Plotly Cheatsheet

Version 0.6.0 - May 2019

Live examples shown using Plotly.js v.1.48.1

Boilerplate

Importing the libray

```
<script src="https://cdn.plot.ly/
plotly-latest.min.js"></script>
```

Use the plotly CDN

Standard structure

```
var traces = [ ... ];
var layout = { ... };
Plotly.plot("divID",traces,layout);
```

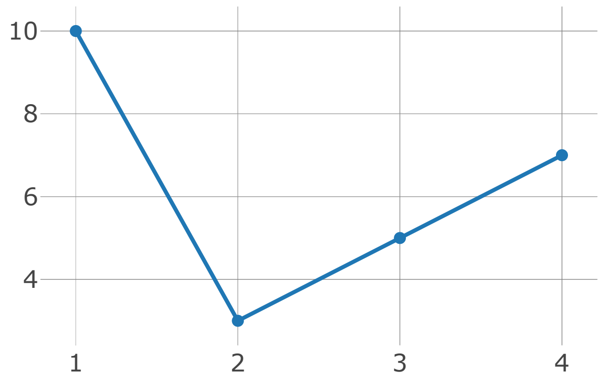
Typical layout

```
layout = {margin:{        t:1,
                    l:20,       r:2,
                          b:30
}};
```

Default margins are wide.

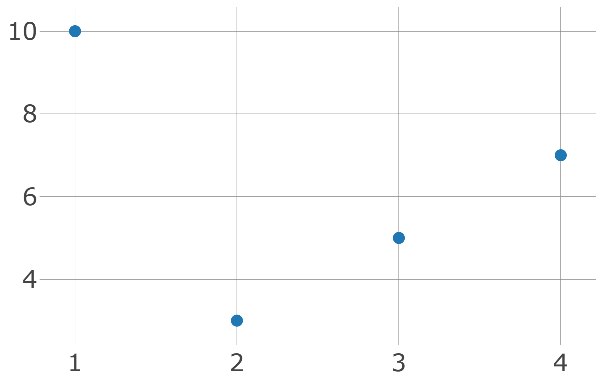
Basic plots

Lines



```
var traces = [{
             x:[1,2,3,4],
             y:[10,3,5,7],
             type:"scatter"}];
```

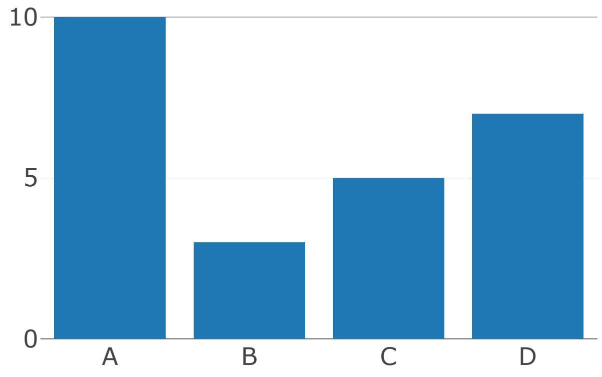
Dots



```
var traces = [{
             x:[1,2,3,4],
             y:[10,3,5,7],
             type:"scatter",
             mode:"markers",
             }];
```

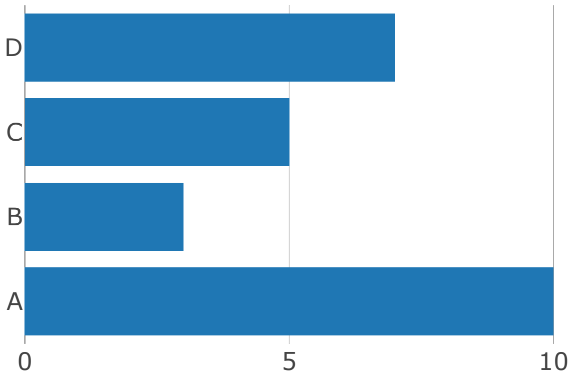
Mode can be any combination of `"lines"`, `"markers"`, `"text"` joined with a `"+"` OR `"none"`.

