

Port_Freight_Traffic

Arif_Furkan

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Before you start; “Zorunlu Paket Yükleniyor” means Installing required package

Loading Port Data

This data consists of a list ranking the busiest ports from 2004 to 2014.

```
require(dplyr)
```

```
## Zorunlu paket yükleniyor: dplyr
```

```
##
```

```
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
```

```
##
```

```
## filter, lag
```

```
## The following objects are masked from 'package:base':
```

```
##
```

```
## intersect, setdiff, setequal, union
```

```
url.world_ports <-
```

```
url("http://sharpsightlabs.com/wp-content/datasets/world_ports.RData")
```

```
load(url.world_ports)
```

```
glimpse(df.world_ports)
```

```
## Rows: 550
```

```
## Columns: 9
```

```
## $ rank      <int> 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, ~
```

```
## $ year      <fct> 2014, 2014, 2014, 2014, 2014, 2014, 2014, 2014, 2014, 2014, ~
```

```
## $ continent <fct> Asia, Asia, Asia, Asia, Asia, Asia, Asia, Asia, Asia, Asia, ~
```

```
## $ economy   <fct> China, Singapore, China, Hong Kong, China, South Korea, Chi~
```

```
## $ port      <fct> Shanghai, Singapore, Shenzhen, Hong Kong, Ningbo-Zhoushan, ~
```

```
## $ port_label <fct> Shanghai, Singapore, Shenzhen, Hong Kong, Ningbo/Z-shan, Bu~
```

```
## $ lon       <dbl> 121.473701, 103.819836, 114.057865, 114.109497, 121.988043, ~
```

```
## $ lat       <dbl> 31.230416, 1.352083, 22.543096, 22.396428, 29.901620, 35.17~
```

```
## $ volume    <dbl> 35268, 33869, 23798, 22374, 19450, 18423, 16624, 16160, 147~
```

Creating a Theme

```
require(ggplot2)

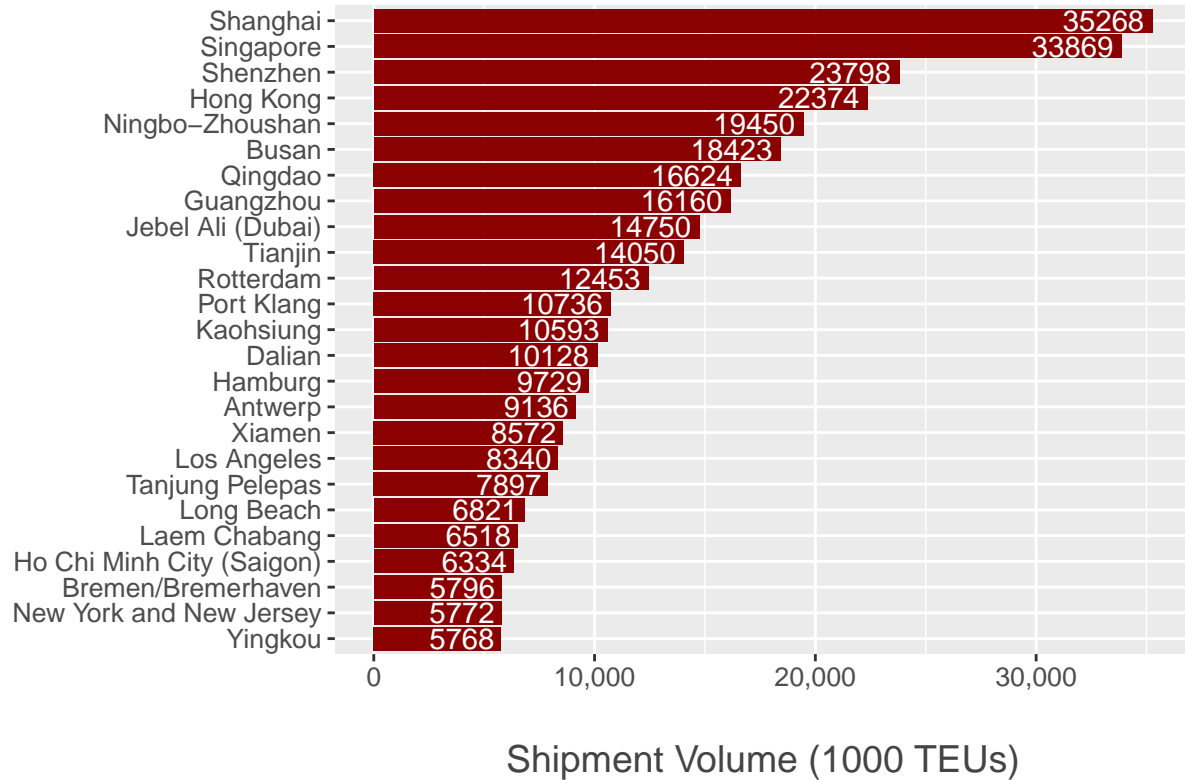
## Zorunlu paket yükleniyor: ggplot2

theme.porttheme <-
theme(text = element_text(color = "#444444")) +
theme(plot.title = element_text(size = 18)) +
theme(plot.subtitle = element_text(size = 16)) +
theme(axis.title = element_text(size = 14)) +
theme(axis.title.y = element_text(angle = 0, vjust = .5,
margin = margin(r = 15))) +
theme(axis.text = element_text(size = 10)) +
theme(axis.title.x = element_text(margin = margin(t = 20))) +
theme(legend.title = element_blank())
```

