| Reg | iress | TM Free E | xcel add-in for linear reg ultivariate data analysis | gression | | |
|------|----------|-------------|---|----------|----------|---------------|
| HOME | STUDENTS | INSTRUCTORS | PRACTITIONERS | R USERS | FEATURES | FREE DOWNLOAD |
| | | | | | | RegressItPC |

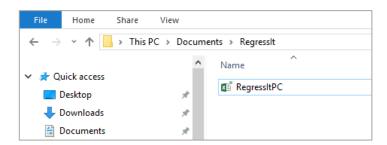
RegressItPC installation and test instructions¹

1. Create a new folder in which to store your RegressIt files. It is recommended that you create a new folder called **RegressIt** in the Documents folder, and store the program file and its documentation and test files there. This will make it easy to find in the future if you need to re-read or update files. You can store your own data and analysis files elsewhere.

2. Download the files from this web page only: <u>https://regressit.com/regressitpc.html</u>. Its link is pictured above. (For your safety, do not download it from any other web site!) Right-click on the RegressIt.xlam link, choose the "Save Link As" option, and save the file into the new folder.

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| | > Th | nis PC → Docun | nents > RegressIt | ~ Č | Search Regress | lt | ,p |
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| 💻 This PC | | | | No items match your searc | h. | | |
| 🧊 3D Objects | | | | | | | |
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| File name: | Regr | essitPC | | | | | ~ |
| Save as type: | Micro | osoft Excel Add-I | n | | | | ~ |
| ∧ Hide Folders | | | | | Save | Cancel | |

When the RegressIt program file is placed there, its path will look like the picture below in Windows 10. In Windows 7 the path will be Libraries > Documents > My Documents > RegressIt.



Then **do the same for the other files on the download page** (documentation and test data), just so they will all be stored in one place.

¹October 23, 2020. Installation instructions are also provided on the download page, although without the pictures shown here.

Alternatively, you can download the single zip file. Do this in the same way, then go to the RegressIt folder and right-click on the RegressItPC.zip file and choose "Extract all" or "Extract to here". The zip file approach is recommended, because it will make sure that you get all the files and also it may help to avoid conflicts with security software (see #5 below).

3. Unblock the program file after it has first been downloaded. By default, Windows 10 will temporarily block the execution of an Excel add-in that has been downloaded from an unrecognized source, so you need to to unblock the file, otherwise nothing will happen when you try to run it. In the File Explorer, right-click on the RegressItPC.xlam file and choose Properties at the bottom of the pop-up menu. At the bottom of the Properties box, look for an "Unblock" button. If you see it, click Unblock, then Apply, then OK.

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| | | | | x | RegressItPC | |
| | | | | Type of file: | Microsoft Excel Add-In (xlam) | |
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| Regressit | or. | 2/15/2018 5:02 PM | | Location: | C:\Users\Bob\Documents\RegressIt | - |
| | | Scan for Viruses | | Size: | 739 KB (757,121 bytes) | |
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| | | Give access to > | | Created: | Today, February 15, 2018, 16 minutes ago | |
| | | Restore previous versions | | Modified: | Today, February 15, 2018, 16 minutes ago | |
| | | Send to > | | Accessed: | Today, February 15, 2018, 20 minutes ago | |
| | | Cut Copy | | Attributes: | Read-only Hidden Advanced | |
| | | Create shortcut | | Security: | This file came from another computer and might be blothed to Unblock help protect this computer. | > |
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You will only need to do this once. (Note: Windows 7 does not require this step.)

VERY IMPORTANT: you must *close* the File Explorer while running analyses in RegressIt, otherwise you may get errors under some conditions, particularly when producing non-editable graphs or using features that write to the clipboard. (You may see an error message referring to a "paste" operation that failed.) The File Explorer may interfere with use of the clipboard by other programs. See the Support page on the RegressIt web site for more details.

4, Launch the program and enable macros. You can launch the program from the RegressIt folder by just opening its file (which is recommended while testing), or you can install it on the add-ins menu, as illustrated on the last page of this handout. Do not store multiple copies of the RegressIt.xlam file in different locations on your computer (at least not under the same name). You will probably want to update it from time to time (in fact, it is highly recommended that you should visit the web site regularly to see if there are new materials and announcements) and you should only need to look in one place.

The first time you launch the program, you should get a pop-up box that says **"Microsoft has identified a potential security concern"** (namely that you are trying to open an executable file), and there will be 3 options. It is recommended that you click the **"Trust all from publisher"** button. This will enable the present version of the program to run and it will also allow other versions to run if they are downloaded later (e.g., updated versions of the program). You will not get the security prompt in future Excel sessions.

