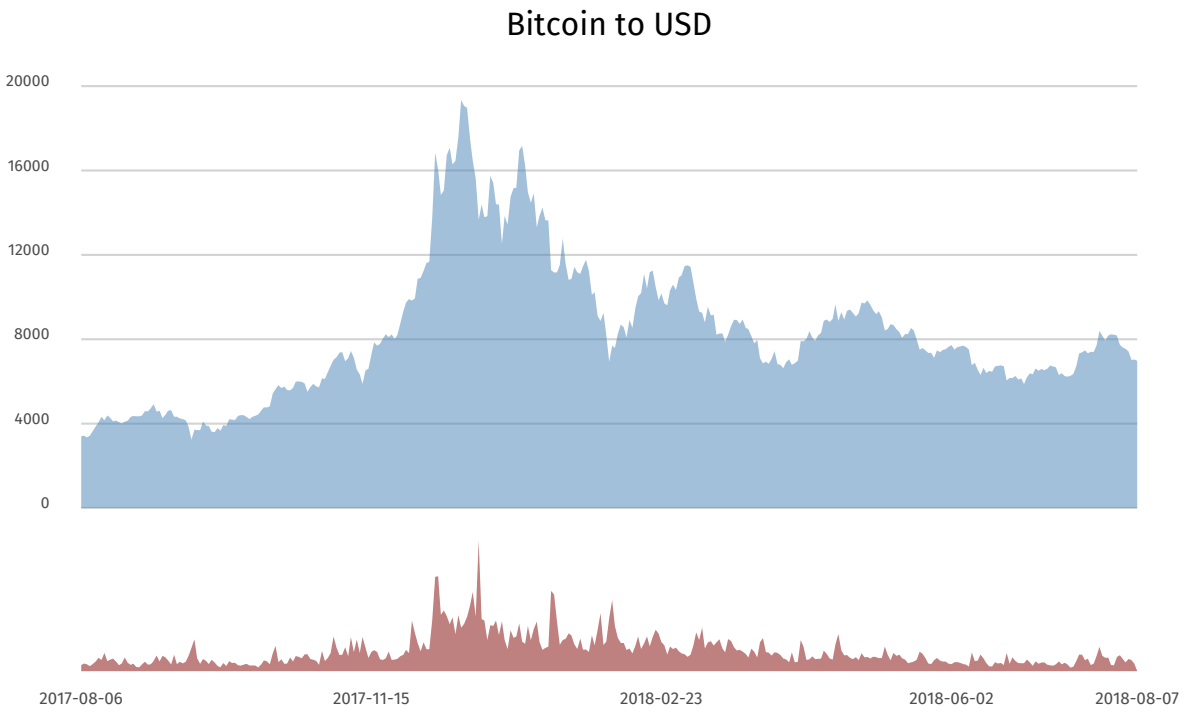
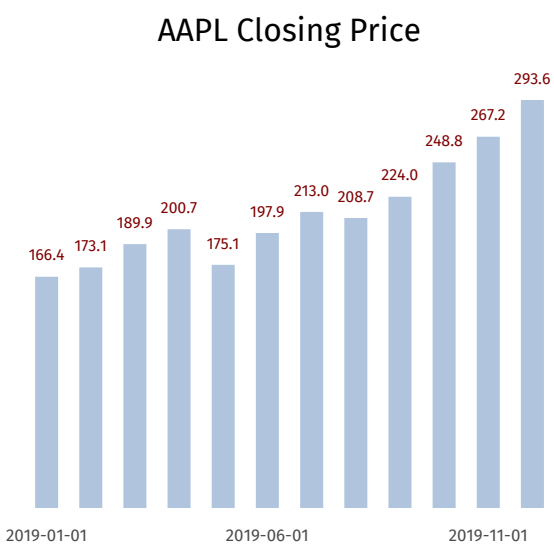
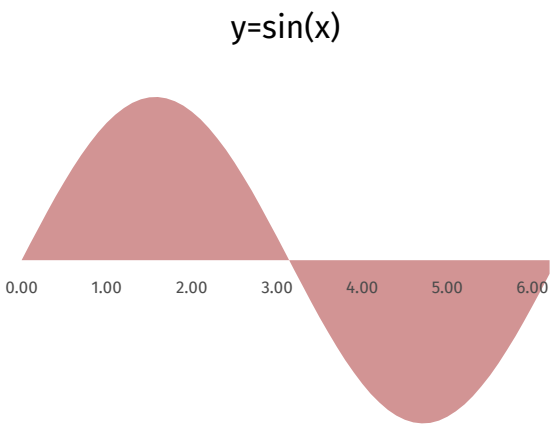
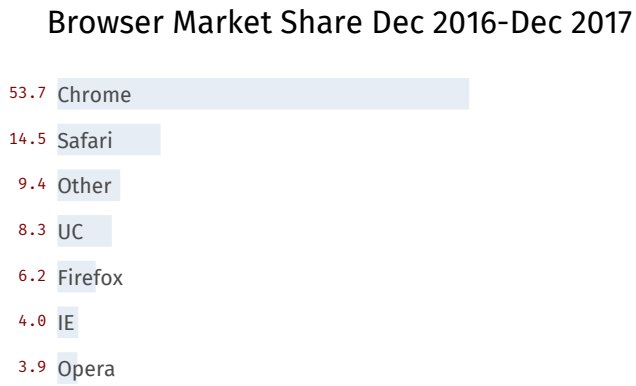
dchart: charts for deck/decksh









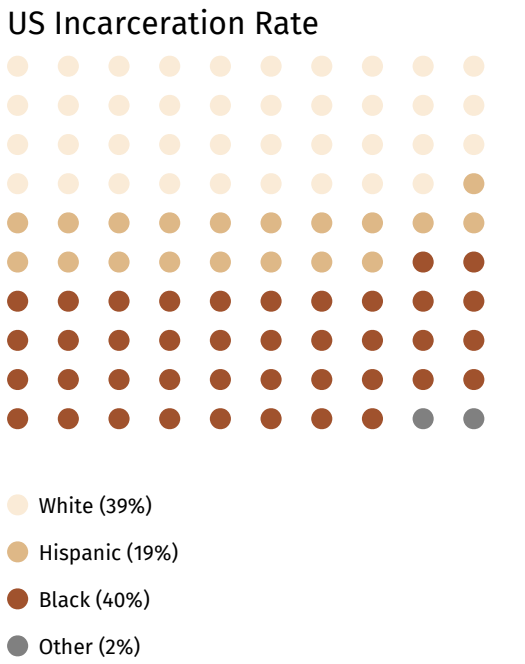
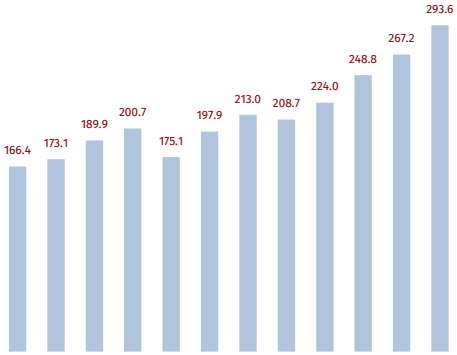
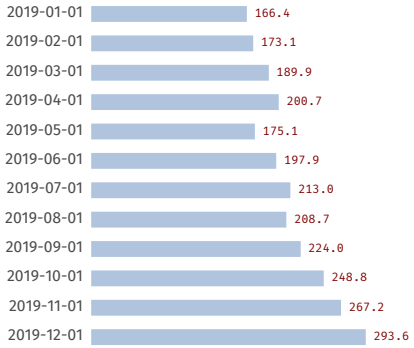


Chart Types

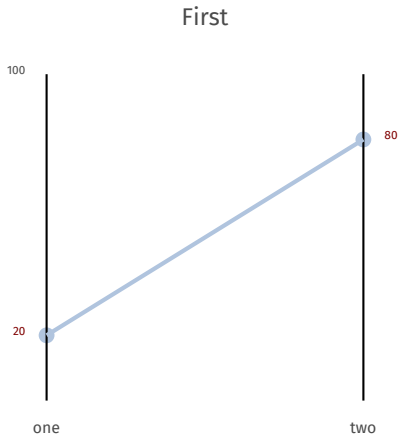


Column

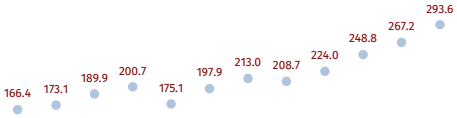


Bar

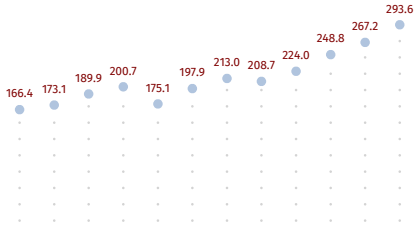
Word Bar



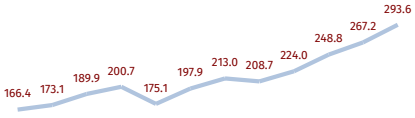
Slope



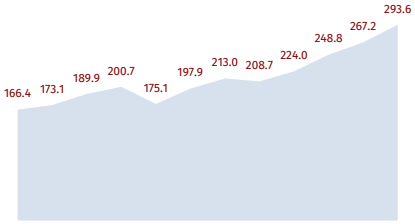
Scatter



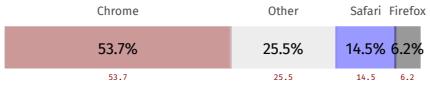
Dot



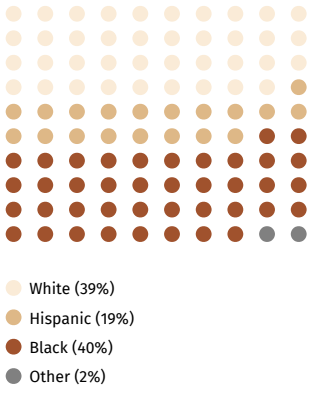
Line



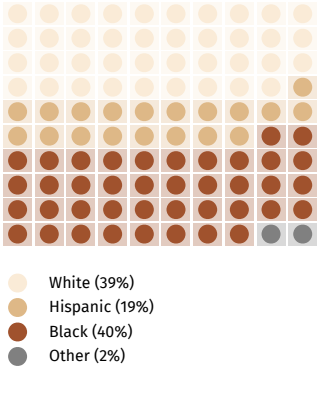
Area



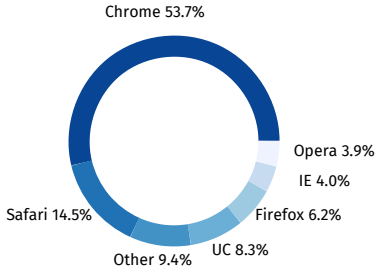
Proportional Map



Proportonal Grid

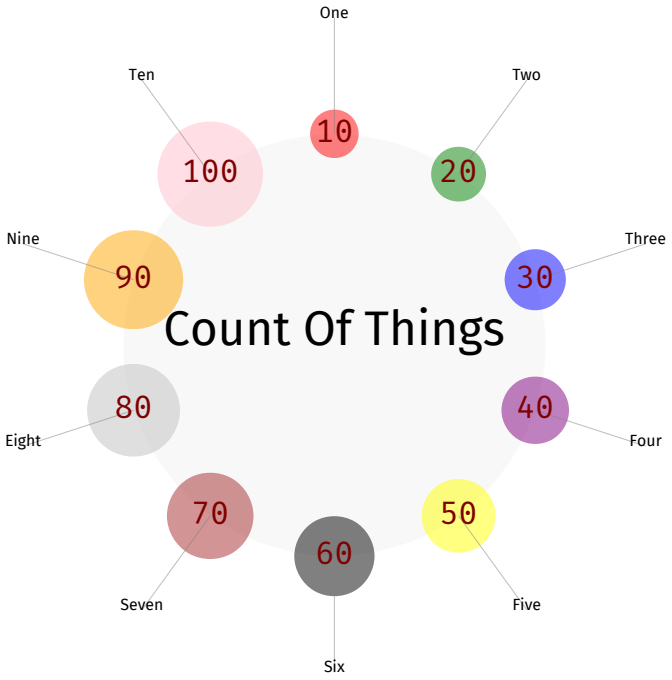


Lego

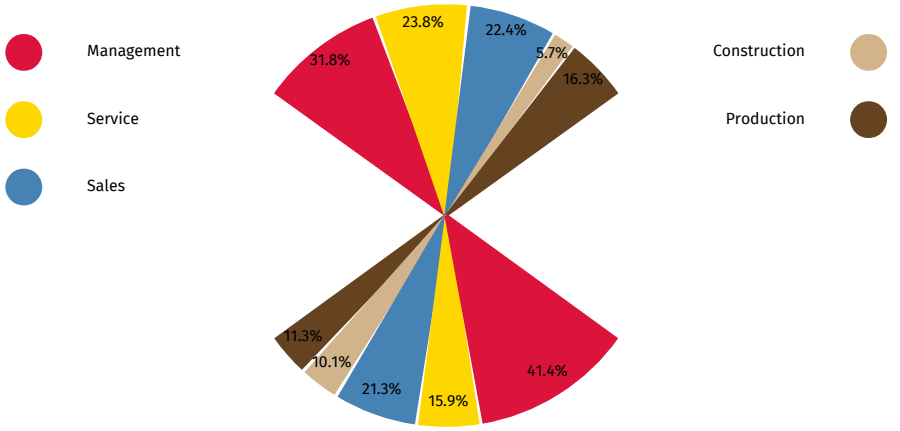


Donut/Pie

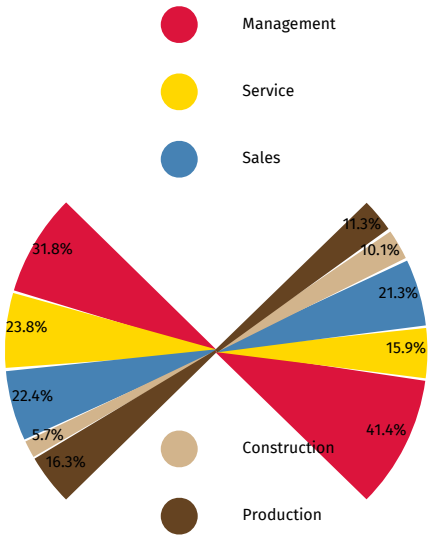
Chart Types (continued)



Radial



Fan



Bowtie

Data

Tab-Separated

X Label Y Value

```
# AAPL Closing Price
2019-01-01    166.440002
2019-02-01    173.149994
2019-03-01    189.949997
2019-04-01    200.669998
2019-05-01    175.070007
2019-06-01    197.919998
2019-07-01    213.039993
2019-08-01    208.740005
2019-09-01    223.970001
2019-10-01    248.759995
2019-11-01    267.250000
2019-12-01    293.649994
```

Comma-Separated (CSV)

Columns (pick two)

```
Date,Open,High,Low,Close,Adj Close,Volume
2019-01-01,154.889999,169.000000,142.000000,166.440002,163.587997,828087400
2019-02-01,166.960007,175.869995,165.929993,173.149994,170.183029,472540600
2019-03-01,174.279999,197.690002,169.500000,189.949997,187.495865,650981400
2019-04-01,191.639999,208.479996,188.380005,200.669998,198.077362,506117700
2019-05-01,209.880005,215.309998,174.990005,175.070007,172.808105,739456600
2019-06-01,175.600006,201.570007,170.270004,197.919998,196.115219,515187300
2019-07-01,203.169998,221.369995,198.410004,213.039993,211.097366,473957000
2019-08-01,213.899994,218.029999,192.580002,208.740005,206.836563,681074600
2019-09-01,206.429993,226.419998,204.220001,223.970001,222.770889,542567100
2019-10-01,225.070007,249.750000,215.130005,248.759995,247.428162,608302700
2019-11-01,249.539993,268.000000,249.160004,267.250000,265.819183,448331500
2019-12-01,267.269989,293.970001,256.290009,293.649994,292.954712,597198700
```

Data to Chart

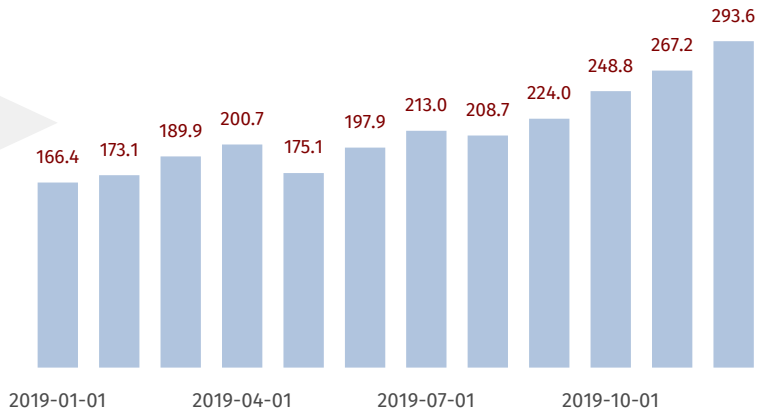
Data

```
# AAPL Closing Price
2019-01-01    166.440002
2019-02-01    173.149994
2019-03-01    189.949997
2019-04-01    200.669998
2019-05-01    175.070007
2019-06-01    197.919998
2019-07-01    213.039993
2019-08-01    208.740005
2019-09-01    223.970001
2019-10-01    248.759995
2019-11-01    267.250000
2019-12-01    293.649994
```

Markup

```
<deck>
  <canvas width="0" height="0" />
  <slide bg="white">
    <text ...>AAPL Volume</text>
    <line ... color="lightsteelblue" />
    <text ... color="rgb(127,0,0)">563.1</text>
    <text ... color="rgb(75,75,75)">2017-01-01</text>
    .
    .
    .
  </slide>
</deck>
```

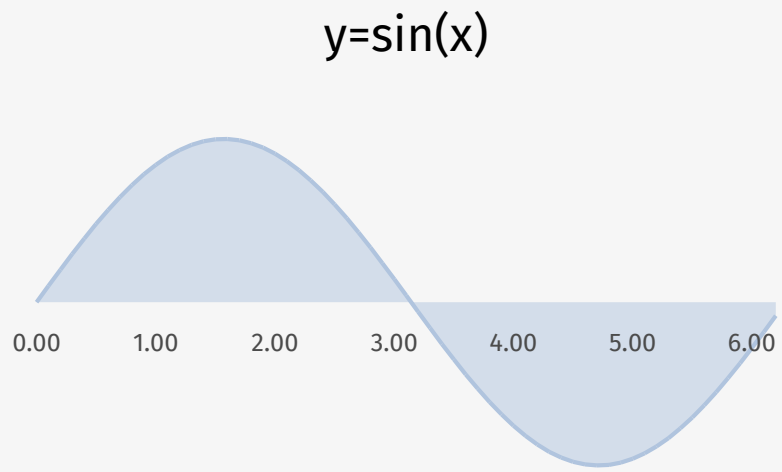
PDF Rendition




```
dchart AAPL.d | pdf
```

Generating data for charts

```
package main

import (
    "fmt"
    "math"
)

func main() {
    fmt.Println("# y=sin(x)")
    for x := 0.0; x < math.Pi*2; x += 0.1 {
        fmt.Printf("%.2f\t%.4f\n", x, math.Sin(x))
    }
}
```




```
# y=sin(x)
0.00    0.0000
0.10    0.0998
0.20    0.1987
0.30    0.2955
0.40    0.3894
0.50    0.4794
0.60    0.5646
0.70    0.6442
0.80    0.7174
.
.
5.80    -0.4646
5.90    -0.3739
6.00    -0.2794
6.10    -0.1822
6.20    -0.0831
```

```
go run sine.go |
dchart -bar=f -val=f -xlabel=10 -line -vol -bottom=50 |
pdfdeck -stdout - > sine.pdf
```

dchart API

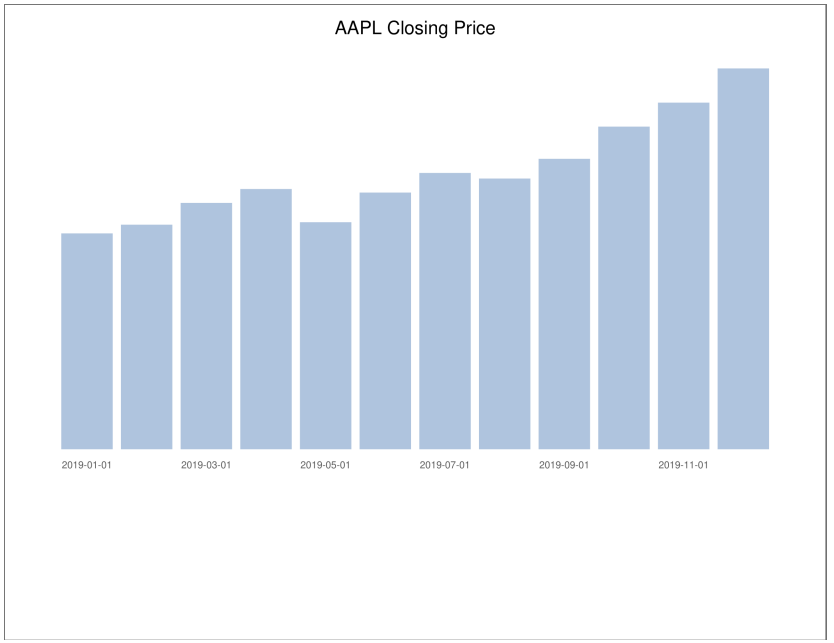
```
NewChart(chartype string, top, bottom, left, right float64) => settings

settings.[thing] = ...

settings.GenerateChart(deck *generate.Deck, io.ReadCloser)
```

Chart Data	`[]ChartData`
Chart Settings	`Settings`
Read CSV or TSV	`Getdata(r io.ReadCloser, readcsv bool, cols string) ([]ChartData,float64,float64,string)`
Read TSV	`TSVdata(r io.ReadCloser) ([]ChartData, float64, float64, string)`
Read CSV	`CSVdata(r io.ReadCloser, csvcols string) ([]ChartData, float64, float64, string)`
Defne a Chart	`NewChart(chartType string, top, bottom, left, right float64) Settings`
Define Standalone	`NewFullChart(chartType string, top, bottom, left, right float64) Settings`
Make Chart	`(s *Settings) GenerateChart(deck *generate.Deck, r io.ReadCloser)`
Write the Chart	`(s *Settings) Write(w io.Writer, r io.ReadCloser)`

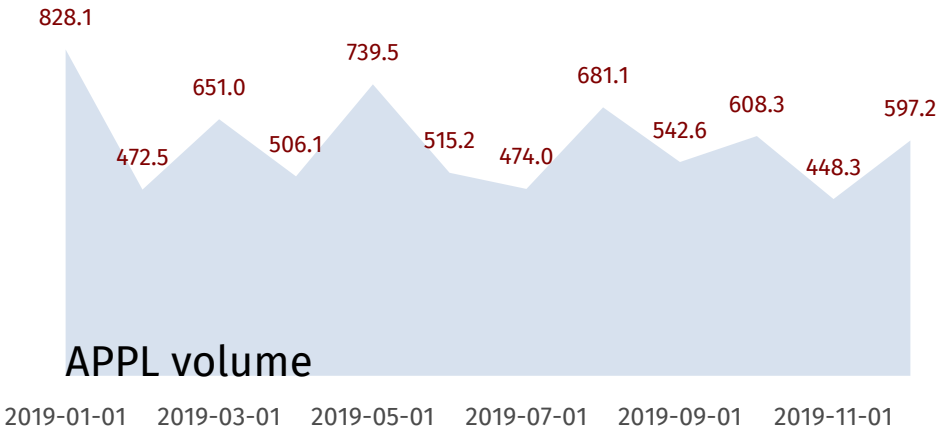
Example Program

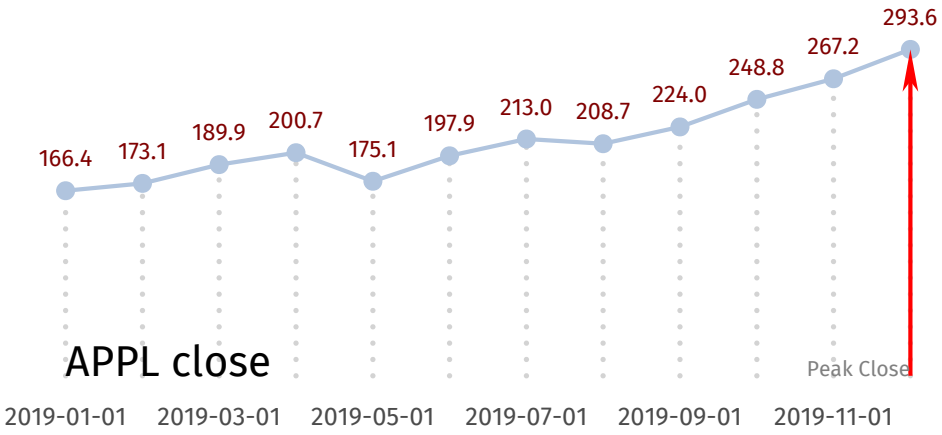
```
package main

import (
    "fmt"
    "os"

    "github.com/ajstarks/dchart"
    "github.com/ajstarks/deck/deckgen"
)

func main() {
    chart := dchart.NewFullChart("bar", 0, 0, 0, 0)
    chart.ShowTitle = true
    chart.XLabelInterval = 2
    deck := deckgen.NewSlides(os.Stdout, 0, 0)
    deck.StartDeck()
    for _, f := range os.Args[1:] {
        r, err := os.Open(f)
        if err != nil {
            fmt.Fprintf(os.Stderr, "%v\n", err)
            continue
        }
        chart.GenerateChart(deck, r)
    }
    deck.EndDeck()
}
```

```
go run main.go | pdf
```



