



Free Excel add-in for regression  
and multivariate data analysis

- Released for the PC in 2014, major updates in the last couple of years
  - Now includes Mac and logistic versions, interface with R, more teaching tools
- Originally developed for an advanced MBA course on regression and time series analysis at Duke University, but intended for much wider use
  - Has many novel features to support in-class and online teaching as well as applications
  - A good complement if not substitute for other regression software
  - A good companion for R (generate R code from menu interface in Excel, run it with a few clicks, get high-quality output in both environments)
- A vast improvement over Excel's prehistoric regression tool (Analysis Toolpak c. 1993)
- Better-designed regression interface and output than any commercial Excel add-in
- Fun to use
- *Offered for free at regressit.com as a public service*

### Features to support teaching (also helpful to practitioners)

- Designed to teach and support the entire analytic process: data visualization and exploration, model selection, testing of assumptions, side-by-side model comparisons, use of nonlinear transformations in linear models, time series issues, effective presentation of results, and leaving an audit trail for yourself and others.
- Unique ribbon interface simplifies all of these steps and helps to make them systematic
- ***Great for interactive demonstrations and exercises in the classroom and in online sessions and videos***
- Fits nicely into a statistics curriculum where either Excel or R is used to any extent, as well as workshops and short courses on linear or logistic regression taught to students with diverse software skills
- Presentation-quality Excel output is effective in class notes and student reports
- Self-instructive: dialog boxes have pop-up explanations of regression analysis tools
- Detailed teaching notes can be embedded in the output as cell comments (your own could appear there)
- Many audit trail features to authenticate individual effort and show the logical and temporal sequence of work
- Easy to evaluate and grade student work (the entire workbook is easy to navigate by clicking buttons)
- If you use a teaching platform in which student files for an assignment can be downloaded to a single folder, ***the details of every analysis worksheet in every student file can be extracted and placed on a single worksheet for a gradable overview of the work of the whole class.***

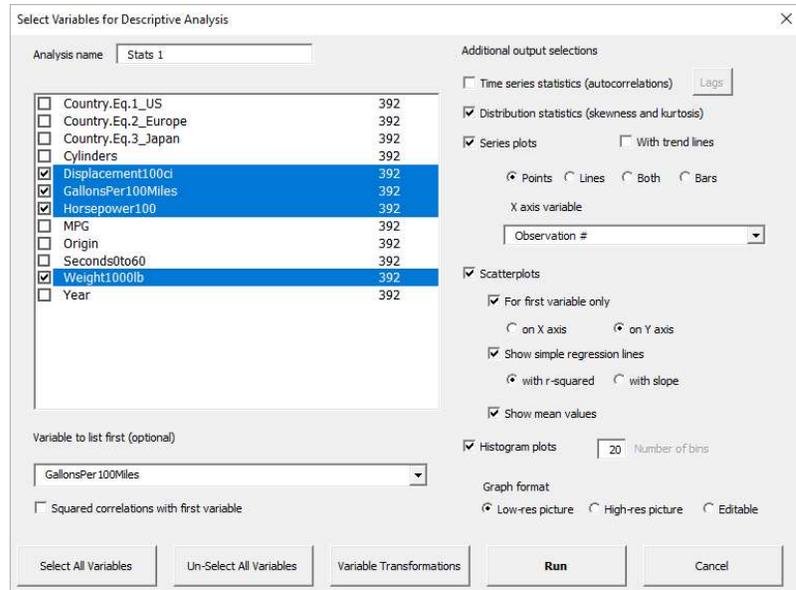
## Descriptive statistics procedure

### Default output:

- Summary statistics
- Correlations

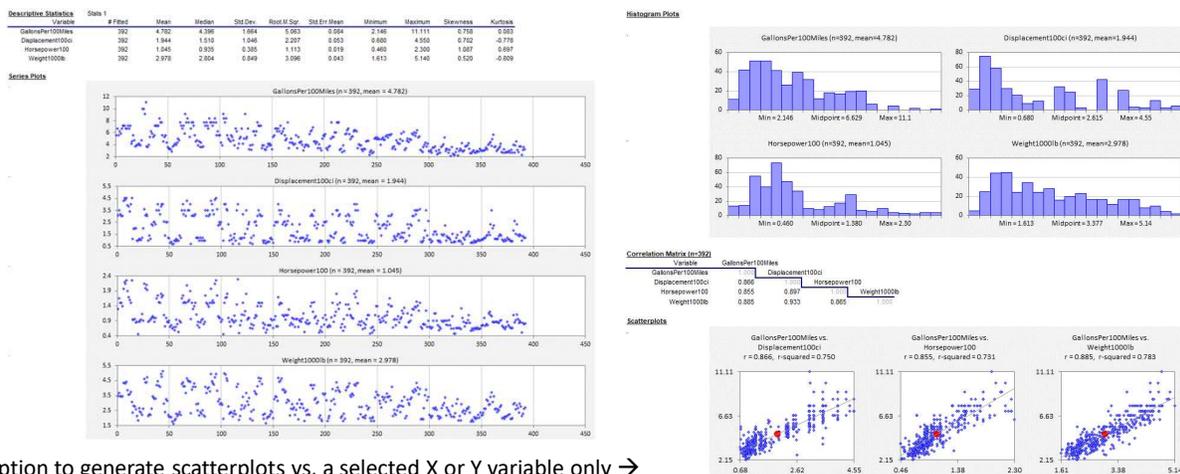
### Optional output:

- Autocorrelations for any set of lags
- Series plots
- Histogram plots
- Individually titled scatterplots with optional regression lines and center-of-mass points
- Scatterplots vs. the 1<sup>st</sup> variable only
- Table of squared correlations vs. 1<sup>st</sup> variable which can be interactively sorted and used to pre-select regression variables



## Descriptive stats output

- Presentation quality, well scaled, chart titles provide important summary statistics: sample size, means, min/max, correlations, squared correlations or slope coefficients
- Tables, charts, and correlation matrix can handle long variable names with full visibility.
- Correlations and autocorrelations can be color-coded by significance.



