

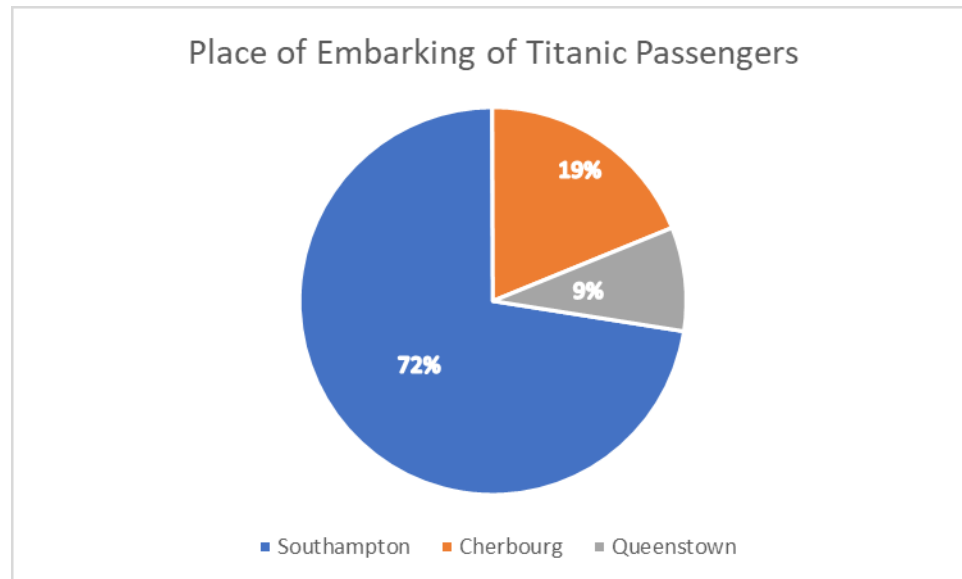
Data Visualization

Univariate visualizations

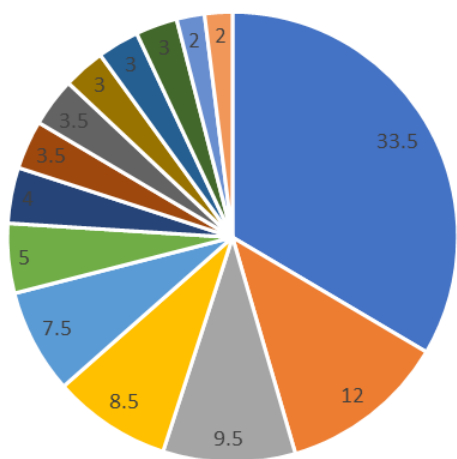
- Univariate = only one variable is visualized
- Different ways of visualizations for different data types
- Categorical – „names“ or short ordinal variables, numbers just labels for categories
 - comparing categories (bar chart)
 - Fraction – value relative to the whole (pie charts)
- Cardinal – numbers have meaning as numbers
 - distribution = „spread of data“ (histogram, box plot)

Pie chart

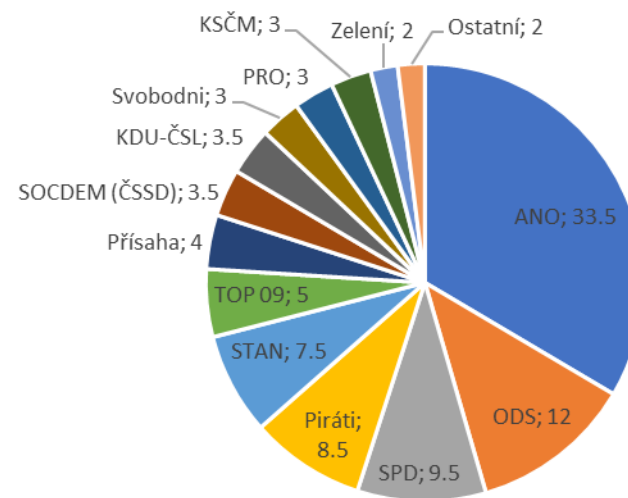
- Only small number of categories (max about 7)
- Not very informative when all slices are of similar size
- Only when it is part of whole