Bars



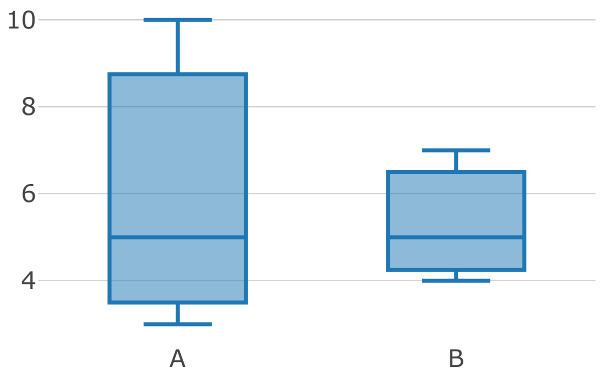
```
var traces = [{
             x:['A','B','C','D'],
             y:[10,3,5,7],
             type:"bar"}];
```

Horizontal Bars



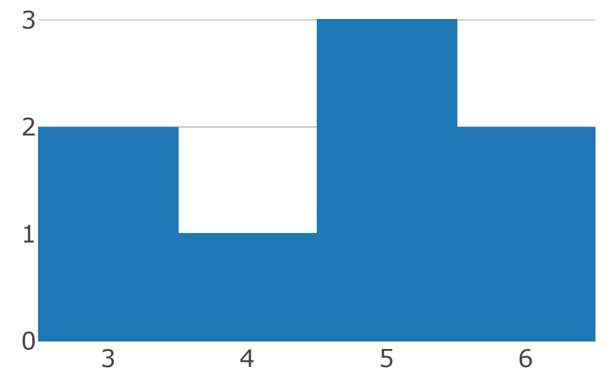
```
var traces = [{
     y:['A','B','C','D'],
     x:[10,3,5,7],
     orientation:"h", // default: "v"
     type:"bar"}];
```

Boxplots



```
var traces = [{
       x:['A','A','A',  'B','B','B'],
       y:[10,  3,  5,    7,  5,  4],
    type:"box"}];
```

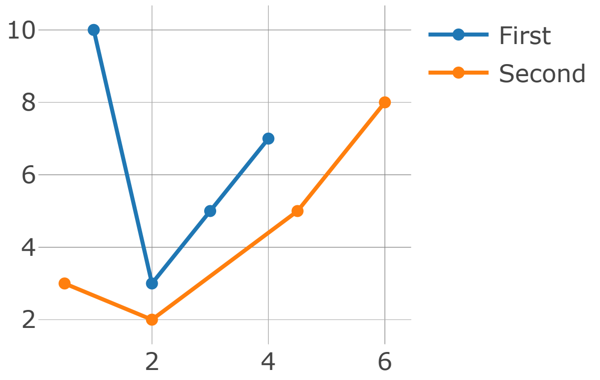
Histogram



```
var traces = [{
    x:[5, 3, 5, 3, 5, 4, 6, 6],
    type:"histogram"}];
```

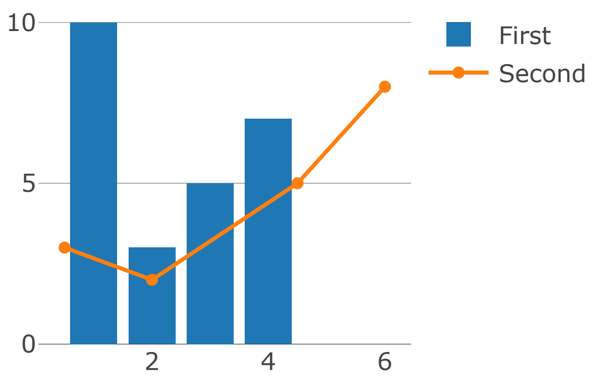
Use `y` to have it horizontal.