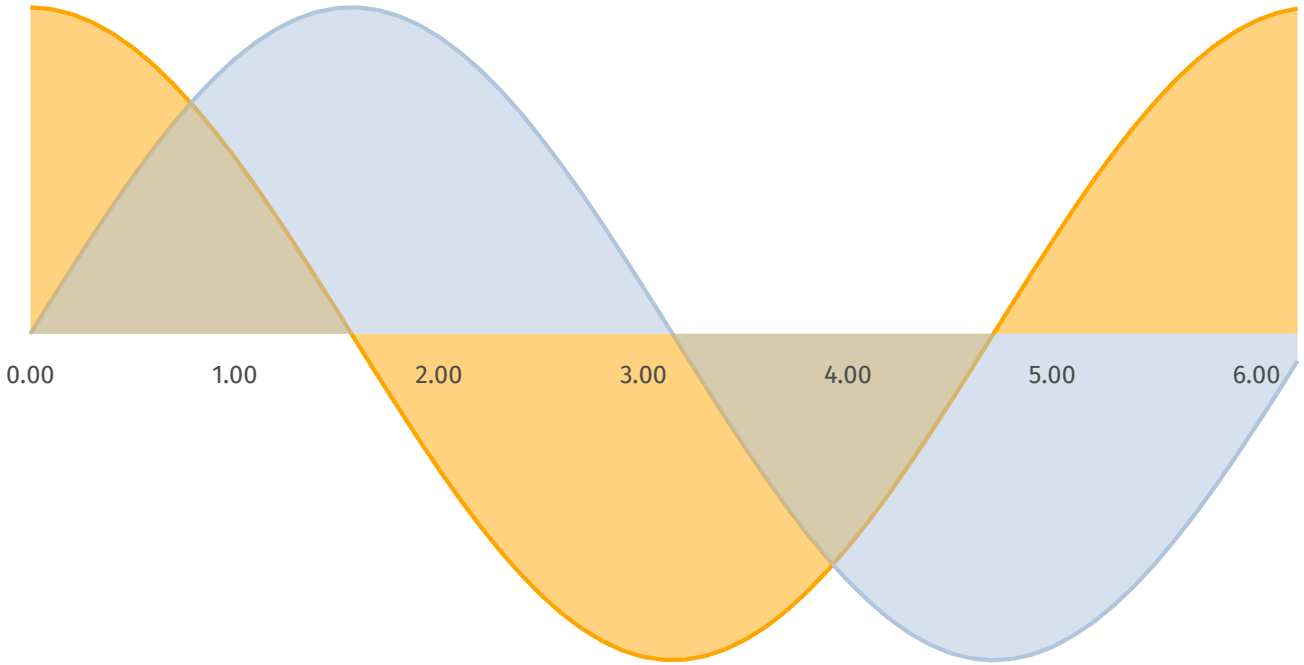
Using dchart with decksh






```
cw=40                 // chart width
t=80                  // top
b=t-20                // bottom
l1=5                  // volume chart left
r1=l1+cw              // volume chart right
l2=r1+10              // close chart left
r2=l2+cw              // close chart right

opts="-fulldeck=f -xlabel=2 -title=f -bar=f"
copts="-dot -line -csv -csvcol Date,Close"
dchart opts -vol  -top t -bottom b -left l1 -right r1 code/AAPL-vol.d
dchart opts copts -top t -bottom b -left l2 -right r2 code/AAPL.csv
text "APPL volume" l1 b 2
text "APPL close"  l2 b 2
arrow r2 b r2 t 0.2 2 1 "red"
etext "Peak Close" r2 b 1 "sans" "gray"
```

Composite Charts




```
// go run mfunc.go -f cos > code/cos.d
// go run mfunc.go -f sin > code/sin.d
opts="-top=80 -bottom=60 -left=20 -right=80 -fulldeck=f -title=f -val=f -bar=f -line -vol"
dchart opts -xlabel=10 -color orange code/cos.d
dchart opts -xlabel=0                code/sin.d
```

Command Line Options

Chart Types

-bar	true	bar chart
-wbar	false	word bar chart
-hbar	false	horizontal bar chart
-donut	false	donut chart
-dot	false	dot chart
-lego	false	lego chart
-line	false	line chart
-pgrid	false	proportional grid
-pmap	false	proportional map
-bowtie	false	bowtie chart
-fan	false	fan chart
-radial	false	radial chart
-scatter	false	scatter chart
-slope	false	slope chart
-vol	false	volume (area) chart

Chart Elements

-csv	false	read CSV files
-frame	false	show a colored frame
-fulldeck	true	generate full deck markup
-grid	false	show gridlines on the y axis
-note	true	show annotations
-pct	false	show computed percentage
-rline	false	show a regression line
-solidpmap	false	show solid pmap colors
-spokes	false	show spokes in radial chart
-title	true	show the title
-val	true	show values
-xlast	false	show the last x label
-xstagger	false	stagger x axis labels
-yaxis	false	show a y axis
-chartitle	override title in data	specify the title
-datacond	low,high,color	conditional data colors
-hline	value,label	label horizontal line at value
-valpos	t=top, b=bottom, m=middle	value position
-xlabel	default=1, 0 to suppress	x axis label interval
-yrange	min,max.step	specify the y axis label range

Position and Scaling

-top	80	top of the chart
-bottom	30	bottom of the chart
-left	20	left margin
-right	80	right margin
-min	data min	set the minimum data value
-max	data max	set the maximum data value

Measures and Attributes

-bgcolor	white	background color
-barwidth	computed from data size	barwidth
-color	lightsteelblue	data color
-csvcol	labe1,label2	specify csv columns
-datafmt	%.1f	data format for values
-dmin	false	use data minimum, not zero
-framecolor	rgb(127,127,127)	frame color
-lcolor	rgb(75,75,75)	label color
-linewidth	0.2	linewidth
-ls	2.4	linespacing
-noteloc	c=center, r=right, l=left	annotation location
-pmlen	20	pmap label length
-psize	30	diameter of the donut
-pwidth	3	width of the donut or pmap
-rlcolor	rgb(127,0,0)	regression line color
-textsize	1.5	text size
-xlabrot	0	xlabel rotation (deg.)
-vcolor	rgb(127,0,0)	value color
-volop	50	volume opacity %

Command Examples

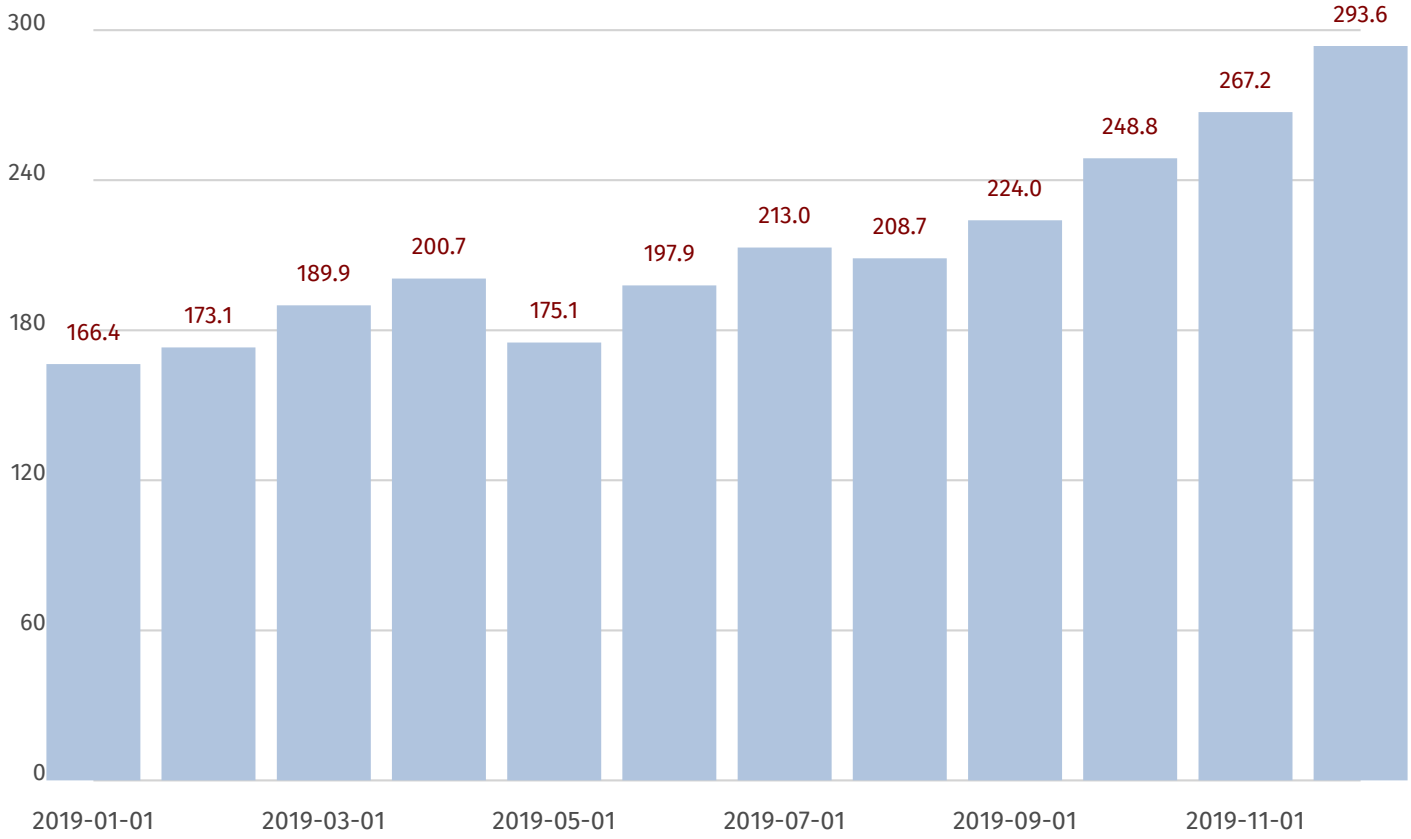
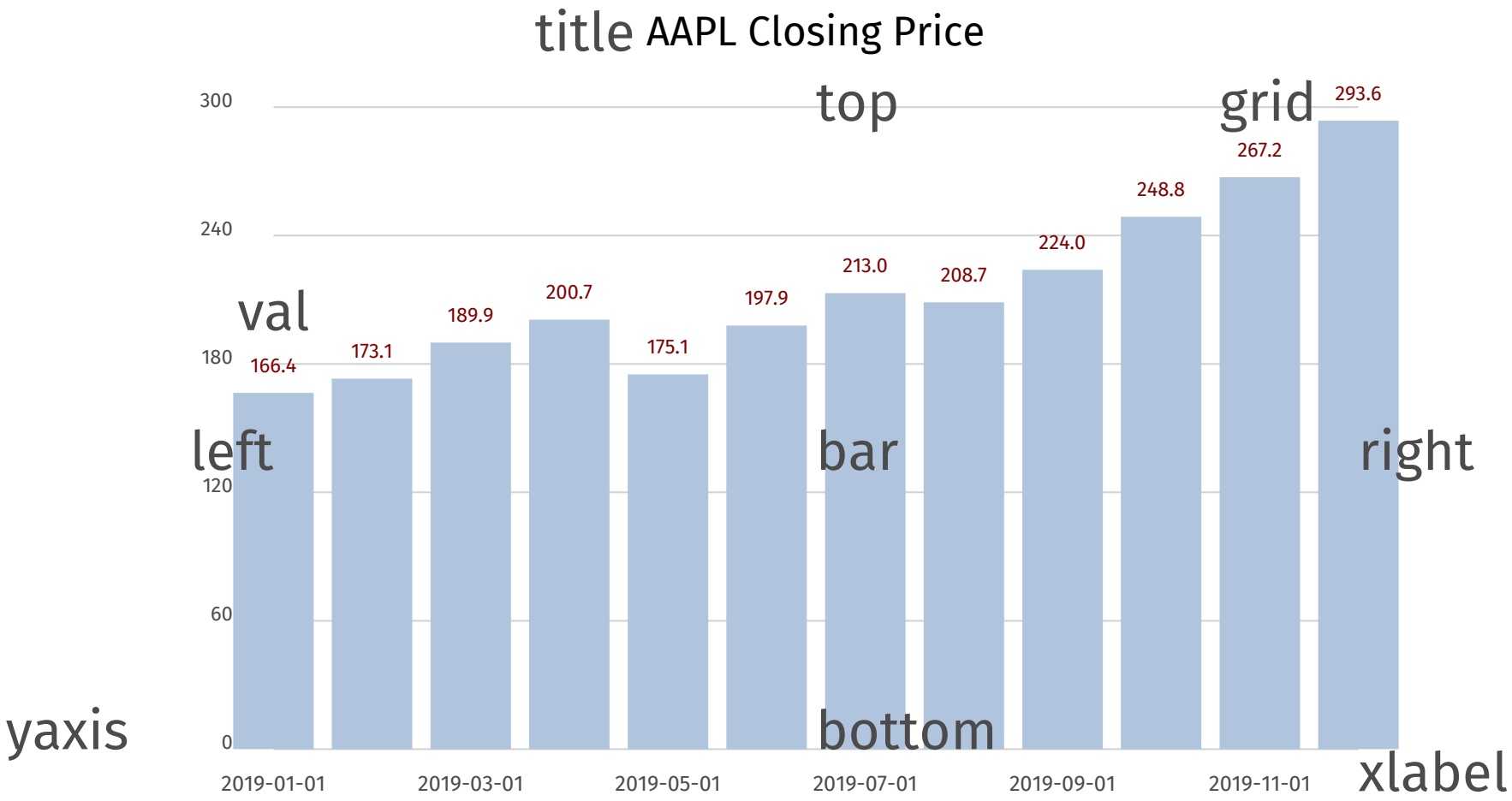
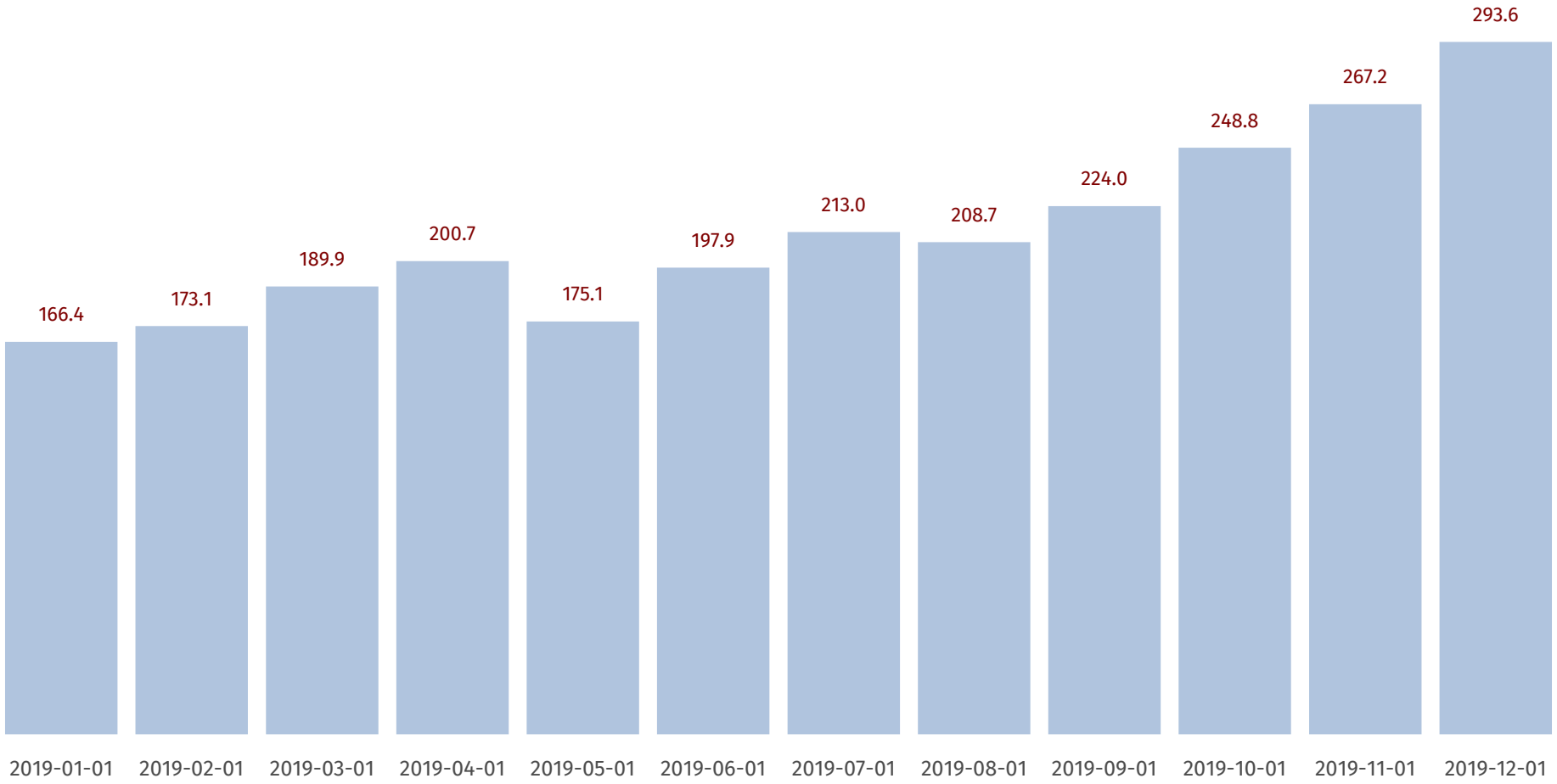

AAPL Closing Price
300
240
180
120
60
0
166.4
173.1
189.9
200.7
175.1
197.9
213.0
208.7
224.0
248.8
267.2
293.6
2019-01-01
2019-03-01
2019-05-01
2019-07-01
2019-09-01
2019-11-01

Chart Attributes

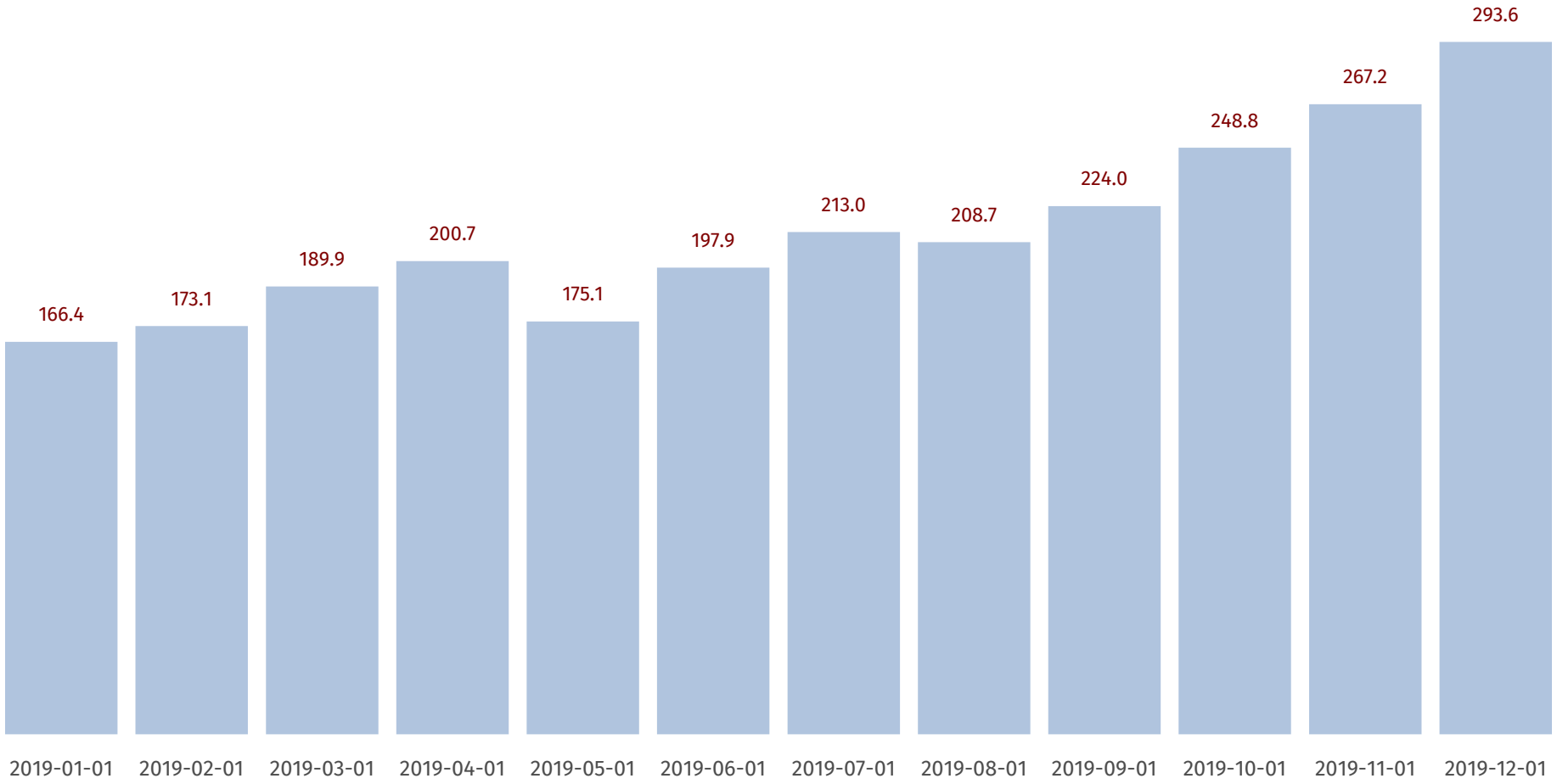



```
dchart -left=20 -right=80 -top=75 -bottom=30 -yaxis -grid -xlabel=2 -val AAPL.d
```



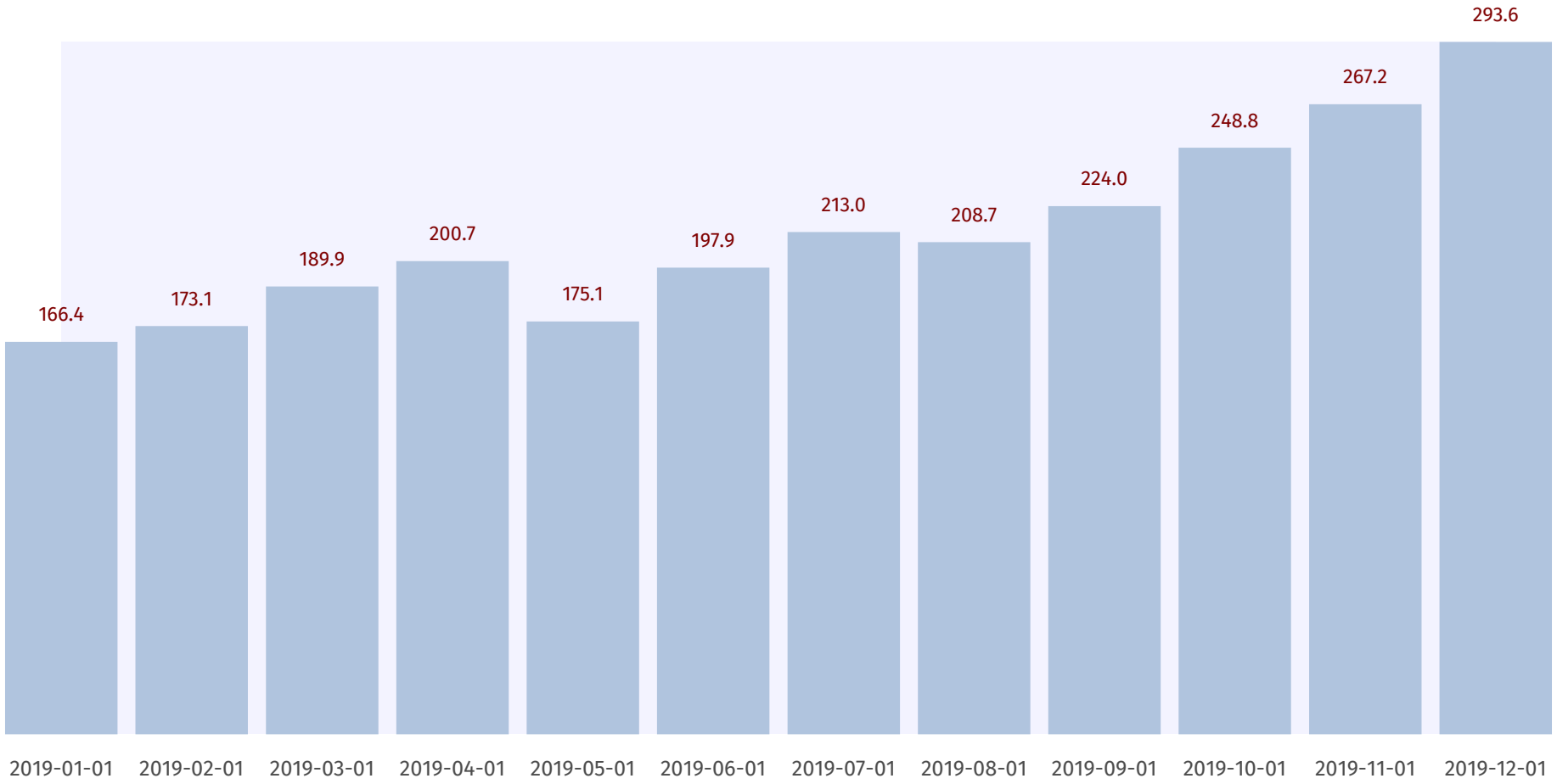
Default Bar Chart

```
dchart AAPL.d
```