Option to generate scatterplots vs. a selected X or Y variable only →

## Linear regression procedure

- Many presentation-quality tables and charts on a single model worksheet
- Default table and chart titles include model name (up to 30 characters) and key statistics
- Out-of-sample forecasts can be produced for missing values of dependent variable
- Confidence intervals in tables and charts can be interactive
- Model summaries worksheet provides side-by-side comparisons of all models
- Teaching notes can be embedded in the output in the form of cell comments

## Regression output

- Coefficients can be color coded by significance
- Coefficient table and residual table are sortable on any statistic
- Variables for next model can be interactively de-selected from the coefficient table
- Cells can contain values or formulas
- Formula option provides interactive conf. limits and has teaching value
- Optional residual autocorrelations for any set of lags

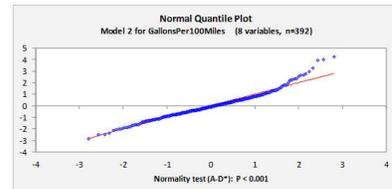
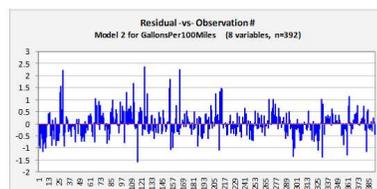
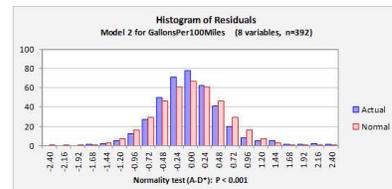
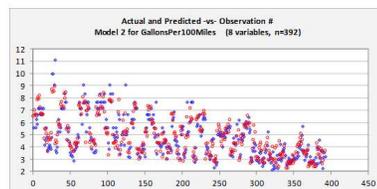
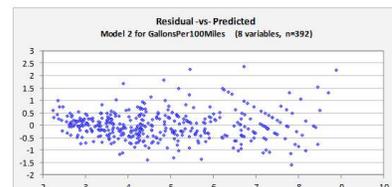
Variable	Coefficient	Std.Err.	t-Statistic	P-value	Lower95%	Upper95%	VIF	Std. Coeff.
Constant	9.392	0.800	11.735	0.000	7.619	10.965	0.000	0.000
Cylinders	0.160	0.055	2.734	0.007	0.042	0.258	10.738	0.154
Displacement100ci	-0.323	0.131	-2.467	0.014	-0.590	-0.066	22.938	-0.203
Horsepower100	1.275	0.235	5.437	0.000	0.814	1.736	9.957	0.295
Origin.Eq.2	-0.296	0.097	-3.063	0.002	-0.488	-0.105	1.848	-0.067
Origin.Eq.3	-0.203	0.095	-2.142	0.033	-0.388	-0.017	1.763	-0.049
Seconds0to60	0.034	0.017	2.051	0.041	0.001417	0.067	2.826	0.057
Weight1000lb	1.125	0.112	10.038	0.000	0.904	1.345	11.074	0.574
Year	-0.131	0.008558	-14.780	0.000	-0.148	-0.113	1.301	-0.209

	R-Squared	Adj.R.Sqr.	Std.Err.Reg.	Std.Deg.Var.	# Fitted	# Missing	(2.50%,383)	Confidence
	0.887	0.884	0.558	1.664	392	0	1.956	95.0%

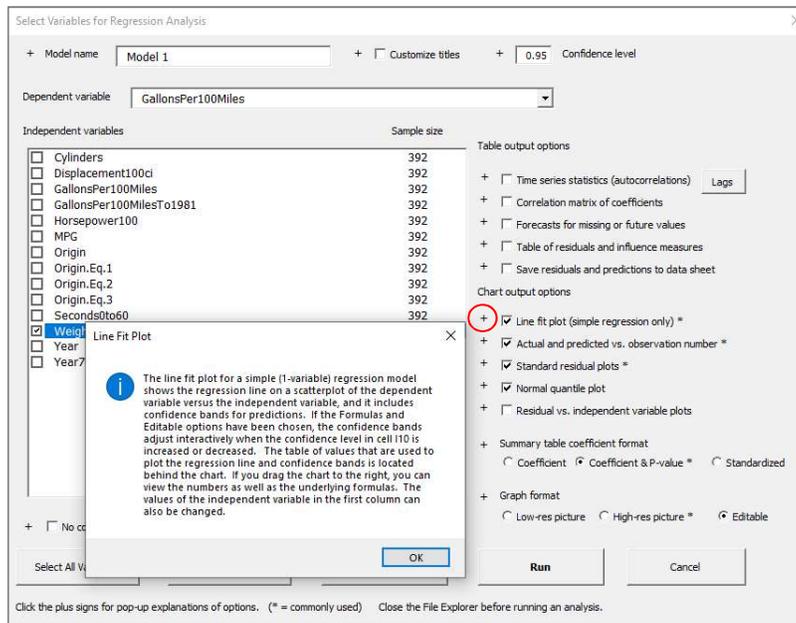
  

	Mean Error	RMSE	MAE	Minimum	Maximum	MAPE	A-D* stat
Fitted (n=392)	0.000	0.558	0.417	-1.584	2.372	9.0%	2.41 (P=0.000)



