

# Trellis Plots and Other New Features in Statgraphics 19.3

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# Statgraphics 19.3

New features:

- Trellis plots (also called lattice or panel plots)

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- Additional data input option for crosstabulation

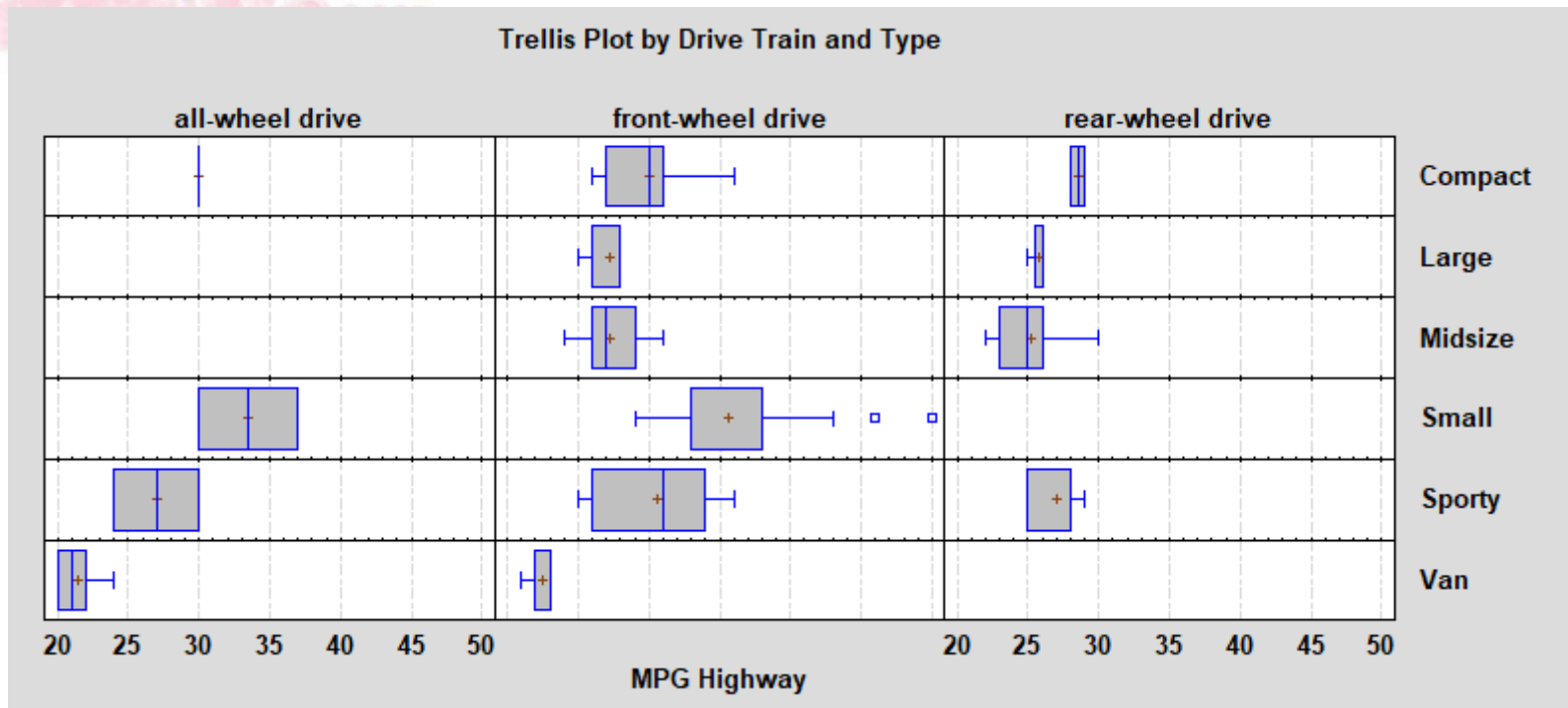
# Statgraphics 19.3

New features:

- Trellis plots (also called lattice or panel plots)
- Additional data input option for crosstabulation
- Academic site license activation changed to permit use of non-persistent virtual machines in classrooms and laboratories

# Trellis Plots

- Multiple plots arranged in a grid to show how data change based on 1 or 2 conditioning factors.



# Types of Trellis Plots

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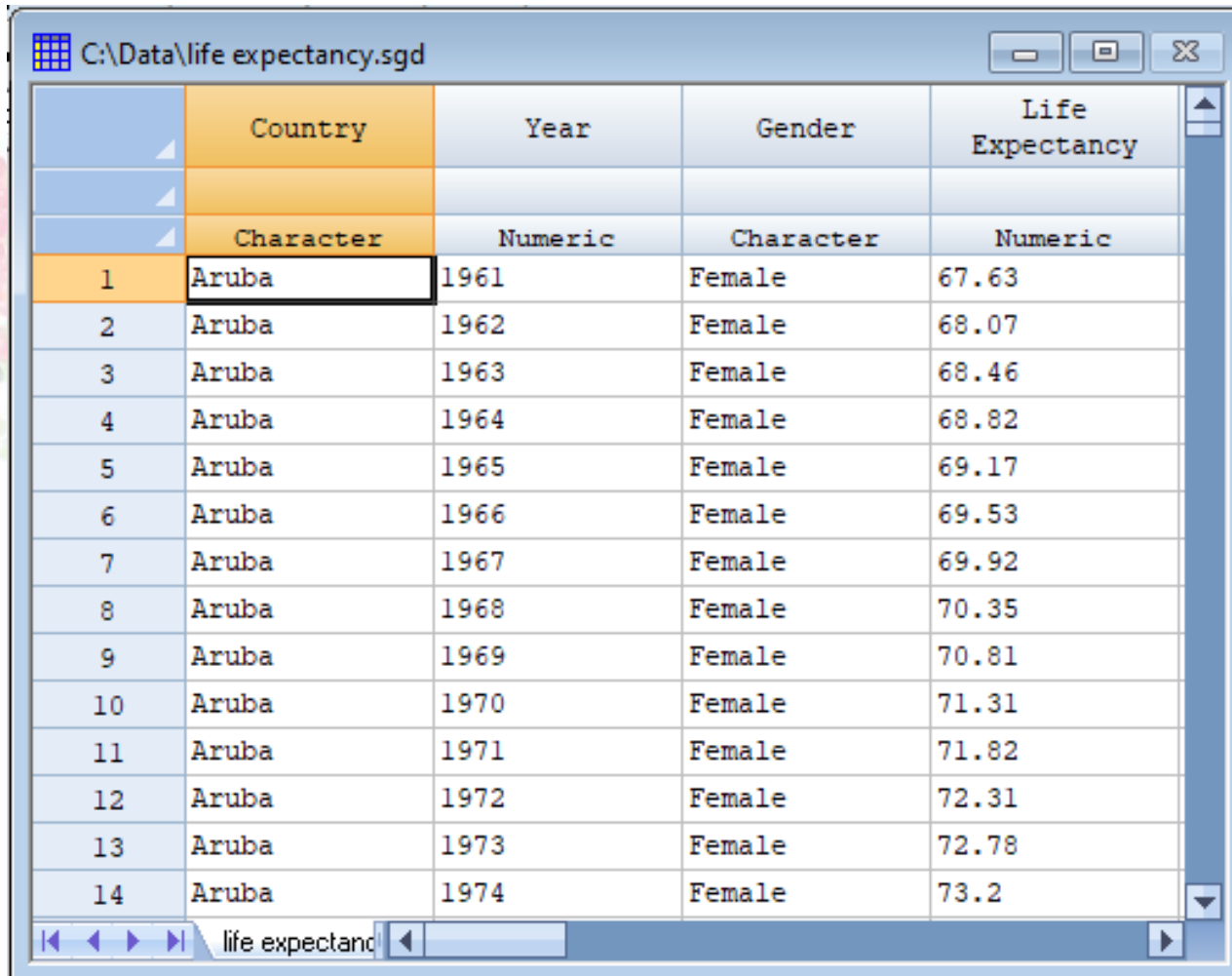
- **Plots for numeric Y**
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- **Plots for categorical Y**
  - Bar charts, pie charts, donut charts
- **Plots for Y vs X**
  - Scatterplots, regression curves, nonparametric smoothers



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- **Plots for numeric Y**
  - Box and whisker plots, histograms, normal probability plots
- **Plots for categorical Y**
  - Bar charts, pie charts, donut charts
- **Plots for Y vs X**
  - Scatterplots, regression curves, nonparametric smoothers
- **Plots for Z vs X and Y**
  - Bubble charts, regression contours, LOWESS

# Example: Data from World Bank



The image shows a screenshot of a data viewer window titled "C:\Data\life expectancy.sgd". The window displays a table with the following columns: Country, Year, Gender, and Life Expectancy. The data is filtered to show only records for Aruba, with the first row (1961) highlighted. The table shows a steady increase in life expectancy for females in Aruba from 1961 to 1974.