Chart of the 25 Busiest Ports by Volume

```
df.world_ports %>%
filter(year == 2014, rank <= 25) %>%
ggplot(aes(x = reorder(port, volume), y = volume)) +
geom_bar(stat = "identity", fill = "dark red") +
geom_text(aes(label = volume), hjust = 1.1, color = "#FFFFFF") +
scale_y_continuous(labels = scales::comma_format()) +
coord_flip() +
labs(title = "25 Busiest Ports") +
labs(x="", y = "Shipment Volume (1000 TEUs)") +
theme.porttheme
```

25 Busiest Ports



From this chart we can clearly see that the busiest ports are in the Far East - China region.

Development of ports by years

```
param.rank_n = 15
df.world_ports %>%
  filter(rank <= param.rank_n) %>%
  mutate(china_flag = ifelse(economy == "China", T,F)) %>%
  mutate(china_labels = ifelse(china_flag == T, port,"other")) %>%
  ggplot(aes(x = year, y = rank, group = port_label)) +
  geom_line(aes(color = china_labels, alpha = china_flag), size = 2) +
  geom_point(aes(color = china_labels, alpha = china_flag), size = 2.3) +
  geom_point(color = "#FFFFFF", alpha = .8, size = .3) +
  geom_text(data = df.world_ports %>%
    filter(year == "2014", rank <= param.rank_n),
    aes(label = port_label, x = '2014') , hjust = -.05,
    color = "#888888",
    size = 4) +
  geom_text(data = df.world_ports %>%
    filter(year == "2004", rank <= param.rank_n),
    aes(label = port_label, x = '2004') , hjust = 1.05,
    color = "#888888",
    size = 4) +
```

```

scale_x_discrete(expand = c(.3, .3)) +
scale_y_reverse(breaks = c(1,5,10,15)) +
scale_alpha_discrete(range = c(.4,.9)) +
labs(x = "Year", y = "Row") +
theme.porttheme +
theme(panel.grid.major.x = element_line(color = "#F3F3F3")) +
theme(panel.grid.major.y = element_blank()) +
theme(panel.grid.minor = element_blank()) +
theme(legend.position = "none") +
theme(axis.text.x = element_text(angle = 90, hjust = 1)) +
scale_color_manual(values = c("#4e79a5", "#f18f3b", "#af7a0a", "#e0585b", "#5aa155", "#edc958", "#77b7b2", "#B

