



INTEGO

GROUP

Paper DV07

Make Your Data Come Alive

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AGENDA

- Introduction
- Part I: Plotly
- Part II: Highcharts
- Summary



R interactive graphs libraries



```
library(plotly)
```

- JavaScript
- free
- can convert ggplot2 to plotly



```
library(highcharter)
```

- JavaScript
- not free
- looks beautiful

Both inspired by well-known ggplot2 R package and the Grammar of Graphics concept.

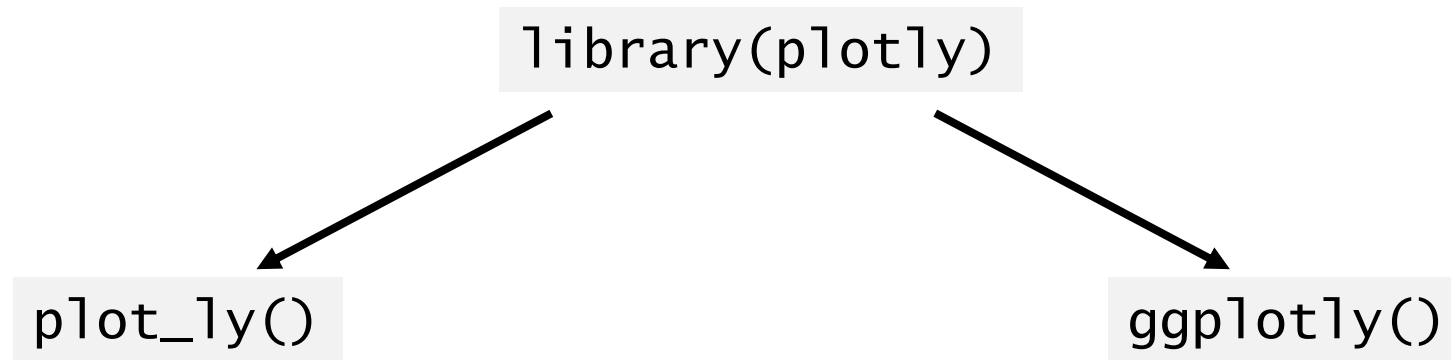


PART I

Plotly

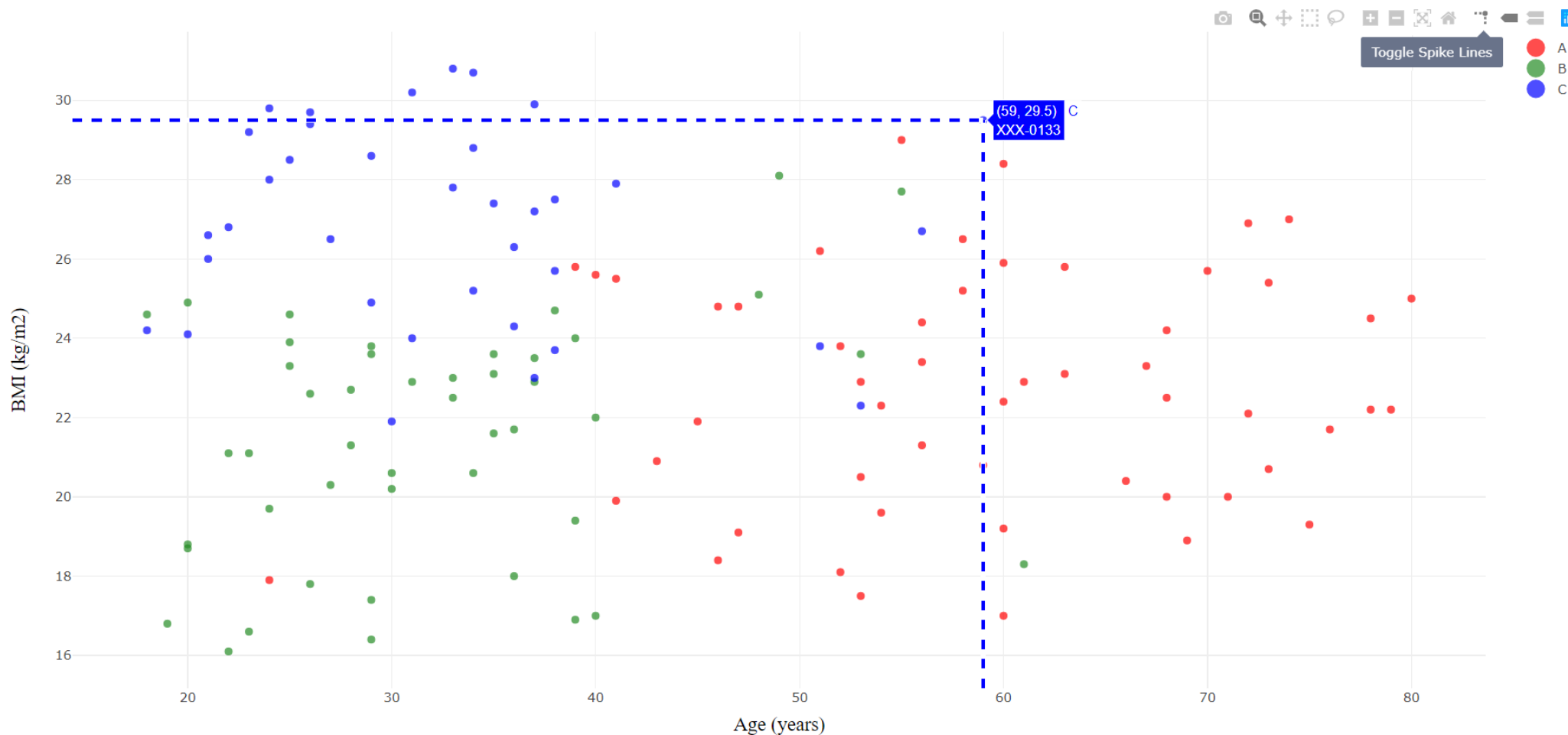


Any graph made with the **plotly** R package is powered by the JavaScript library plotly.js.