	Country	Year	Gender	Life Expectancy
	Character	Numeric	Character	Numeric
1	Aruba	1961	Female	67.63
2	Aruba	1962	Female	68.07
3	Aruba	1963	Female	68.46
4	Aruba	1964	Female	68.82
5	Aruba	1965	Female	69.17
6	Aruba	1966	Female	69.53
7	Aruba	1967	Female	69.92
8	Aruba	1968	Female	70.35
9	Aruba	1969	Female	70.81
10	Aruba	1970	Female	71.31
11	Aruba	1971	Female	71.82
12	Aruba	1972	Female	72.31
13	Aruba	1973	Female	72.78
14	Aruba	1974	Female	73.2

# Numeric Y: Data Input

Trellis Plot (Numeric Y) [X]

Country  
Year  
Gender  
Life Expectancy

Dep. variable:  
▶ Life Expectancy

Conditioning factor #1:  
▶ Year

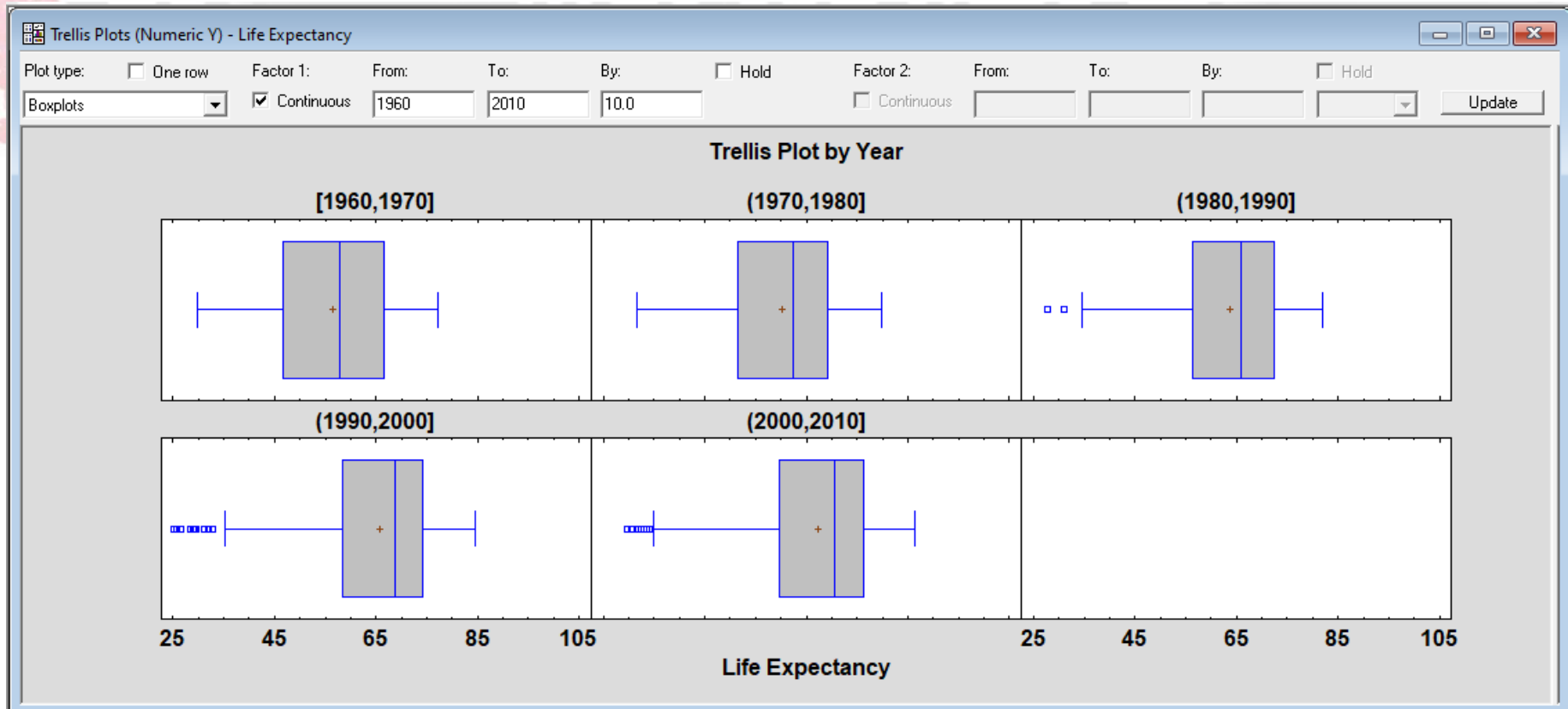
(Conditioning factor #2:)  
▶

(Select:)  
▶

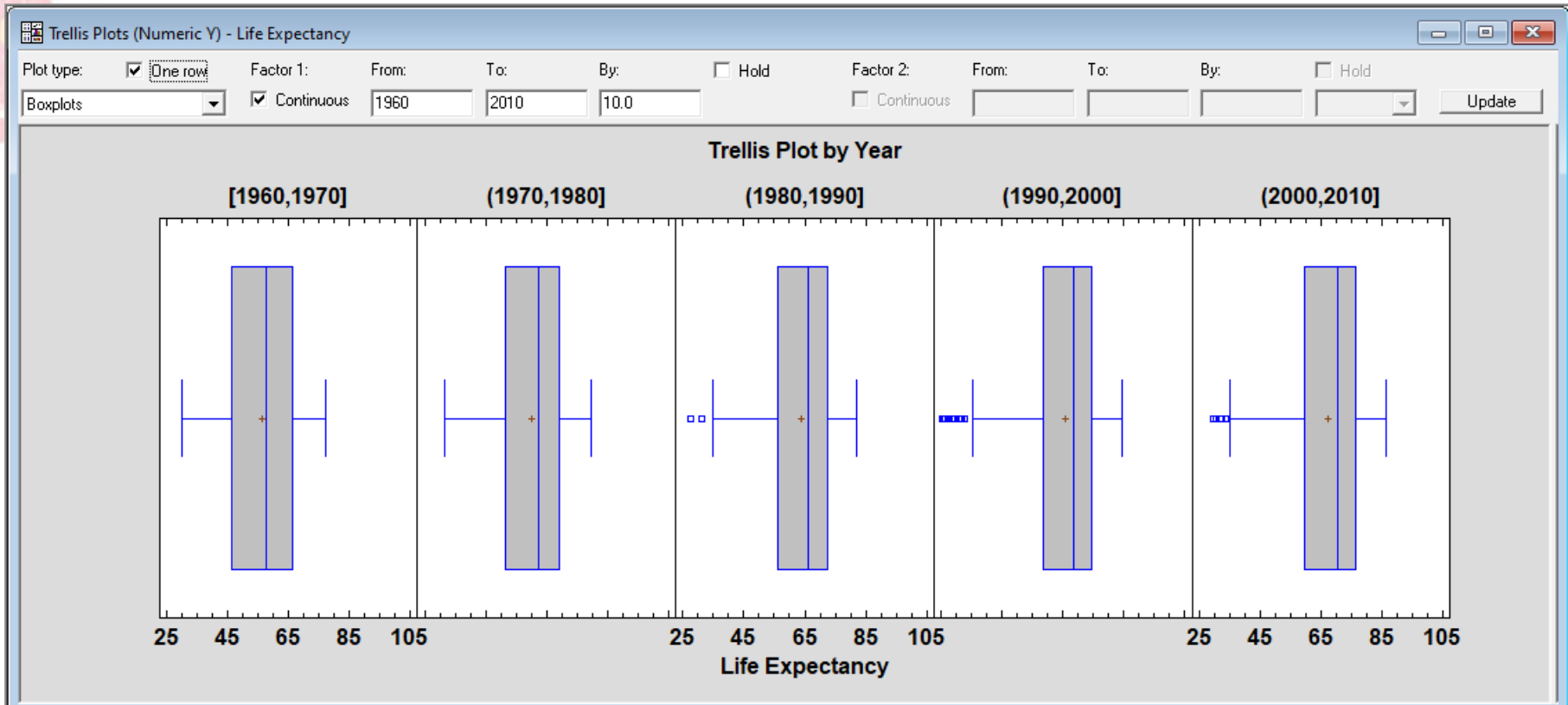
Sort column names

OK Cancel Delete Transform... Help

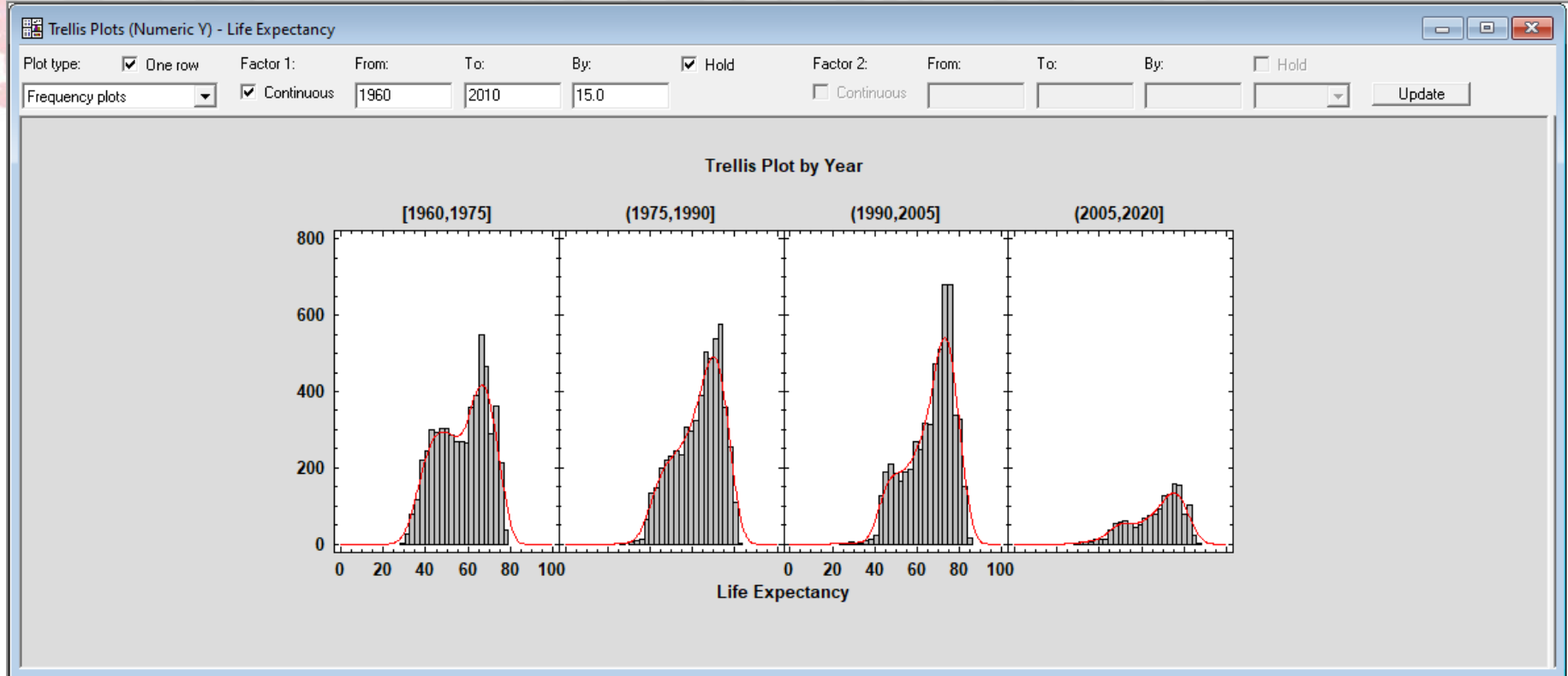