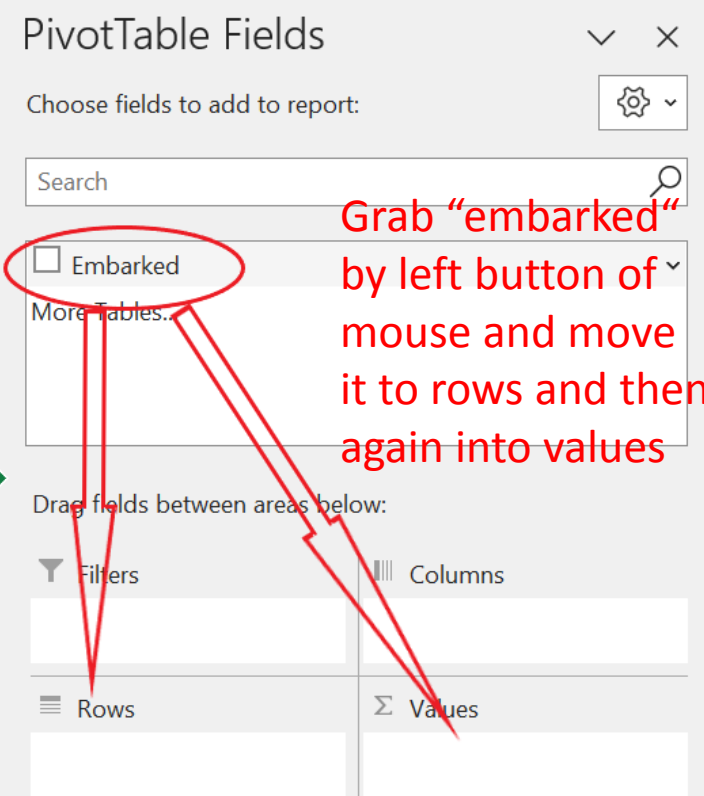
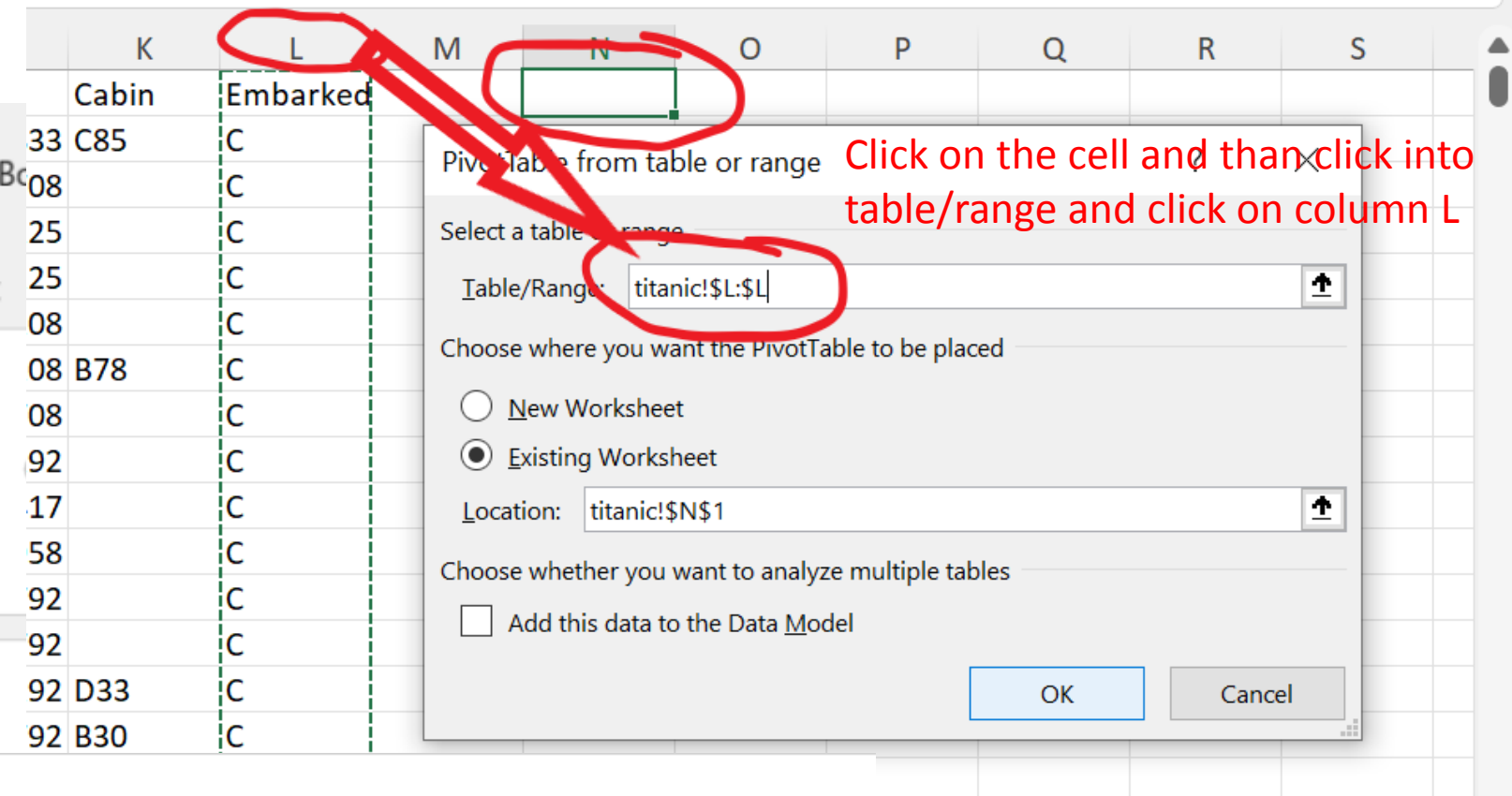