Directly initialize a **plotly** object with `plot_ly()` function.

Transforms **ggplot2** object to a **plotly** object.



```
plot_ly(ADSL, x = ~AGE, y = ~BMI, color = ~ARMCD, text = ~USUBJID, size = I(20),
        colors = c("red", "forestgreen", "blue")) %>%
  add_trace(type = "scatter", mode = "markers")
```

Box plot

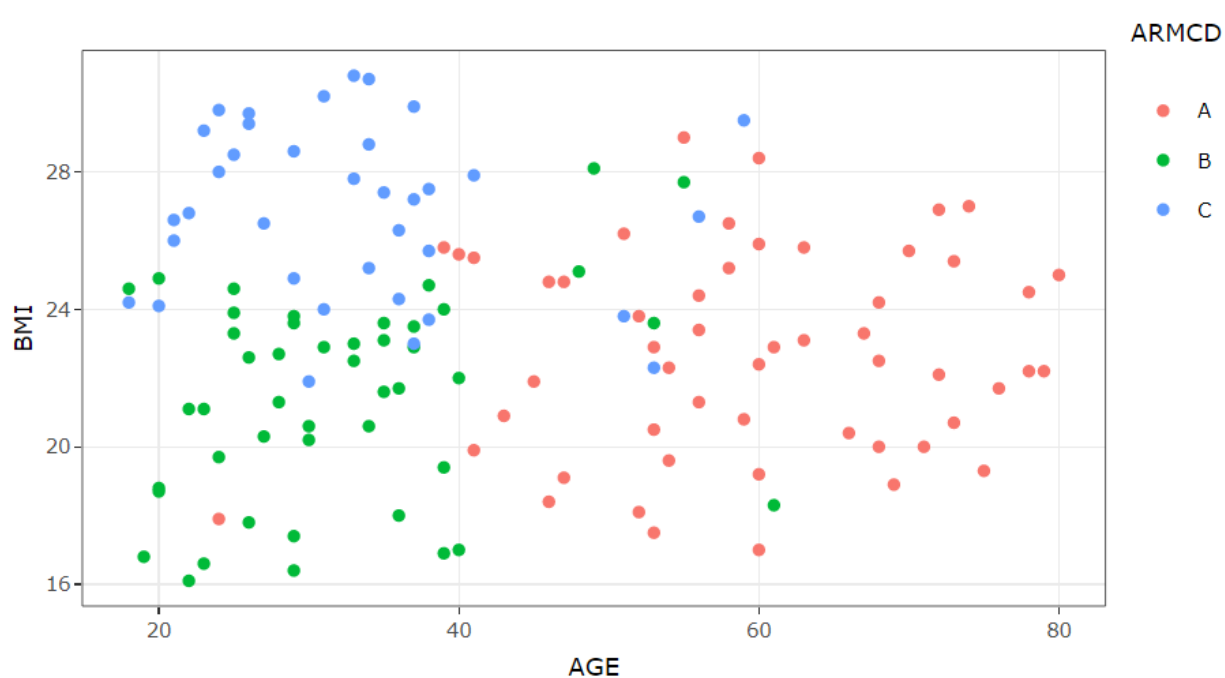


```
fig1 <- plot_ly(labs_1, y = ~result, x = ~visit, type = "box", name = "WBC") %>%
```

```
  layout(yaxis = list(title = 'WBC x 10^3 uLn')) ...
```

```
subplot(fig1, fig2, nrow = 2, shareX = TRUE, titleY = TRUE) %>%
```

```
  layout(title = "WBC and Neutrophils: week 1-6", xaxis = list(title = "Visit"))
```

