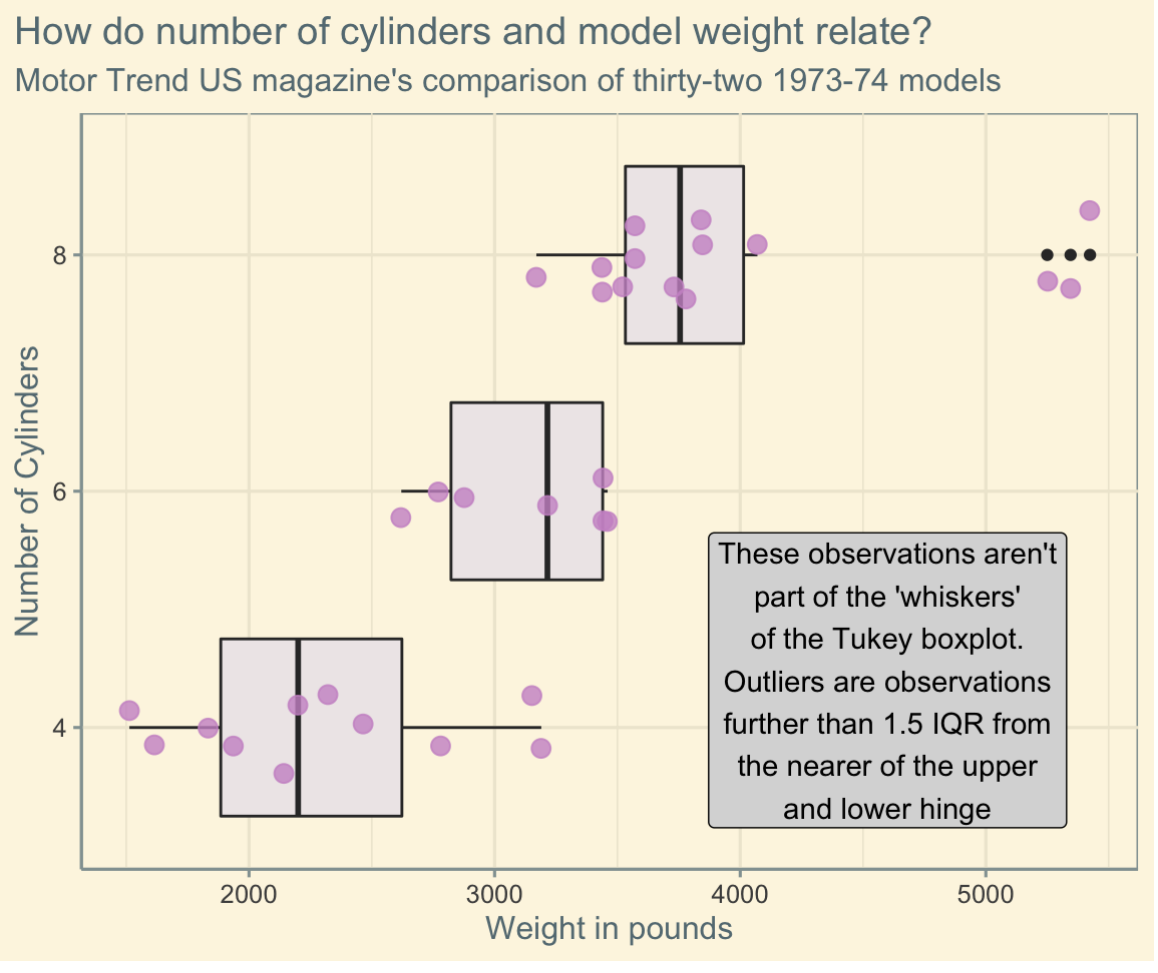
  theme(plot.title.position = "plot") +
  geom_label(data = tibble(x = 1),  # one row datafr
             fill = "grey85", x = 4600,
             y = 1.2,  # cylinder is a factor w 3 le
             label = "These observations aren't part
               str_wrap(25))
```



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  geom_curve(data = tibble(x = 1),
             curvature = -.2,
             arrow = arrow(length =
                           unit(0.1,
                                "inches")),
             x = 4550, xend = 5150,
             y = 1.85, yend = 2.8,
             )
```