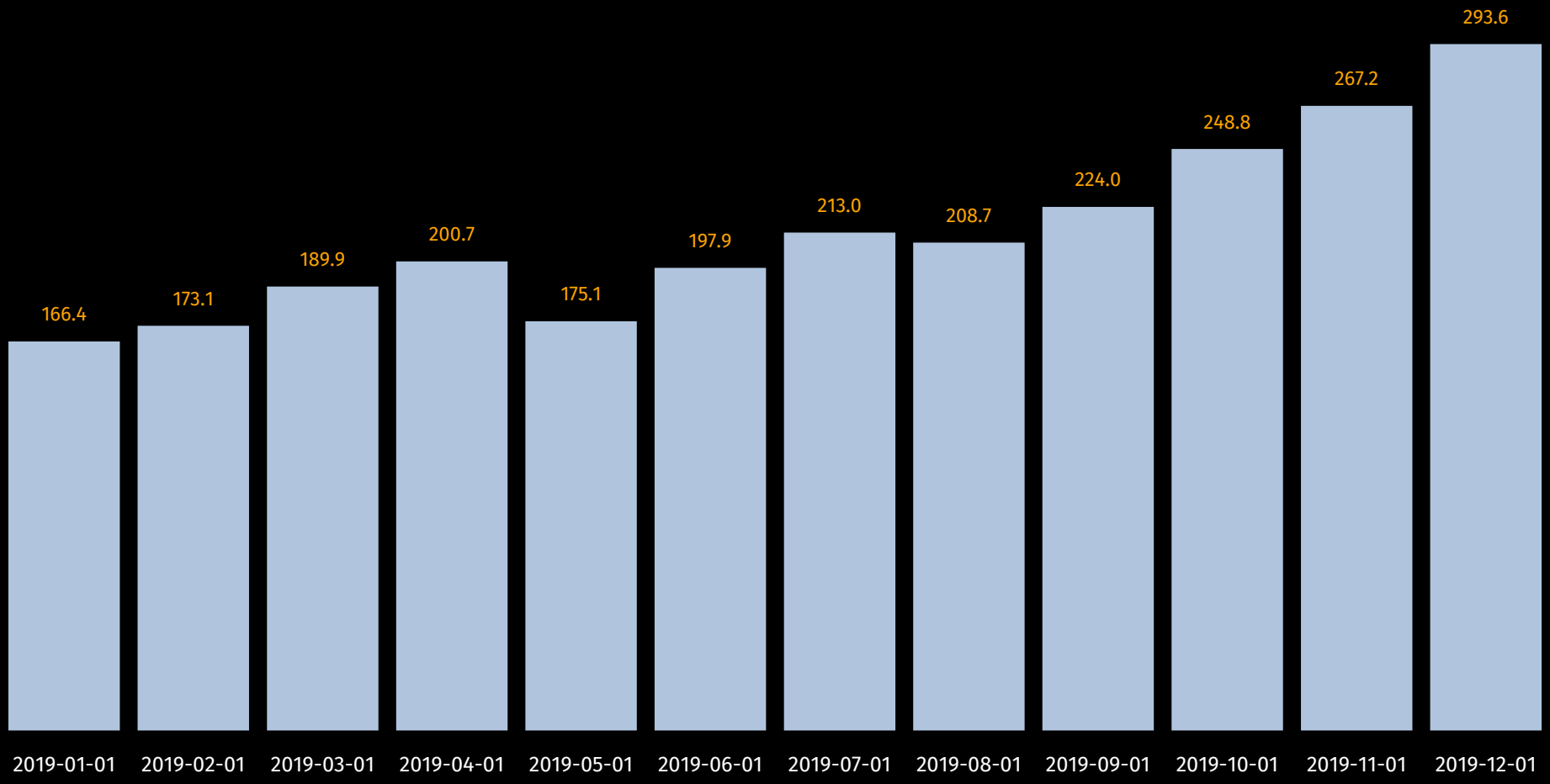
Reading CSV files

```
dchart -csv -csvcol=Date,Close AAPL.csv
```



Frame, Frame Color

```
dchart -frame=t -framecolor=blue AAPL.d
```



Background, Label, Value Color

```
dchart -bgcolor=black -lcolor=white -vcolor=orange AAPL.d
```

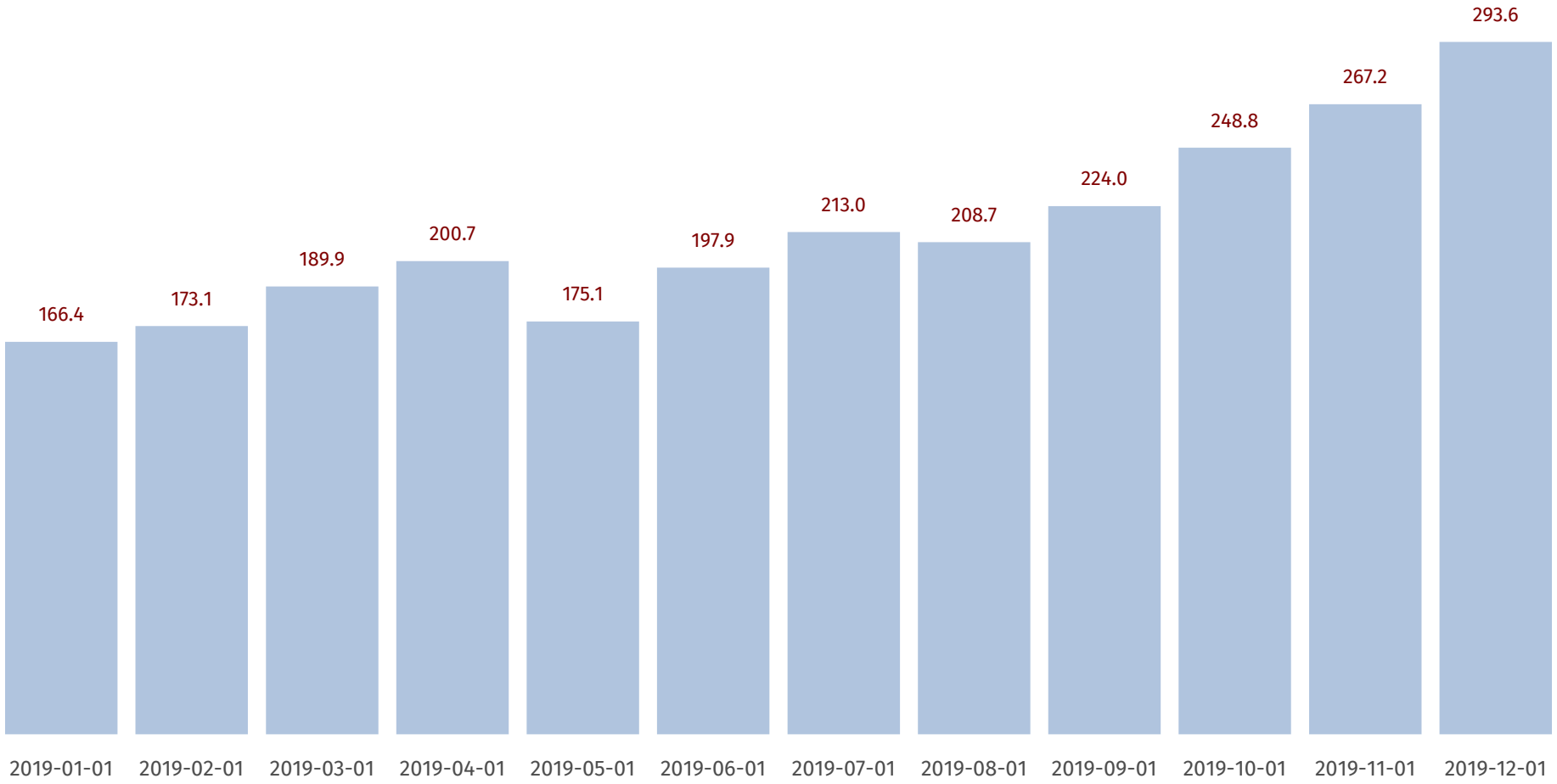
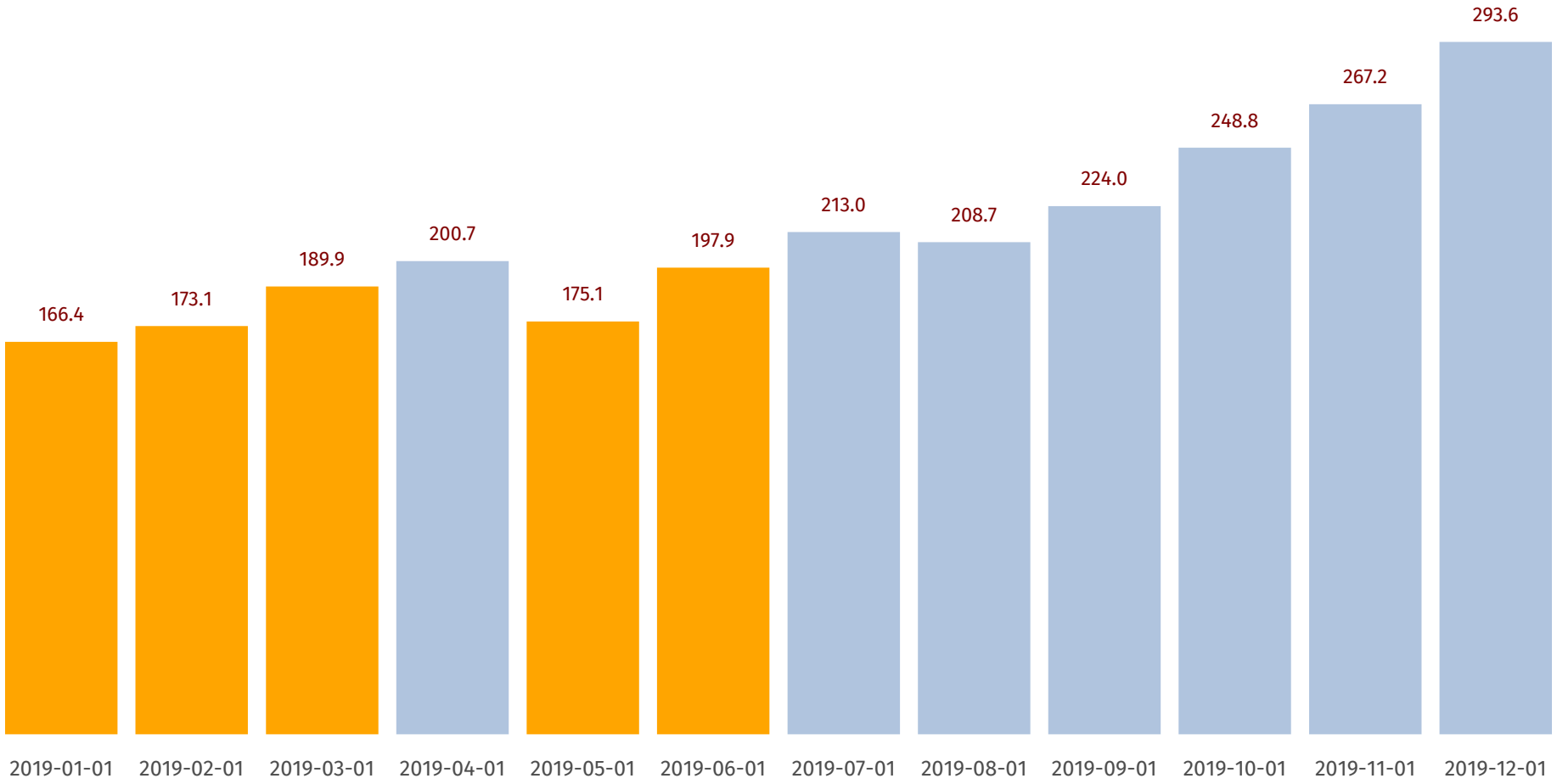


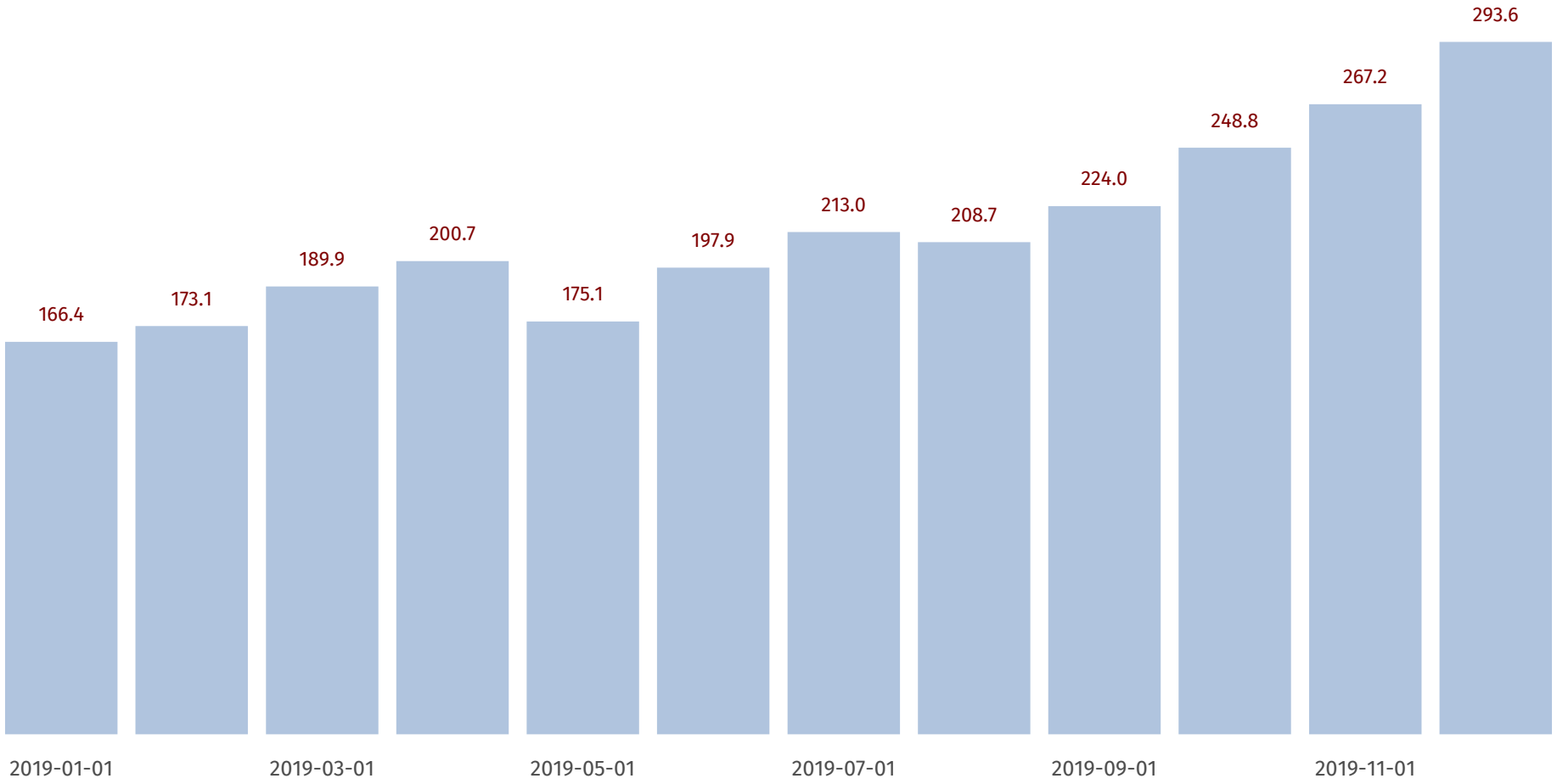
Chart Title

```
dchart -chartitle="Close:2019" AAPL.d
```



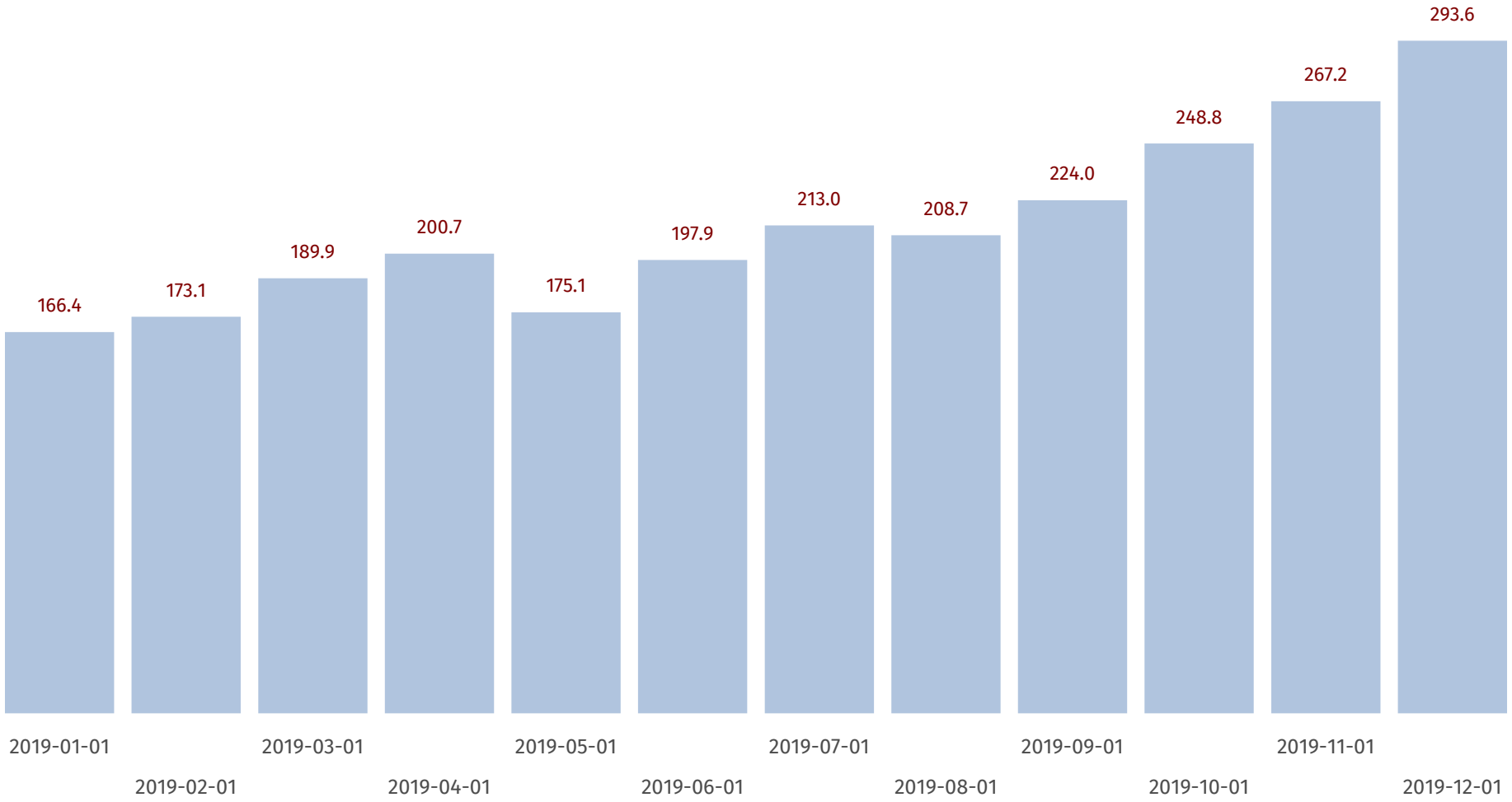
Data Conditions

```
dchart -datacond=150,200,orange AAPL.d
```



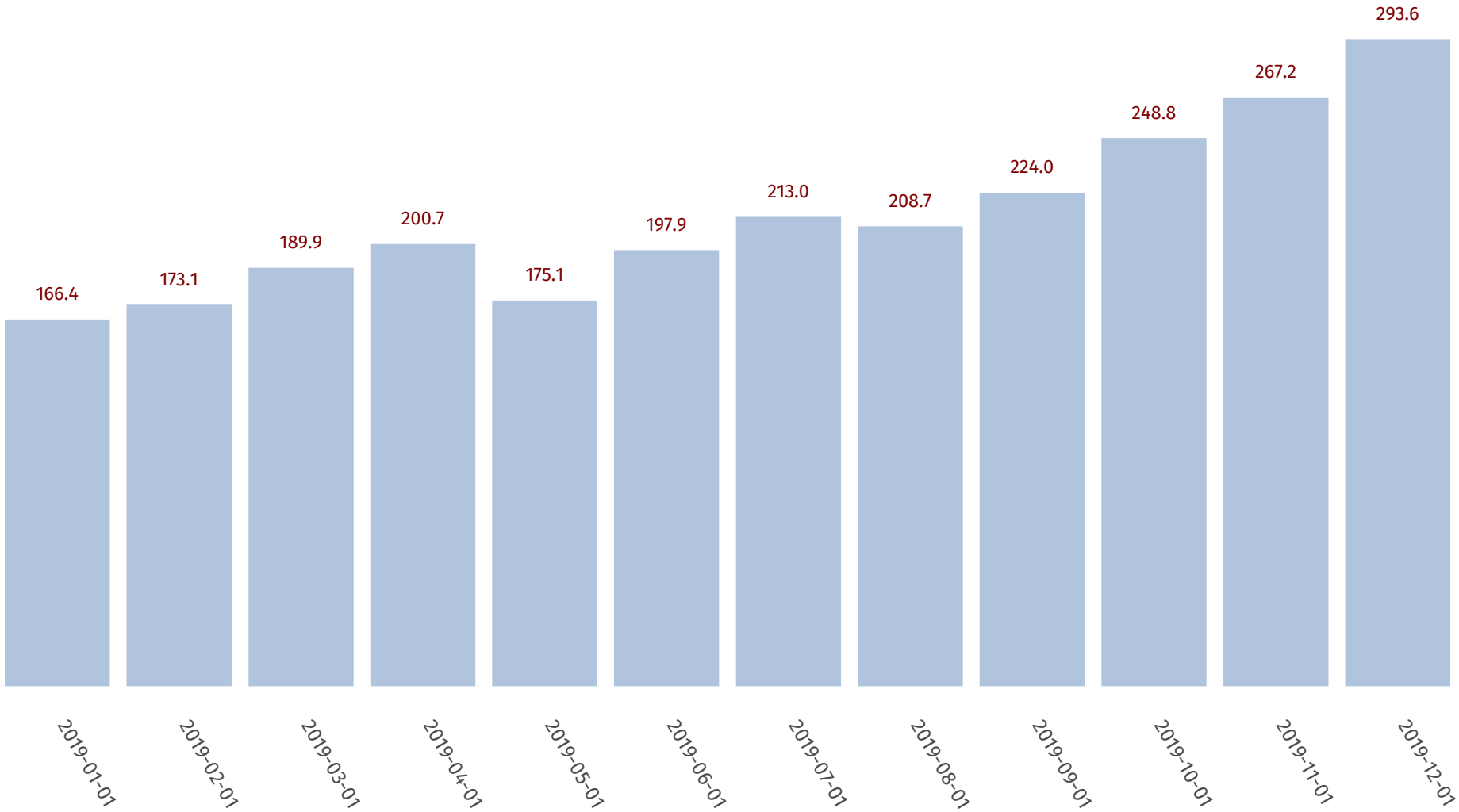
X-Axis Label Interval

```
dchart -xlabel=2 AAPL.d
```