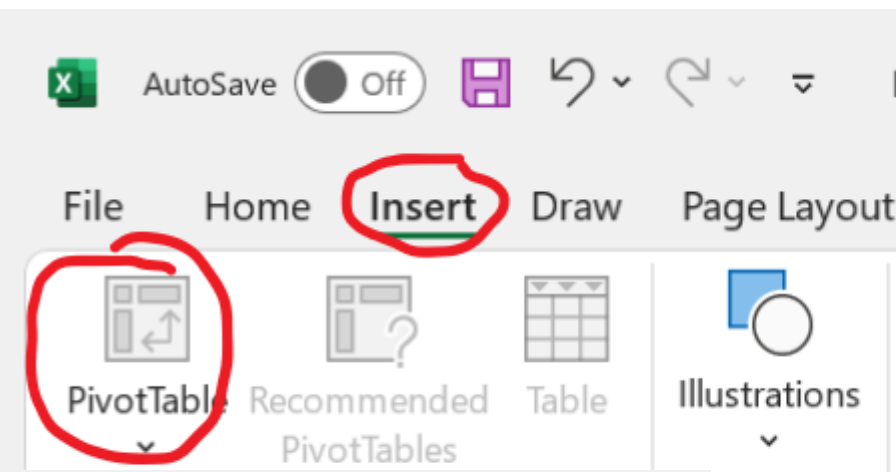
support