Multiple data series



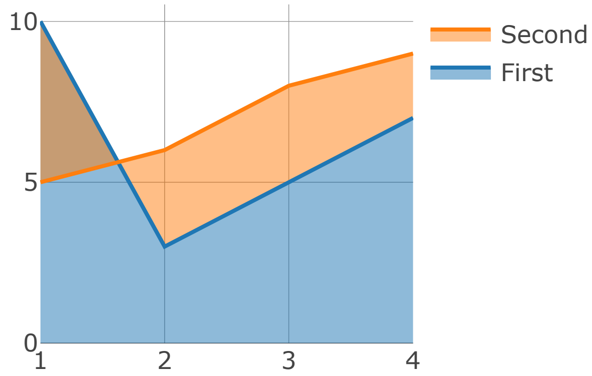
```
var traces = [{name:"First",
              x:[1,2,3,4],
              y:[10,3,5,7],
              type:"scatter",
              },
              {name:"Second",
              x:[.5,2,4.5,6],
              y:[3,2,5,8],
              type:"scatter",
              }];
```

Multiple graph types



```
var traces = [{name:"First",
              x:[1,2,3,4],
              y:[10,3,5,7],
              type:"bar",
              },
              {name:"Second",
              x:[.5,2,4.5,6],
              y:[3,2,5,8],
              type:"scatter",
              }];
```

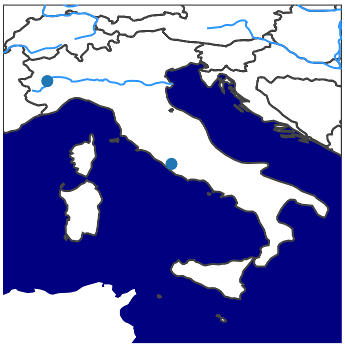
Area



```
var traces = [{name:"First",
             x:[1,2,3,4],
             y:[10,3,5,7],
             type:"scatter",
             fill:"tozeroy",
             mode:"lines"
             },{name:"Second",
             x:[1,2,3,4],
             y:[5,6,8,9],
             type:"scatter",
             fill:"tonexty",
             mode:"lines"
             }];
```

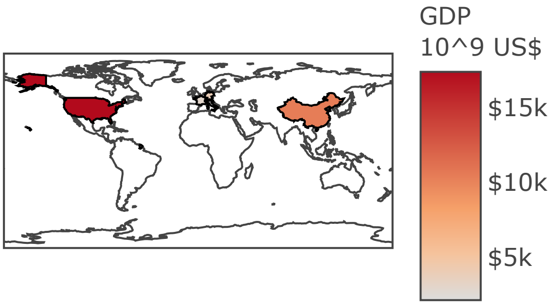
`fill` can be `tozero` x or y, `tonext` x or y or `none`

Scatter Geo



```
var traces = [{
  lat:[41.883,45.066],
  lon:[12.466,7.700],
  text:['Rome','Turin'],
    type:'scattergeo',
  mode:'markers'}];
var layout = {
geo : {
  projection: {type:"equirectangular"},
  showocean: true, oceancolor: "navy",
  showrivers: true, scope:"europe",
  resolution: 50,
  lataxis:{range:[35,48]},
  lonaxis:{range:[6,19]}
}}
```

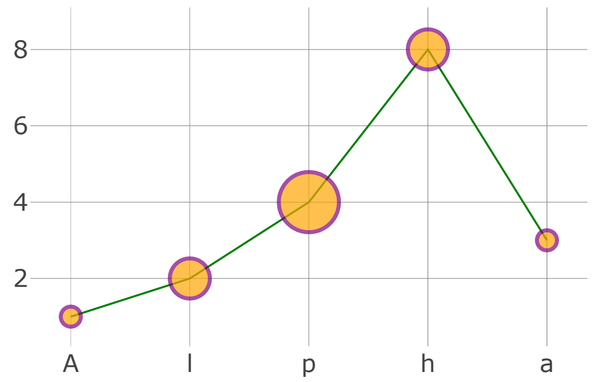
Choropleth Map



```
var traces = [{
  type: 'choropleth',
  locations: ['ITA','DEU','FRA',
              'USA','CHN'],
  z: [2129,3820,2902,17420,10360],
  text: ['Italy','Germany','France',
         'USA','China'],
  autocolorscale: true,
  hoverinfo: 'z+text',
  colorbar: {
    tickprefix: '$',
    title: 'GDP<br>10^9 US$'
  }}];
```