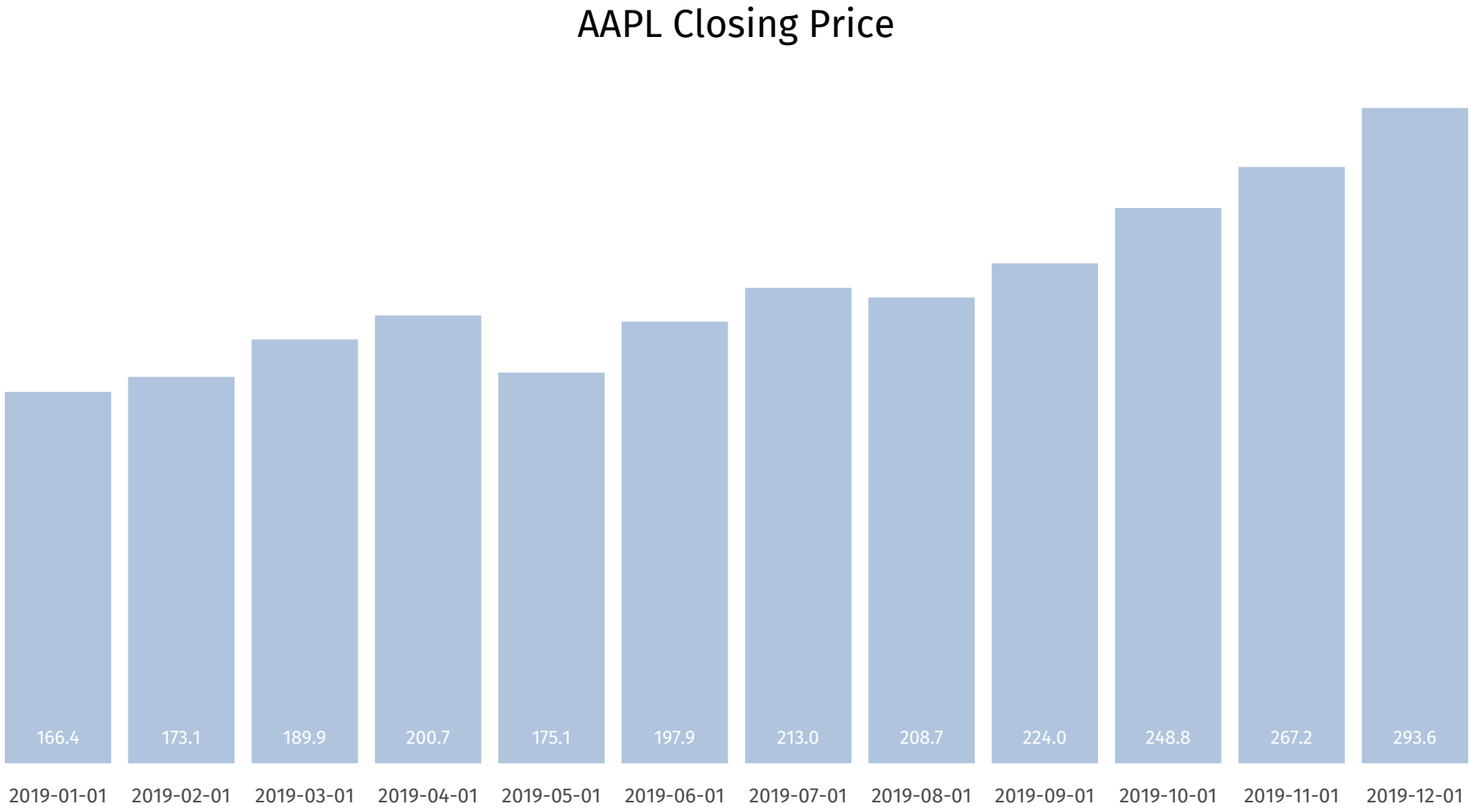
Stagger X-Axis Labels

```
dchart -xstagger AAPL.d
```



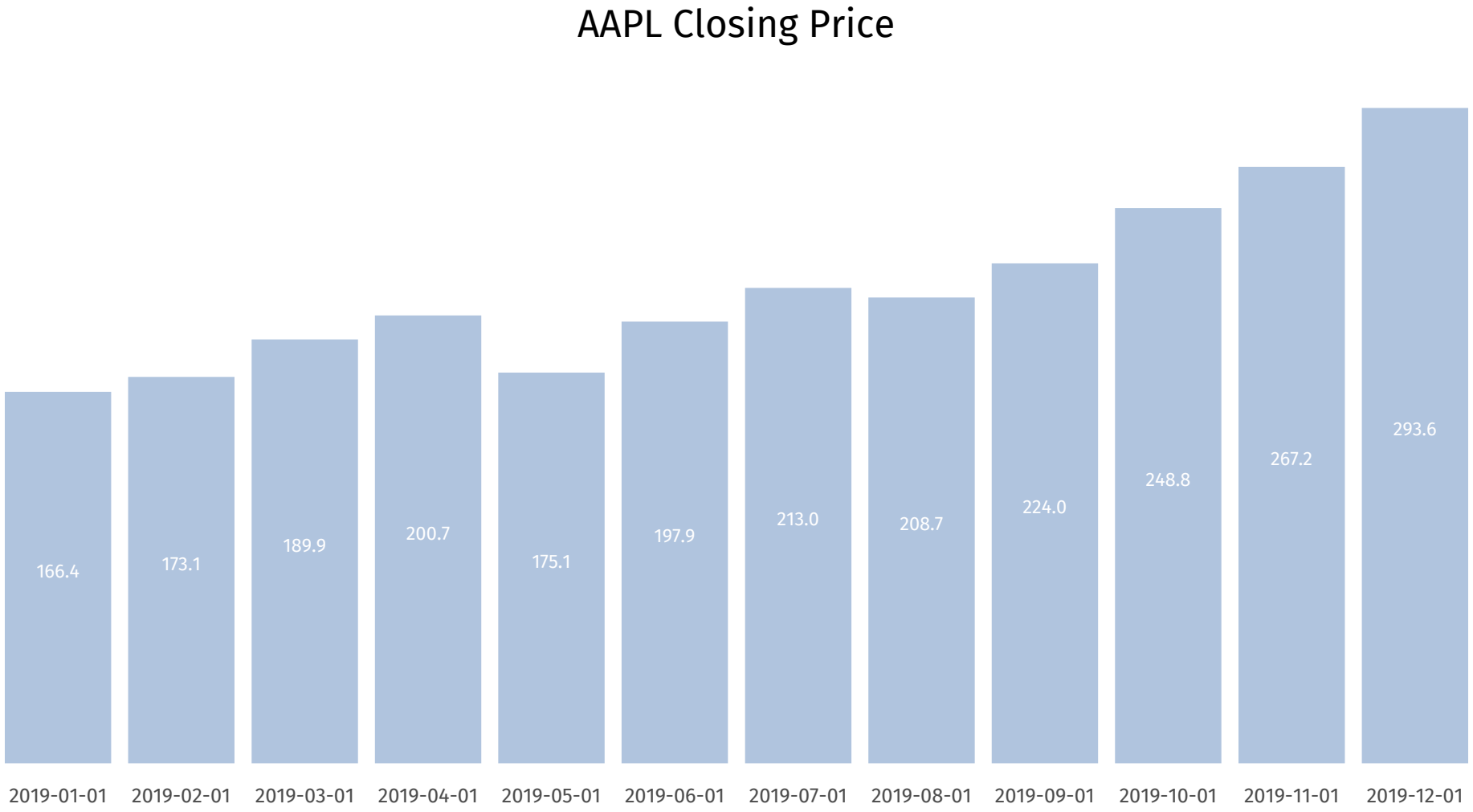
X-Axis Label Rotation

```
dchart -xlabrot=300 AAPL.d
```



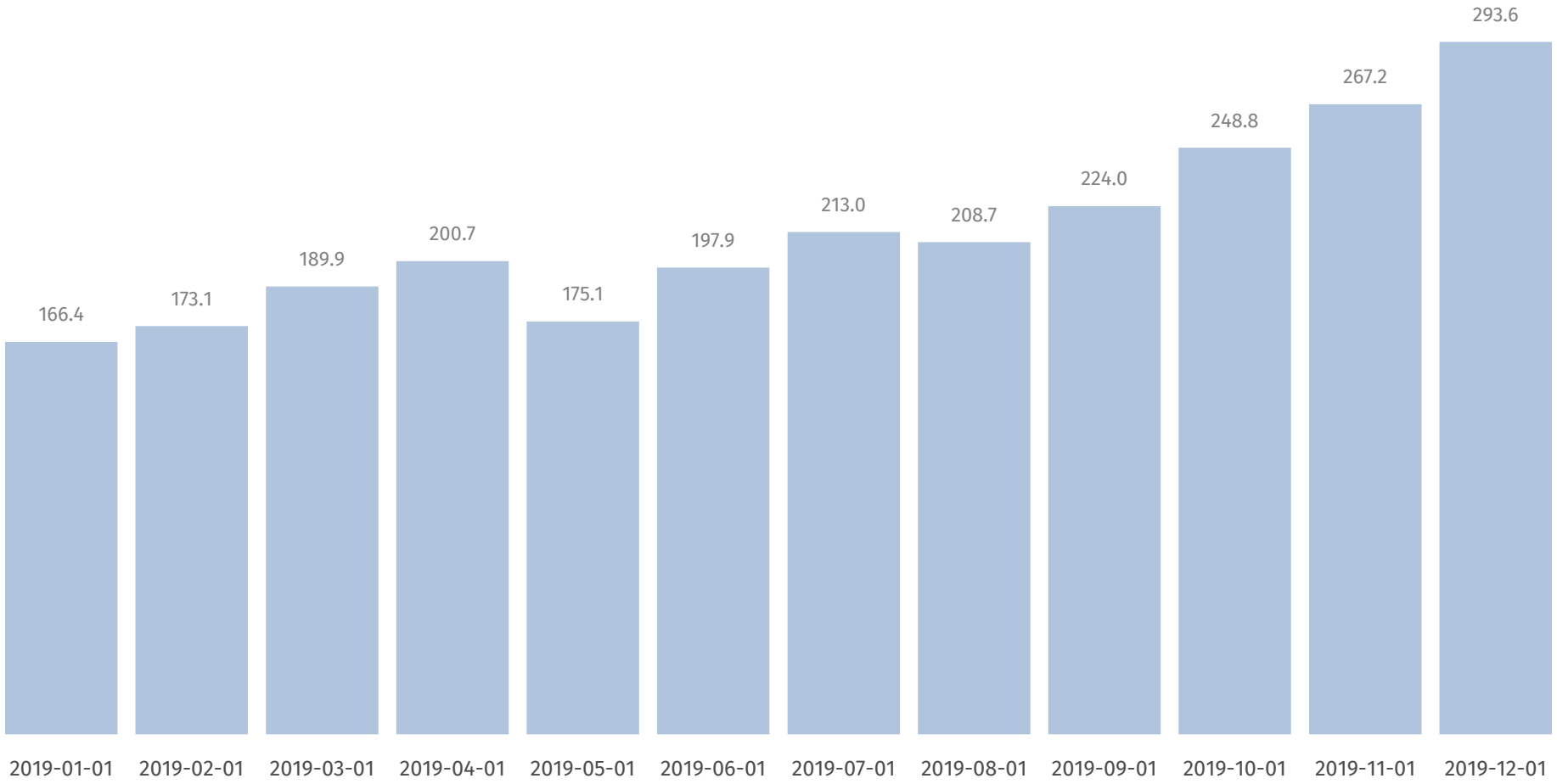
Value Color, Value Position Bottom

```
dchart -vcolor=white -valpos=b AAPL.d
```



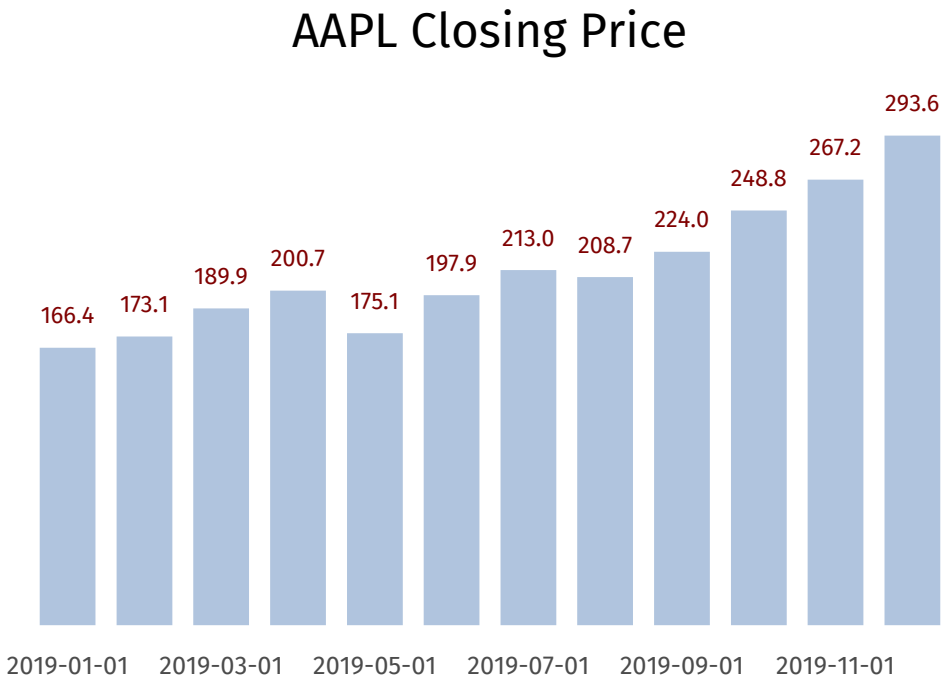
Value Color, Value Position Middle

```
dchart -vcolor=white -valpos=m AAPL.d
```



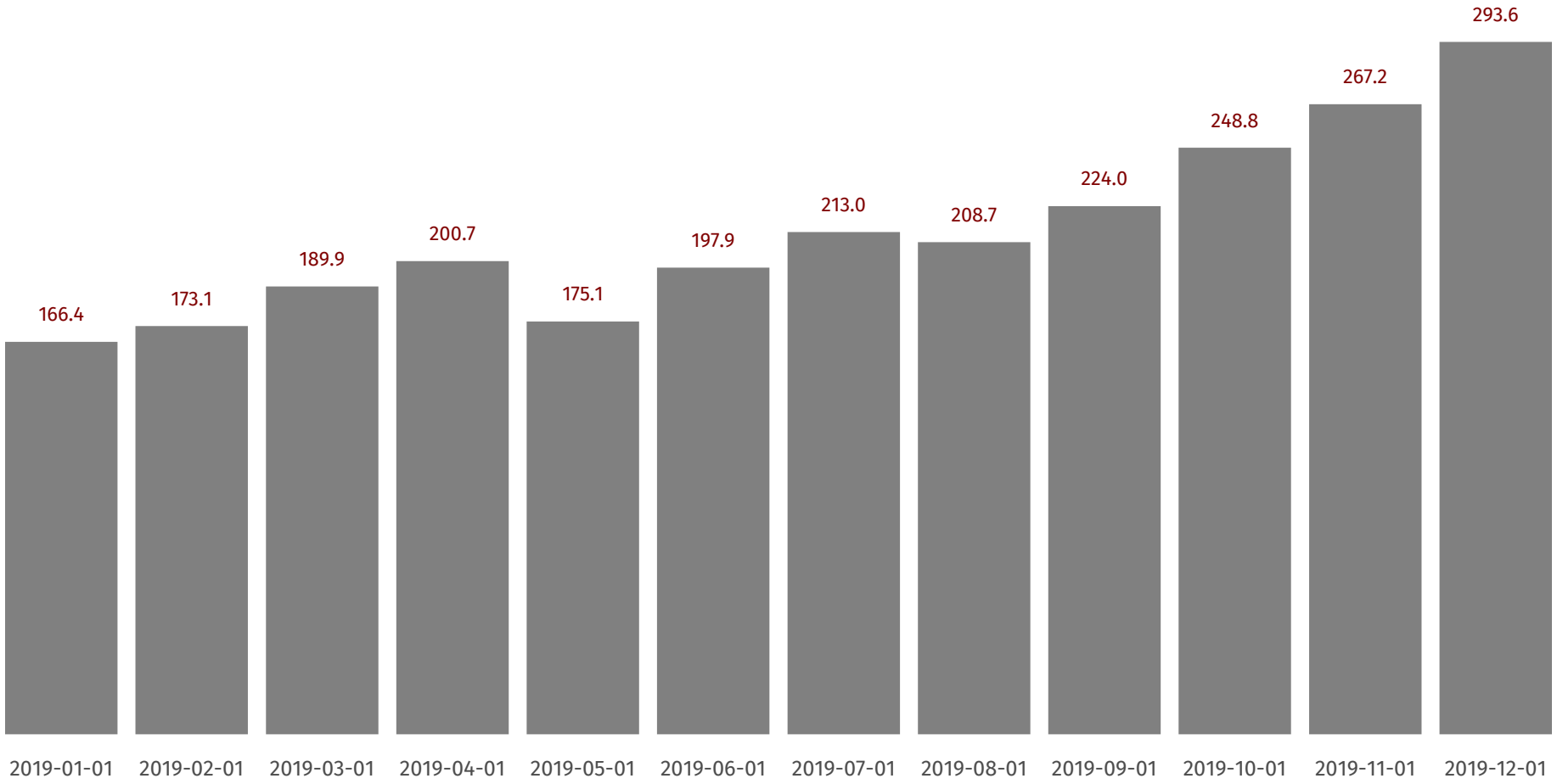
Value Color, Value Position Top

```
dchart -vcolor=gray AAPL.d
```



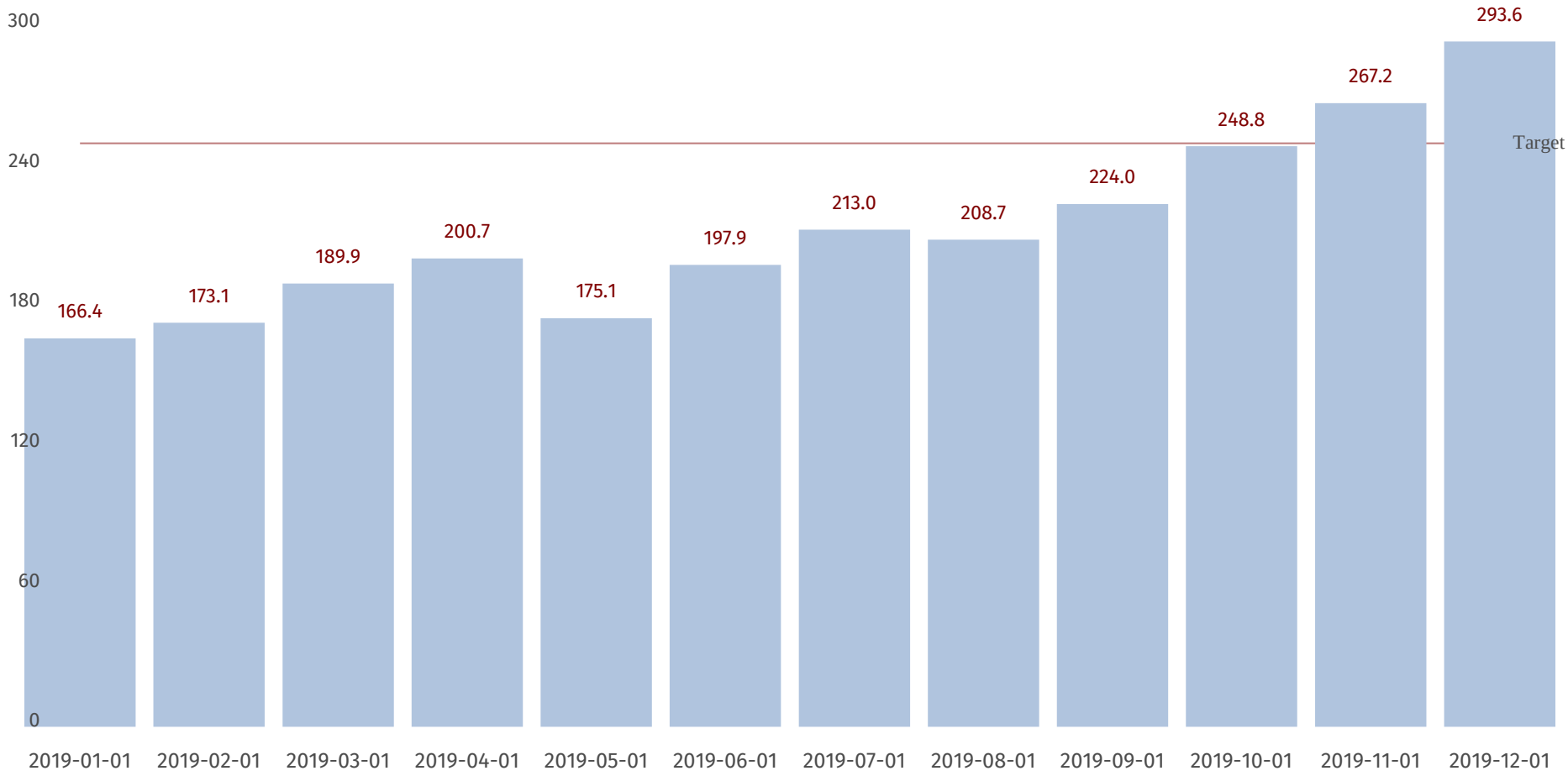
Scaling

```
dchart -xlabel=2 -left 30 -right 70 -top 70 -bottom 40 AAPL.d
```



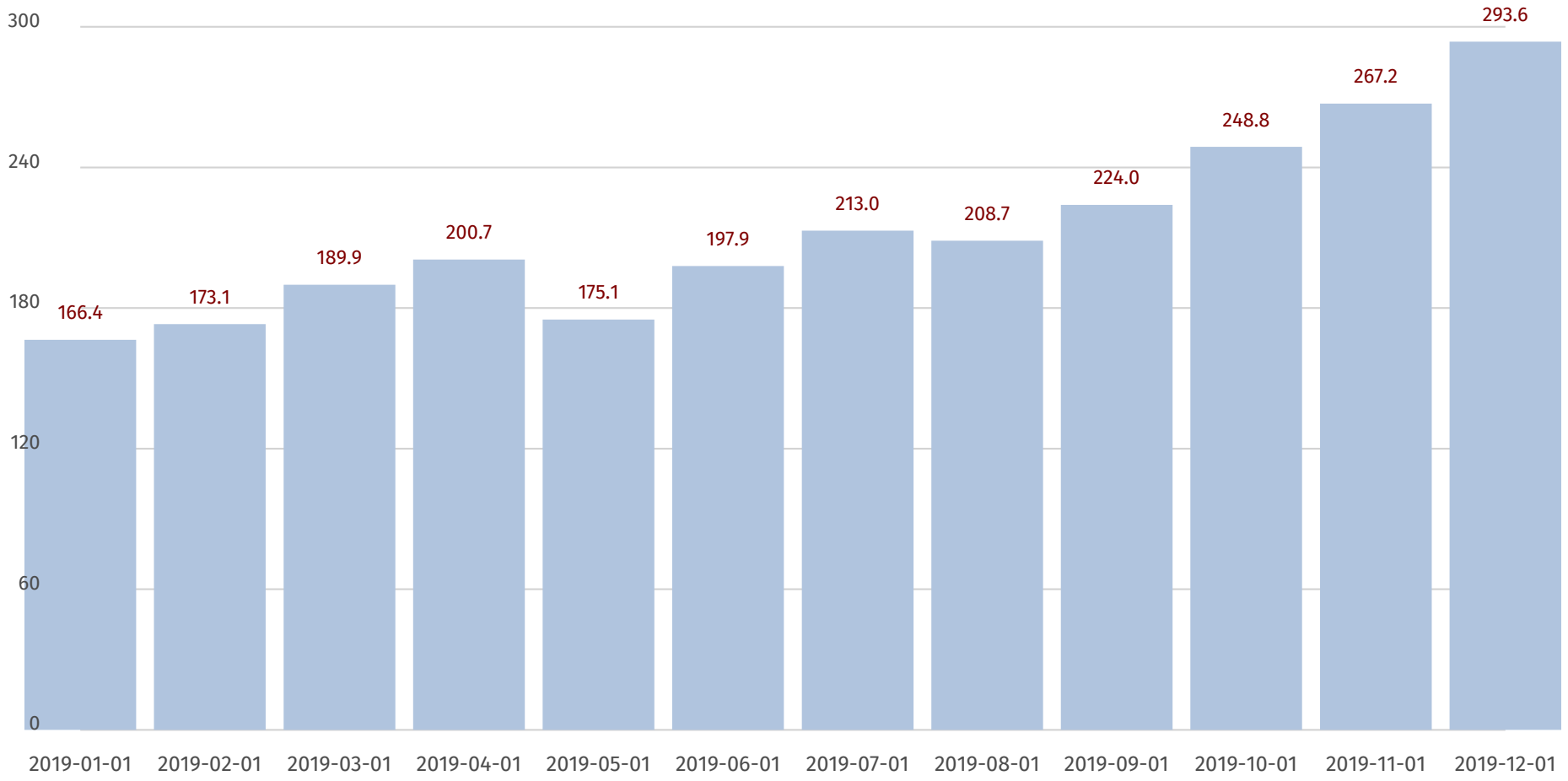
Color

```
dchart -color gray AAPL.d
```