support



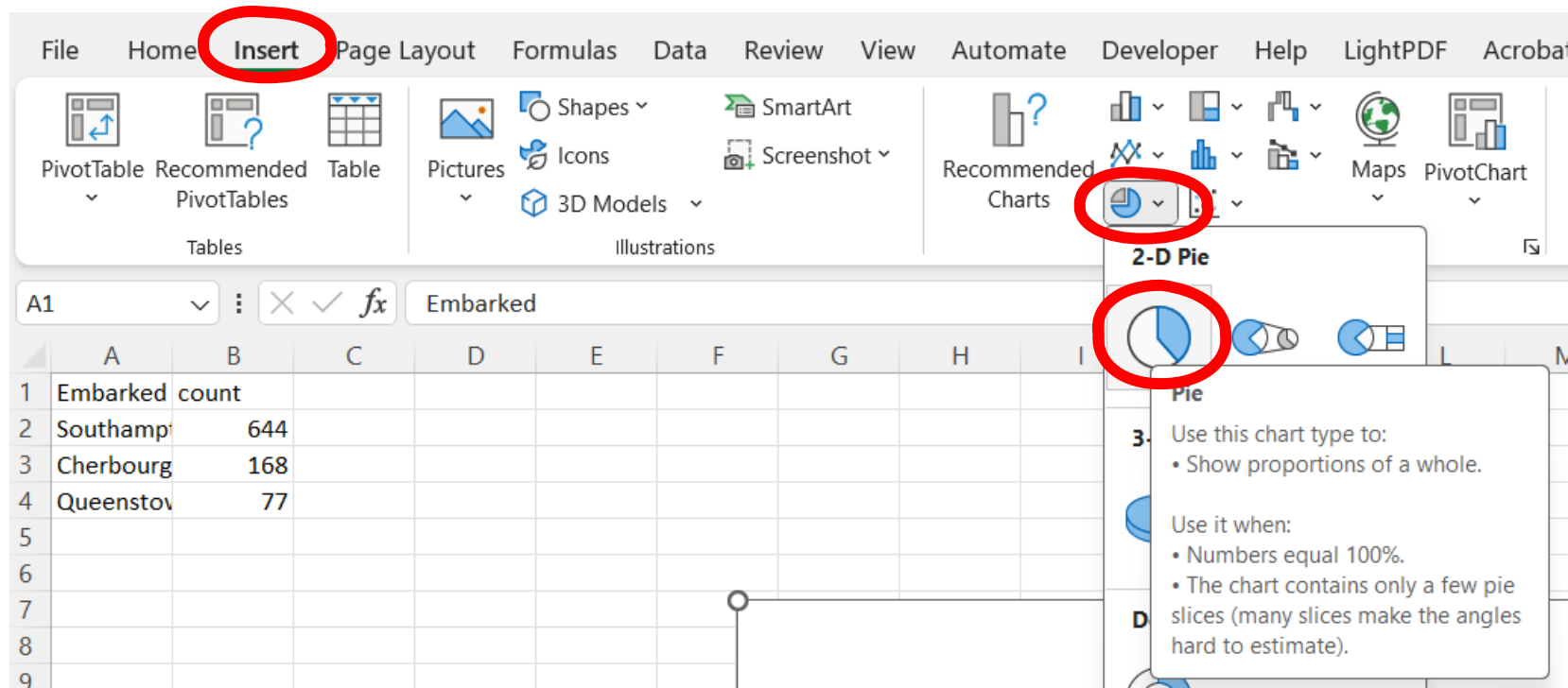
Pivot table



Row Labels	Count of Embarked
C	168
Q	77
S	644
(blank)	
Grand Total	889

Making of pie chart

- Counts for categories are needed



The screenshot shows the Microsoft Excel interface. The 'Insert' tab is selected and circled in red. In the 'Charts' group, the 'Pie' chart icon is also circled in red. A tooltip is displayed over the 'Pie' icon, providing information about the chart type. The spreadsheet data is visible in the background, showing a table with 'Embarked' categories and their counts.

	A	B	C	D	E	F	G	H	I	L	M
1	Embarked	count									
2	Southamp	644									
3	Cherbourg	168									
4	Queenstov	77									
5											
6											
7											
8											
9											

2-D Pie

Pie

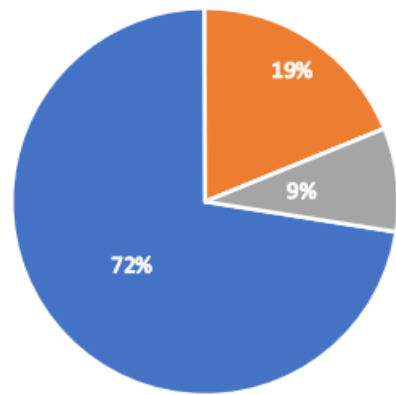
3. Use this chart type to:

- Show proportions of a whole.