# Default Layout



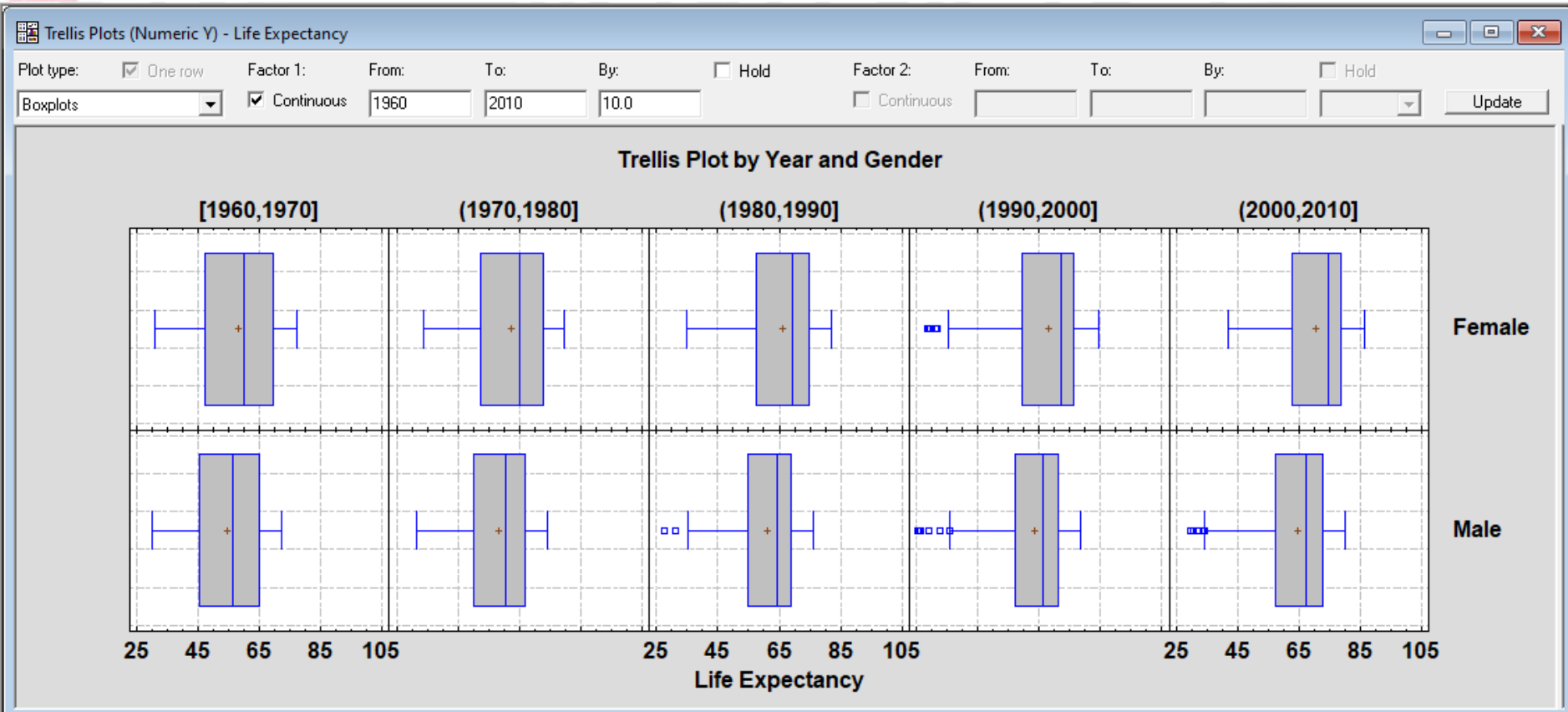
# Single Row



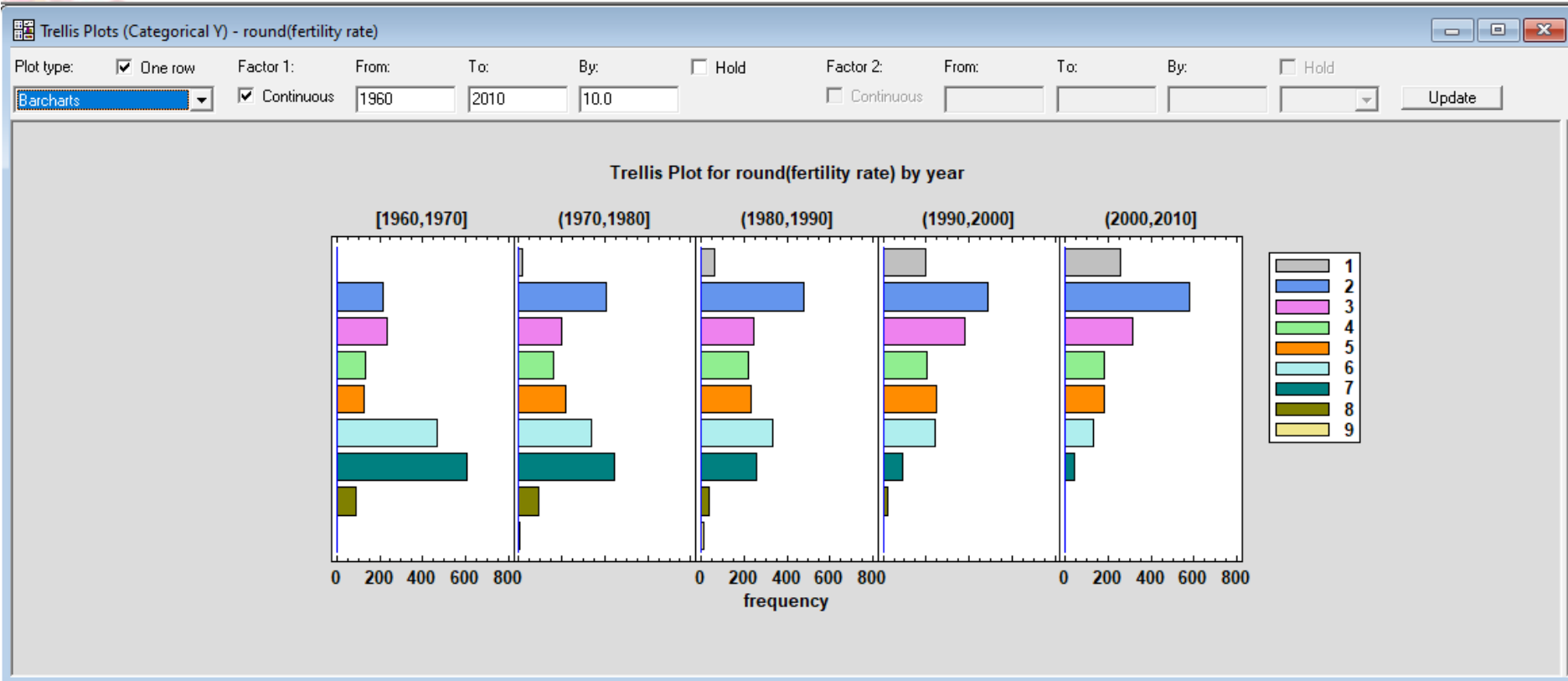
# Frequency Histograms



# 2 Conditioning Factors

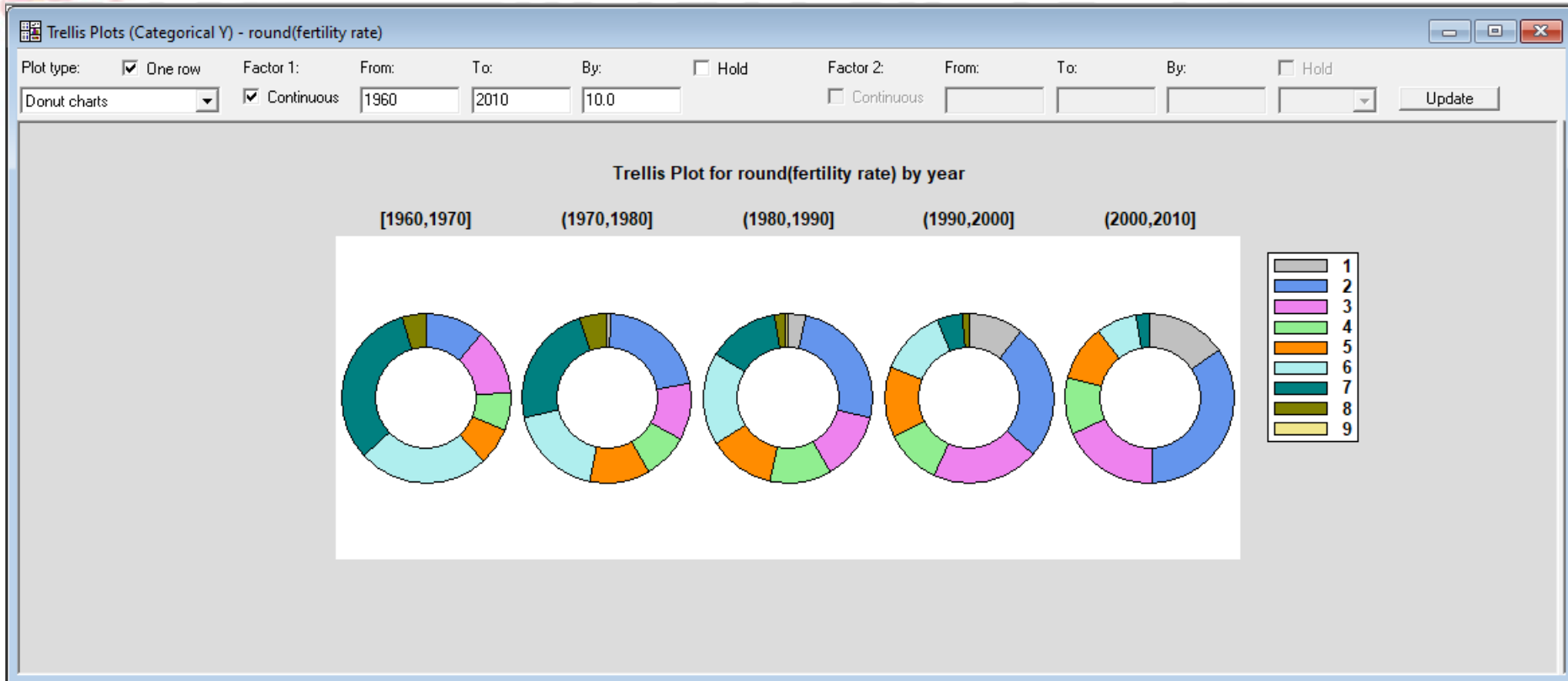


# Categorical Y

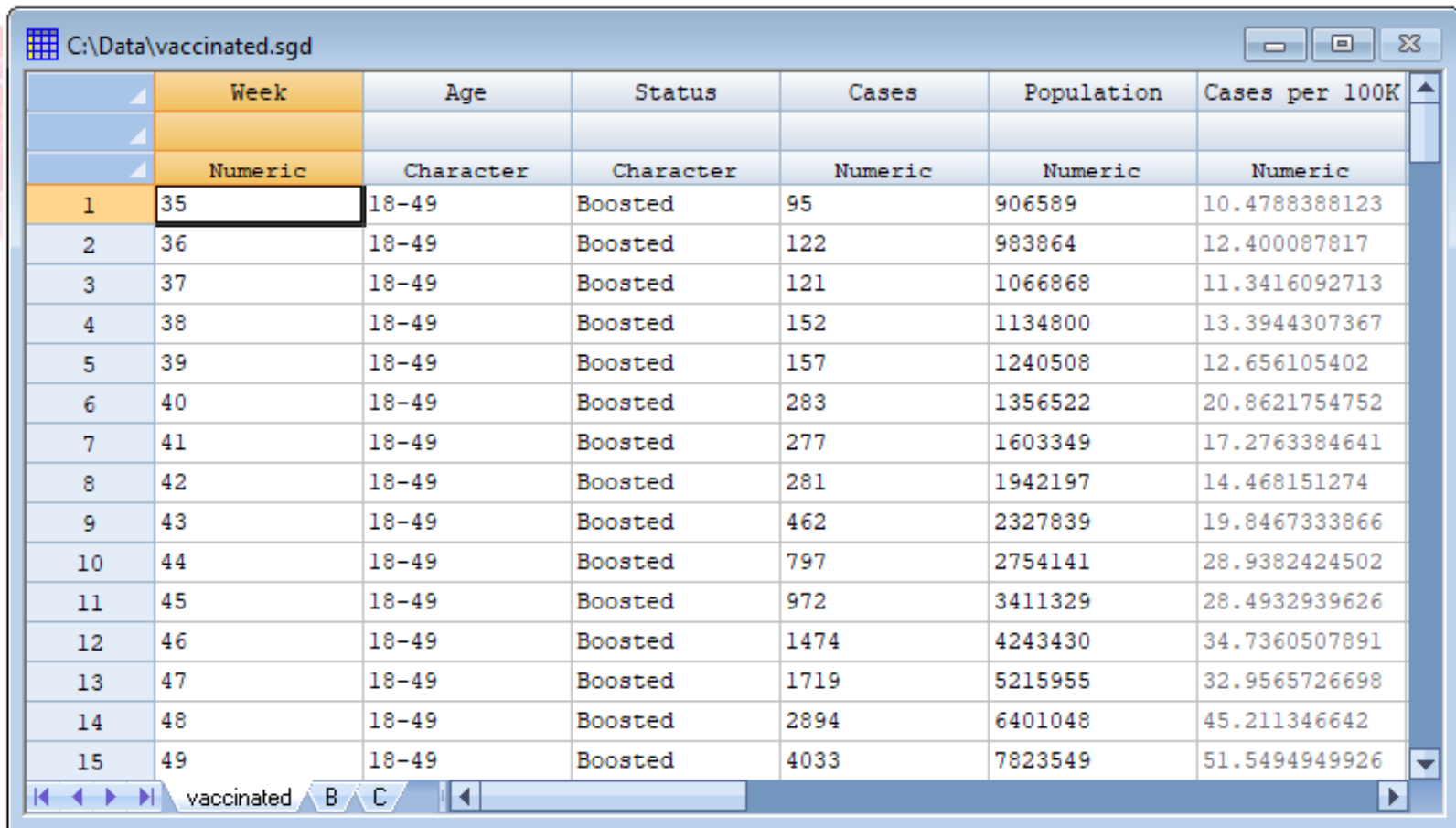




# Donut Chart



# Trellis: Y vs X



C:\Data\vaccinated.sgd

	Week	Age	Status	Cases	Population	Cases per 100K
	Numeric	Character	Character	Numeric	Numeric	Numeric
1	35	18-49	Boosted	95	906589	10.4788388123
2	36	18-49	Boosted	122	983864	12.400087817
3	37	18-49	Boosted	121	1066868	11.3416092713
4	38	18-49	Boosted	152	1134800	13.3944307367
5	39	18-49	Boosted	157	1240508	12.656105402
6	40	18-49	Boosted	283	1356522	20.8621754752
7	41	18-49	Boosted	277	1603349	17.2763384641
8	42	18-49	Boosted	281	1942197	14.468151274
9	43	18-49	Boosted	462	2327839	19.8467333866