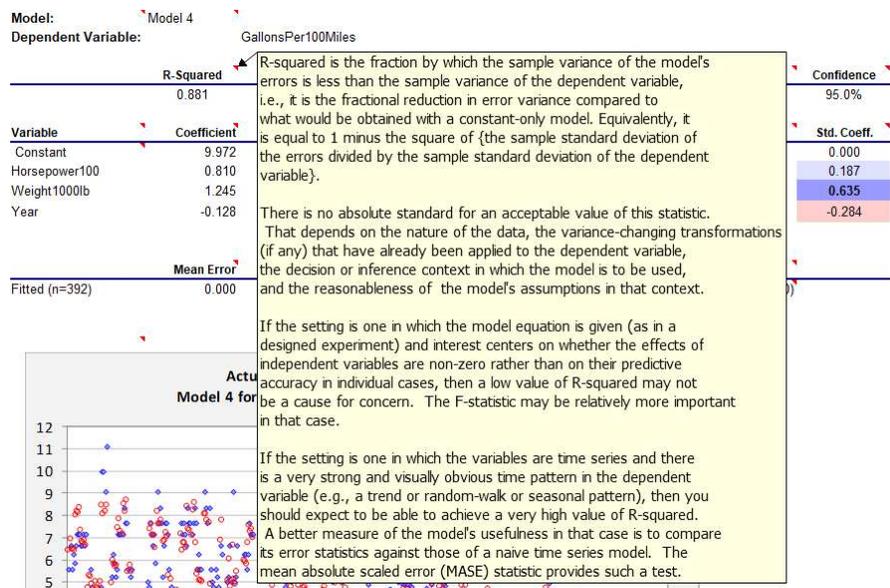
## Regression dialog box has popup documentation of analysis options

- Click the plus sign (+) next to a check-box option to see an explanation of its use



## Detailed teaching notes can be embedded in the output

- Notes pop up when cells with red flags are moused over (if teaching notes option has been chosen and Notes button has been toggled to show flags)
- They could be customized for a school (or a topic for an online discussion...)
- There are currently around 10,000 words of teaching notes and pop-up documentation of analysis options



## Model summaries worksheet

- Side by side model statistics in journal article format
- Several available formats for coefficients (with or without P-values, standardization)
- Color coding of coefficients can be applied here too
- Can be used for navigation: jump directly to the worksheet for any model
- Computer information and more details of variables are stored in popup cell comments

Linear Model For GallonsPer100Miles	Model 1	Model 2	Model 3	Model 4
Run Time	11/14/20 1:39 PM	11/14/20 1:42 PM	11/14/20 1:43 PM	11/14/20 1:45 PM
# Fitted	392	392	392	392
Mean	4.782	4.782	4.782	4.782
Standard Deviation	1.664	1.664	1.664	1.664
Number Of Variables	1	8	7	3
Standard Error of Regression	<b>0.776</b>	<b>0.566</b>	<b>0.569</b>	<b>0.576</b>
R-squared	0.783	0.887	0.885	0.881
Adjusted R-squared	<b>0.783</b>	<b>0.884</b>	<b>0.883</b>	<b>0.880</b>
Mean Absolute Error	0.579	0.417	0.412	0.419
Mean Absolute Percentage Error	13.1%	9.0%	8.9%	9.0%
Maximum VIF		22.938	9.261	4.386
Normality Test	***	***	***	***
Coefficients:	Model 1	Model 2	Model 3	Model 4
Constant	-0.380 (0.008)	9.392 (0.000)	9.481 (0.000)	9.972 (0.000)
Cylinders		0.150 (0.007)	0.063 (0.139)	
Displacement100ci		-0.323 (0.014)		
Horsepower100		<b>1.275 (0.000)</b>	<b>1.105 (0.000)</b>	<b>0.810 (0.000)</b>
Origin.Eq.2		-0.296 (0.002)	-0.214 (0.020)	
Origin.Eq.3		-0.203 (0.033)	-0.130 (0.151)	
Seconds0to60		0.034 (0.041)	0.039 (0.023)	
Weight1000lb	<b>1.734 (0.000)</b>	<b>1.125 (0.000)</b>	<b>1.013 (0.000)</b>	<b>1.245 (0.000)</b>
Year		<b>-0.131 (0.000)</b>	<b>-0.128 (0.000)</b>	<b>-0.128 (0.000)</b>

Model 4 (#vars=3, n=392, AdjRsq=0.88)  
 Dependent variable = GallonsPer100Miles  
 Run time = 11/14/2020 1:45:20 PM  
 File name = AutoMPGmodel3.xlsx  
 Computer name = FACD5414  
 Program file name = RegressItPC  
 Version number = 2020.11.11  
 Execution time = 00h:00m:06s