Use it when:

- Numbers equal 100%.
- The chart contains only a few pie slices (many slices make the angles hard to estimate).

Place of Embarking of Titanic Passengers



■ Southampton ■ Cherbourg ■ Queenstown

Chart Elements

- Chart Title
- Data Labels
- Legend

FILE Home Insert Page Layout Formulas Data Review View Automate Developer Help LightPDF Acrobat **Chart Design**

Add Chart Quick Layout Change Colors

Chart Styles

Chart Title

Data Labels

Data Table

Legend

Lines

Trendline

Up/Down Bars

None

Center

Inside End

Outside End

Best Fit

Data Callout

More Data Label Options...

Sheet2!\$A\$2:\$A\$4;Sheet2!\$B\$2:\$B\$4;1)

	F	G	H	I	J	K	L	M	N
1									
2	700.00								
3	600.00								
4	500.00								

Place of Embarking of Titanic Passengers

Format Data Labels

Label Options Text Options

Label Options

Label Contains

- Value From Cells
- Series Name
- Category Name
- Value
- Percentage
- Show Leader Lines
- Legend key

Separator ;

Reset Label Text

Label Position

- Center
- Inside End
- Outside End
- Best Fit

Number

Bar chart

- Useful for almost any situation
- Base for numerous other charts
- Very easy for interpretation
- Unlimited number of categories
 - (then it is turned into histogram)

File Home **Insert** Page Layout Formulas Data Review View Automate Developer Help LightPDF Acrobat

PivotTable Recommended Table Pictures Shapes SmartArt Recommended Charts 2-D Column 3-D Column 3D Map Tours

Tables Illustrations

13

	A	B	C	D	E	F	G	H	I
1	Embarked	count	percentage						
2	Southamp	644	72.44094						
3	Cherbourg	168	18.89764						
4	Queenstov	77	8.661417						
5									

2-D Column

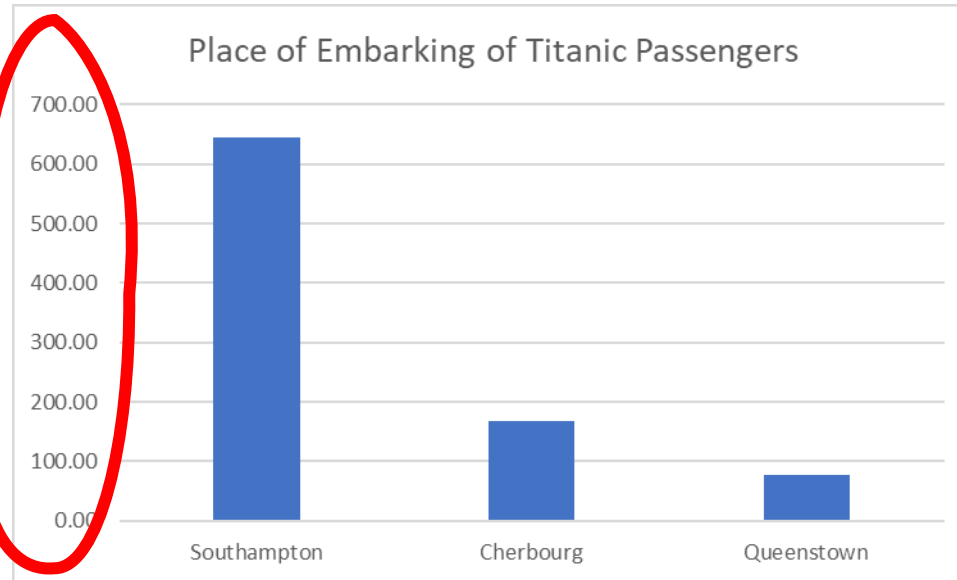
Clustered Column

Use this chart type to:

- Compare values across a few categories.