10	44	18-49	Boosted	797	2754141	28.9382424502
11	45	18-49	Boosted	972	3411329	28.4932939626
12	46	18-49	Boosted	1474	4243430	34.7360507891
13	47	18-49	Boosted	1719	5215955	32.9565726698
14	48	18-49	Boosted	2894	6401048	45.211346642
15	49	18-49	Boosted	4033	7823549	51.5494949926

vaccinated B C

# Y vs X: Data Input

Trellis Plot (Y vs X) ✕

Week  
Age  
Status  
Cases  
Population  
Cases per 100K

Dependent variable:

Ind. variable:

Conditioning factor #1:

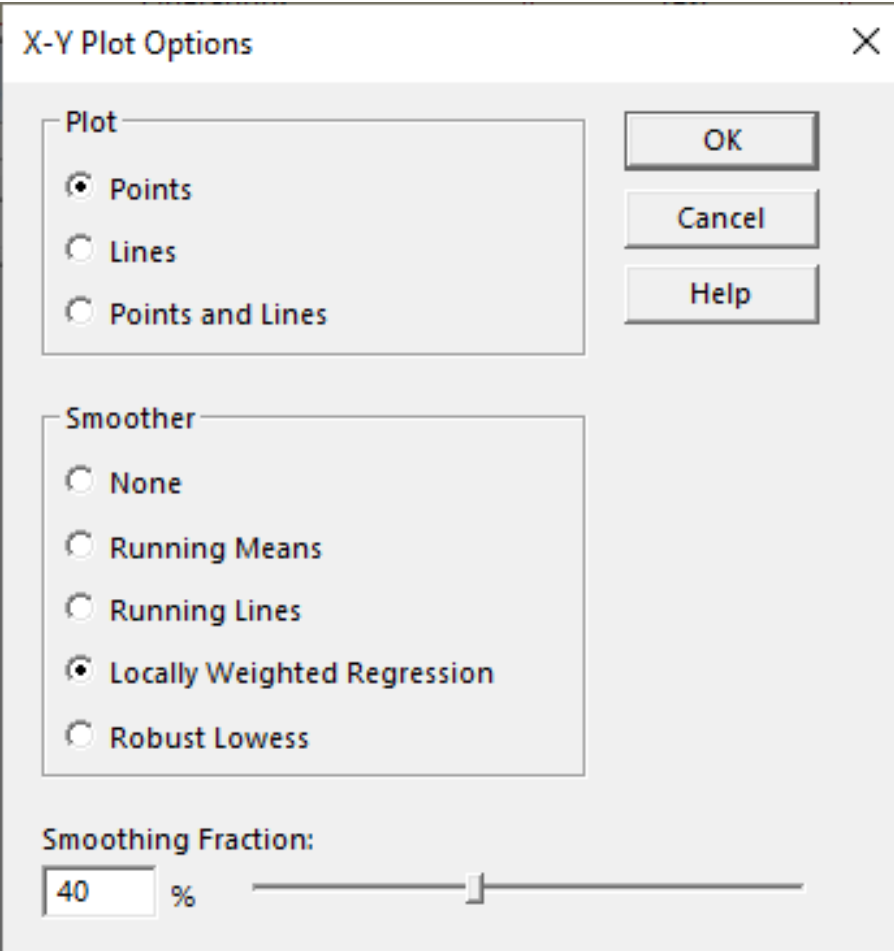
(Conditioning factor #2):

(Select:)

Sort column names

OK Cancel Delete Transform... Help

# Analysis Options



X-Y Plot Options

Plot

- Points
- Lines
- Points and Lines

Smoothing Fraction: 40 %

Smoother

- None
- Running Means
- Running Lines
- Locally Weighted Regression
- Robust Lowess