Model = Model 4  
 Variable = Horsepower100  
 Coeff = 0.80985  
 StdErr = 0.158606  
 t-stat = 5.106  
 P-value = 0  
 VIF = 4.386  
 StdCoeff = 0.18734

## Variable transformation procedure

- An essential tool for applying linear models in general
- Often underemphasized in teaching and/or used unsystematically
- RegressIt has 20 different transformation options (nonlinear functions, time transformations, creation of dummy variables, etc.)
- Transformed variables are assigned standardized self-descriptive names by default and are inserted in new columns next to parent variables on data worksheet

Data Transformations

Variable to transform: Cylinders

<p><b>Mathematical Transformations</b></p> <p><input type="checkbox"/> LN(X) [natural log]</p> <p><input type="checkbox"/> EXP(X) [exponential]</p> <p><input type="checkbox"/> X^2</p> <p><input type="checkbox"/> X^k [power]</p> <p><input type="checkbox"/> Square root</p> <p><input type="checkbox"/> Create dummy variables</p> <p><input type="checkbox"/> Standardize with sample standard deviation</p> <p><input type="checkbox"/> Standardize with population standard deviation</p> <p><input type="checkbox"/> Linear trend per # periods</p> <p><input type="checkbox"/> Subset selected by second variable</p> <p><input type="checkbox"/> Operation applied to a second variable <span style="border: 1px solid gray; padding: 2px;">+</span></p>	<p><b>Time Series Transformations</b></p> <p><input type="checkbox"/> Difference from k periods ago</p> <p><input type="checkbox"/> Difference of natural log from k periods ago</p> <p><input type="checkbox"/> % Change from k periods ago</p> <p><input type="checkbox"/> Deflate at</p> <p><input type="checkbox"/> Lag k periods</p> <p><input type="checkbox"/> Trailing moving average of n terms</p> <p><input type="checkbox"/> Centered moving average of n terms</p> <p><input type="checkbox"/> Sine</p> <p><input type="checkbox"/> Cosine</p>
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## Logistic regression procedure (PC only)

- Very rich and well-formatted table and chart output for visualization of logistic model properties—great for teaching and demonstrations
- *Spinners next to tables and charts interactively vary their parameters and can be used without the software running*
- Cutoff level is interactive in classification tables & ROC chart
- 5 chart options, 4 of which have interactive features
- Out-of-sample testing option

Select Variables for Logistic Regression

Model name: Titanic logistic model + Confidence level: 0.95 + Cutoff value for binary predictions: 0.5 + Error rate weight for plots: 0.5

Dependent variable: Survived1st800

Value labels: 0= Dead, 1= Alive

Independent variables:

- Class1 (891)
- Class2 (891)
- Class3 (891)
- EmbarkedC (891)
- EmbarkedQ (891)
- EmbarkedS (891)
- Fare (891)
- Female (891)
- FemaleClass3S (891)
- First800 (891)
- Male (891)
- MaleAge\_0\_9 (891)
- MaleClass2 (891)
- MaleClass3Q (891)
- MaleParentChild0 (891)
- MaleQ (891)
- MaleSiblingSpouse0 (891)

Analysis options:

- Coefficient table
- Logit
- Logit & Exponentiated
- Classification Table
- Table of residuals and leverages
- Forecasts for missing values of dependent variable
- Save predictions and residuals to data sheet
- Out-of-sample test

Chart options:

- ROC curve
- Logistic curve
- Outcome frequencies vs. prediction intervals
- Actual and predicted vs. observation #
- Error rates vs. cutoff plots

Out-of-sample test values: Survived

Options:

- No constant
- R code only
- Teaching notes in cell comments
- Coefficients on model summary sheet
- With P-values
- With N-values
- Standardized
- Exponentiated

Graph format:

- Low-res picture
- High-res picture
- Interactive

Buttons: Select All Variables, Un-Select All Variables, Variable Transformations, Run, Cancel

## Logistic model output

Value labels: Dead, Alive

Variable	Coefficient	Std. Err.	z-statistic	P-value	Lower95%	Upper95%	WIF	Std. coeff.
Constant	0.476	0.407	1.168	0.243	-0.322	1.274		
Age	-0.025	0.009283	-2.664	0.008	-0.043	-0.006538	1.384	-0.177
Class3	-1.857	0.256	-7.262	0.000	-2.358	-1.356	1.840	-0.510
Female	-3.084	0.271	-11.385	0.000	-3.623	-2.545		
FemaleClass3S	-1.214	0.356	-3.412	0.001	-1.911	-0.515		
MaleAge_0_9	-2.907	0.627	-4.634	0.000	-4.147	-1.678		
MaleClass2	-1.822	0.390	-4.666	0.000	-2.597	-1.047		
SiblingSpouseGT2	-2.357	0.568	-4.150	0.000	-3.470	-1.236		