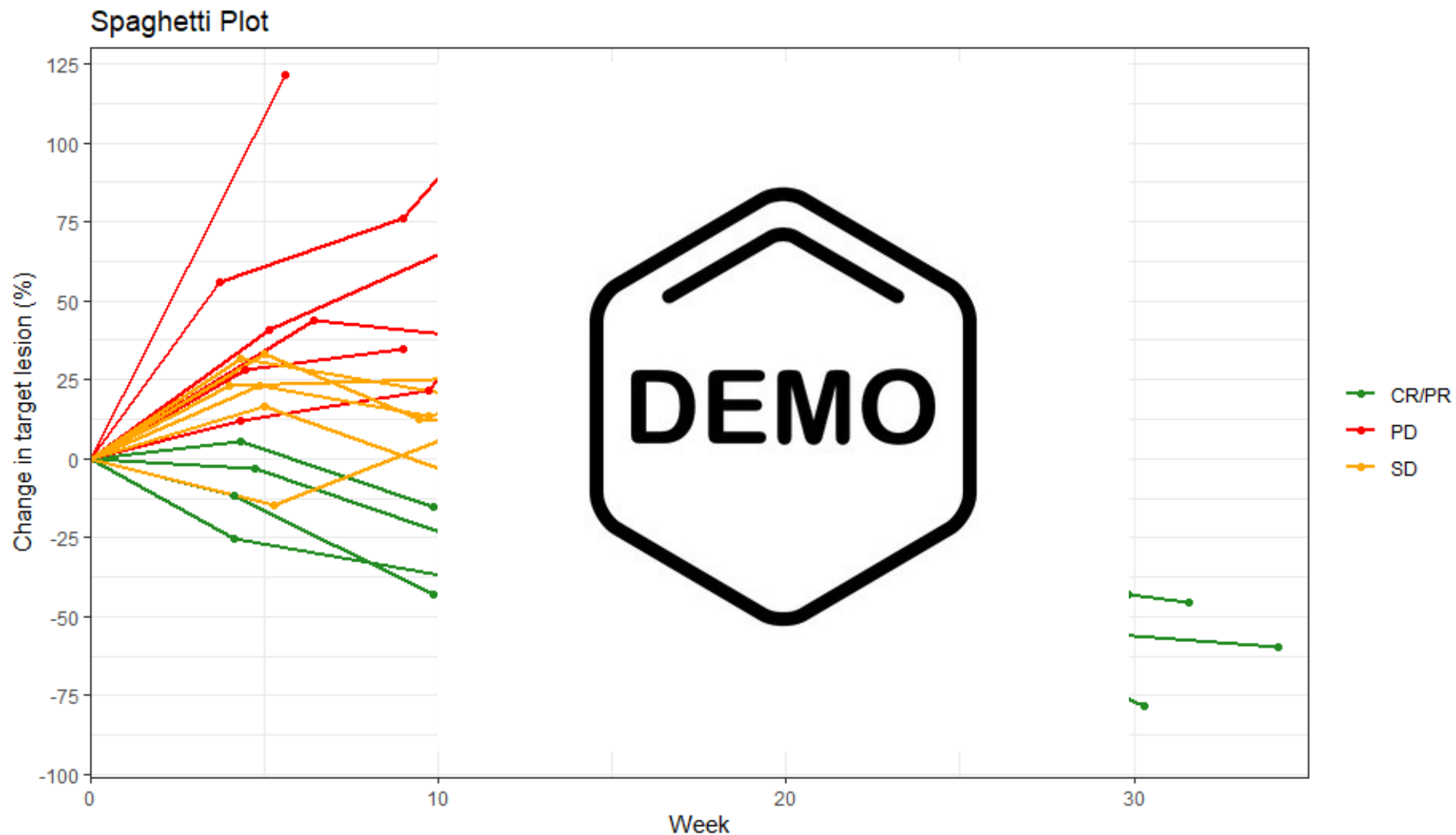


Show 10 entries

	USUBJID	ARMCD	SEX	AGE
1	XXX-0068	B	F	22
2	XXX-0078	B	M	29
3	XXX-0072	B	M	23
4	XXX-0086	B	M	19
5	XXX-0054	B	M	39
6	XXX-0050	A	F	60
7	XXX-0064	B	M	40
8	XXX-0073	B	M	29
9	XXX-0042	A	F	53
10	XXX-0080	B	F	26

Showing 1 to 10 of 135 entries

```
adsl_table <- highlight_key(ADSL)
plot <- ggplot(adsl_table, aes(AGE, BMI, color = ARMCD, text = USUBJID)) + geom_point()