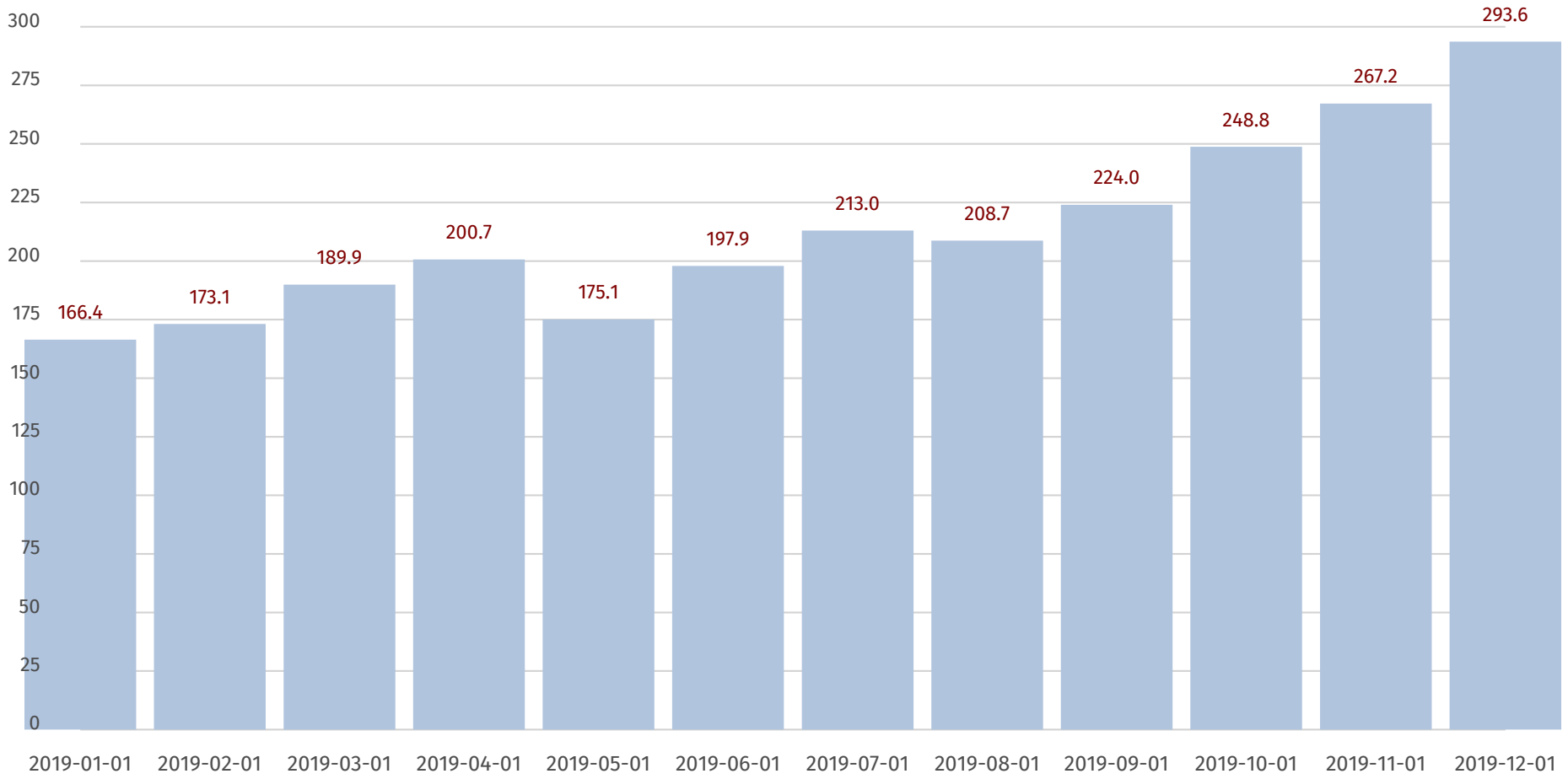
Target Line, Y-Axis

```
dchart -hline=250,Target -yaxis AAPL.d
```



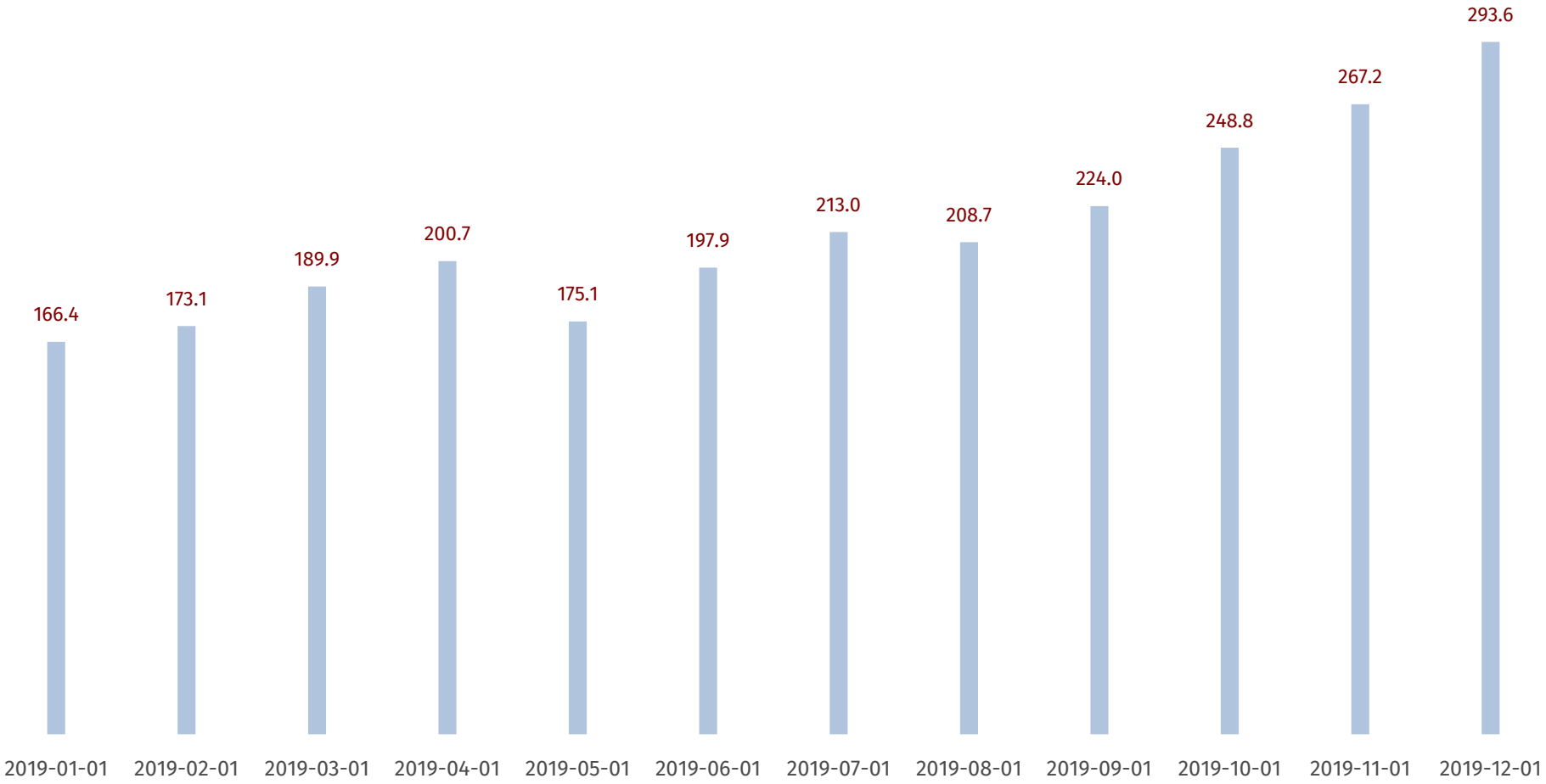
Y-Axis, Grid

```
dchart -grid -yaxis AAPL.d
```



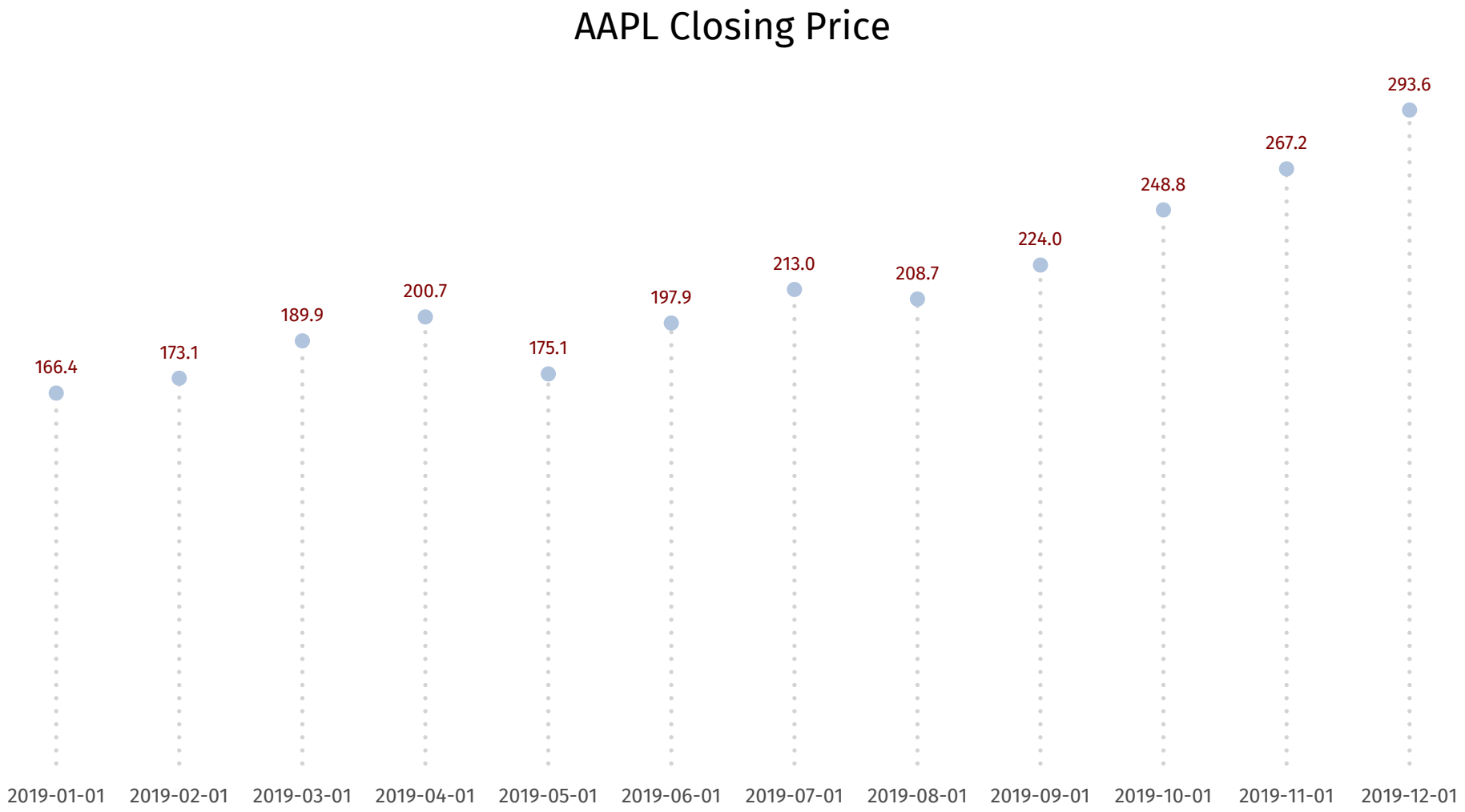
Y-Range

```
dchart -yrange=0,300,25 -grid -yaxis AAPL.d
```



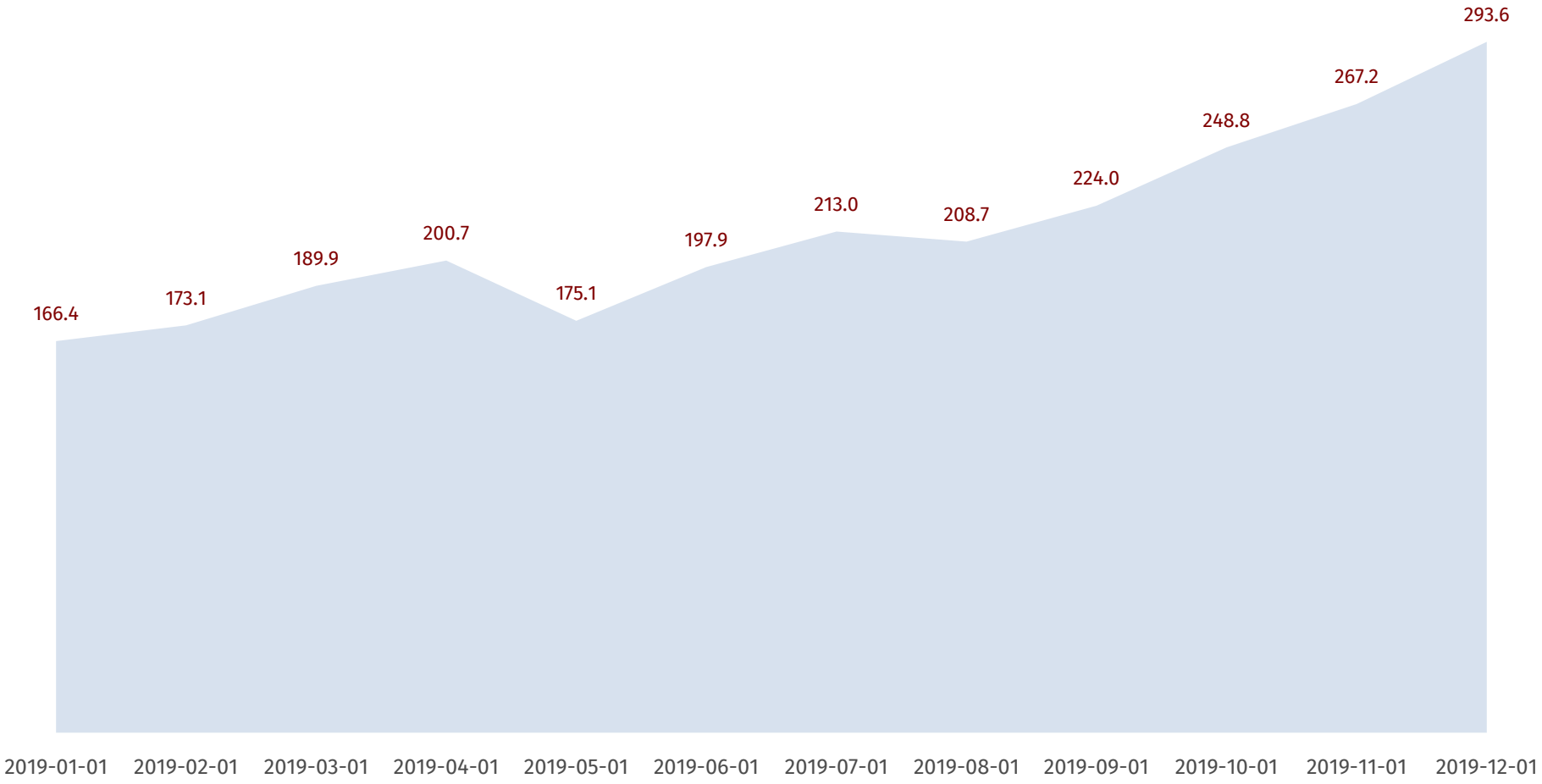
Adjusting Bar Width

```
dchart -barwidth=1 AAPL.d
```



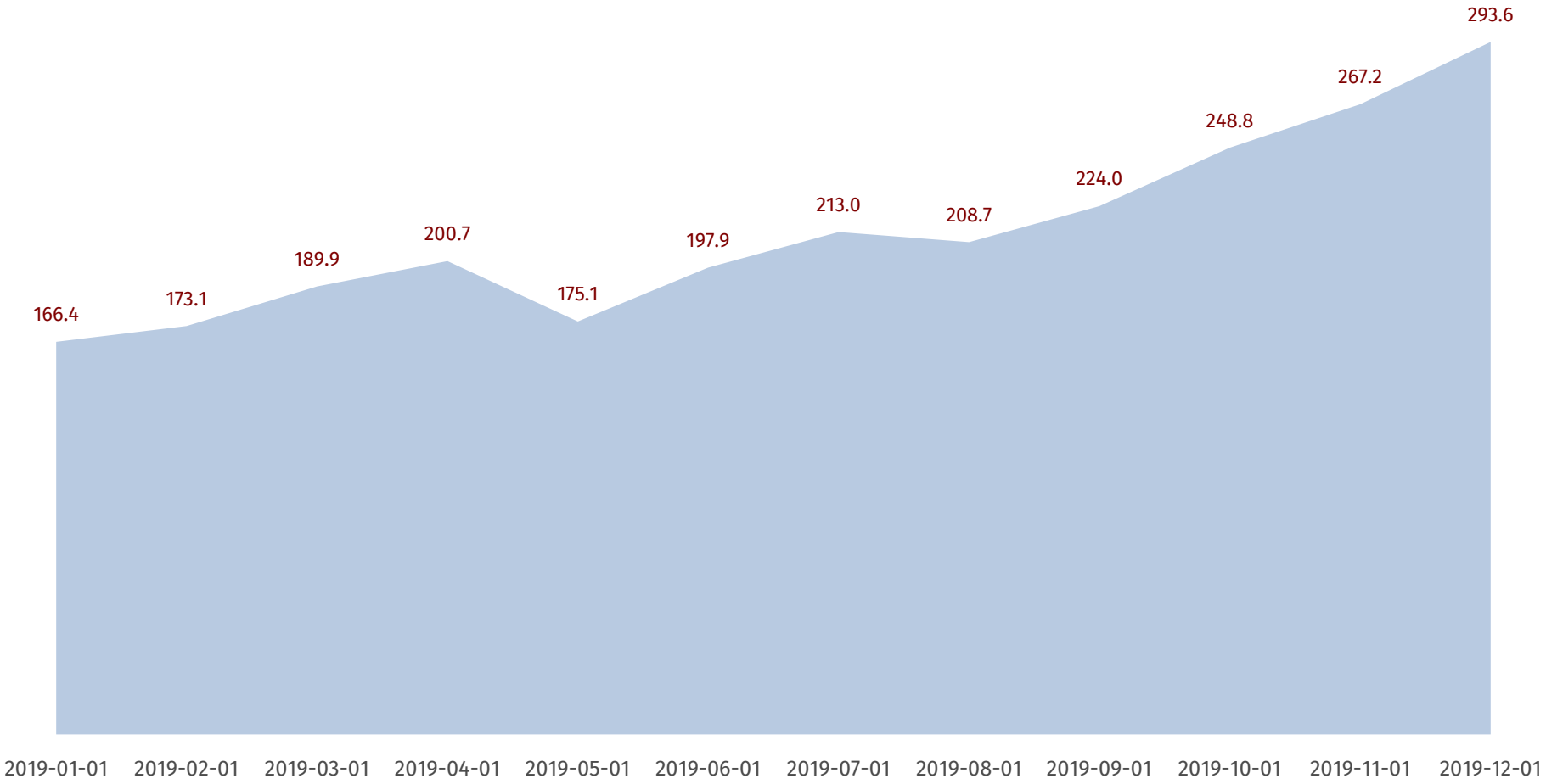
Dot Chart

```
dchart -bar=f -dot AAPL.d
```



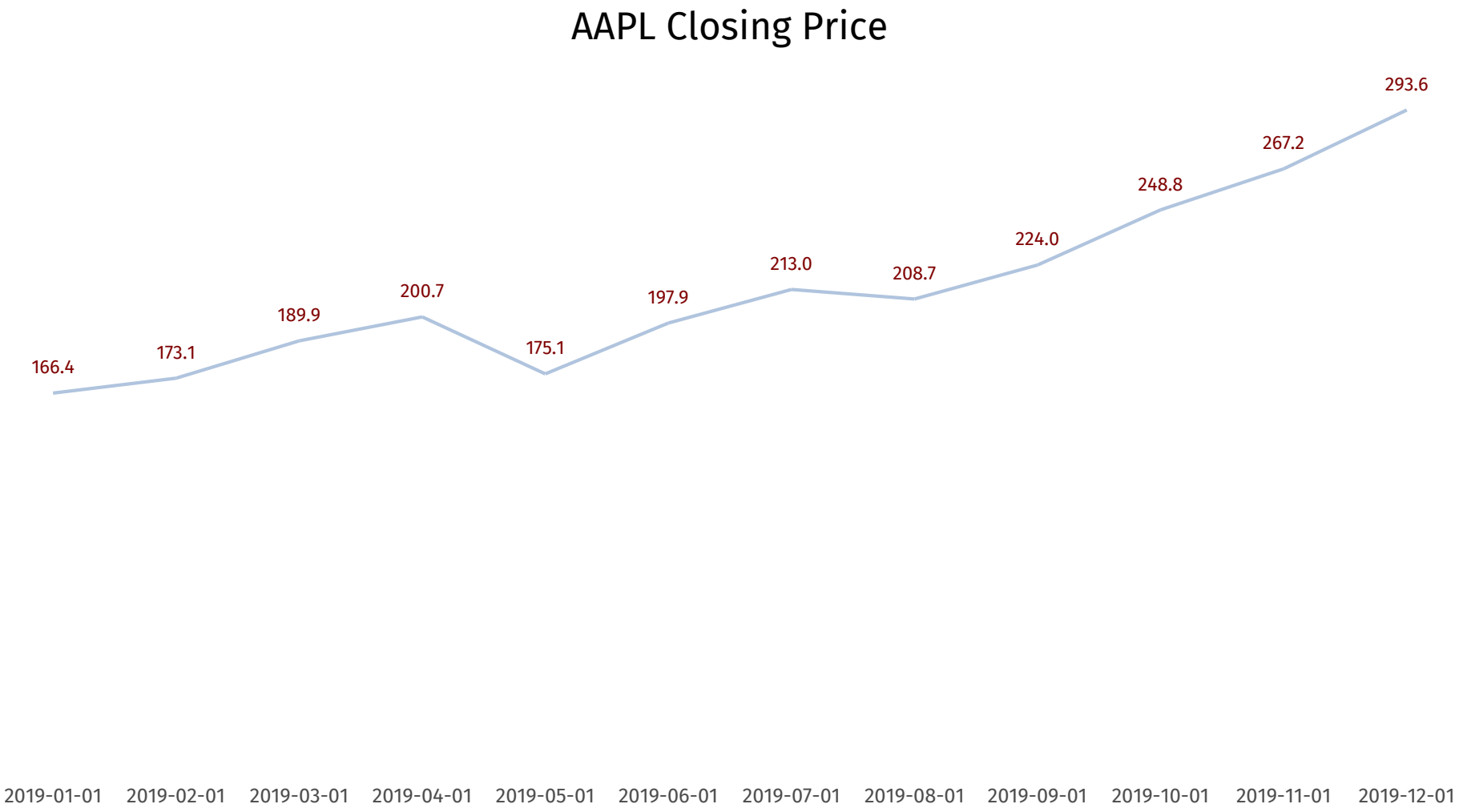
Area Chart

```
dchart -bar=f -vol AAPL.d
```



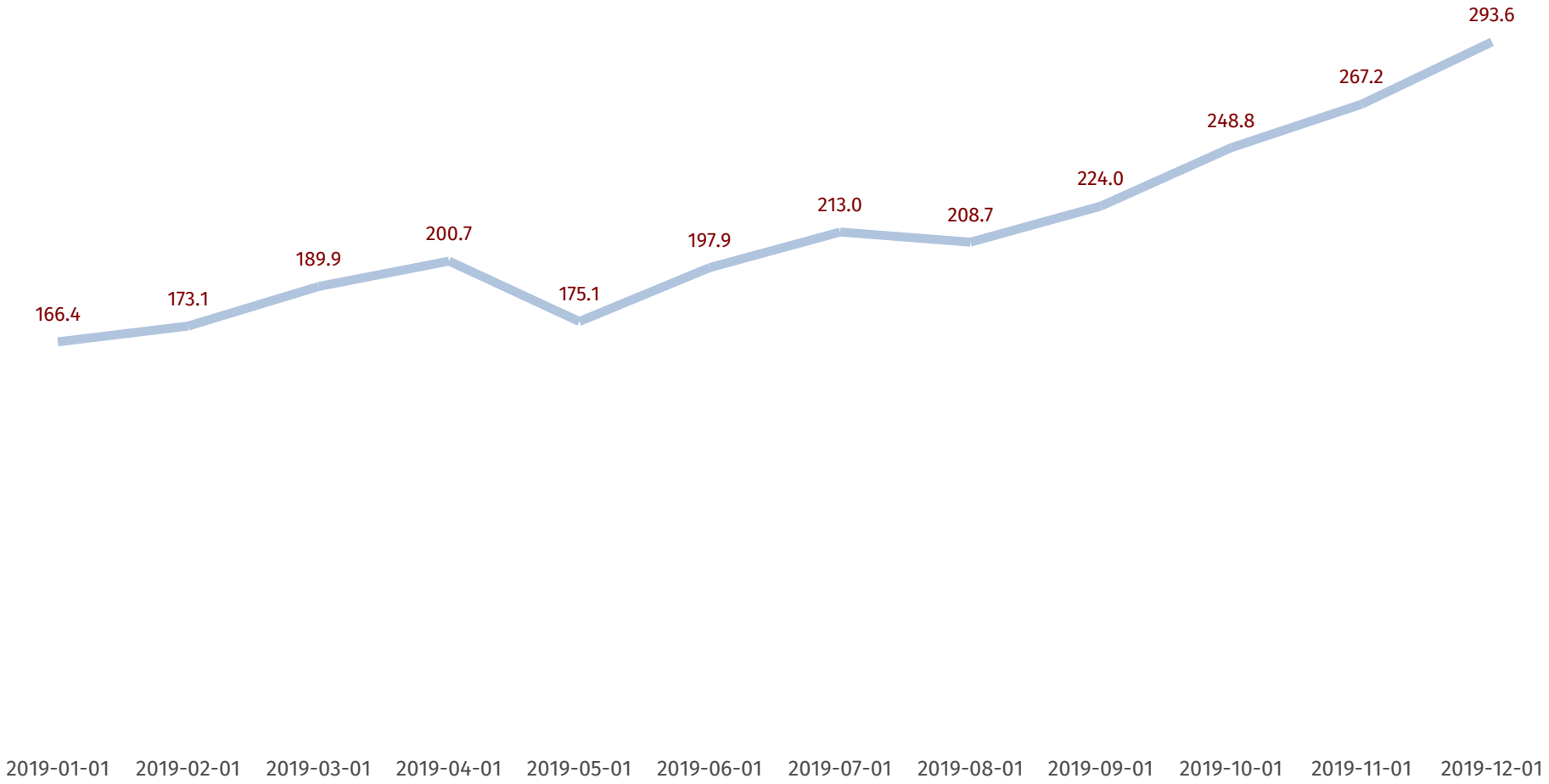
Area Chart, Opacity

```
dchart -bar=f -vol -volop=90 AAPL.d
```