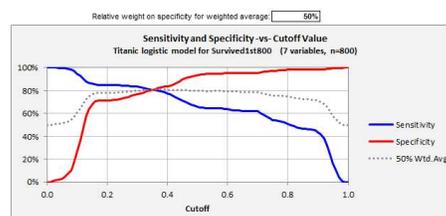
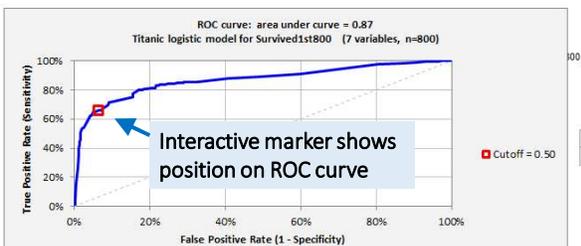
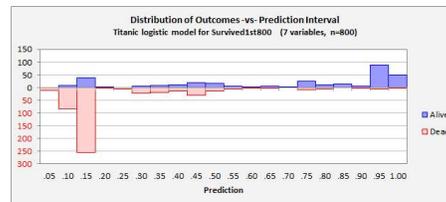
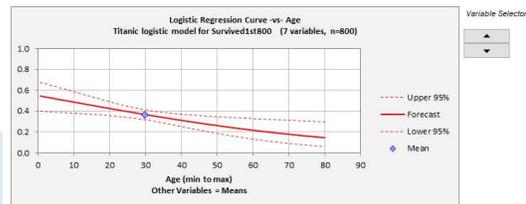
Source	Deg. Freedom	Deviance	P-value	AIC	ROC area	R-squared
Regression	7	415.003	= Chi-square 0.000	667.331	0.87	0.389
Residual	792	651.331	= -2 * log likelihood			0.405
Null	799	1,068.334	= -2 * null model log likelihood			0.550

Cutoff value for prediction of Alive: 0.50 RMSE = 0.355

Predicted:			Total	Actual:		
# Dead	# Alive	% Dead		% Alive	Total	
461	31	492	58%	4%	62%	
195	203	398	13%	25%	38%	
566	234	800	71%	29%	100%	

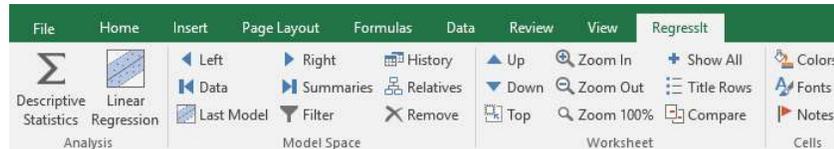
Percent correct = 83.0% True positive rate = 65.9% True negative rate = 93.7%

"Spinners" to play with confidence and cutoff levels after fitting a model

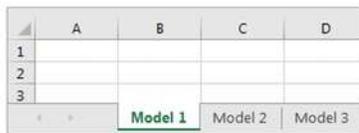


## Ribbon interface: the really unique feature of RegressIt

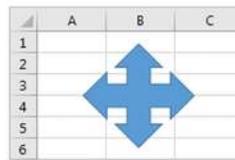
- Allows you to take full advantage of the 4 dimensions of an Excel workbook
  - Navigate the model space for presentations and model comparisons and refinements
  - Navigate and interactively control the display of output on worksheets
  - Reveal layers of information within cells (conditional formatting, cell comments)
  - Makes it unnecessary to go to other Excel menus while working



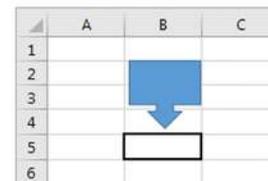
Worksheets:  
the model space



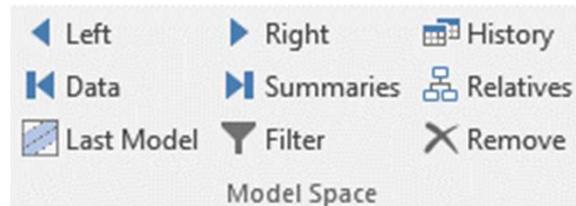
Rows and columns:  
the table and chart space



Cell contents: displayed values,  
numeric values, formulas, colors  
and fonts, paragraphs of text



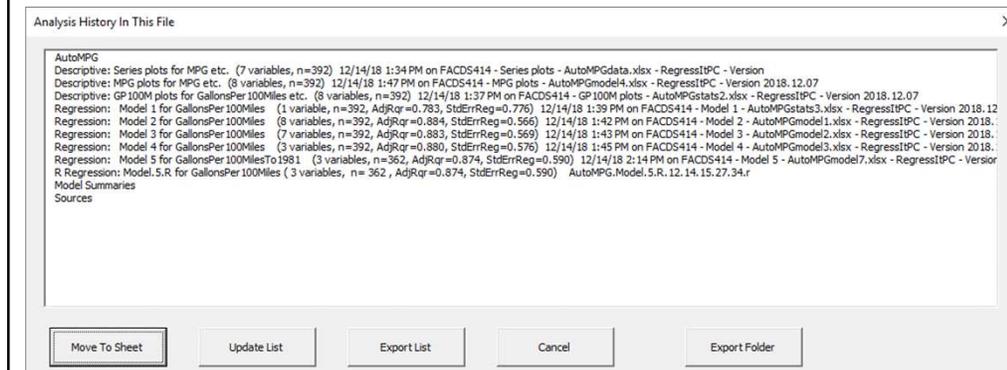
## Model space tools



- **VCR buttons** move to left or right sheet or to data or model summaries sheet (first and last sheets)
- **Last Model** button toggles back and forth to last viewed model sheet (good for comparing 2 models head to head)
- **History** button shows list of worksheets with summary information about each, can be used to jump directly to any other sheet or to export the list to a file
- **Relatives** button navigates among models by parent-child relationships
- **Filter** button allows coefficient table or residual table to be sorted on any stats
- **Remove** button interactively de-selects variables from an existing model sheet or from a squared-correlation table prior to launching a new model from it