crosstalk::bscols(highlight(ggplotly(plot), "plotly_selected"), DT::datatable(adsl_table))
```



```
ggplotly(p = ggplot2::last_plot())
```



PART II

highcharts



Highcharter^{er} is an R wrapper of HighCharts javascript library.

library(ggplot2)

library(highcharter)

qplot()



hchart()

ggplot()



highcharts()

aes()



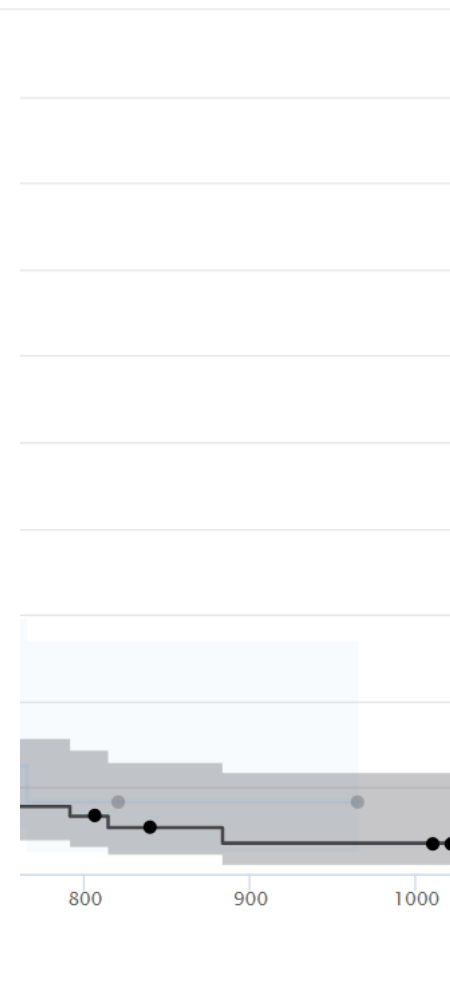
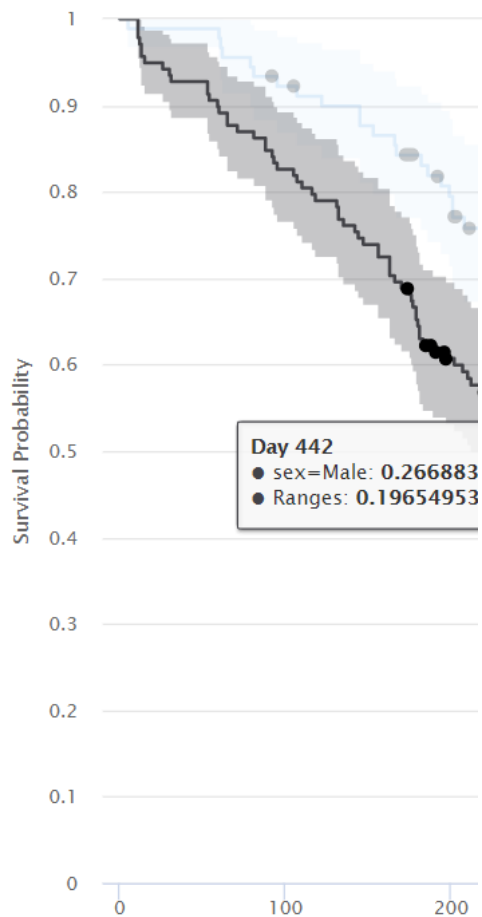
hcaes()