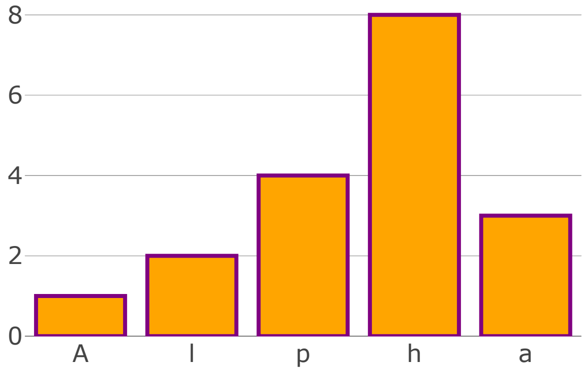
Visual attributes

Lines and dots



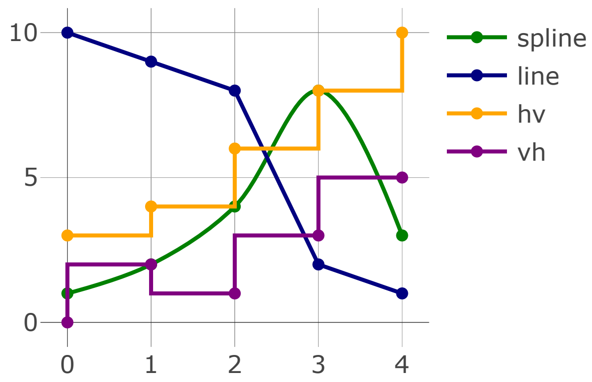
```
var traces = [{
        x: ['A', 'l', 'p', 'h', 'a'],
        y: [1, 2, 4, 8, 3],
        type : "scatter",
        marker: {
              color: "orange",
              size: [10,20,30,20,10],
              line: {
                color:"purple",
                width: 2
              }
        },
        line: {
             color: "green",
             width: 1
        }
       }];
```

Coloring bars



```
var traces = [{
        x: ['A', 'l', 'p', 'h', 'a'],
        y: [1, 2, 4, 8, 3],
        type : "bar",
        marker: {
            color: "orange",
            line:{
                color:"purple",
                width: 2
            }
        }
       }];
```

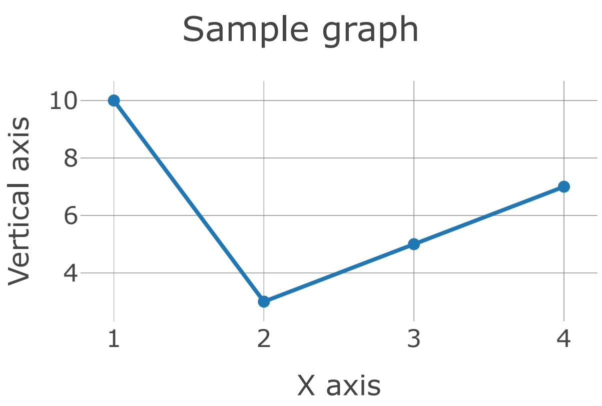
Line shapes



```
var traces = [{name:"spline",
    y: [1, 2, 4, 8, 3],
    type : "scatter",
    line: {
        color:"green", shape: "spline"
    }},
    {name:"line",
    y: [10, 9, 8, 2, 1],
    type : "scatter",
    line: {
        color: "navy", shape: "line"
    }},
    }},
    {name:"hv",
    y: [3, 4, 6, 8, 10],
    type : "scatter",
    line: {
        color: "orange", shape: "hv"
    }},
    {name:"vh",
    y: [0,2, 1, 3, 5],
    type : "scatter",
    line: {
        color: "purple", shape: "vh"
    }       }];
```

Layout

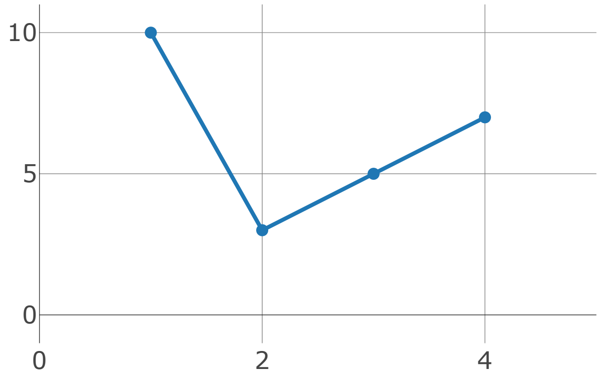
Titles



```
var traces = [{type:"scatter",
  x:[1,2,3,4],y:[10,3,5,7],}];
var layout = {
        title: "Sample graph",
        xaxis: {title:"X axis"},
        yaxis: {title:"Vertical axis"},
        margin : {t:40,b:40,r:2,l:40}
}
```