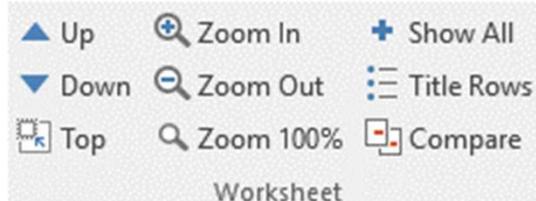
## How the History tool works

- Displays a 1-line description of the contents of every sheet in the file
- Provides audit trail information such as date/time, computer name, and program version
- Can be used for random-access navigation among worksheets
- **The “Export folder” option will download detailed information about *all analysis sheets in all files in a folder*, placing it on a worksheet with 1 row for every analysis sheet in every file.**
- Export-folder worksheet can be sorted on multiple fields (model specs, run time, computer name, ...) and used to survey the work submitted by an entire class of students



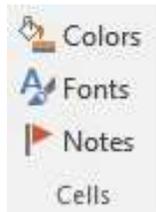
Note that the last model in this list is one that was produced in R

## Worksheet tools



- **Up/Down** buttons move up or down the sheet by whole table or chart so that the topmost one is always aligned with the top of the screen.
- **Top** button jumps back to top left cell. Top followed by Compare will re-reset the viewpoint of all sheets to the top left cell, restoring the original view.
- **Zoom** buttons zoom **all worksheets** up and down in the same pre-defined steps (good for adjusting to new screen size or Excel window size).
- **Show All** button shows or hides all tables and charts.
- **Titles** button shows or hides **title rows** above tables and charts. Showing titles while hiding tables and charts gives an outline view of worksheet.
- **Compare** button sets viewpoint of all model sheets to same table or chart.

## Cell tools



- **Colors** button toggles blue-to-red color coding on and off for showing signs and significance of coefficient estimates, correlations, and autocorrelations
- **Fonts** button toggles font color and boldness up and down for showing significance of coefficient estimates, correlations, and autocorrelations
- **Notes** button toggles the display of red markers in cells for showing cell notes. (Cell notes may contain teaching notes or more detail underneath the numbers.)

## Utilities and support tools



- **Select data range** and **create variable names** (Excel range names) with a couple of clicks when setting up a new file
- **Show-hide gridlines** to allow adjustment of column widths
- **Export data to R** (writes to CSV file and places source command on clipboard for loading the data into a new R data frame, you just need to hit Ctrl-V and Enter in R)
- **Import-R** button creates new worksheet for model fitted in R
- Launch alternative **floating toolbar** interface (good for tablet computers)
- Display **instructions** and **troubleshooting** information

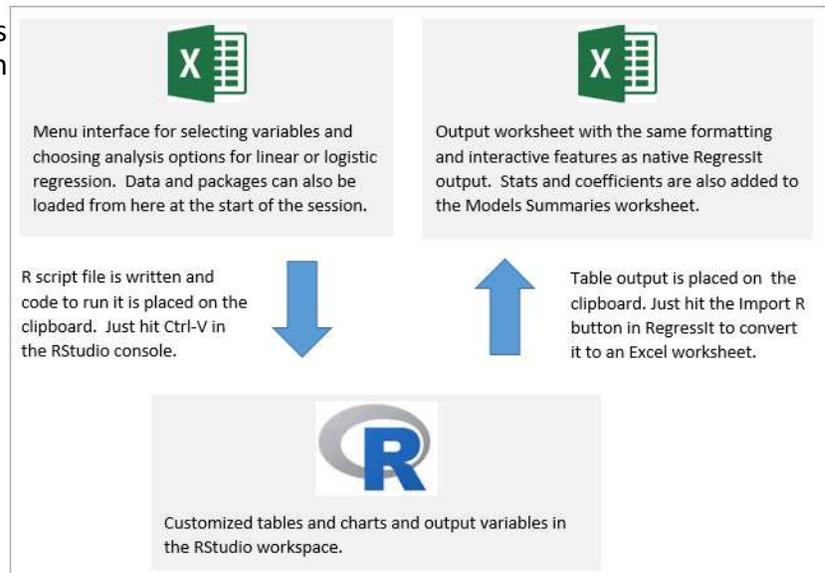
## R interface

- Can be used without any experience in R
- Variables are selected from the regression input panel
- Options for analysis in R are chosen from this panel
- Linear or logistic regression
- Stepwise regression option
- Several train/test and multiple-model options
- Customized tables and charts with model-specific titles
- Code for loading necessary packages can be generated here
- Variable selections can also be pulled from existing R code (lm and glm text strings)

Can be used to handle very large data sets for either linear or logistic regression

## How it works

- When you hit Run, a script file is written and a line of code to run it is placed on the clipboard
- Just hit Ctrl-V and Enter in RStudio to run the script
- Produces customized table and chart output in RStudio
- Table output can be exported back to Excel with 1 keystroke
- Excel model sheets produced by R have the same formatting and interactivity as the native ones (color coding, sorting of coefficient table, inclusion in history list and model summaries sheet)



# Model output in RStudio: most of the same tables and charts as in Excel, including model names and stats in chart titles

-----Begin script AutoMPG2.Model.5.07.04.09.59.47.r produced by RegressItPC version 2019.05.27 on FACDS414 at time 07.04.09.59.47