geom_...()



hc_add_series()

In the highcharts tooltips it is possible to render html which means that you can put images, tables or even graphs.



```
library(survival)
```

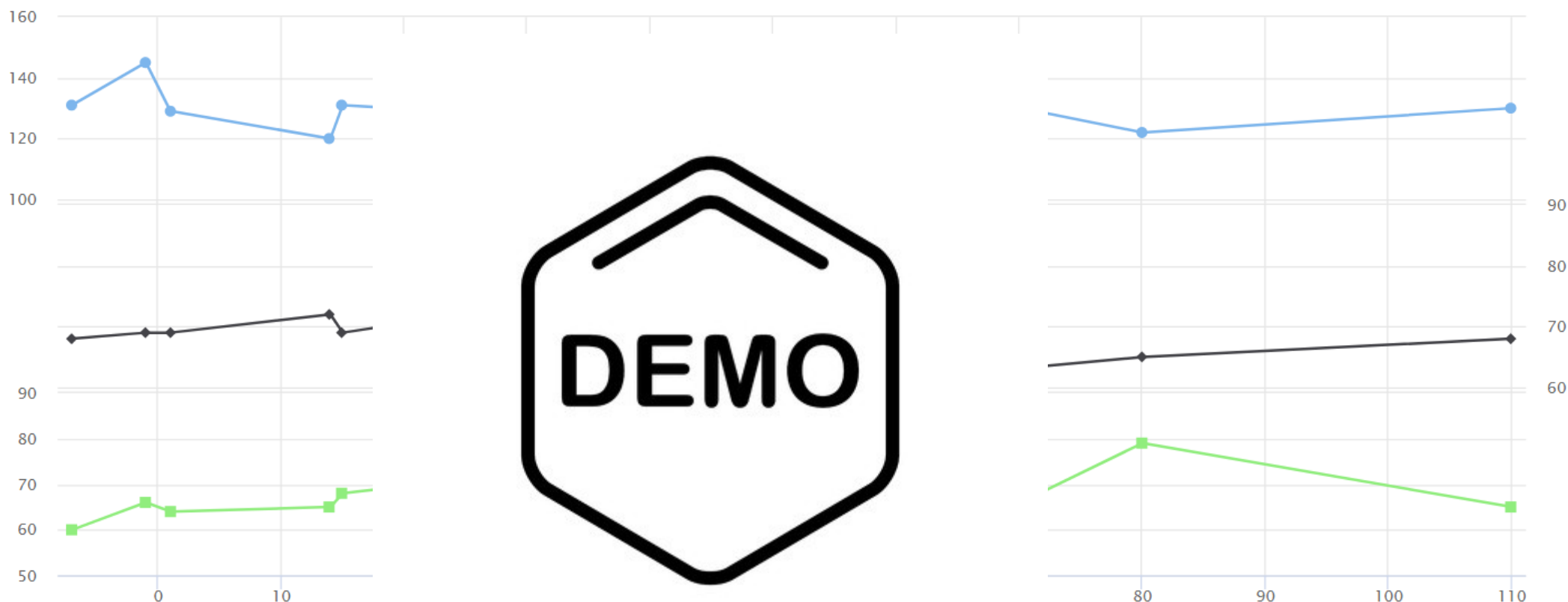
```
lung <- mutate(lung, sex = ifelse(sex == 1, "Male", "Female"))
```

```
fit <- survfit(Surv(time, status) ~ sex, data = lung)
```

```
hchart(fit, ranges = TRUE, tooltip=list(headerFormat="<b>Day {point.key}</b><br>"))
```