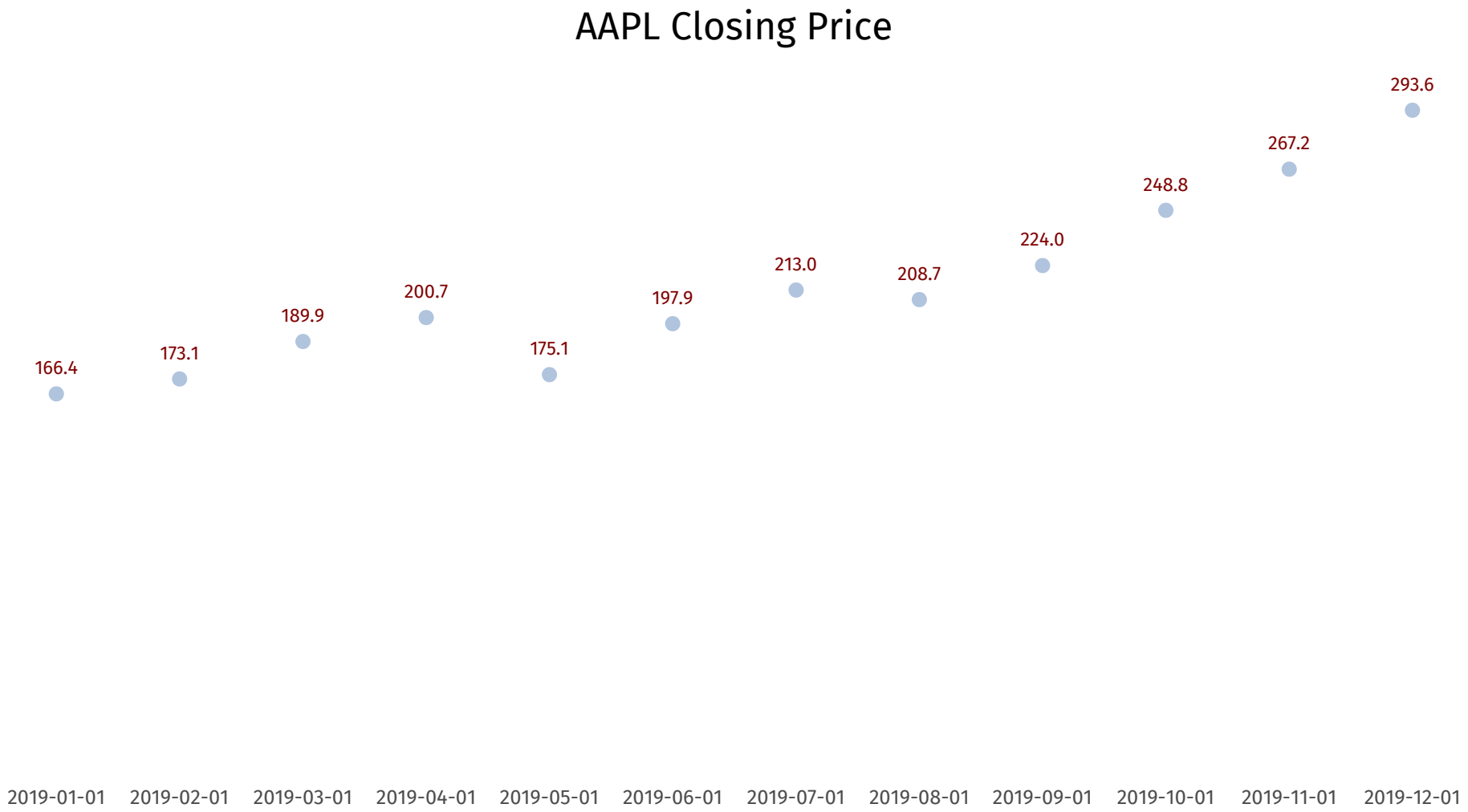
Line Chart

```
dchart -bar=f -line AAPL.d
```



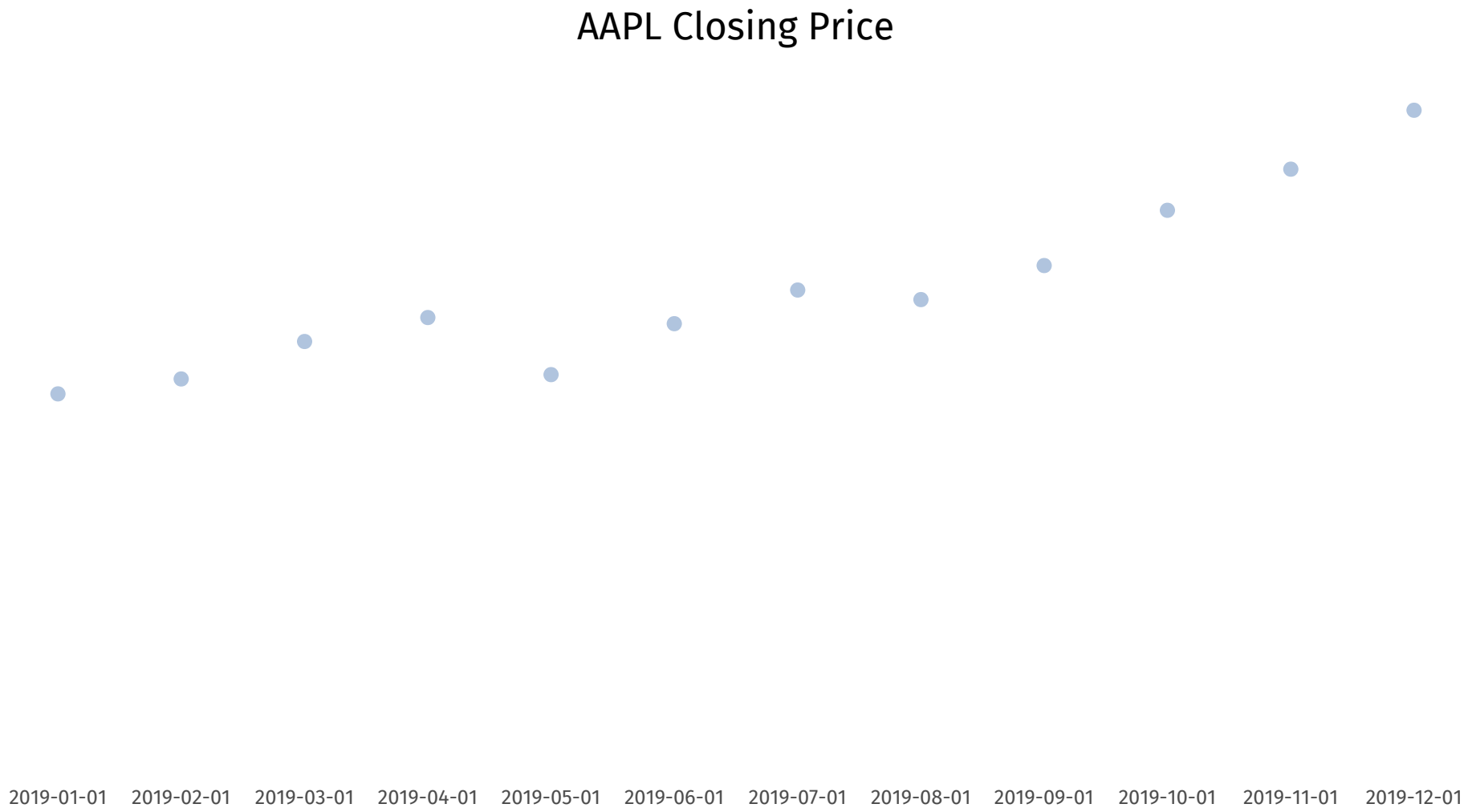
Line Chart, Line Width

```
dchart -bar=f -line -linewidth=0.5 AAPL.d
```



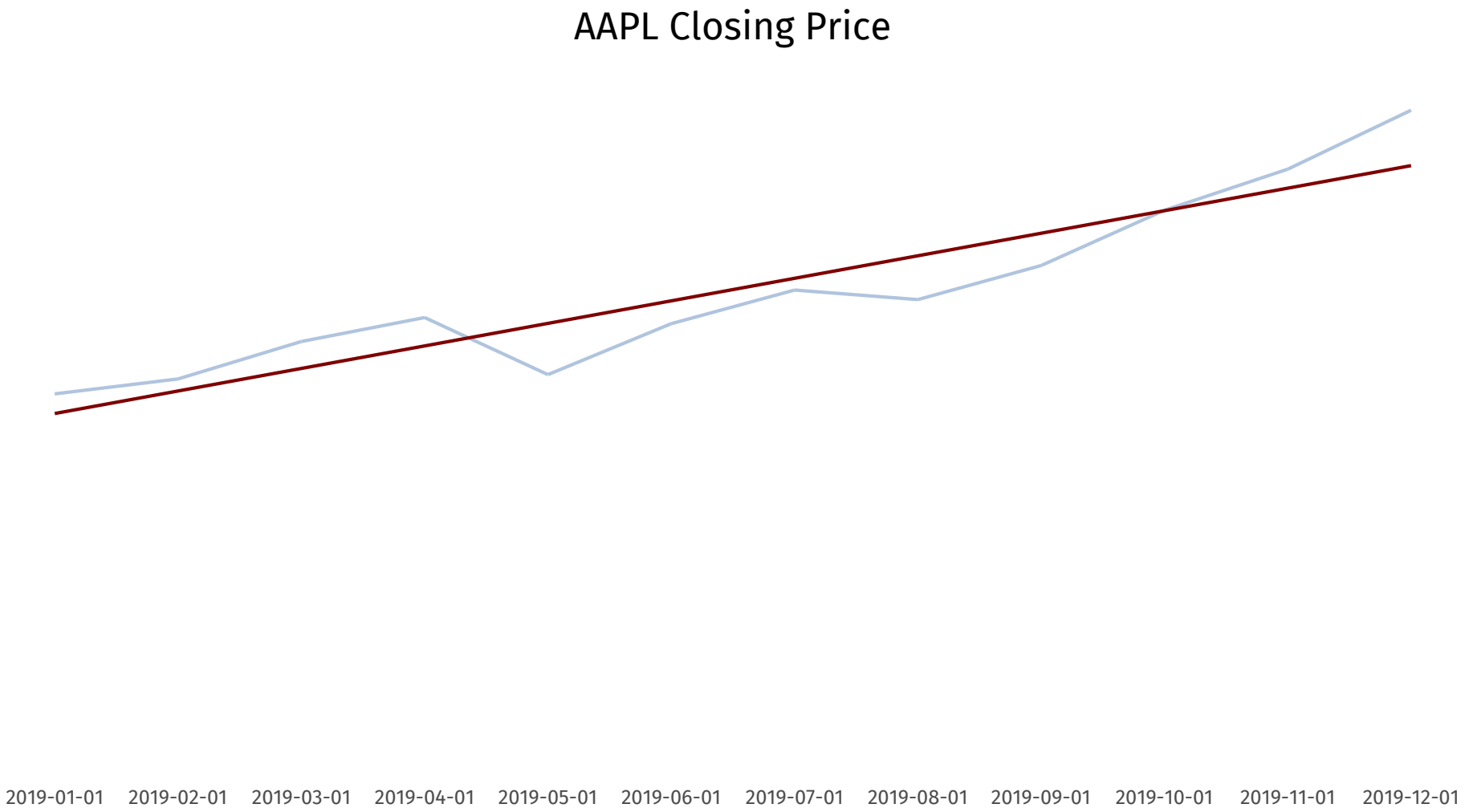
Scatter Chart

```
dchart -bar=f -scatter AAPL.d
```



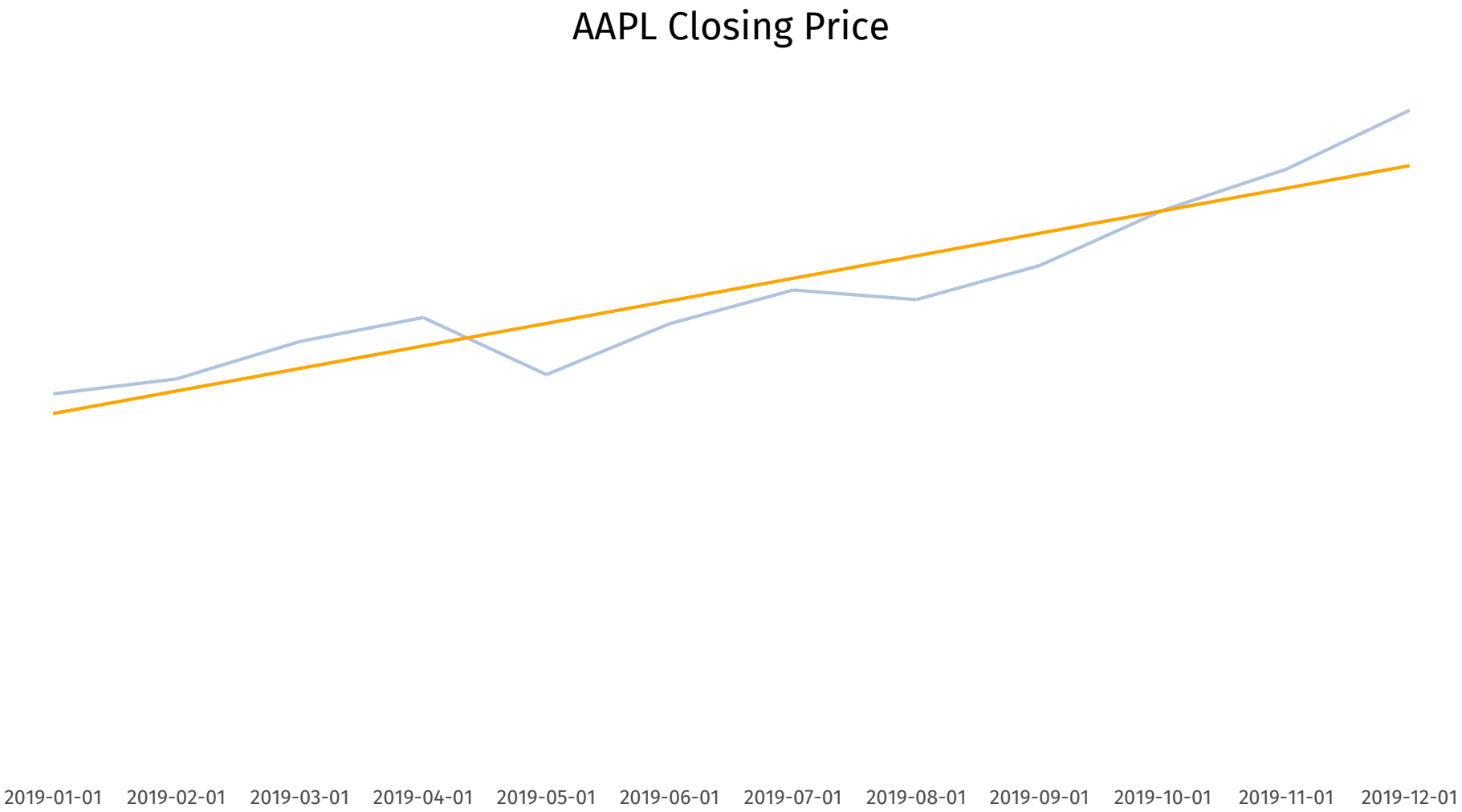
Scatter Chart, No Values

```
dchart -bar=f -scatter -val=f AAPL.d
```



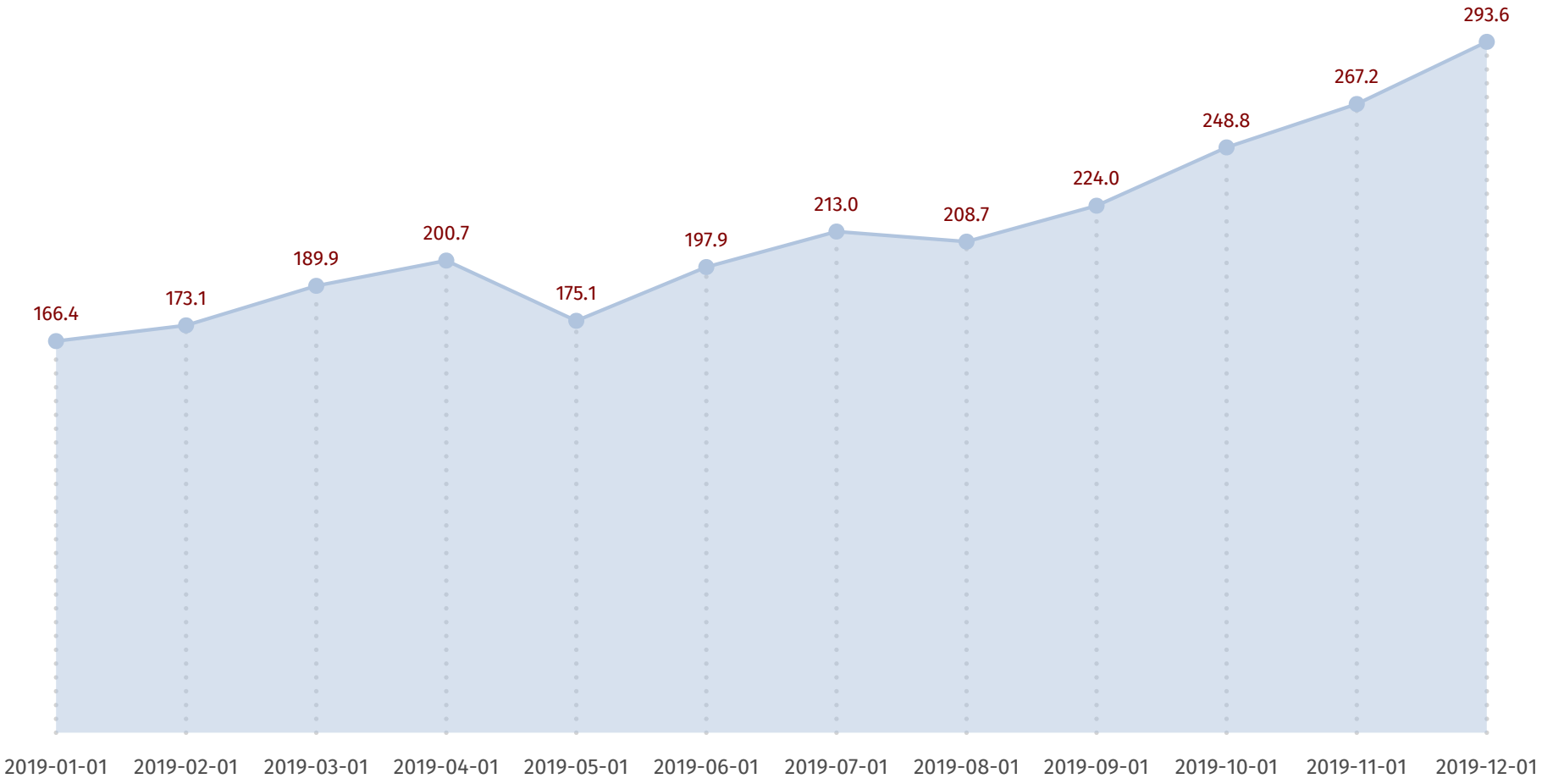
Line Chart, No Values, Regression Line

```
dchart -bar=f -line -val=f -rline AAPL.d
```



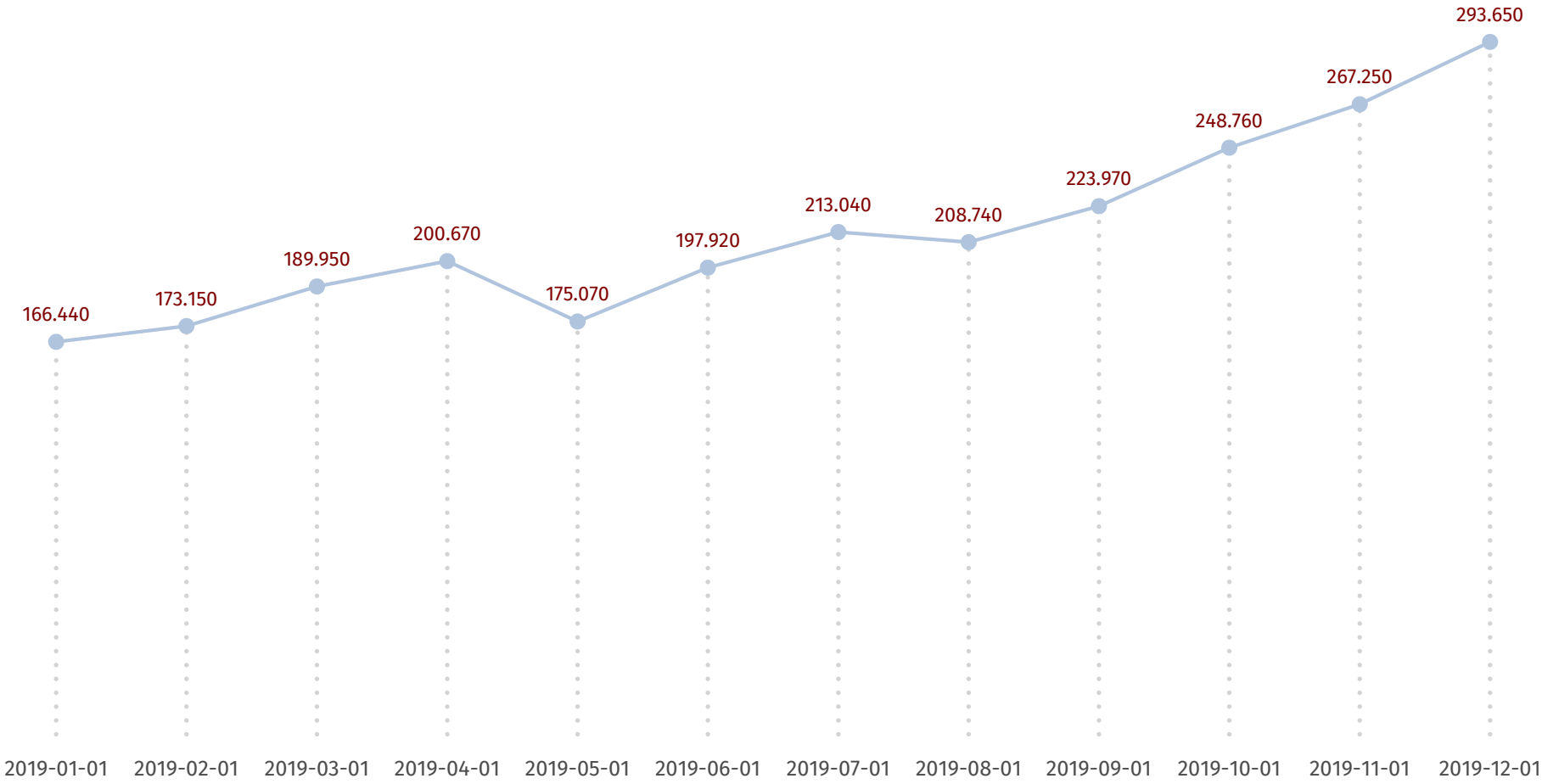
Line Chart, No Values, Regression Line Color

```
dchart -bar=f -line -val=f -rline -rlcolor=orange AAPL.d
```