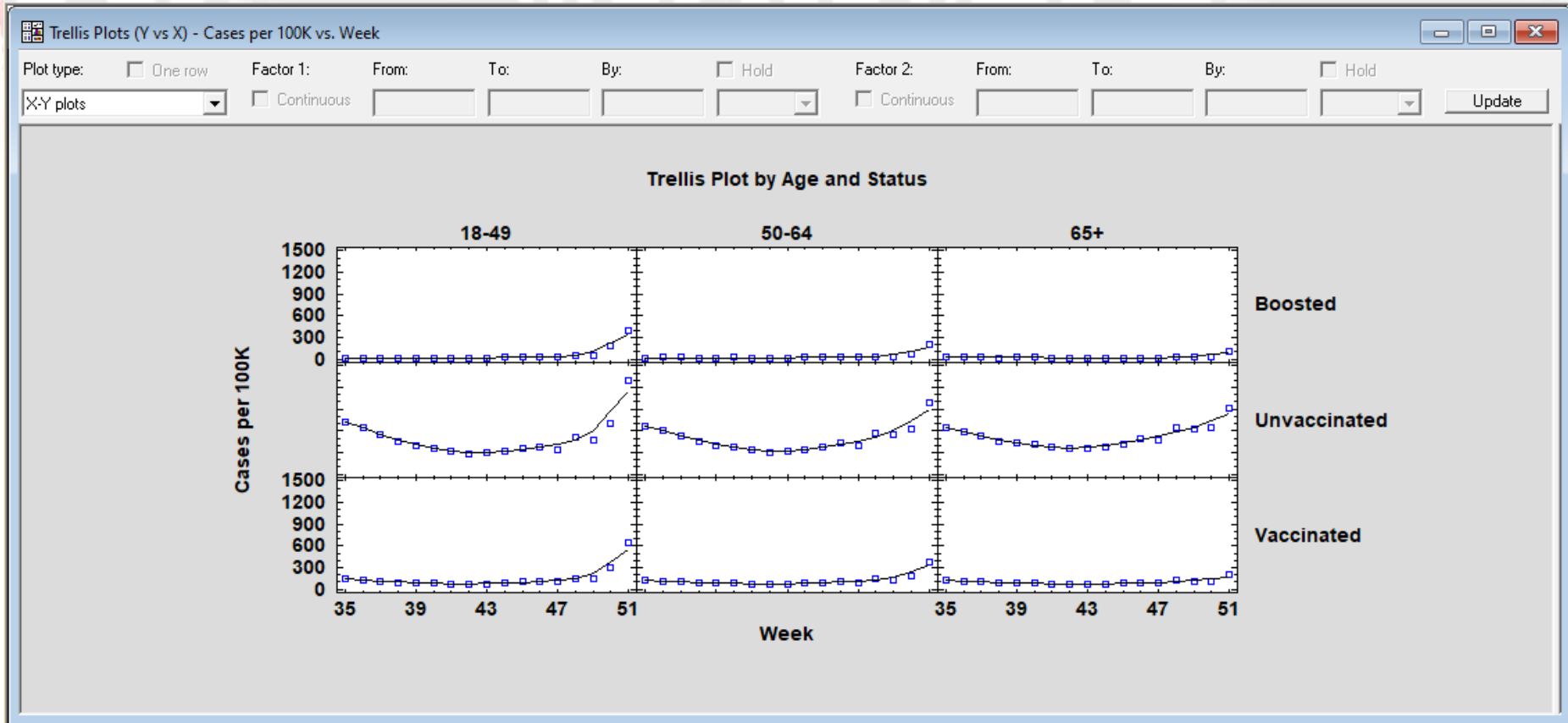
OK

Cancel

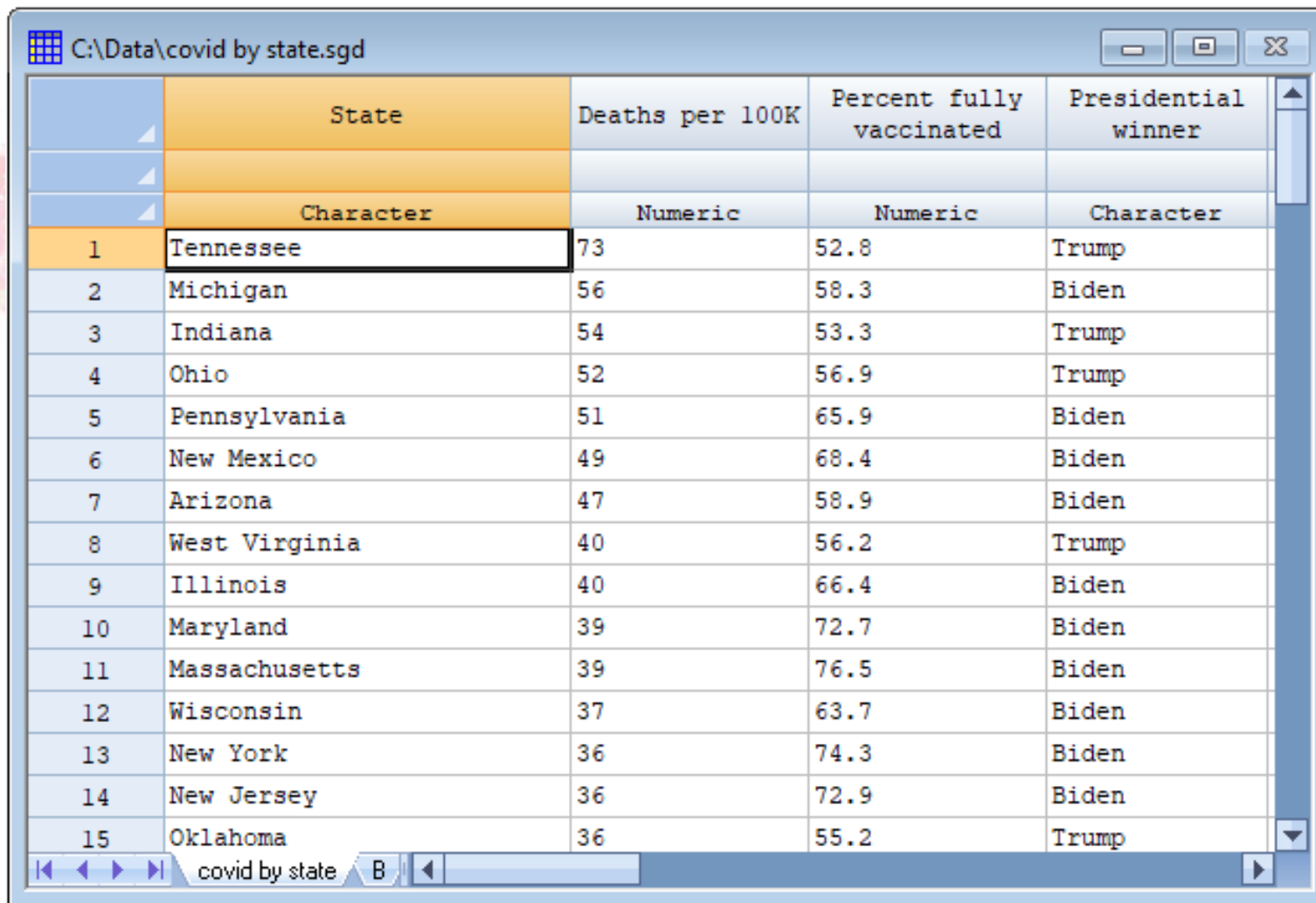
Help

The dialog box is titled "X-Y Plot Options" and features a close button (X) in the top right corner. It is divided into two main sections: "Plot" and "Smoother". The "Plot" section contains three radio button options: "Points" (which is selected), "Lines", and "Points and Lines". The "Smoother" section contains five radio button options: "None", "Running Means", "Running Lines", "Locally Weighted Regression" (which is selected), and "Robust Lowess". Below the "Smoother" section is a "Smoothing Fraction" control, consisting of a text input field containing "40" followed by a percentage sign and a horizontal slider bar. To the right of the dialog box are three buttons: "OK", "Cancel", and "Help". The background of the slide features a decorative graphic of a scatter plot with a fitted curve, using various colored dots (pink, yellow, green, blue) to represent data points.

# Trellis Plot



# State by State Data



The screenshot shows a software window titled "C:\Data\covid by state.sgd". The window contains a data table with the following columns: "State", "Deaths per 100K", "Percent fully vaccinated", and "Presidential winner". The "State" column is highlighted in orange. Below the table, there is a status bar showing "covid by state" and a "B" button.

	State	Deaths per 100K	Percent fully vaccinated	Presidential winner
	Character	Numeric	Numeric	Character
1	Tennessee	73	52.8	Trump
2	Michigan	56	58.3	Biden
3	Indiana	54	53.3	Trump
4	Ohio	52	56.9	Trump
5	Pennsylvania	51	65.9	Biden
6	New Mexico	49	68.4	Biden
7	Arizona	47	58.9	Biden
8	West Virginia	40	56.2	Trump
9	Illinois	40	66.4	Biden
10	Maryland	39	72.7	Biden
11	Massachusetts	39	76.5	Biden
12	Wisconsin	37	63.7	Biden
13	New York	36	74.3	Biden
14	New Jersey	36	72.9	Biden
15	Oklahoma	36	55.2	Trump

# Y vs X - Data Input

Trellis Plot (Y vs X) ✕

State  
Deaths per 100K  
Percent fully vaccinated  
Presidential winner

Dependent variable:

Ind. variable:

Conditioning factor #1:

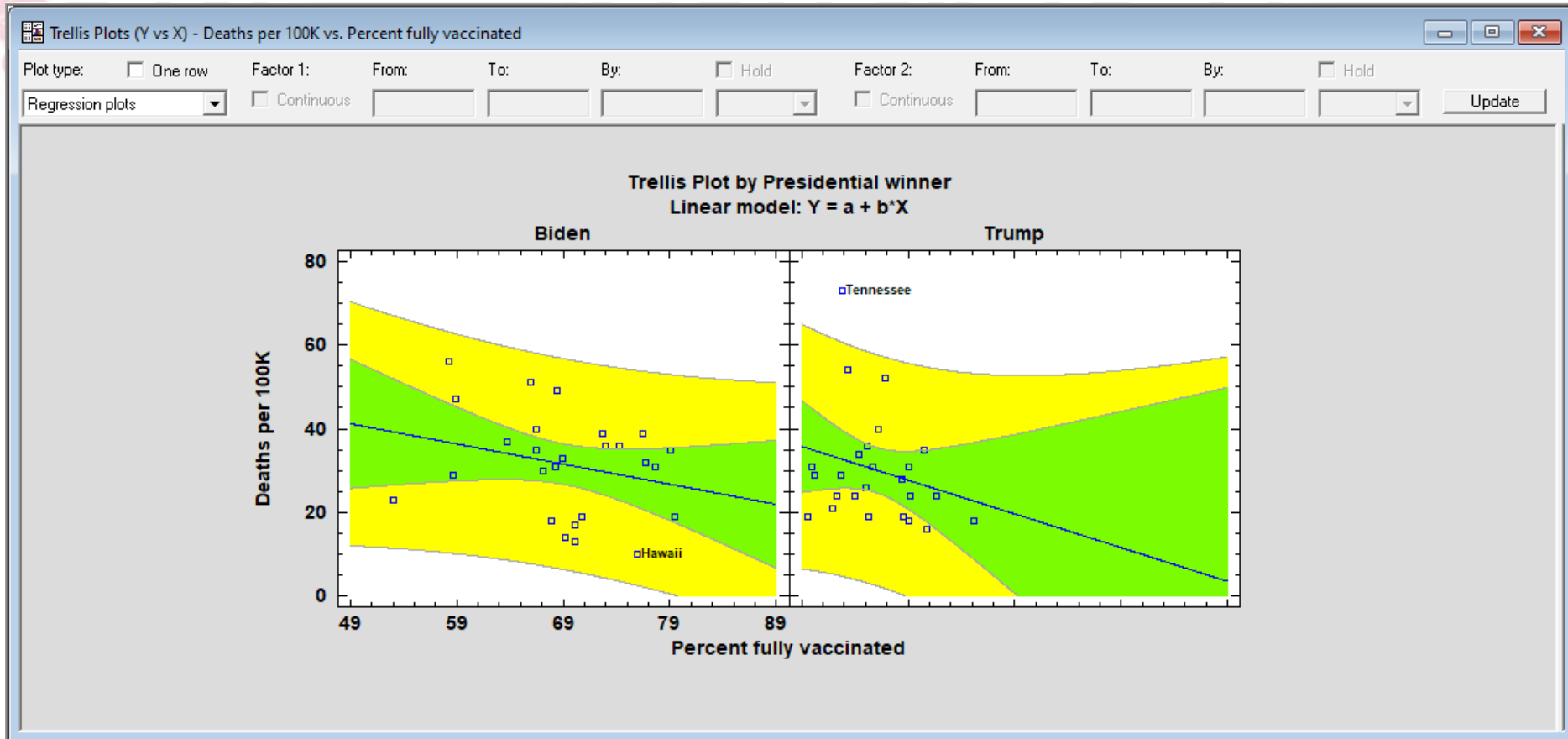
(Conditioning factor #2:)

(Select:)

Sort column names

OK Cancel Delete Transform... Help

# Regression Fits – deaths since Dec. 13



Note: slopes are not statistically significant.