Several line plots

Vital Statistics for Patient id = XXX-001



```
highcharts() %>%
```

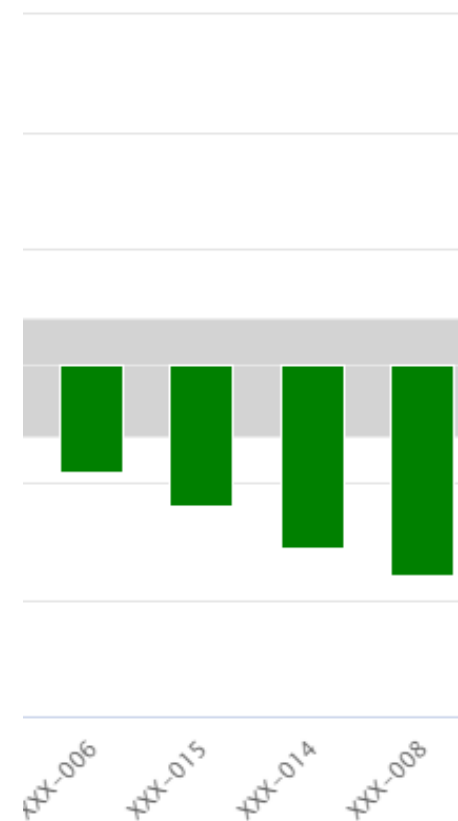
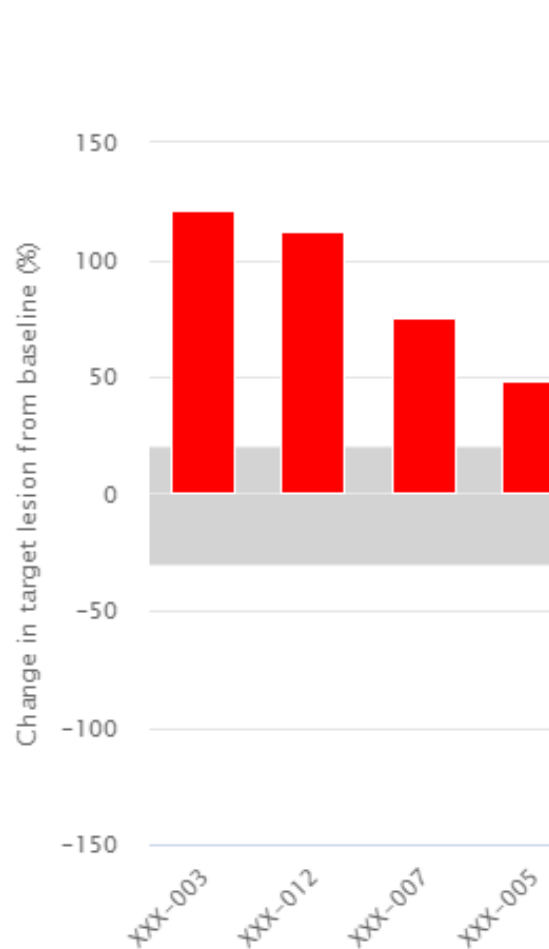
```
  hc_add_series(ADVS, type = "line", hcaes(x = DAY, y = SYSBP), yAxis = 0, name = "Systolic BP (mmHg)",
    tooltip = list(headerFormat = "Day: {point.key} <br>", valuesSuffix = " mmHg")) %>% ...
```

```
  hc_yAxis_multiples(create_yaxis(naxis = 3))
```

```
  hc_exporting(enabled = TRUE) ...
```

— Systolic BP (mmHg) — Diastolic BP (mmHg) — Pulse (beats/min)

