The 2018 PISA result of students across all OECD member states

Data points:

Geom_point function is used to visualise the data points with different shapes in ggplot2. Different shape of the data points is visualised using scale_shape_manual function. Data points are filled with different colours using both scale_colour_manual and scale_fill_manual function. Data points are visualised with different size using scale_size_manual function.

Axes:

In this plot, both x and y-axis lines are removed by setting *axis.line.x* and *axis.line.y* variable respectively with *element_blank()* function in *theme* function. Ireland text in x-axis is coloured with red by setting variable *colour* in *element_text* function with an array of hexadecimal colour values where red colour hexadecimal is corresponding to the text Ireland and passing *element_text* function to *axis.text.x* in theme function of ggplot. Y-axis text is visualised on the plot using annotate function in ggplot2. Label values and label position on the plot is used as a parameter for annotate function. X-axis text is tilted with 45 degrees. Assign variable *axis.text.x* with a variable *angle* equals 45 in theme function of ggplot2 to tilt the x-axis label. The x-axis is expanded to the left to fit the Y-axis label. *Expand_scale* is used to expand x-axis to the left, *expand* parameter is set with this *expand_scale* function in *scale_x_discrete* function.

Gridlines:

Geom_segment function is used to visualise the vertical grid line from the x-axis to the data points. Two geom_segment functions are used, one to draw the vertical white grid line from the x-axis to the round-shaped data points and another geom_segment function is used to draw a vertical blue grid line from the round-shaped data points to the diamond-shaped data points. Y-axis panel white grid lines are drawn from left to right side of the plot by setting *panel.grid.major.y* variable with *element_line* function with setting the variable *linetype* to *solid and colour* variable to white.

Panel:

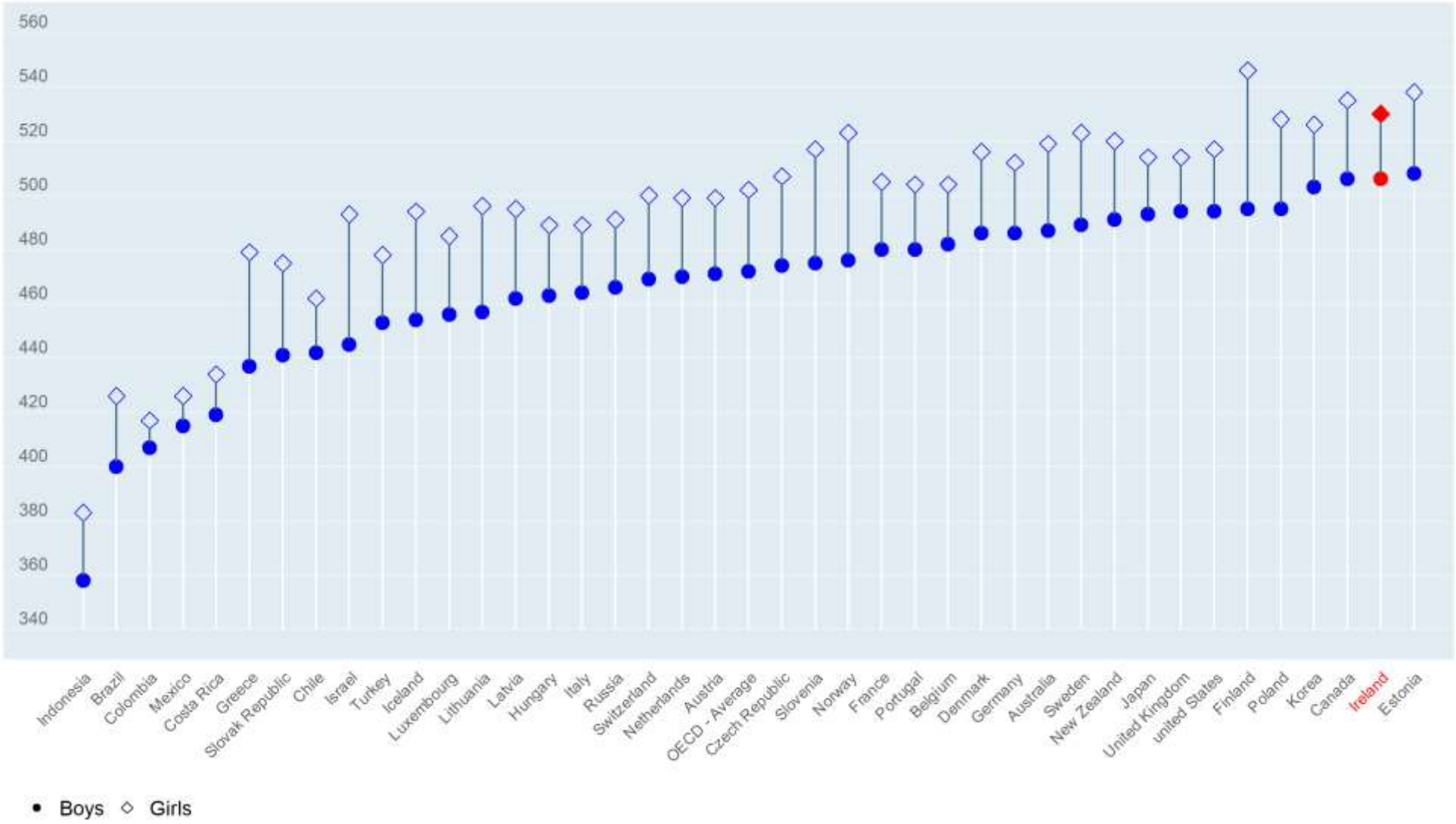
The background colour of the panel is changed to hexa '#e1edf3'(light blue) colour by assigning *panel.background* variable with the *element_rect()* function in theme function , *fill* variable is assigned with hexadecimal colour inside *element_rect()* function.