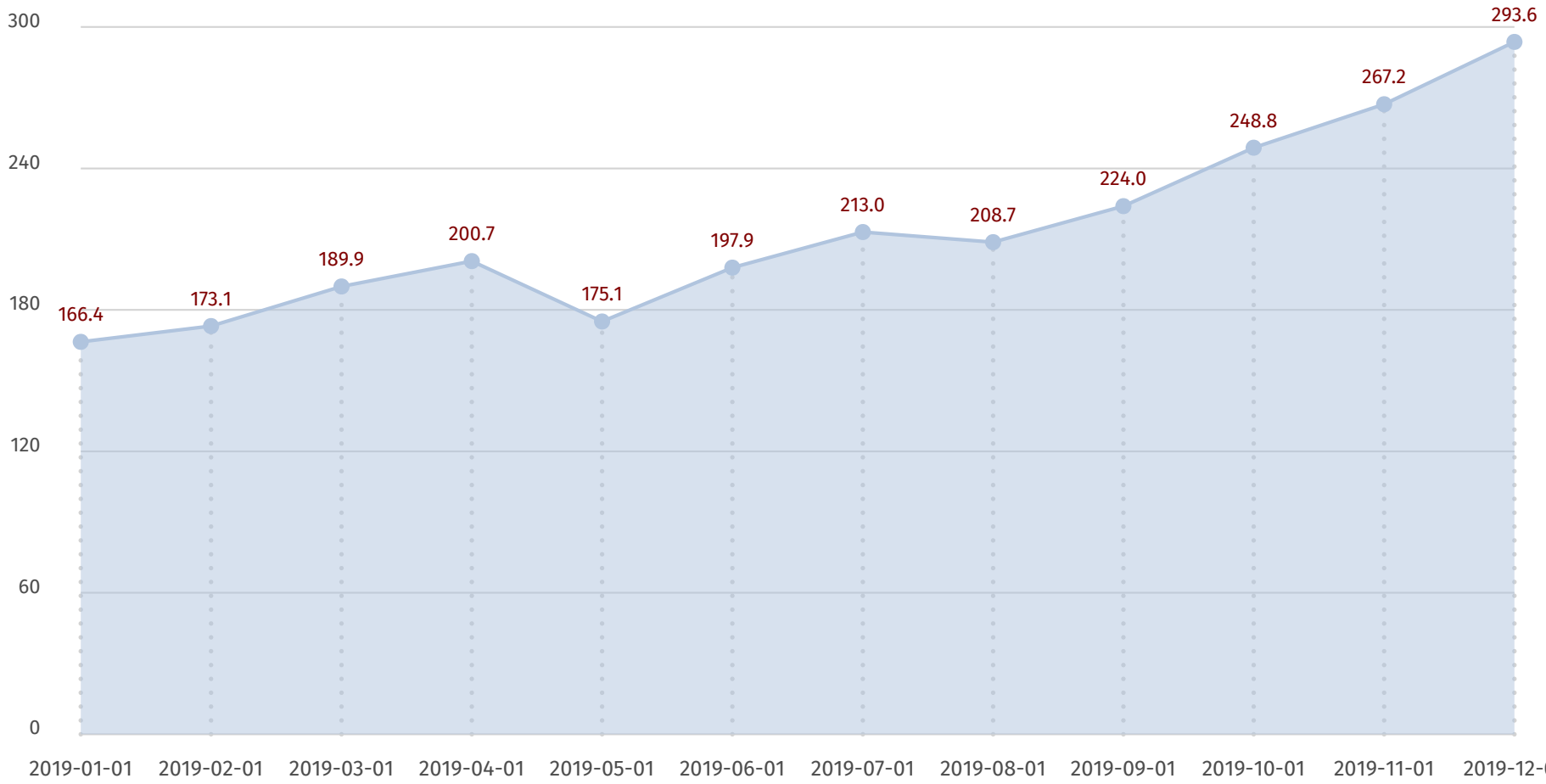
Volume, Line, Dot

```
dchart -bar=f -line -vol -dot AAPL.d
```



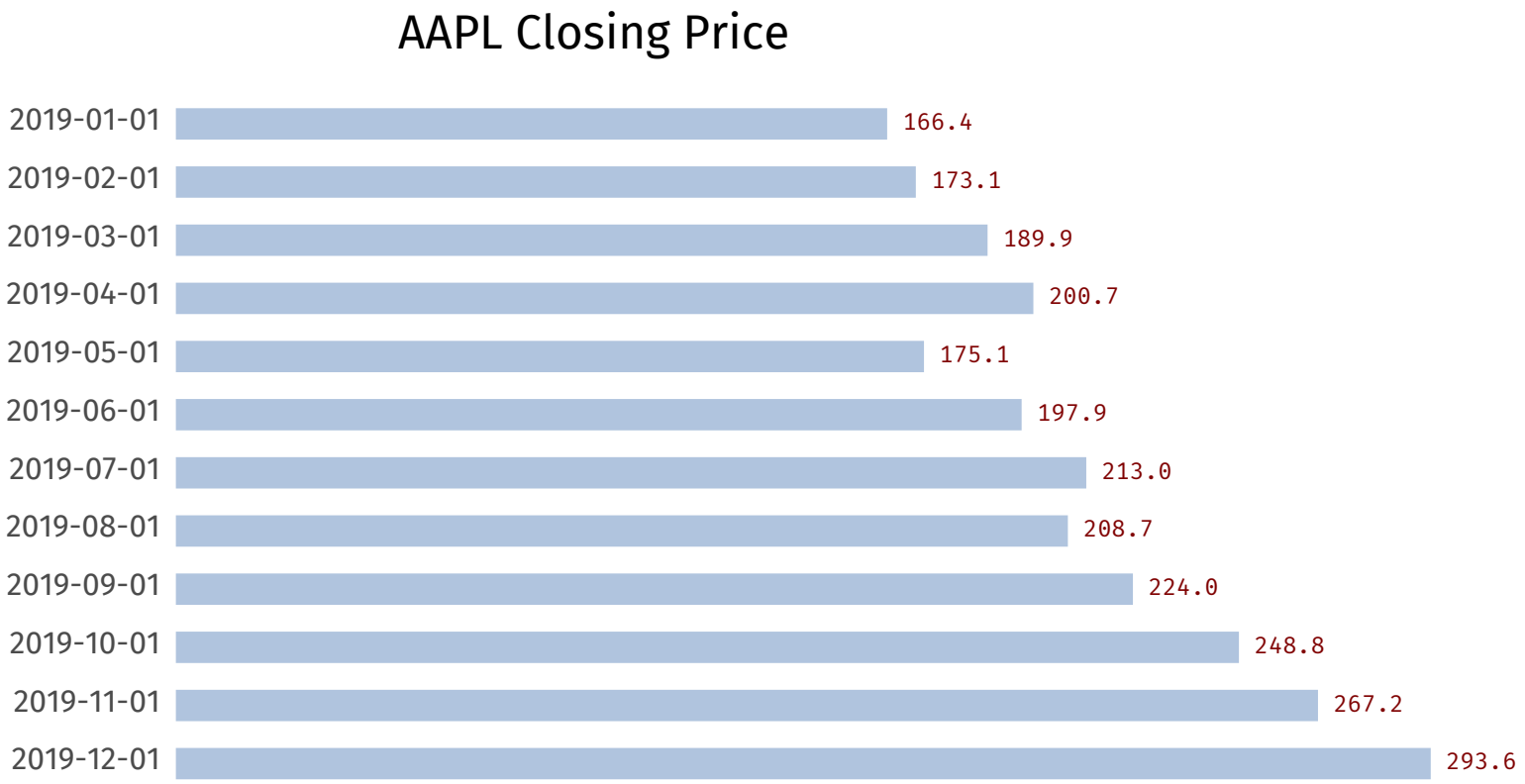
Dot, Line, Data Format

```
dchart -datafmt %0.3f -bar=f -dot -line AAPL.d
```



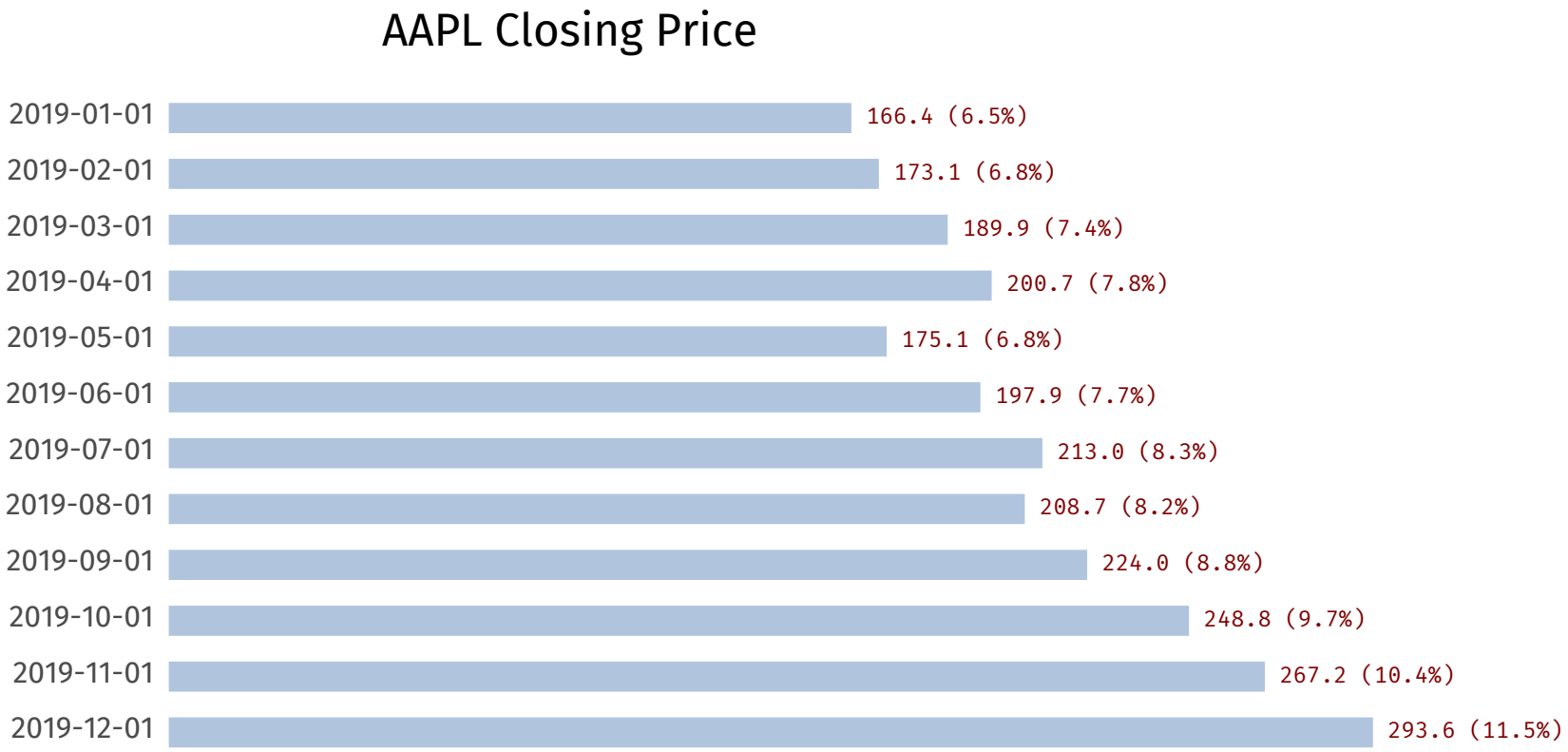
Line, Area, Dot, Y-Axis, Grid

```
dchart -bar=f -line -vol -dot -grid -yaxis AAPL.d
```



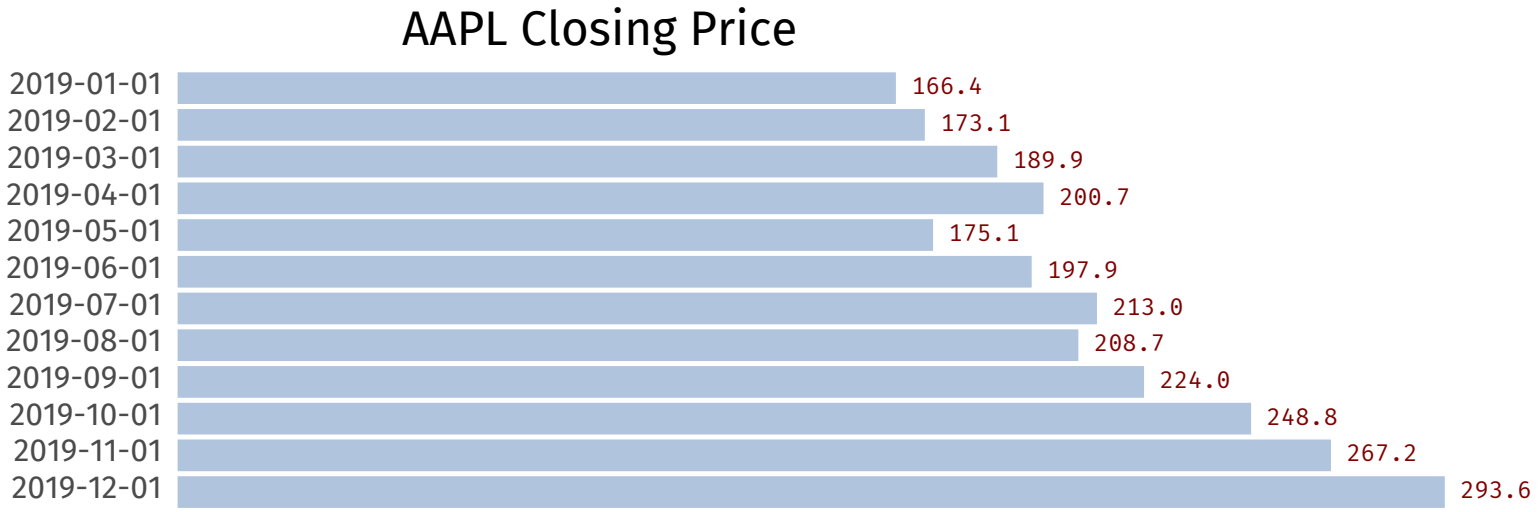
Horizontal Bar

```
dchart -hbar AAPL.d
```



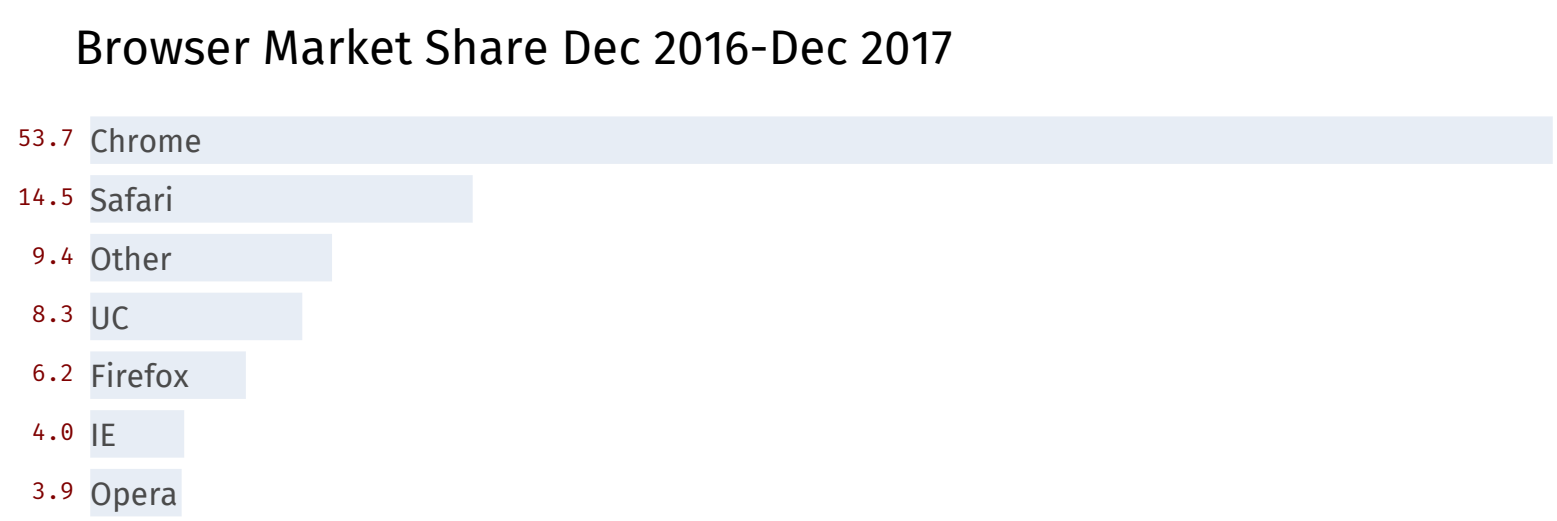
Horizontal Bar, Show Percentages

```
dchart -hbar -pct AAPL.d
```



Horizontal Bar, Line Spacing

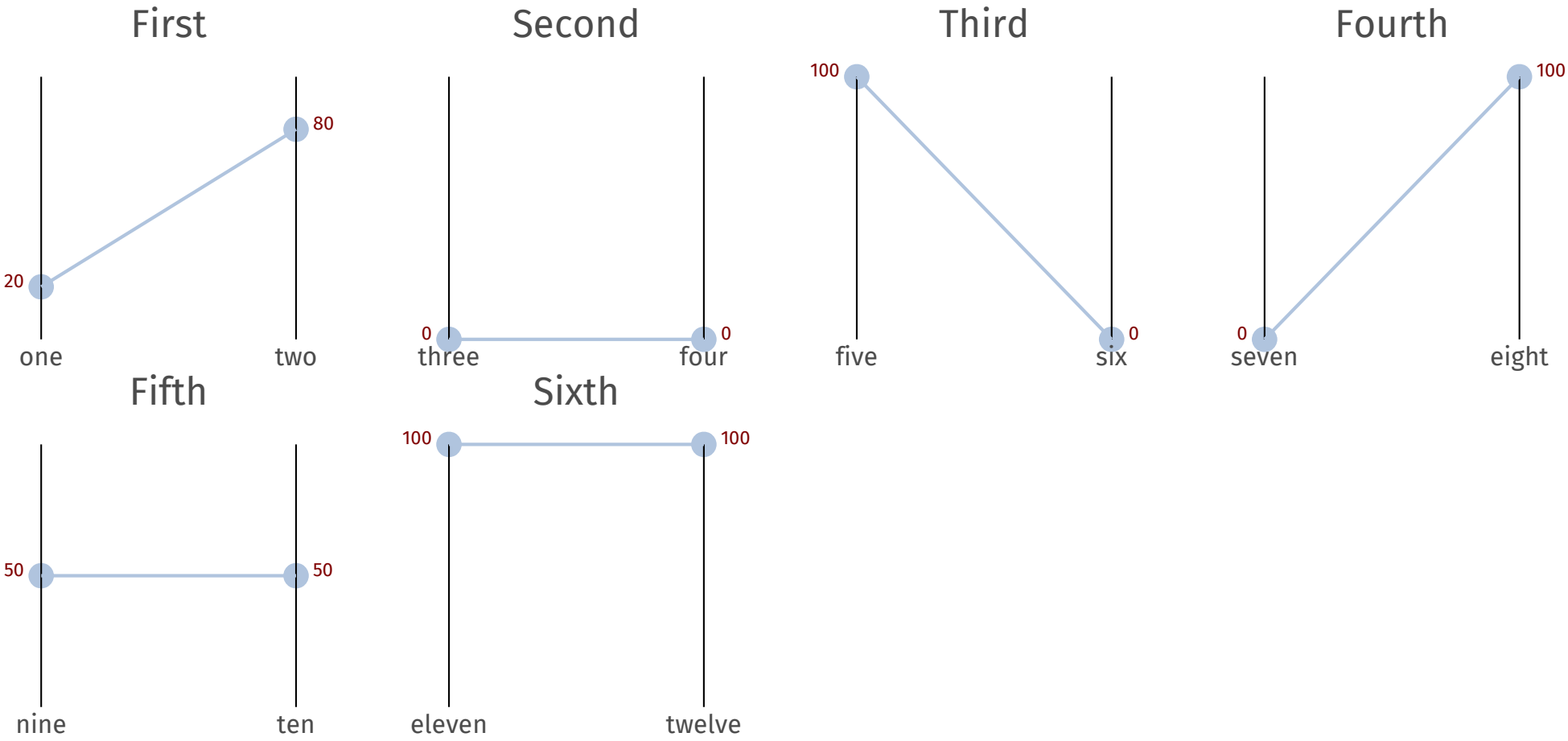
```
dchart -hbar -ls 1.5 AAPL.d
```



Word Bar

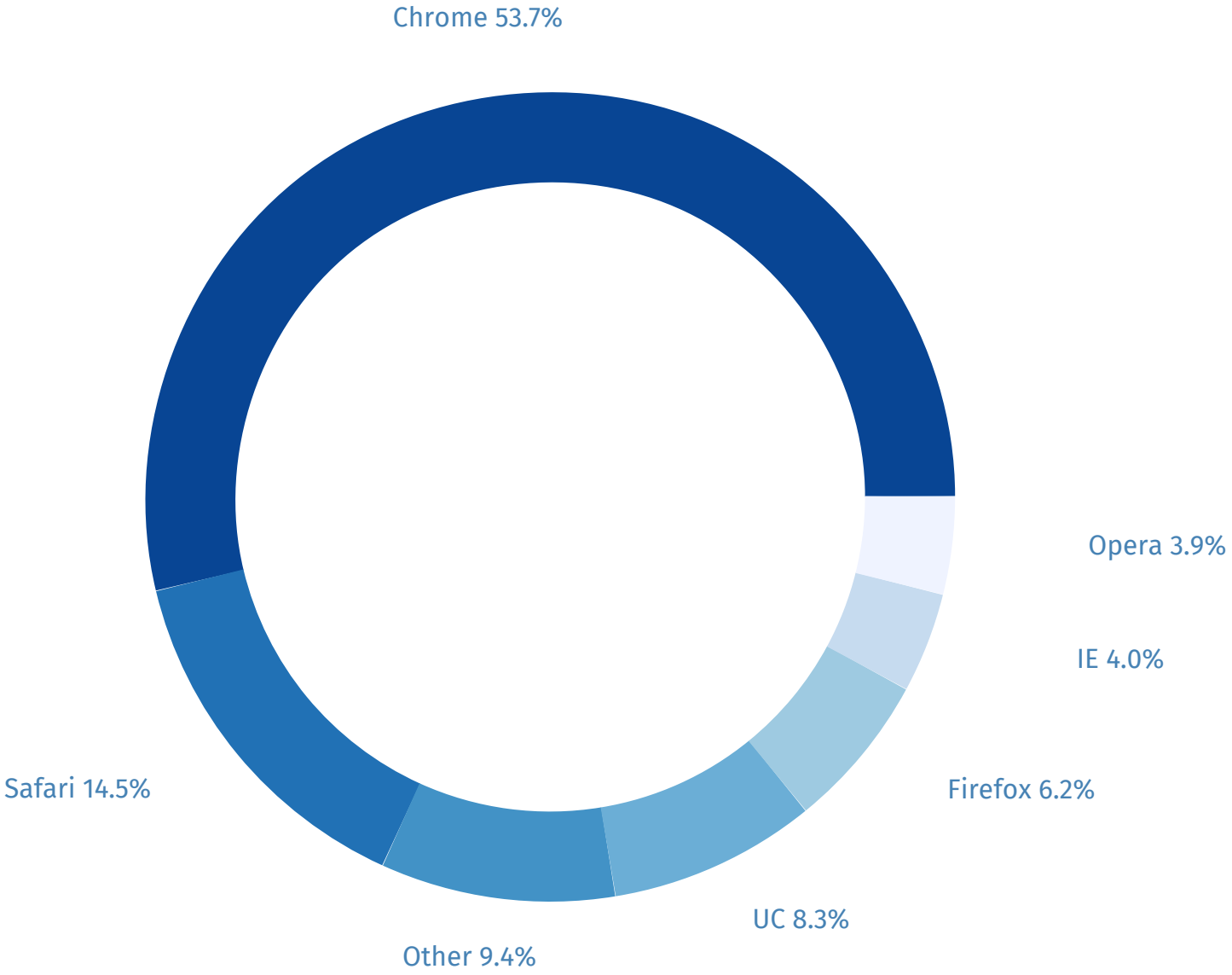
```
dchart -wbar AAPL.d
```

Test Slope Graphs



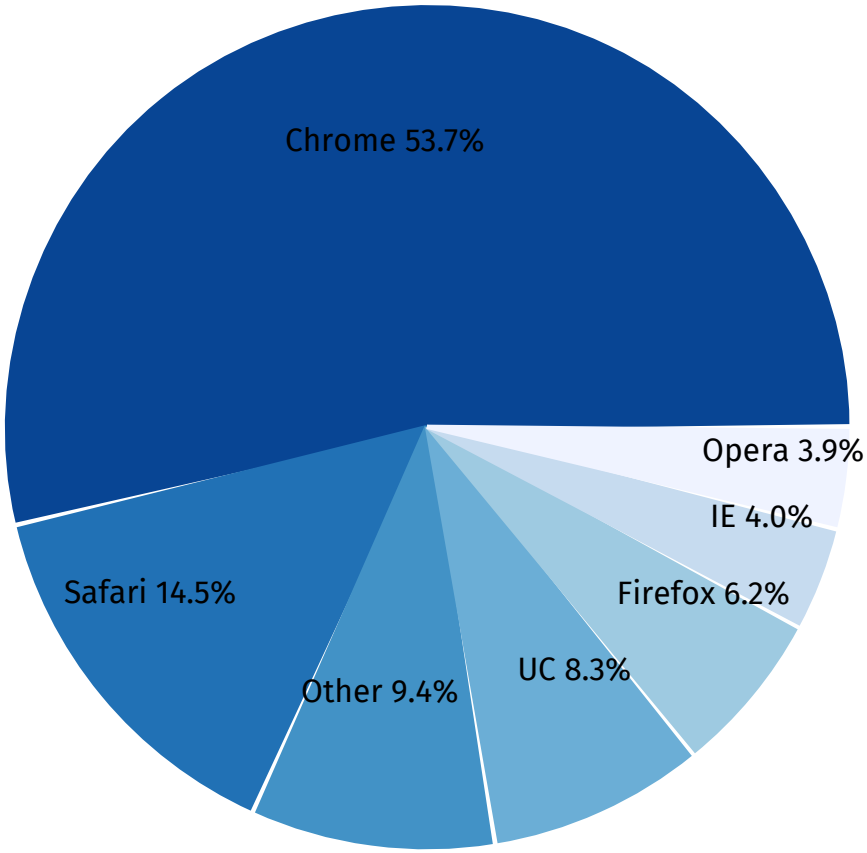
Slope Chart

```
dchart -left=10 -right=25 -top=80 -bottom=60 -slope slope.d
```