```

```

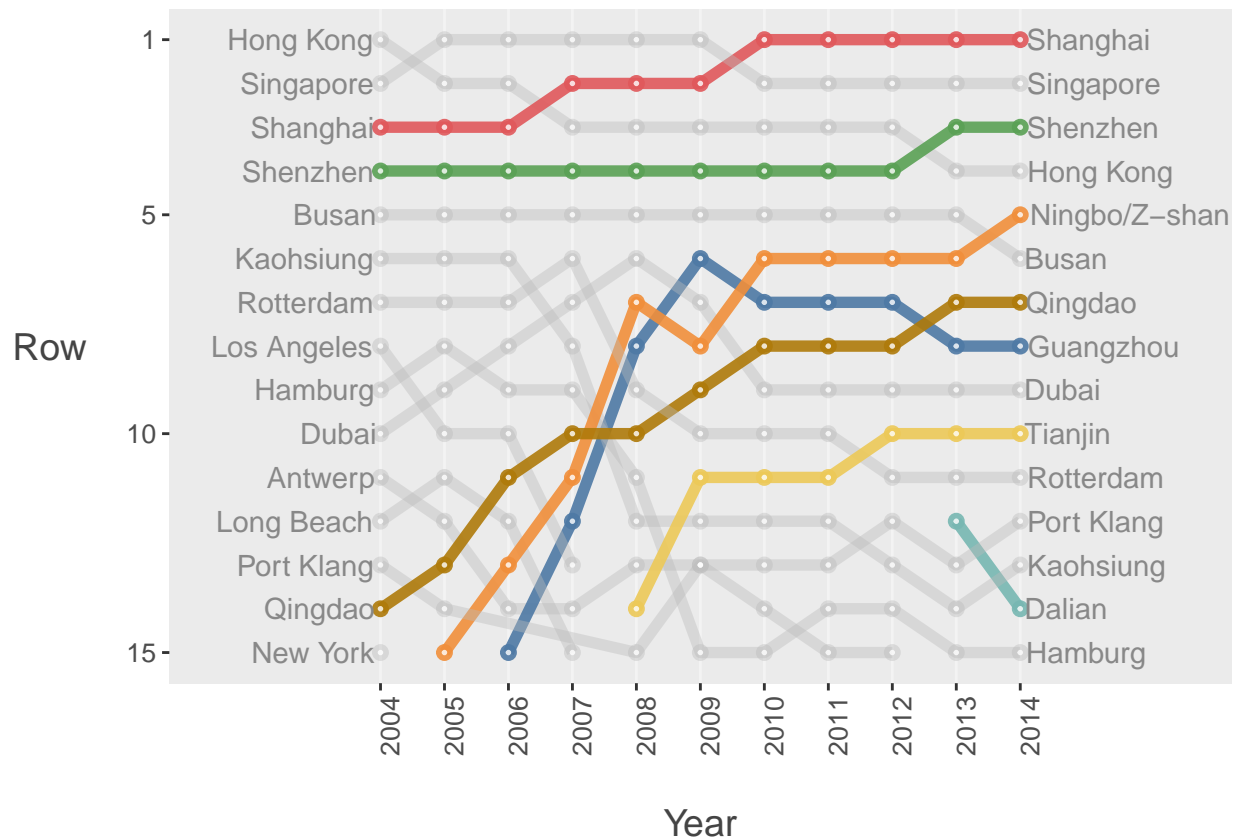
## Warning: Using 'size' aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use 'linewidth' instead.
## This warning is displayed once every 8 hours.
## Call 'lifecycle::last_lifecycle_warnings()' to see where this warning was
## generated.

```

```

## Warning: Using alpha for a discrete variable is not advised.

```



In this chart, we see the density ranking of ports by year. In this chart the colored lines indicate Chinese ports. As we can see from the graph, we can say that Chinese ports have made great progress since the early 2000s.

Preparing the Map Theme

```
theme.maptheeme <-
theme(text = element_text(color = "#444444")) +
theme(plot.title = element_text(size = 30)) +
theme(panel.background = element_rect(fill = "#FCFCFF")) +
theme(plot.subtitle = element_text(size = 18)) +
theme(panel.grid = element_blank()) +
theme(axis.text = element_blank()) +
theme(axis.ticks = element_blank()) +
theme(axis.title = element_blank()) +
theme(legend.position = c(.17,.35)) +
theme(legend.background = element_blank()) +
theme(legend.key = element_blank()) +
theme(legend.title = element_text(size = 16)) +
theme(legend.text = element_text(size = 10))
```

```
## Warning: A numeric 'legend.position' argument in 'theme()' was deprecated in ggplot2
## 3.5.0.
## i Please use the 'legend.position.inside' argument of 'theme()' instead.
## This warning is displayed once every 8 hours.
## Call 'lifecycle::last_lifecycle_warnings()' to see where this warning was
## generated.
```

Preparation of Graphics to Show Ports on the Map

```
require(tidyverse)
```

```
## Zorunlu paket yükleniyor: tidyverse
```

