

A detailed line drawing of a Gothic building tower, likely a library or university building, featuring multiple levels of arched windows and intricate stonework. The drawing is positioned on the left side of the slide, partially overlapping a gold diagonal background element.

# GGPLOT2: DATA VIZ IN R

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UNIVERSITY

# DOWNLOAD TODAY'S DATA

1. Go to download link: <http://tiny.cc/dataViz>
2. Download data.zip file
3. Unzip/decompress file in your working directory

Data source #1: Baby Names from Social Security Card Applications – National Data  
<https://catalog.data.gov/dataset/baby-names-from-social-security-card-applications-national-level-data>

Data source #2: Baby Names from Social Security Card Applications – State and District of Colombia Data  
[https://catalog.data.gov/dataset/baby-names-from-social-security-card-applications-data-by-state-and-district-of-](https://catalog.data.gov/dataset/baby-names-from-social-security-card-applications-data-by-state-and-district-of)

# PACKAGES

- **pacman** – run both `install.packages()` and `library()` on multiple packages simultaneously
- **tidyverse** – large collection of packages for data manipulations and plotting
- **RColorBrewer** – color palettes for `ggplot2`
- **geofacet** – cool facet plot manipulation tool (more on this later)
- **ggpubr** – export `ggplots` easily
- **ggalt** – some extra tools for `ggplot2` (e.g., `encircle`)
- **ggplotAssist** – point-&-click `ggplot` addin for RStudio

# GRAMMAR OF GRAPHIC

- ggplot2 breaks plots up into layers/components so that new data can be added simply

## Core elements

- **Data:** ggplot2(data)
- **Aesthetics:** ggplot2(data, aes(x=year, y=number, color=name))
- **Geometries:** ggplot2(data, aes(x=year, y=number, color=name)) + **geom\_line()**

## Optional elements

- **Facets:** + facet\_wrap(~year, nrow=10)
- **Coordinates:** + scale\_x\_continuous() + xlab() + ylab()
- **Theme:** + theme(legend.position="bottom", axis.title=element\_text(size=12))

# DATA MANIPULATION WITH PIPES

- Combining `group_by` and `mutate` with pipes (`%>%`) is a powerful way to manipulate dataframes for `ggplot`
- It is often easier to manipulate the data than it is to manipulate a plot
- Good practice
  - 1 or 2 clean dataframes that go untouched
  - Use `subset()` or piping to select, organize, and manipulate the data for your plot

# BASIC GGPLOT TEMPLATE

Combining `group_by` and `mutate` with pipes (`%>%`) is a powerful way to manipulate dataframes for `ggplot`

```
column <- ggplot() +  
  geom_col(subset(national_name_data, sex=="F" & allYear_rank <=10),  
    mapping=aes(x=year, y=number, fill=name)) +  
  scale_x_continuous() +  
  scale_y_continuous(labels = comma) +  
  labs(title="Year vs Number", y="Number", x="Year", caption="data.gov", fill="Name") +  
  theme(legend.position = "bottom",  
    legend.title = element_text(face="bold",size=14),  
    legend.text=element_text(face="bold",size=12),  
    axis.text.x = element_text(face="bold", color="black",size=12, angle=0),  
    axis.text.y = element_text(face="bold", color="black",size=12, angle=45))
```

# BASIC GGPLOT TEMPLATE

Load in data and choose aesthetics

Universal

```
ggplot(data, mapping=aes(x=year, y=number, fill=name)) +  
geom_col()
```

Individual geometry

```
ggplot() +  
geom_col(data, mapping=aes(x=year, y=number, fill=name))
```

Piping

```
data %>% ggplot() +  
geom_col(mapping=aes(x=year, y=number, fill=name))
```

# EXPORTING PLOTS

- ggpubr package contains the ggeexport() function
- Export as multiple PNG files, single PDF, jpeg, etc.

```
ggexport(plotlist = list(plot_name), filename = "plots/column.png",  
width = 800, height = 600)
```



# WE'RE HERE TO HELP!



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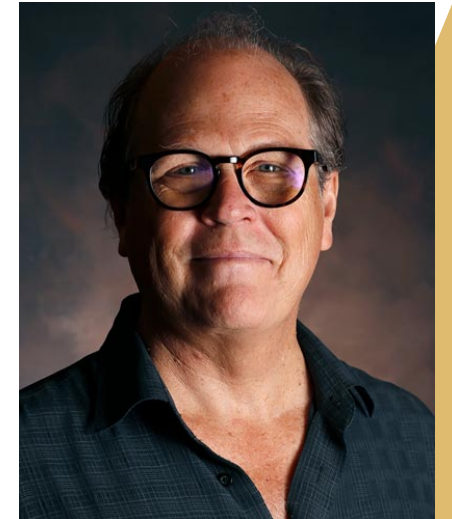
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