Linear regression model Model.5 for GallonsPer100Miles in data frame AutoMPG2  
 Variable selection: all  
 Out-of-sample test: none

Regression statistics: Model.5 for GallonsPer100Miles (#variables = 6)

R-Sqr	Adj R-Sqr	DF	StdErrReg	StdDepVar	MeanDepVar	#Fitted	#Missing
0.884	0.883	385	0.5702	1.6639	4.7822	392	0

Coefficient estimates: Model.5 for GallonsPer100Miles (#variables = 6)

	Coeff	StdErr	t stat	P(> t )	Lower95%	Upper95%	VIF	StdCoeff
(Intercept)	9.56979	0.79076	12.102	0.000	8.01503	11.12454	0.0	0.000
Horsepower100	1.13602	0.22498	5.049	0.000	0.69367	1.57837	9.0	0.263
Origin.Eq.1	0.14911	0.08975	1.661	0.097	-0.02736	0.32558	2.3	0.043
Origin.Eq.2	-0.09850	0.09703	-1.015	0.311	-0.28928	0.09227	1.6	-0.022
Seconds0to60	0.03478	0.01666	2.087	0.038	0.00201	0.06755	2.5	0.058
Weight1000lb	1.09779	0.08585	12.788	0.000	0.92900	1.26658	6.4	0.560
Year	-0.12977	0.00882	-14.714	0.000	-0.14711	-0.11243	1.3	-0.287

Error distribution statistics: Model.5 for GallonsPer100Miles (#variables = 6)

	#	MeanErr	RMSE	MAE	Min	25%	50%	75%	Max
Fitted	392	0	0.5651	0.4154	-1.6354	-0.3342	-0.0251	0.2865	2.4453

Residual skewness = 0.754 , kurtosis = 2.404 , A-D stat = 2.96 (P = 0.000)

-----Begin script auto\_mpg.Model.1.11.28.16.22.39.r produced by RegressItPC version 2018.11.25 on FACDS414 at time 11.28.16.22.39

Linear regression model Model.1 for GallonsPer100Miles in data frame auto\_mpg  
 Variable selection: Forward stepwise  
 Out-of-sample test: fixed with training set Year70to81

# rows with any missing values removed prior to stepwise selection = 0  
 # variables removed by forward stepwise selection = 0

Regression statistics: Model.1 for GallonsPer100Miles (#variables = 8)

R-Sqr	Adj R-Sqr	DF	StdErrReg	StdDepVar	MeanDepVar	#Fitted	#Missing
0.881	0.879	353	0.5782	1.6591	4.9126	362	0

Coefficient estimates: Model.1 for GallonsPer100Miles (#variables = 8)

	Coeff	StdErr	t stat	P(> t )	Lower95%	Upper95%	VIF	StdCoeff
(Intercept)	9.46283	0.88704	10.668	0.000	7.71828	11.20737	0.0	0.000
Weight1000lb	1.12762	0.11798	9.558	0.000	0.89559	1.35966	11.2	0.587
Year	-0.13286	0.01015	-13.091	0.000	-0.15282	-0.11290	1.3	-0.271
Horsepower100	1.28764	0.25001	5.150	0.000	0.79594	1.77933	10.4	0.305
Origin.Eq.2	-0.30444	0.10421	-2.922	0.004	-0.50939	-0.09950	1.8	-0.071
Seconds0to60	0.03959	0.01820	2.175	0.030	0.00380	0.07538	2.8	0.066
Origin.Eq.3	-0.23563	0.10526	-2.239	0.026	-0.44266	-0.02861	1.9	-0.056
Cylinders	0.15032	0.05781	2.600	0.010	0.03662	0.26401	10.7	0.156
Displacement100ci	-0.32471	0.13804	-2.352	0.019	-0.59618	-0.05323	23.3	-0.208

Error distribution statistics: Model.1 for GallonsPer100Miles (#variables = 8)

	#	MeanErr	RMSE	MAE	Min	25%	50%	75%	Max
Fitted	362	0.0000	0.5709	0.4281	-1.5791	-0.3787	-0.0358	0.3044	2.3762
Test	30	0.0699	0.3952	0.3006	-1.1549	-0.1423	0.0846	0.2631	0.7939

Test RMSE/Train RMSE = 0.692

Residual skewness = 0.732 , kurtosis = 1.884 , A-D stat = 2.26 (P = 0.000)

Summary statistics of dependent variable:

	#	Mean	StdDev	Min	Max
Fitted	362	4.913	1.6590	2.146	11.110
Test	30	3.210	0.5444	2.273	4.545

Test stdDev/Train StdDev = 0.328

Linear regression model Model.1 for GallonsPer100Miles in data frame auto\_mpg  
 Variable selection: Forward stepwise  
 Out-of-sample test: fixed with training set Year70to81

\*\*\*The output for this model has been written to the clipboard for importing to Excel.\*\*\*

## Exporting results to Excel

← Output in RStudio from script generated by RegressIt

Below: same output as exported from RStudio to Excel. Formatting is the same as RegressIt output, it has the same interactivity, and is also on the model summaries sheet.