Use it when:

- The order of categories is not important.



If we want percentages, we have to calculate them

Add Chart Quick Element Layout

Change Colors

Chart Styles

Switch Row Column

Select Data

Change Chart Type

Move Chart

A1

	A	B	C	D	E	F
1	Embarked	count	percentage			
2	Southamp	644	72.44094			
3	Cherbourg	168	18.89764			
4	Queenstov	77	8.661417			
5		889				
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

Place of Embarking of Titanic Passen



Select Data Source

Chart data range: =Sheet2!\$A\$1:\$C\$4

Switch Row/Column

Legend Entries (Series)

- count
- percentage

Horizontal (Category) Axis Labels

- Southampton
- Cherbourg
- Queenstown

Hidden and Empty Cells

OK Cancel

Stacked bar plot

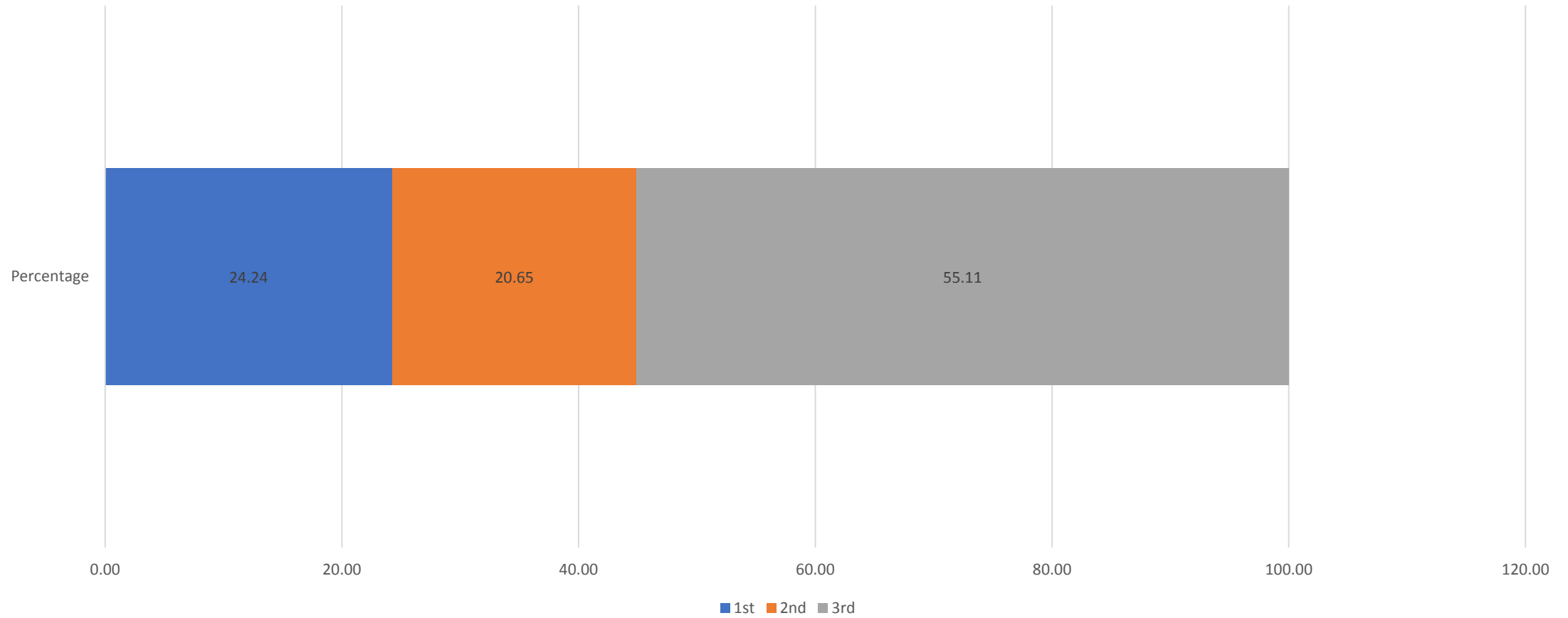


Chart Design ribbon options:

- Chart Layouts: Add Chart Element, Quick Layout, Change Colors
- Chart Styles: 8 different chart style thumbnails
- Data: Switch Row/Column, Select Data
- type: **Change Chart Type** (circled in red)

Chart 1

Class	Count	Percentage
1st	216	24.24
2nd	184	20.65
3rd	491	55.11
	891	

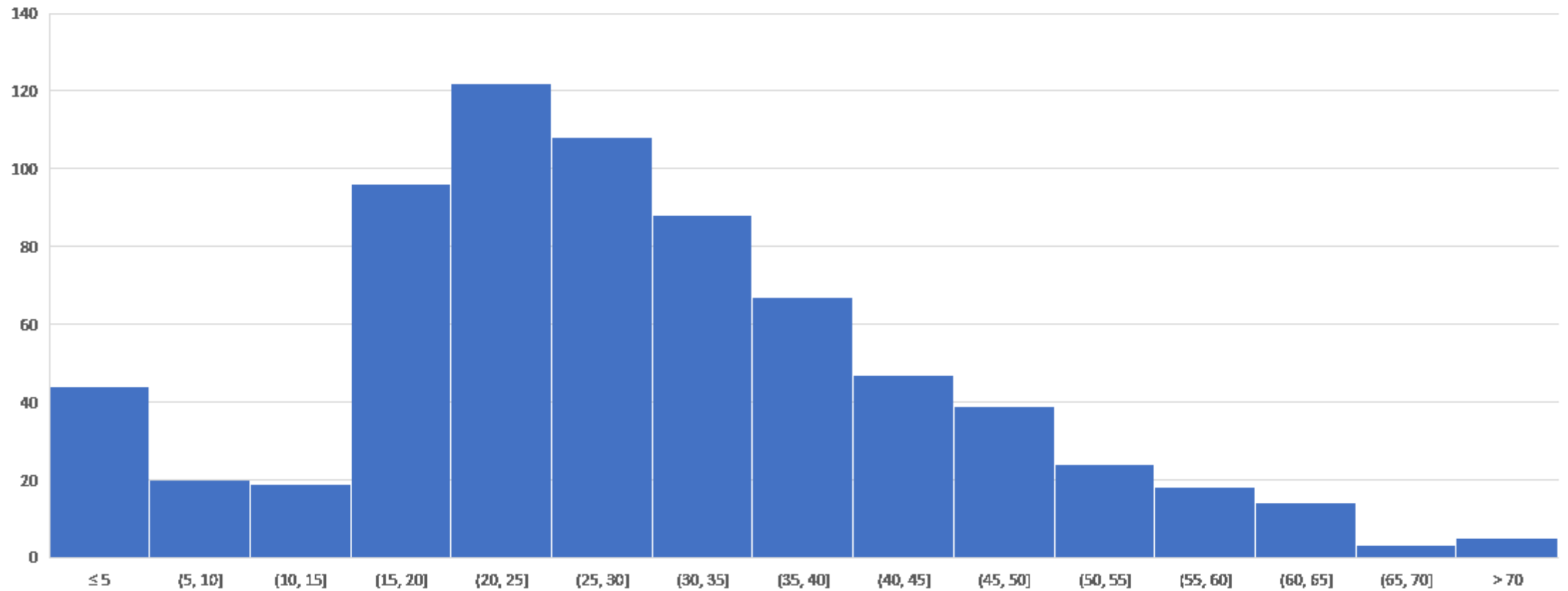
Change Chart Type dialog box:

- Recommended Charts: All Charts
- Recent: [None]
- Templates: [None]
- Column** (circled in red)
- Line
- Pie
- Bar
- Area
- XY (Scatter)
- Map
- Stock
- Surface

Stacked Bar preview:

Histogram

Age of Titanic passengers



- Avoid the usage of 3D versions
 - They can be very misleading
- Always make titles, subtitles and labels as parsimonous as possible
 - (parsimony means to be maximally simplistics and maximally informative simultaneously)