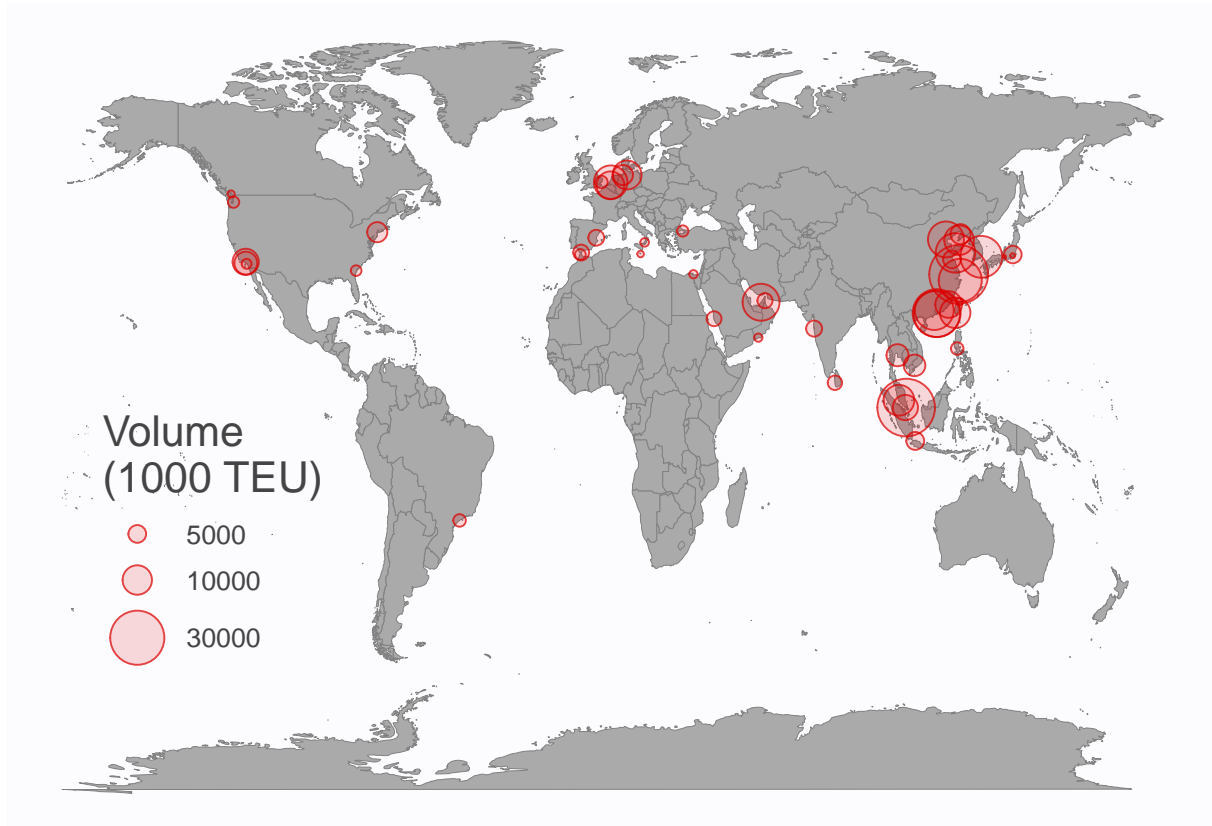
```
## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v forcats 1.0.0 v stringr 1.5.1
## v lubridate 1.9.3 v tibble 3.2.1
## v purrr 1.0.2 v tidyr 1.3.1
## v readr 2.1.5
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag() masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
map.world_polygon <- map_data("world")
df.world_ports %>%
filter(year == "2014") %>%
ggplot(aes(x = lon, y = lat)) +
```

```

geom_polygon(data = map.world_polygon, aes(x = long, y = lat,
group = group),
fill = "#AAAAAA", colour = "#818181", size = .15) +
geom_point(aes(size = volume), color = "#DD0000", alpha = .15) +
geom_point(aes(size = volume), color = "#DD0000", alpha = .7,
shape = 1) +
scale_size_continuous(range = c(.2,10), breaks = c(5000, 10000, 30000),
name = "Volume\n(1000 TEU)") +
theme.maptheeme

```



This chart shows the port density map for 2014. Ports are shown with red dots. Ports have larger circles in proportion to their density. Here we can see how busy the Far Eastern ports are.