Model: Model.1  
 R Script: auto\_mpg.Model.1.11.28.16.22.39.r

Dependent Variable: GallonsPer100Miles  
 Out-of-sample test: fixed with training set Year70to81

Independent Variables: Weight1000lb, Year, Horsepower100, Origin.Eq.2, Seconds0to60, Origin.Eq.3, Cylinders, Displacement100ci  
 Variable selection: forward stepwise

Equation: Model.1 <- lm(GallonsPer100Miles ~ Weight1000lb+Year+Horsepower100+Origin.Eq.2+Seconds0to60+Origin.Eq.3+Cylinders+Displacement100ci, data=)

Regression Statistics: Model.1 for GallonsPer100Miles ( 8 variables, 0 removed by forward stepwise, n= 362 )

R-Squared	Adj R-Sqr	Std.Err.Reg	Std.Dep.Var	#Fitted	#Missing	Critical t	Confidence
0.881	0.879	0.578	1.659	362	0	1.967	95.0%

Coefficient Estimates: Model.1 for GallonsPer100Miles ( 8 variables, 0 removed by forward stepwise, n= 362 )

Variable	Coefficient	Std.Err.	t statistic	P value	Lower95%	Upper95%	VIF	Std.Coeff.
Constant	9.463	0.887	10.668	0.000	7.718	11.207	0.000	0.000
Weight1000lb	1.128	0.118	9.558	0.000	0.896	1.360	11.205	0.587
Year	-0.133	0.010	-13.091	0.000	-0.153	-0.113	1.272	-0.271
Horsepower100	1.288	0.250	5.150	0.000	0.796	1.779	10.414	0.305
Origin.Eq.2	-0.304	0.104	-2.922	0.004	-0.509	-0.099	1.753	-0.071
Seconds0to60	0.040	0.018	2.175	0.030	0.004	0.075	2.750	0.066
Origin.Eq.3	-0.236	0.105	-2.239	0.026	-0.443	-0.029	1.872	-0.056
Cylinders	0.150	0.058	2.600	0.010	0.037	0.264	10.741	0.156
Displacement100ci	-0.325	0.138	-2.352	0.019	-0.596	-0.053	23.329	-0.208

Analysis of Variance: Model.1 for GallonsPer100Miles ( 8 variables, 0 removed by forward stepwise, n= 362 )

Source	Deg.Freedom	Sum Squares	Mean Square	F-statistic	P-value
Regression	8	875.627	109.453	327.424	0.000
Residual	353	118.003	0.334		
Total	361	993.630			

Error Distribution Statistics: Model.1 for GallonsPer100Miles ( 8 variables, 0 removed by forward stepwise, n= 362 )

	Mean Error	RMSE	MAE	Min	Max	MAPE	A-D stat
Fitted (n= 362)	0.000	0.571	0.428	-1.579	2.376	0.090	2.26 ( 0 )
Tested (n= 30)	0.070	0.395	0.301	-1.155	0.794		

Out-of-sample test: fixed with training set Year70to81  
 Test RMSE/Train RMSE = 0.692 , Test StdDev/Train StdDev = 0.328

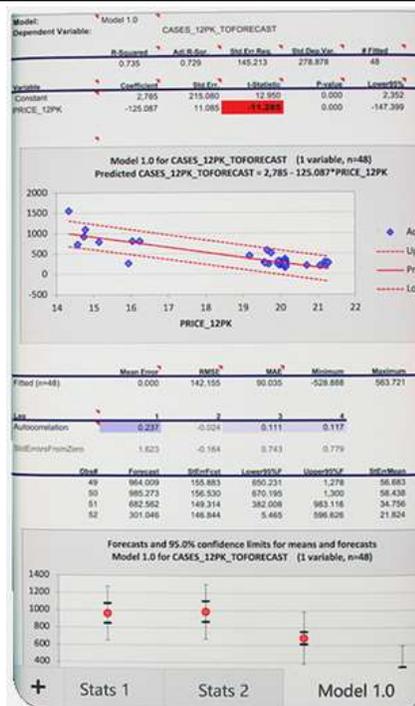
## Floating toolbars (alternatives to the ribbon)

- Vertical toolbar is launched from **Toolbar** button and can be placed to the side of Excel window while hiding the ribbon
- Good for use on touchscreen computers
- Buttons are larger and your hand doesn't block the view
- Maximizes vertical space for viewing rows of the worksheet
- Additional feature: buttons for interactively increasing and decreasing **confidence levels** on editable worksheets with formulas (as opposed to typing new values in cell I10).
- A horizontal toolbar can be launched from vertical one via the **Toolbar-H** button: can be placed at **bottom** of screen



## And one more thing...

- The workbooks produced by RegressIt look good and are easily navigable on a cell phone.
- It's easy to scroll around an analysis worksheet, scale it up and down, and tab back and forth between analyses
- This screen shot is from a Samsung Galaxy S8





Free Excel add-in for regression  
and multivariate data analysis

- Take it for a test drive!
- You can get up and running in a few minutes from the download pages at [regressit.com](http://regressit.com).
  - Download the appropriate program file for your computer (and unblock it if used on a PC)
  - Open an Excel file with a single columnwise data sheet with variable names in the first row
  - Open the program file and hit "Enable" at the macro security prompt
  - Use the Select Data and Create Names buttons on the RegressIt menu to define the variables
  - Start using the descriptive analysis and regression procedures and playing with the output
- Complete documentation, analysis examples, and videos are also available on the web site
- We welcome your comments at [feedback@regressit.com](mailto:feedback@regressit.com).