Waterfall plot

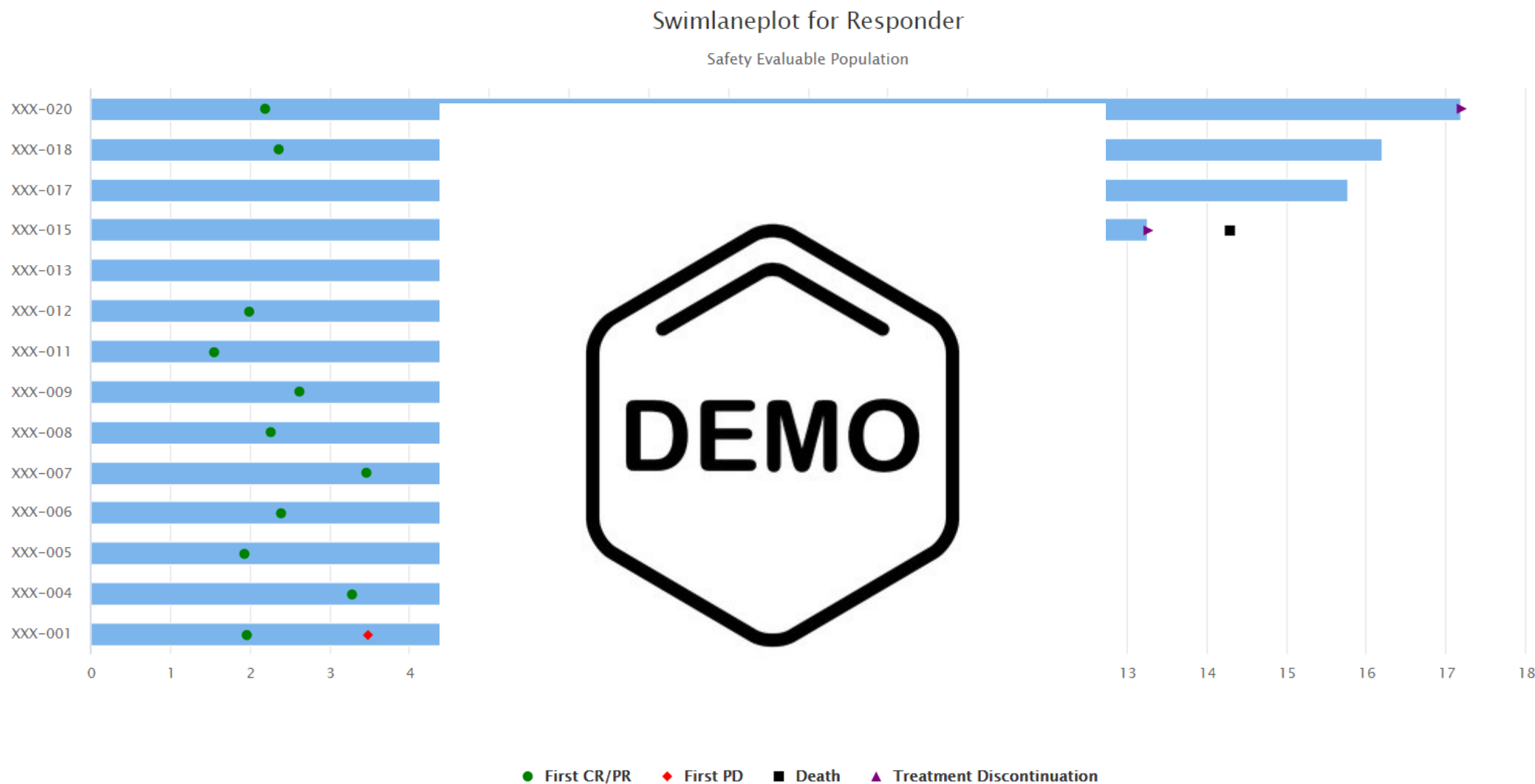


● CR/PR ● PD ● SD

Let's investigate highcharts tooltip abilities:

- tooltip chart

Swimplane plot



Let's investigate highcharts tooltip abilities:

- tooltip chart
- tooltip table

PRESENTATION TAKEAWAYS

- ✓ Easy to create
- ✓ Contains more information
- ✓ Pose multiple questions
- ✓ Focus on details
- ✓ Encourage investigation
- ✓ Looks awesome
- ✓ More fun



THANK YOU

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