Legend:

The legend is placed at the bottom left side of the plot by setting both *legend.position* with 'bottom' and *legend.justification with* 'left' and Legend labels are placed side by side horizontally by setting *legend.direction* variable in theme function with *"horizontal".* Legend title is removed by setting variable *legend.title* as *element_blank()*. Only colour specific legends are visualised. Fill and size related legends are removed by assigning FALSE to the *fill* and *size* parameters in *guides* function.

I have not been able to change the shape colour to blue in the legend.

Plot:


560
540
520
500
480
460
440
420
400
380
360
340
Indonesia
Brazil
Colombia
Mexico
Costa Rica
Greece
Slovak Republic
Chile
Israel
Turkey
Iceland
Luxembourg
Lithuania
Latvia
Hungary
Italy
Russia
Switzerland
Netherlands
Austria
OECD - Average
Czech Republic
Slovenia
Norway
France
Portugal
Belgium
Denmark
Germany
Australia
Sweden
New Zealand
Japan
United Kingdom
united States
Finland
Poland
Korea
Canada
Ireland
Estonia
Boys
Girls

Comparison of reading performance of a set of countries over the years

In this part, visualised plot represents the reading performance of a set of counties over the years. The plot is visualised in the context of how countries with different per capita income perform over the years in terms of reading performance. A set of counties consist of six counties where two countries belong to lower range of per capita income (Indonesia and Brazil), another two countries belong to medium range of per capita income (Finland and Japan), and remaining two countries belong to high range of per capita income (Ireland and Switzerland). Per capita income data is taken from the OECD website.

Scatter plot is used along with the line graph, where dots are connected by lines. This approach visually emphasizes the order and trend by connecting dots. *Geom_point* function is used to draw dots on the plot. *Geom_line* function is used draw line which connects the dots. Y-axis is drawn on the right side of the plot by duplicating Y-axis. This duplicated Y-axis is passed to *scale_y_continuous.* Another field is created in the data to avoid the overlap of the text in Y-axis. Data points shape is changed using *scale_shape_manual* function. Colour of line and shape is changed using *scale_color_manual* function. The theme is similar to the theme used in part 2.