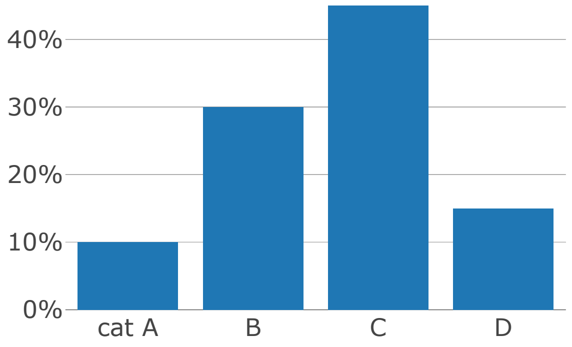
Margin must be large enough to avoid overlap with the graph.

Ranges



```
var traces = [{type:"scatter",
  x:[1,2,3,4],y:[10,3,5,7],}];
var layout = {
        xaxis: {range:[0,5]},
        yaxis: {range:[-1,11]},
}
```

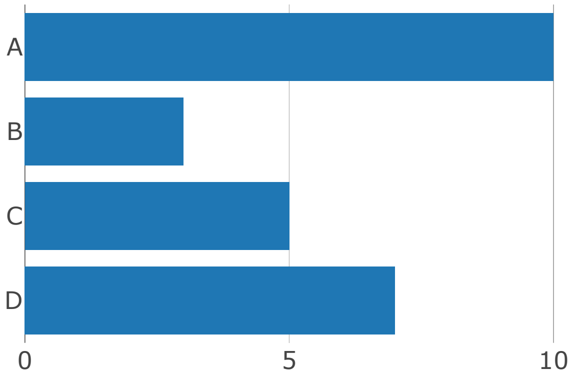
Ticks



```
var traces = [{type:"bar",
  x:["A","B","C","D"],
  y:[.10,.3,.45,.15],}];
var layout = {
    xaxis: {tickprefix:"cat ",
            showtickprefix:"first"},
    yaxis: {tickformat:"%"},
    margin : {t:10,b:30,r:10,l:40}
}
```

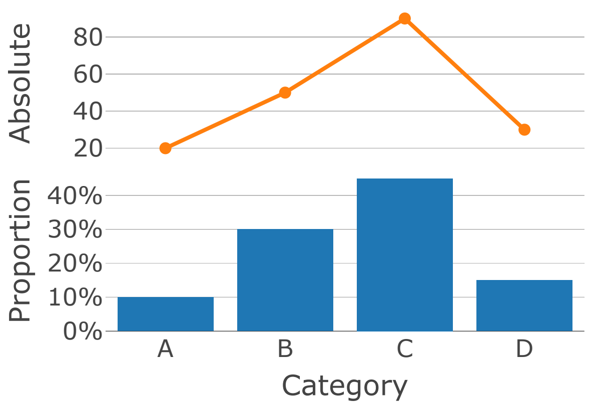
More info about `tickformat` can be found at https://github.com/d3/d3/wiki/Formatting#numbers

Reverse axis



```
var traces = [{
         y:['A','B','C','D'],
         x:[10,3,5,7],
         orientation:"h",
         type:"bar"}
    ];
var layout = {
        yaxis: {autorange:'reversed'}
}
```