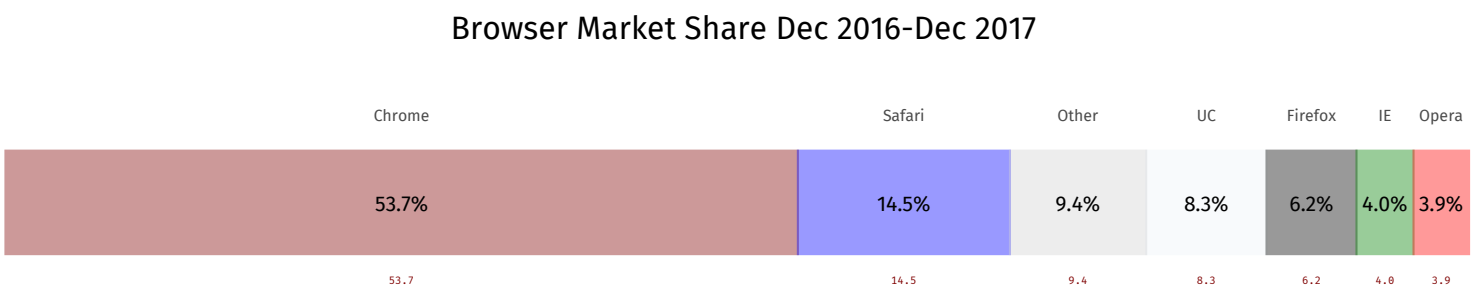
Donut

```
dchart -donut -color=std -pwidth=5 browser.d
```



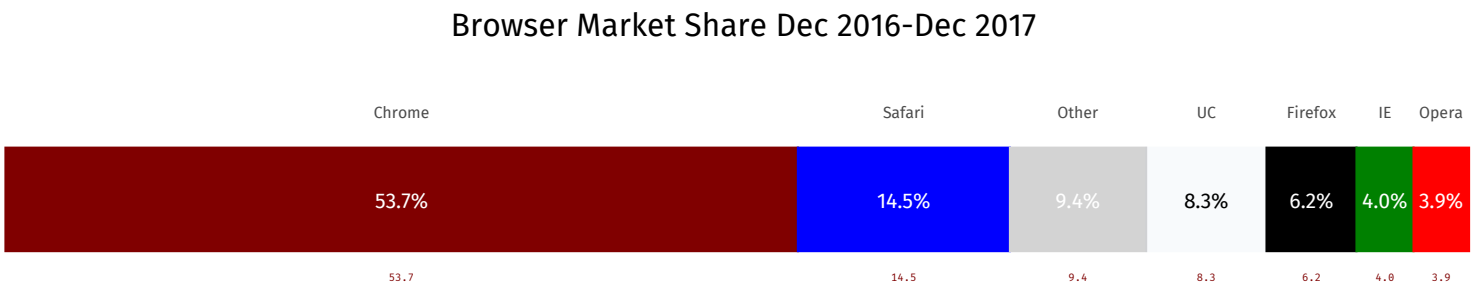
Pie

```
dchart -donut -color=std -title=f -top=70 -pwidth=20 -psize=20 browser.d
```



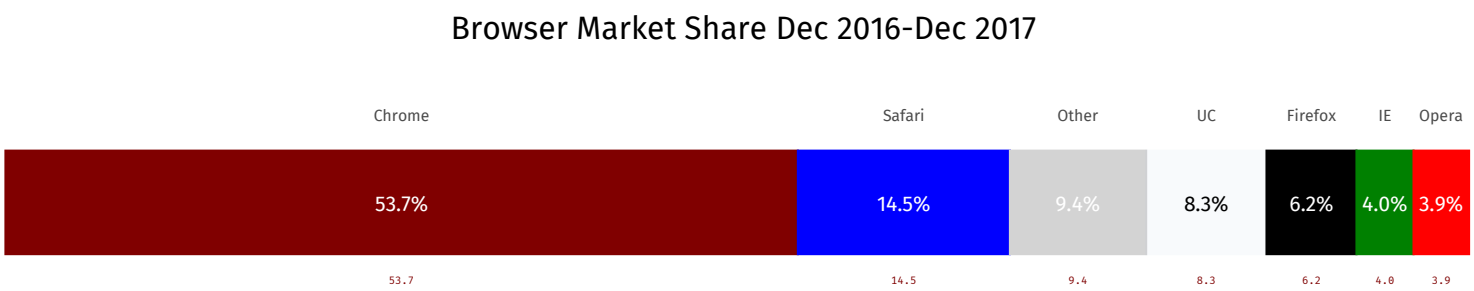
Pmap

```
dchart -pmap -pwidth=5 -textsize=1 browser.d
```



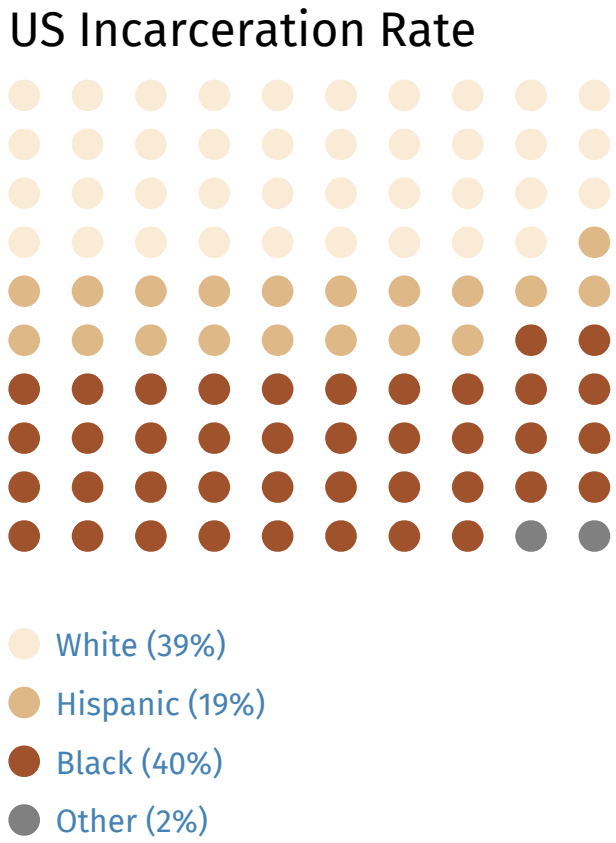
Pmap with Solid Colors

```
dchart -pmap -pwidth=5 -textsize=1 -solidpmap browser.d
```



Pmap with Solid Colors, Length Threshold

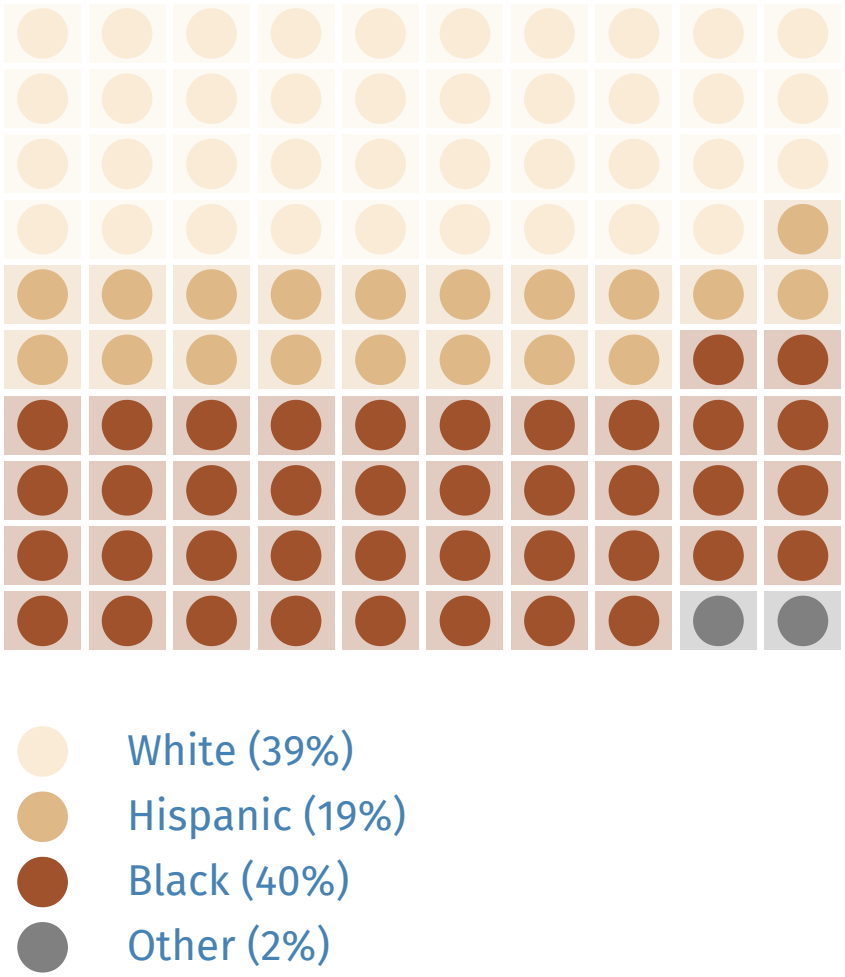
```
dchart -pmap -pwidth=5 -textsize=1 -solidpmap -pmlen=30 browser.d
```



Pgrid

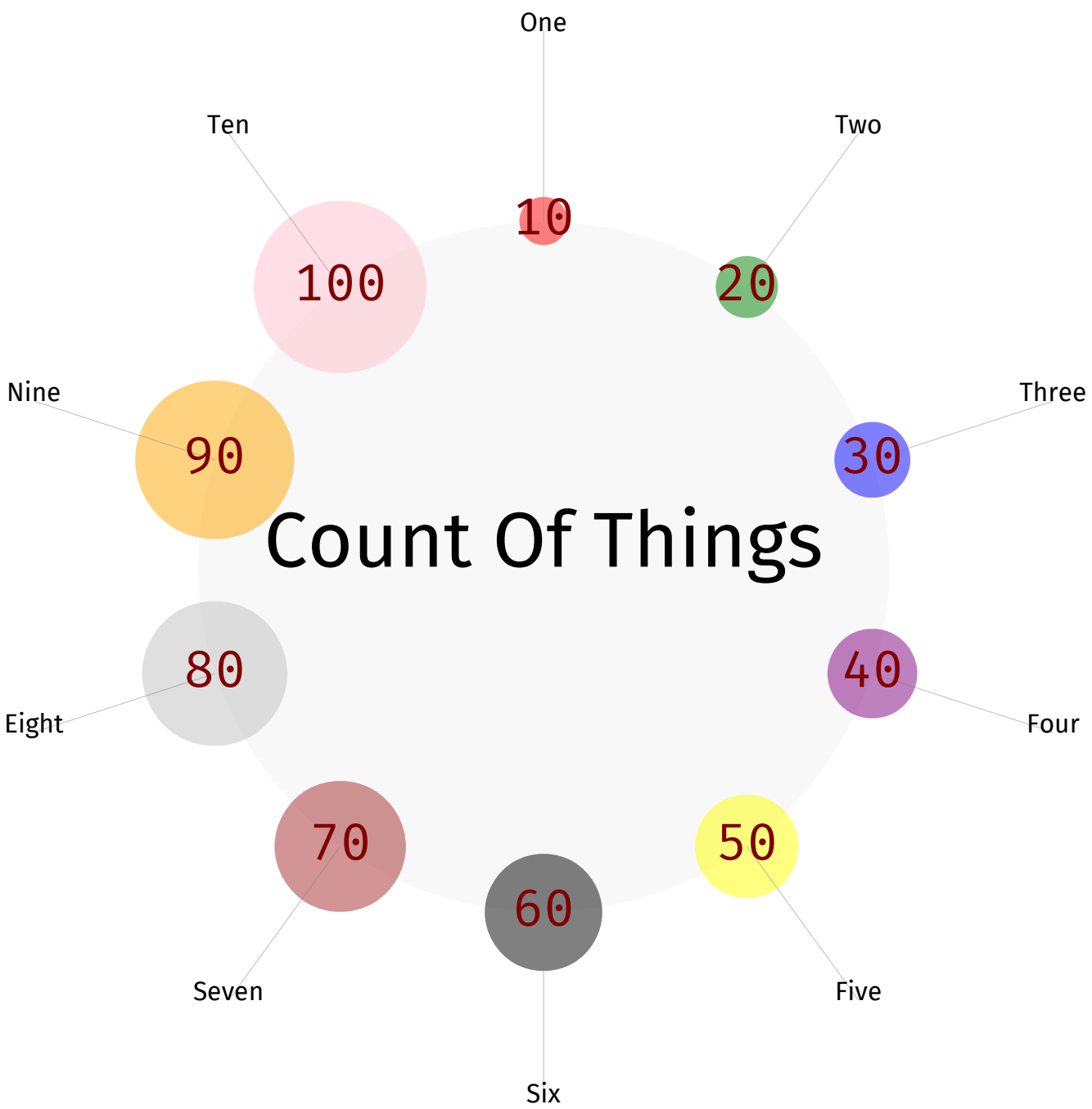
```
dchart -left 35 -top 80 -ls 3 -pgrid -val=f incar.d
```

US Incarceration Rate



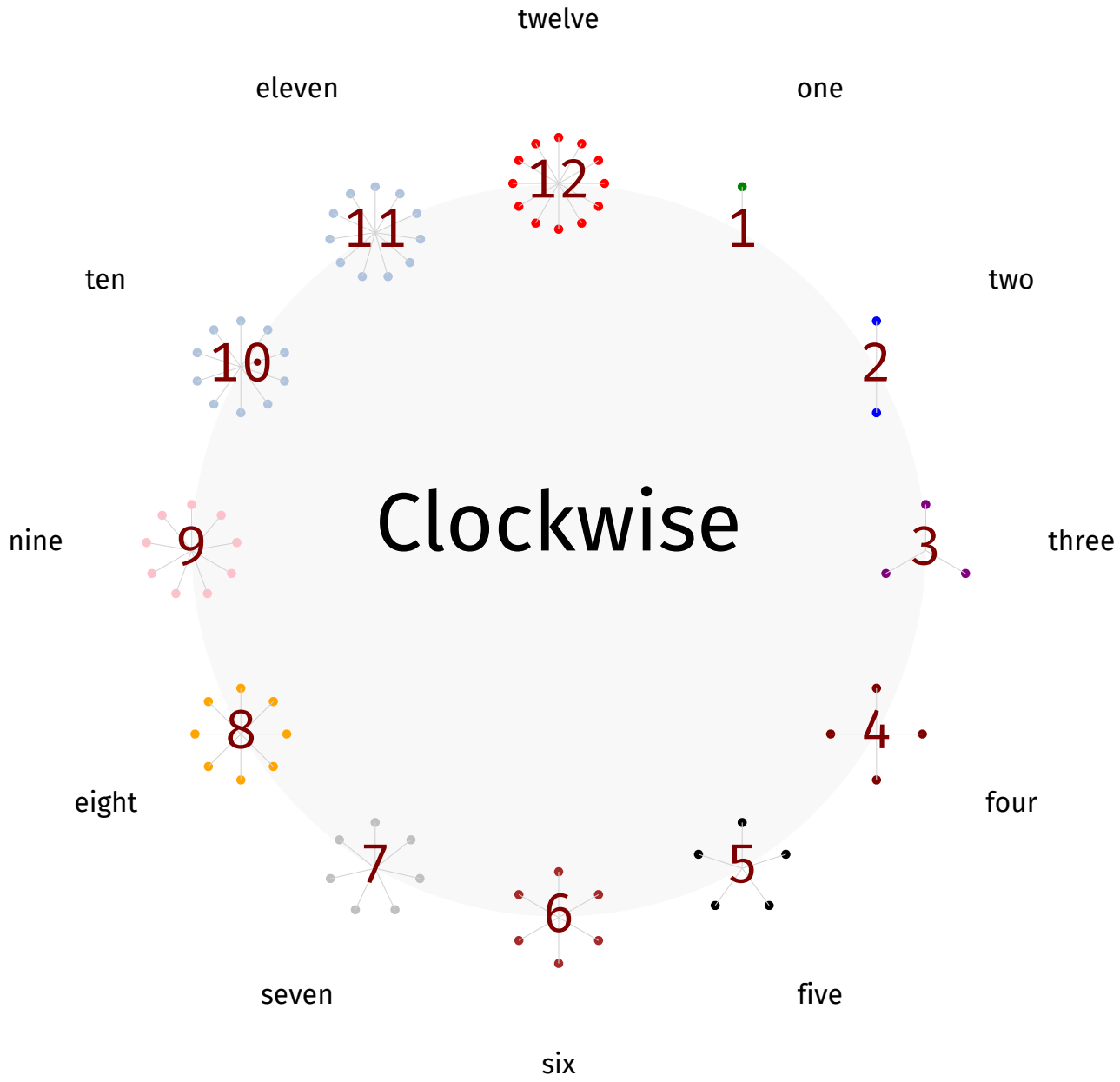
Lego

```
dchart -left 30 -top 80 -textsize 4 -lego  incar.d
```



Radial

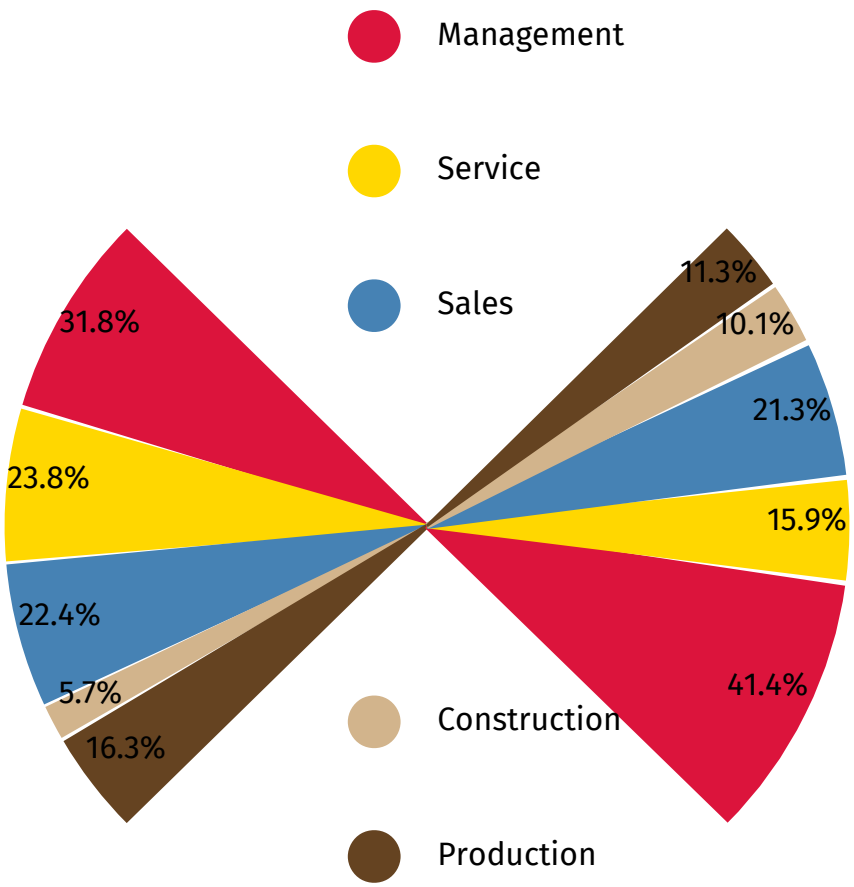
```
dchart -radial -psize=10 -pwidth=20 -top=55 -textsize=3 count.d
```



Radial with Spokes

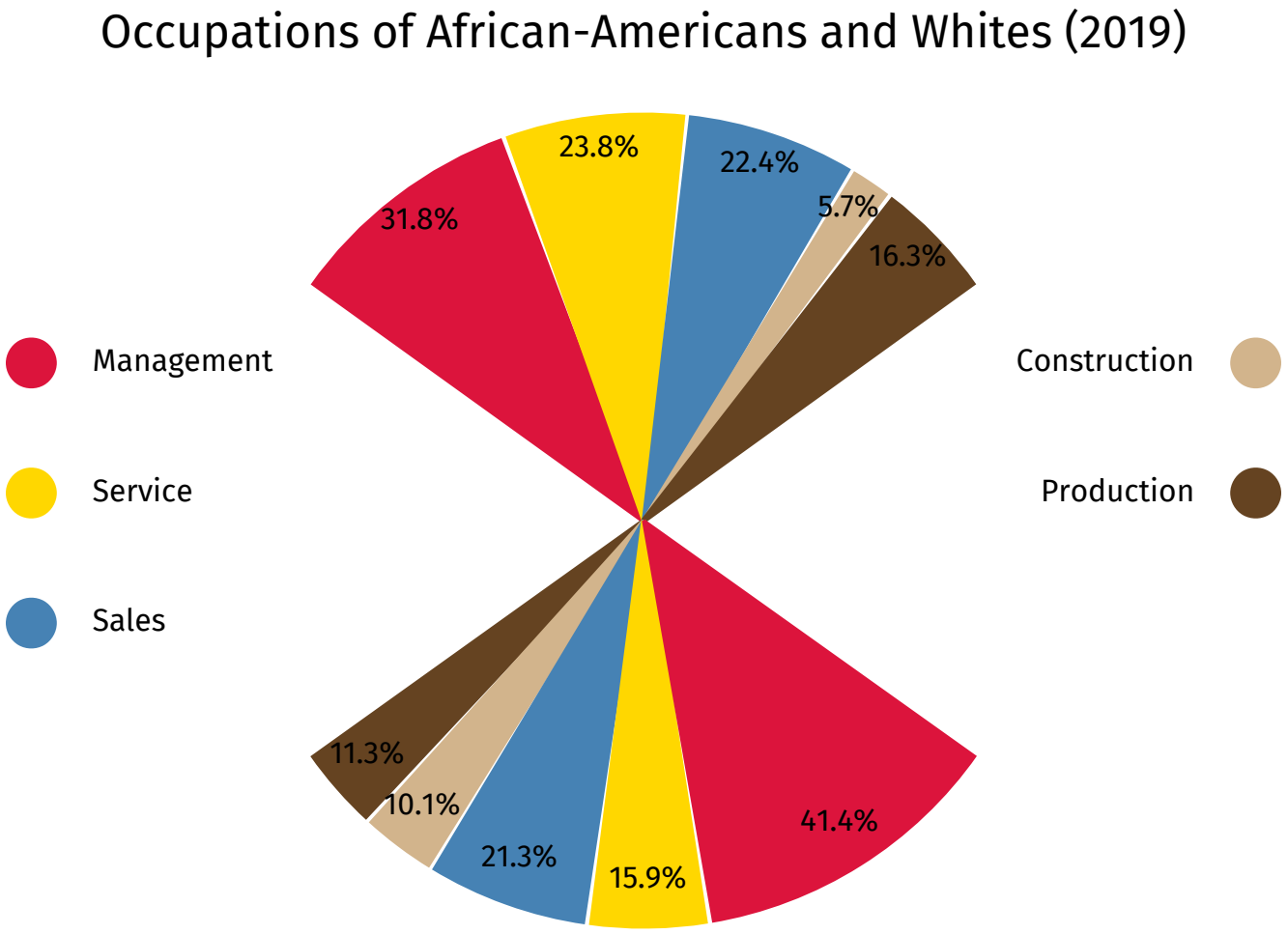
```
dchart -radial -psize=5 -pwidth=20 -top=55 -textsize=3 -spokes clock.d
```

Occupations of African-Americans and Whites (2019)



Bowtie chart

```
dchart -val=t -psize=20 -top=60 -bowtie  occupation.d
```



Fan chart

```
dchart -val=t -psize=20 -top=60 -fan occupation.d
```