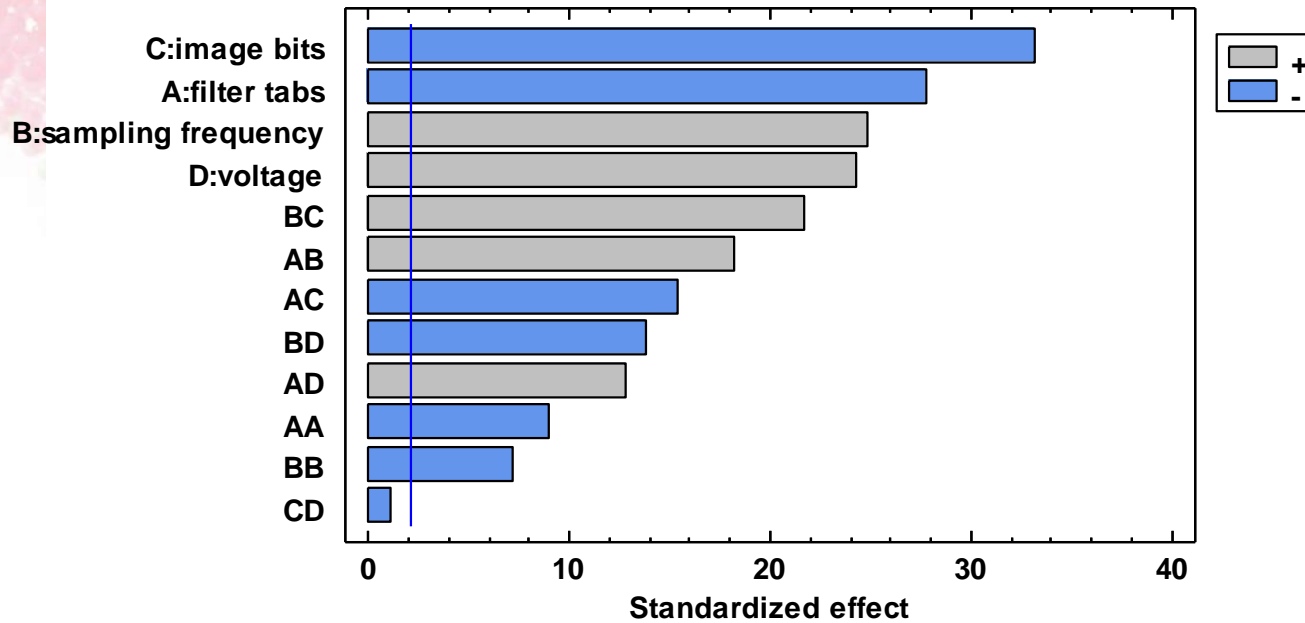


# Trellis Plots: Z vs X and Y

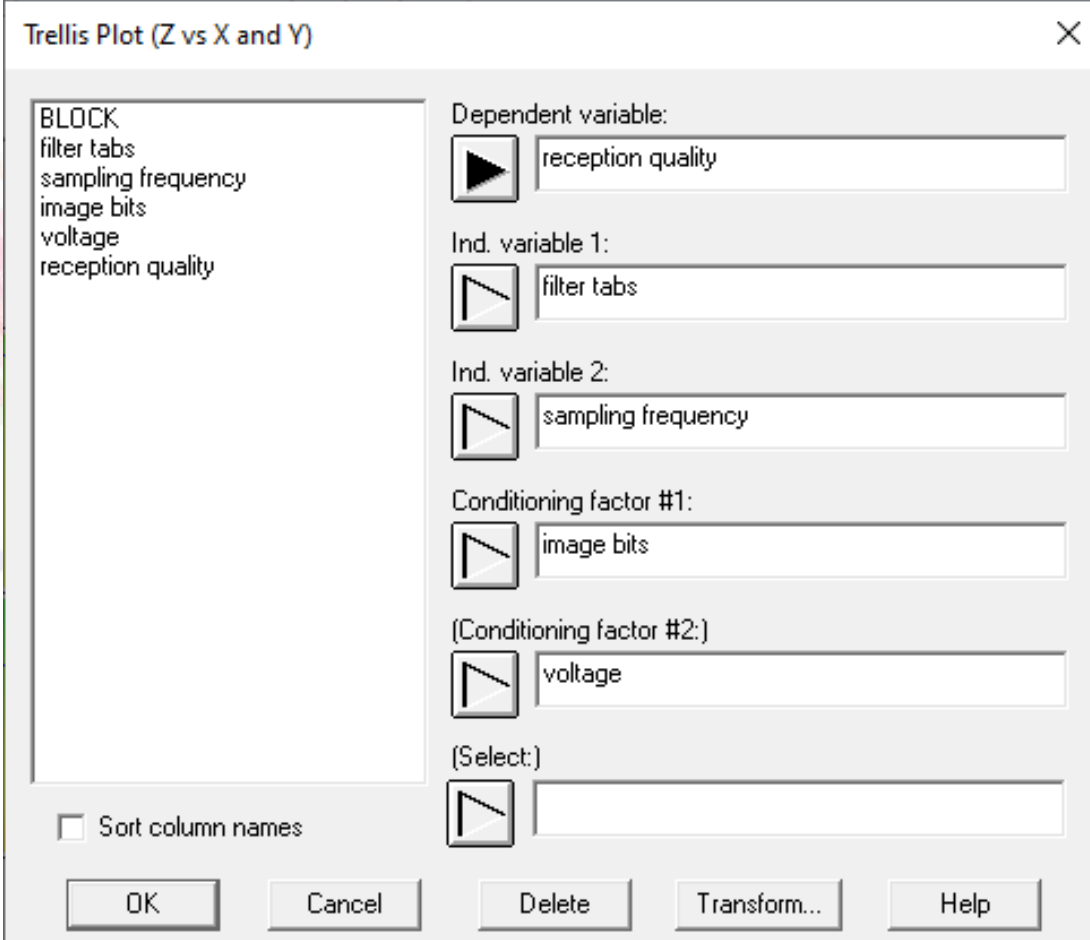
	BLOCK	filter tabs	sampling frequency	image bits	voltage	reception quality
			MHz		volts	decibels
	Integer	Numeric	Numeric	Numeric	Numeric	Numeric
1	1	5.0	6.25	256.0	100.0	33.5021
2	1	13.0	6.25	256.0	100.0	30.4481
3	1	21.0	6.25	256.0	100.0	21.1553
4	1	5.0	9.875	256.0	100.0	35.8234
5	1	13.0	9.875	256.0	100.0	34.8679
6	1	21.0	9.875	256.0	100.0	27.6736
7	1	5.0	13.5	256.0	100.0	33.0773
8	1	13.0	13.5	256.0	100.0	35.2202
9	1	21.0	13.5	256.0	100.0	32.1245
10	1	5.0	6.25	512.0	100.0	25.2683
11	1	13.0	6.25	512.0	100.0	15.1493
12	1	21.0	6.25	512.0	100.0	0.7917
13	1	5.0	9.875	512.0	100.0	32.7928
14	1	13.0	9.875	512.0	100.0	27.7724
15	1	21.0	9.875	512.0	100.0	15.5132
16	1	5.0	13.5	512.0	100.0	36.2500
17	1	13.0	13.5	512.0	100.0	33.3280
18	1	21.0	13.5	512.0	100.0	26.1673
19	1	5.0	6.25	256.0	200.0	41.2268

# Pareto Chart

Standardized Pareto Chart for reception quality



# Trellis Plot: Data Input



Trellis Plot (Z vs X and Y)

BLOCK  
filter tabs  
sampling frequency  
image bits  
voltage  
reception quality