Multiples



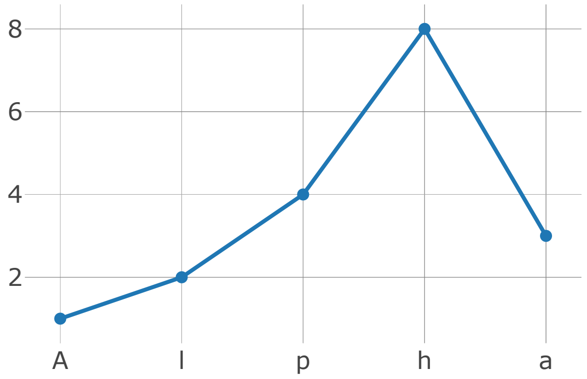
```
var traces = [{type:"bar",
        x:["A","B","C","D"],
        y:[.10,.3,.45,.15],},
  { type:"scatter",
        yaxis:"y2",
        x:["A","B","C","D"],
        y:[20,50,90,30],}
  ];
```

```
var layout = {
    xaxis: {title:"Category",
            anchor:"y"},
    yaxis: {title:"Proportion",
           tickformat:"%",
           domain:[0,0.49]},
    yaxis2:{title:"Absolute",
            domain:[0.51,1]},
    margin:{t:1,b:35,r:1,l:60},
    showlegend: false
}
```

The trace with y axis `y2` is define by `yaxis2`.

The `domain` property defines where the axis will be mapped.

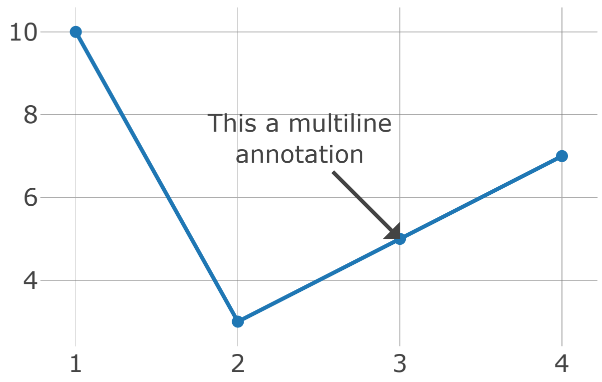
Hover info



```
var traces = [{
        x: ['A', 'l', 'p', 'h', 'a'],
        y: [1, 2, 4, 8, 3],
        text : ["Alpha","Lambda","Pi",
                "Theta","alpha"],
        type : "scatter",
        hoverinfo:"text"
       }];
```

Value for `hoverinfo` can be any combination of `"x"`, `"y"`, `"text"`, `"name"` joined with a `"+"` OR `"all"` or `"none"`

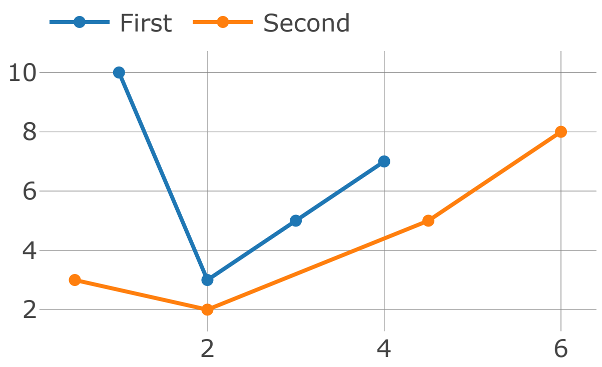
Annotations



```
var traces = [{
         x:[1,2,3,4],
         y:[10,3,5,7],
         type:"scatter"}];
var layout = {
    annotations:[{
    text:"This a multiline<br>"+
         "annotation",
    x:3, y:5, ax:-50, ay:-50
    }],
    margin:{l:20,r:2,t:1,b:30}};
```

By default, `x` and `y` are in graph coordinates, while `ax` and `ay` are in pixels.

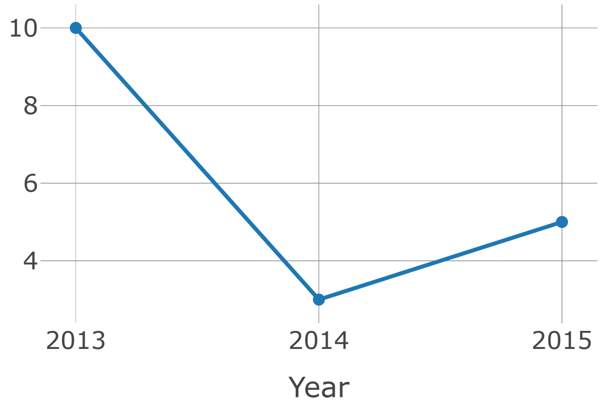
Legends



```
var traces = [{name:"First",
     x:[1,2,3,4], y:[10,3,5,7],
     type:"scatter",},
    {name:"Second",
     x:[.5,2,4.5,6], y:[3,2,5,8],
     type:"scatter",
     }];
var layout = {legend:{
            y:1,x:0,
            yanchor:"bottom",
            orientation:"h"
            },
    margin:{l:20,r:2,t:1,b:30}};
```

`x` and `y` are expressed in graph normalized units, 0 means left (bottom) side and 1 means right (top) side of the graph

Numbers as categories

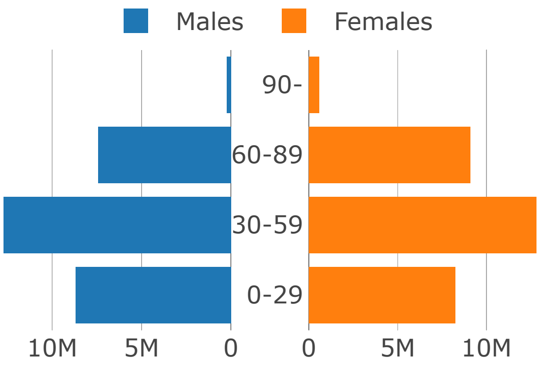


```
var traces = [{name:"Vendite",
     x:[2013,2014,2015],
     y:[10,3,5],
     type:"scatter",}];
var layout = {
        xaxis:{title:"Year",
               type:'category'},
        margin:{l:20,r:2,t:1,b:40}};
```

Without the `type:'category'`, x values even when reported as strings would be considered as numbers and the x axis would include meaningless mid values e.g. 2013.5

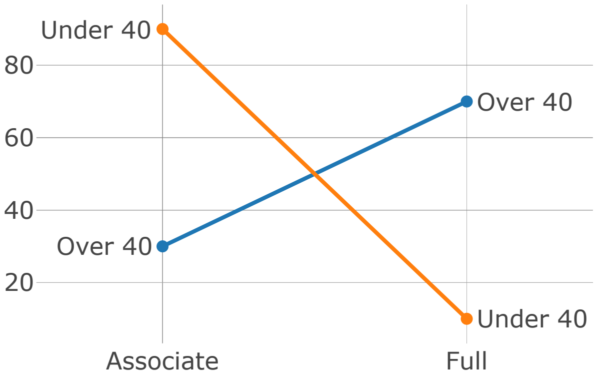
Complex Plots

Diverging bar plot



```
var traces = [{
  name:"Males",
  x:[8686278,12731431,7427114,236912],
  y:["0-29","30-59","60-89","90-"],
  type:"bar",orientation: "h"
  },{
  name:"Females",
  x:[8247164,12808134,9073016,590955],
  y:["0-29","30-59","60-89","90-"],
  type:"bar",orientation: "h",
         xaxis: "x2"}];
var layout = {
  xaxis: { domain: [0, 0.43],
        autorange: 'reversed' },
  xaxis2: { domain: [0.57, 1] },
  yaxis : { position: 0.56 },
  legend:{ y:1,x:0.5,
    yanchor:"bottom",
    xanchor:"center",
    orientation:"h"
} };
```

Slope plot



```
traces = [{
    name: "Over 40",
    x: ["Associate","Full"],
    y: [30,70],
    type:"scatter",
    hoverinfo: "x+y"
},{
    name: "Under 40",
    x: ["Associate","Full"],
    y: [90,10],
    type:"scatter",
    hoverinfo: "x+y"
}];

layout = {
annotations : [
{x:"Associate",y:30,text:"Over 40",
    xanchor:"right", xshift:-3,
        showarrow:false },
{x:"Associate",y:90,text:"Under 40",
    xanchor:"right", xshift:-3,
        showarrow:false },
{x:"Full",y:70,text:"Over 40",
    xanchor:"left", xshift: 3,
        showarrow:false},
{x:"Full",y:10,text:"Under 40",
    xanchor:"left", xshift: 3,
        showarrow:false}
],
showlegend: false
};
```