Dependent variable:  
▶ reception quality

Ind. variable 1:  
▾ filter tabs

Ind. variable 2:  
▾ sampling frequency

Conditioning factor #1:  
▾ image bits

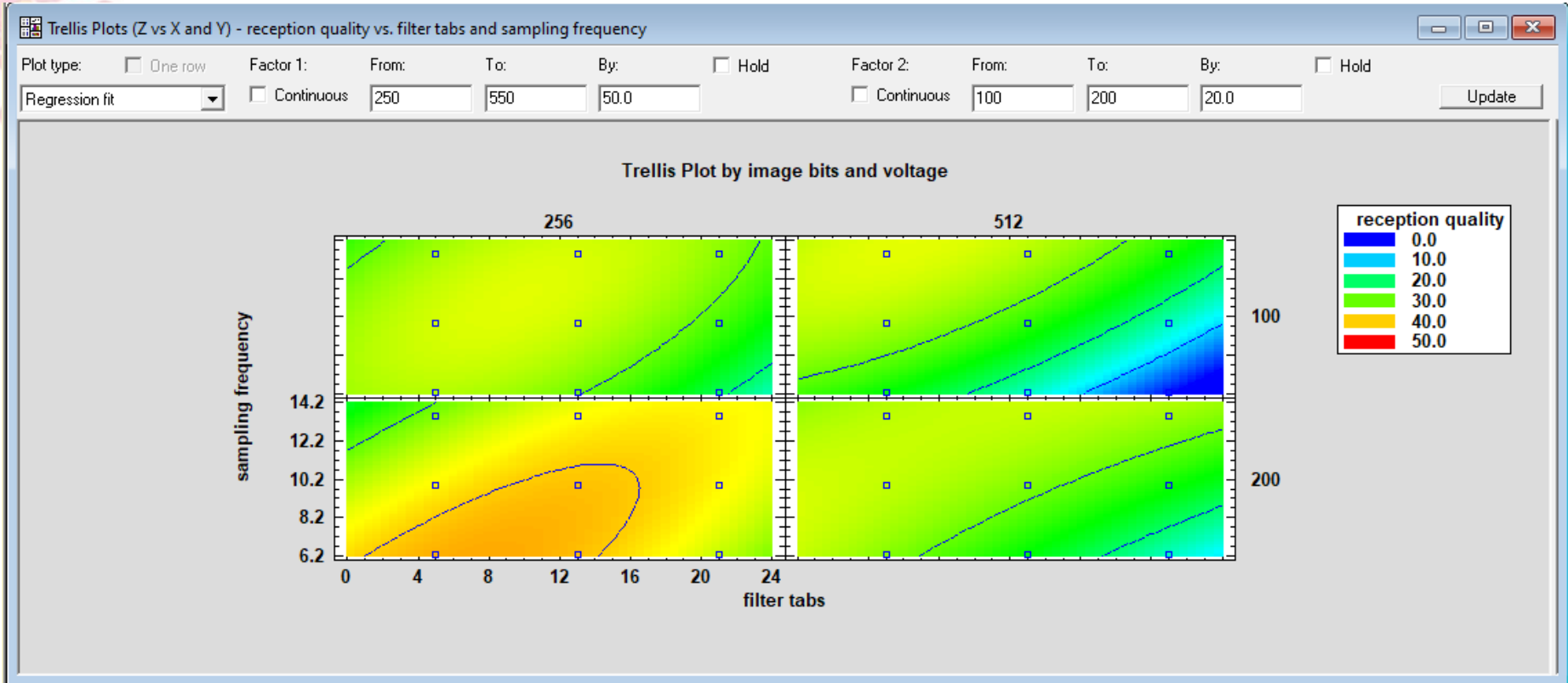
(Conditioning factor #2:)  
▾ voltage

(Select:)  
▾

Sort column names

OK Cancel Delete Transform... Help

# Regression Fit

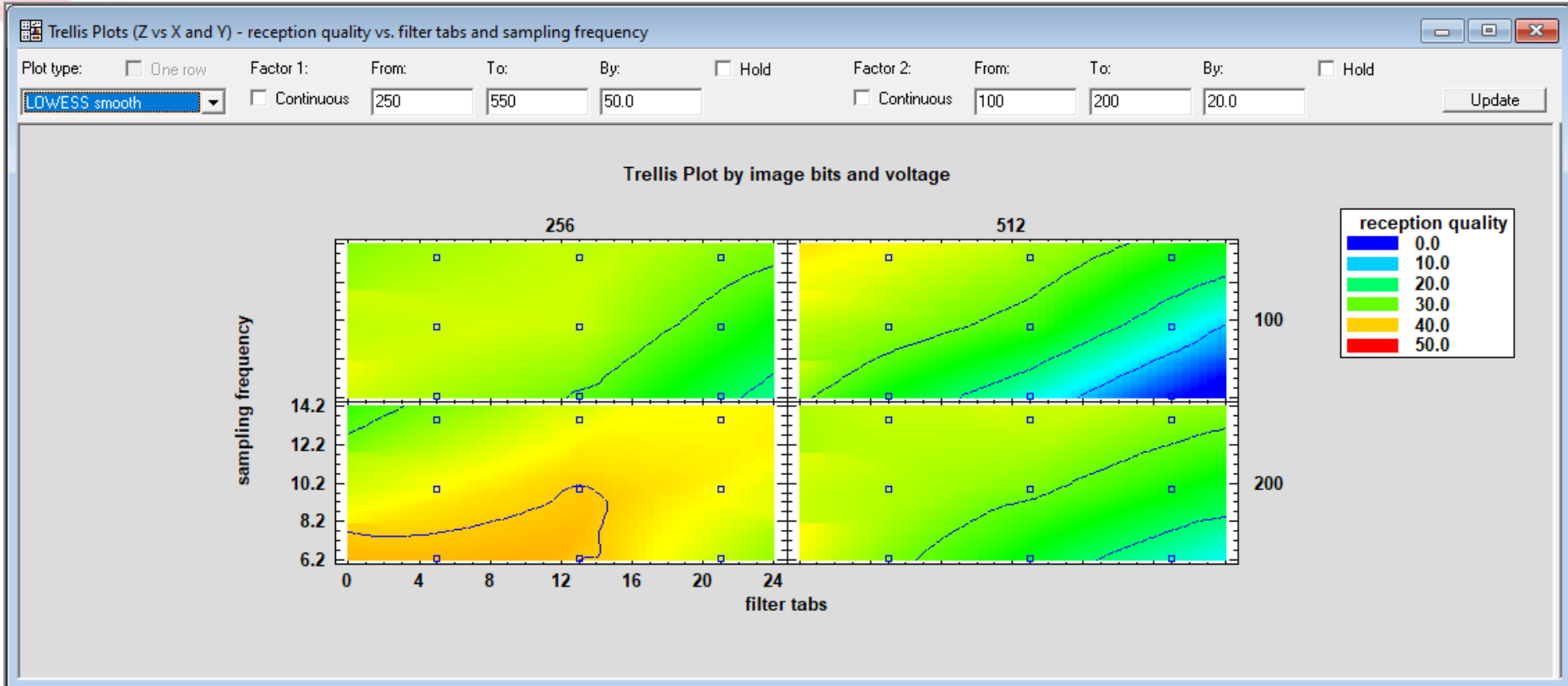


# Analysis Options

Regression Plot Options ✕

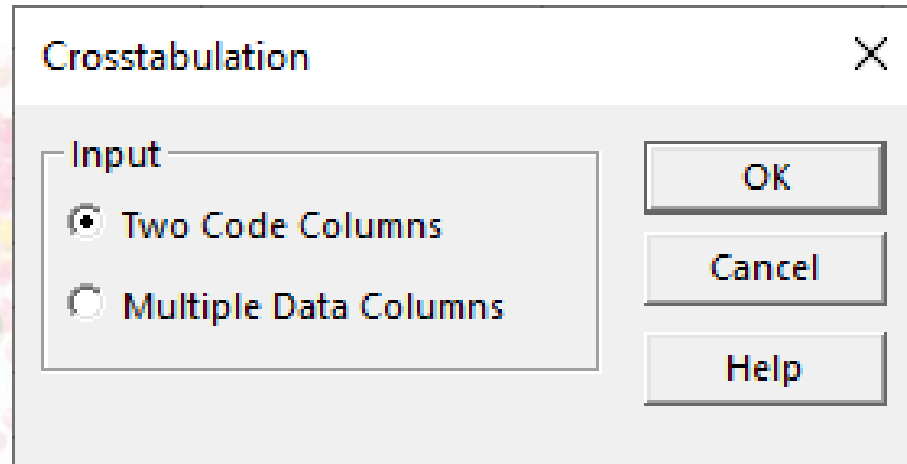
Contours	Model
From: <input type="text" value="0.0"/>	<input checked="" type="checkbox"/> Include constant
To: <input type="text" value="50.0"/>	<input checked="" type="checkbox"/> A: filter tabs
By: <input type="text" value="10.0"/>	<input checked="" type="checkbox"/> B: sampling frequency
<input type="checkbox"/> Hold when data change	<input checked="" type="checkbox"/> C: image bits
Resolution: <input type="text" value="51"/>	<input checked="" type="checkbox"/> D: voltage
<input checked="" type="checkbox"/> Draw contour lines	<input checked="" type="checkbox"/> AA <input checked="" type="checkbox"/> AB <input checked="" type="checkbox"/> BD
	<input checked="" type="checkbox"/> BB <input checked="" type="checkbox"/> AC <input checked="" type="checkbox"/> CD
	<input type="checkbox"/> CC <input checked="" type="checkbox"/> AD
	<input type="checkbox"/> DD <input checked="" type="checkbox"/> BC
<input checked="" type="checkbox"/> Show points	<input type="checkbox"/> Fit separate model to each section

# LOWESS



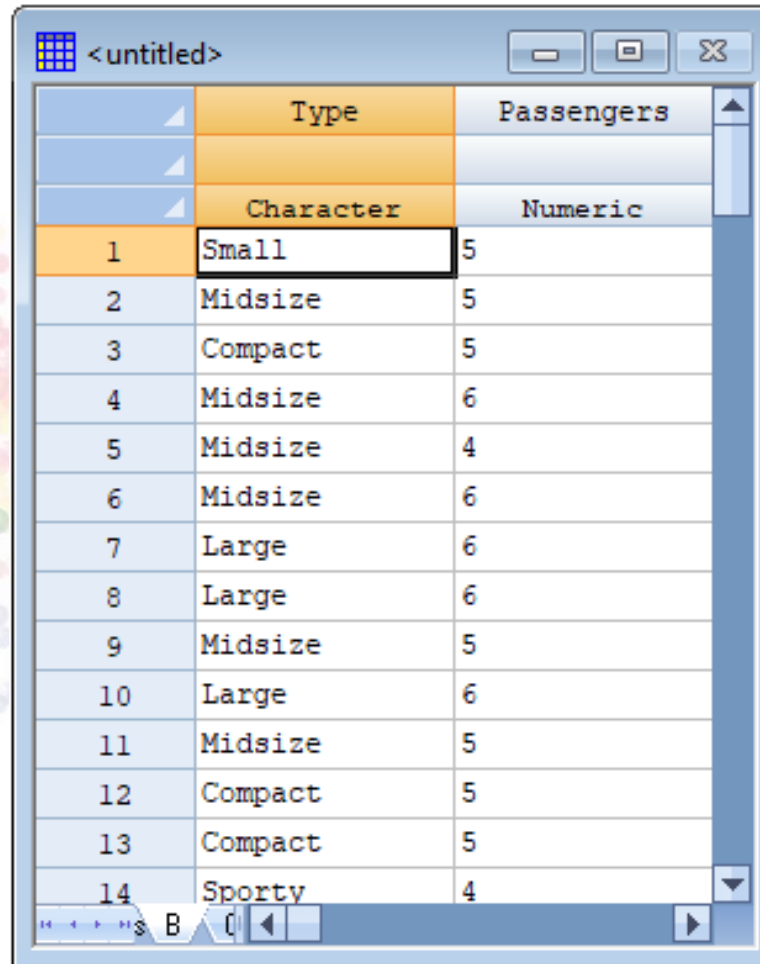
# Crosstabulation

- Initial dialog box:



- Data structures:
  - 2 code columns, one for each factor
  - multiple data columns, one for each column of two-way table

# 2 Code Columns

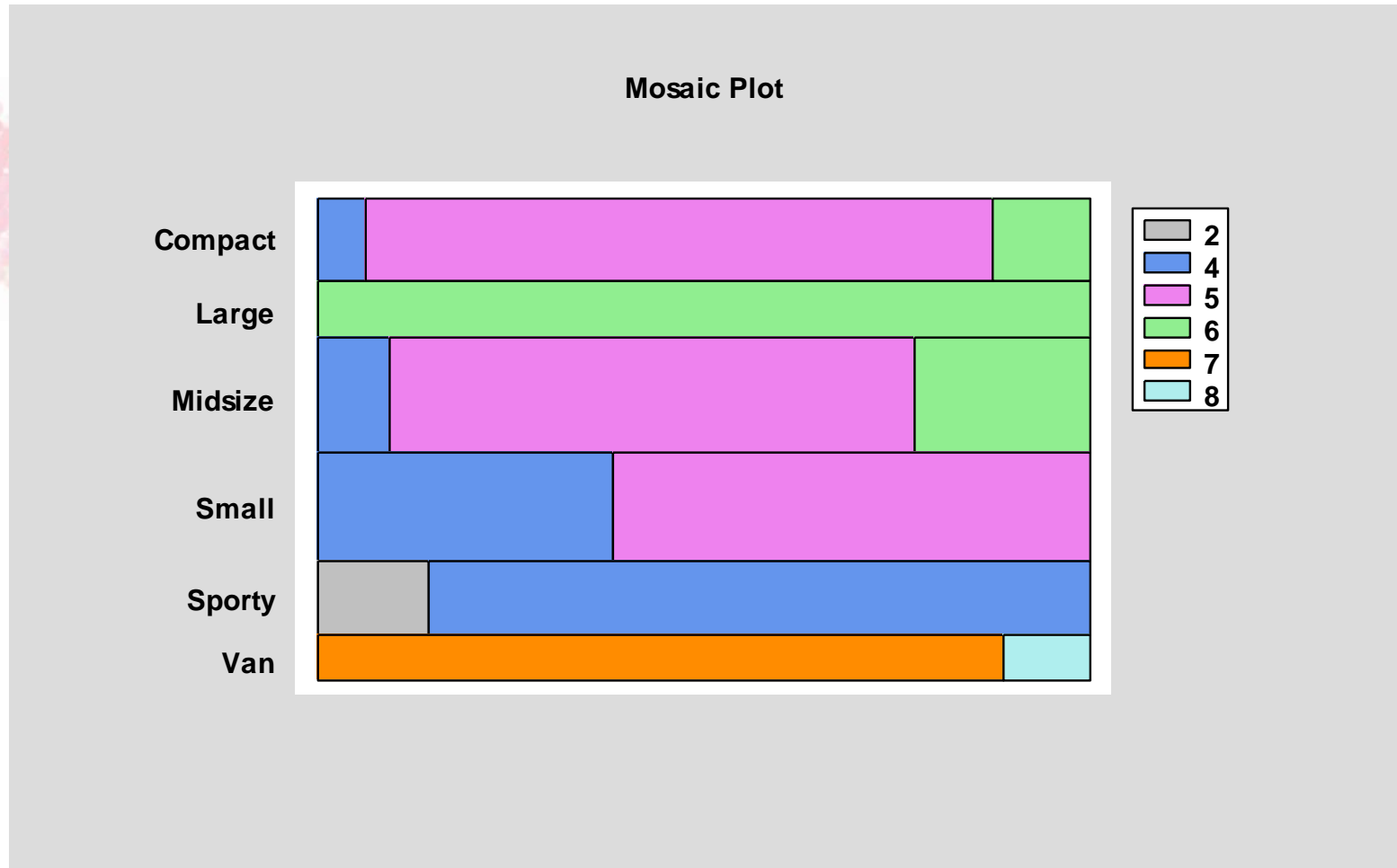


The screenshot shows a data table with 14 rows and 2 columns. The first column is labeled 'Type' and the second is labeled 'Passengers'. The 'Type' column contains categorical values: Small, Midsize, Compact, Large, and Sporty. The 'Passengers' column contains numerical values ranging from 4 to 6. The first row is highlighted in orange.

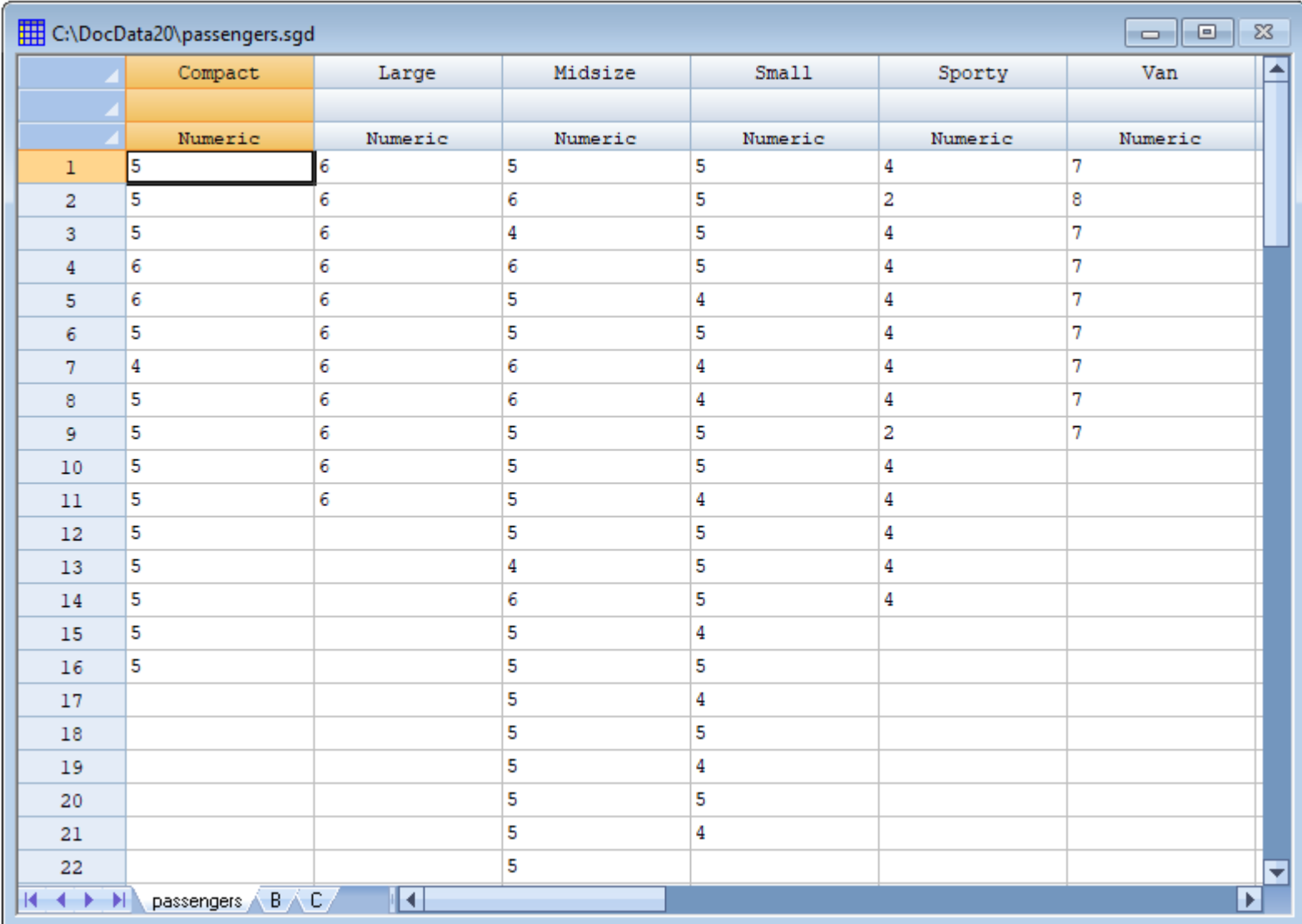
	Type	Passengers
1	Small	5
2	Midsize	5
3	Compact	5
4	Midsize	6
5	Midsize	4
6	Midsize	6
7	Large	6
8	Large	6
9	Midsize	5
10	Large	6
11	Midsize	5
12	Compact	5
13	Compact	5
14	Sporty	4



# Mosaic Plot



# Multiple Data Columns



C:\DocData20\passengers.sgd

	Compact	Large	Midsize	Small	Sporty	Van
	Numeric	Numeric	Numeric	Numeric	Numeric	Numeric
1	5	6	5	5	4	7
2	5	6	6	5	2	8
3	5	6	4	5	4	7
4	6	6	6	5	4	7
5	6	6	5	4	4	7
6	5	6	5	5	4	7
7	4	6	6	4	4	7
8	5	6	6	4	4	7
9	5	6	5	5	2	7
10	5	6	5	5	4	
11	5	6	5	4	4	
12	5		5	5	4	
13	5		4	5	4	
14	5		6	5	4	
15	5		5	4		
16	5		5	5		
17			5	4		
18			5	5		
19			5	4		
20			5	5		
21			5	4		
22			5			

passengers B C

# Academic Site License Activation

- Prior to release 19.3, Statgraphics needed to be activated on each individual computer. This was fine for standalone computers and persistent VMs where each individual had a personal VM.

# Academic Site License Activation

- Prior to release 19.3, Statgraphics needed to be activated on each individual computer. This was fine for standalone computers and persistent VMs where each individual user had a personal VM.
- Beginning with release 19.3, a license manager was added so that the academic site license will work in classrooms and laboratories with non-persistent VMs. Statgraphics only needs to be installed once in the master image.

# References

- **Automobile data** – Journal of Statistics Education data archive
- **Life expectancy** – worldbank.org
- **COVID data** – Data.CDC.gov
- **TV signal experiment** – Response Surface Methodology: Process and Product Optimization Using Designed Experiments by Myers and Montgomery

Recorded webinar and sample data may be found at:  
[www.statgraphics.com/webinars](http://www.statgraphics.com/webinars)