If you click the **"Enable Macros"** button instead, it will allow the program to run in the current Excel session but you will get the same prompt when you open the file again in a future session.

| | Microsoft | Excel Security Noti | ce | ? | × |
|---|------------------|----------------------|--|--------------------|--------------|
| | • 🥑 | Aicrosoft Office has | identified a potenti | al security co | ncern. |
| | | | valid, but the signa t yet chosen to trus | | • |
| | File Path: | | cuments\Dell M4800 INAL VERSIONS FOR | | \1. ^ |
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| < | <u>T</u> rust al | I from publishe | <u>Enable Macros</u> | <u>D</u> isable Ma | acros |

You should now see a RegressIt tab appear on the Excel top menu, with this ribbon:

| File | Home | Insert Page | Layout For | mulas Data | Review | v View | RegressIt | | | | |
|---------------------------|----------------------|--------------|-----------------|-------------|--------|-------------|------------|----------|----------------|-------------|-----------------|
| Σ | | < Left | Right | 📑 History | 🔺 Up | 🕄 Zoom In | + Show All | 🐴 Colors | 🛄 Select Data | ₩ Gridlines | Instructions |
| | | 📕 Data | Nummaries | 🖁 Relatives | 🔻 Down | 🔍 Zoom Out | Title Rows | A Fonts | 🛗 Create Names | Toolbar | Troubleshooting |
| Descriptive Statistics | Linear Regression | 🖉 Last Model | T Filter | 🗙 Remove | 🖳 Тор | 🔍 Zoom 100% | Compare | Notes | 📒 Export Data | R Import R | 🚹 Info |
| Ana | lysis | | Model Space | | | Worksheet | | Cells | Utilitie | 25 | Support |

Note: If you do not open another file first, RegressIt will open a blank workbook file when it first loads, which can be deleted later.

5. Load a data file and start analyzing! Your project should begin with a data file containing a single worksheet on which data should be arranged columnwise with variable names in the first row. Hit the Select Data and Create Names buttons to select the data range and assign the column titles as variable names (Excel range names). This only needs to be done once. The names should contain only letters, numbers, spaces, and/or periods. Do NOT try to use other punctuation marks in names (\$, #, %, et.). English characters are recommended although others may work. Before analyzing your own data, it is recommended that you load the test file and re-run the analyses in it as described below.

6. If the program does not run at all or does not run properly, here are some things to try:

- (i) Download the program in zip format rather than xlam format. It is possible that your computer has an extra layer of security (anti-virus software) that will prevent the execution of a downloaded program file even if it has been unblocked as described above. If you download it in zip format, the security software will not recognize that it is a program file at the time it is downloaded.
- (ii) Check your macro security settings in Excel. Launch Excel and go to File/Options/Trust Center/Trust Center Settings/Macro Settings. The setting needs to be "Disable all macros with notification." This means that macro files are not enabled by default, but you will have the option to enable them when they are loaded as shown on the preceding page.
- (iii) If you get a message saying that you need to "connect a smart card" when trying to run the program on a PC, you may also need to change the Trust Center settings to make the RegressIt program folder a "trusted location". Click File/Options/Trust Center/Trust Center Settings/Trusted Locations. Then in the Trusted Locations dialog box, click "Add new location", then "Browse", then browse to the folder where the RegressIt program file is located, click on the folder, then hit "OK" twice.

| < | Excel Options | | <u>?</u> X |
|-----------|---|--|------------|
| | General Formu as | 🔶 Help keep your documents safe and your computer secure and healthy. | |
| | Proofing | Protecting your privacy | |
| | Save Language Advanded | Microsoft cares about your privacy. For more information about how Microsoft Excel helps to protect your privacy, please see the privacy statements. <u>Show the Microsoft Excel privacy statement</u> | |
| | Customize Ribbon | Security & more | |
| | Quick Access Toolbar | Visit Office.com to learn more about protecting your privacy and security. | |
| | Add-In. | Microsoft Trustworthy Computing | |
| \langle | Trust Center | Microsoft Excel Trust Center | |
| | | The Trust Center contains security and privacy settings. These settings help keep your computer secure Irust Center Settings. We recommend that you do not change these settings. | s |
| | Trust Center | ?× | |
| | Trusted Publishers Trusted Locations Trusted Documents Trusted App Catalogs Add-ins ActiveX Settings Macro Settings Protected View | Macro Settings Disable all macros without notification Disable all macros with notification Disable all macros except digitally signed macros Enable all macros (not recommended: potentially dangerous code can run) Developer Macro Settings I rrust access to the VBA project object model I rust access to the VBA project object model I rust access to the VBA project object model | |

(iv) Check your language and number format settings if your computer was purchased outside the U.S. and/or you normally use a non-English character set. While you are working in RegressIt, it is necessary for numbers to be formatted according to U.S. standards with regard to the use of commas and periods and English-language characters, and the Windows and Excel display languages and the Windows language for "non-unicode programs" should be set to English. See the separate document called "PC language and number format settings" for more details.

(v) Hit Ctrl-G to see if the floating toolbar will launch. See the toolbar instructions below for details.

If one of these operations does not solve your problem, visit this page on the web site for a full list of issues to look for: https://regressit.com/support.html

7. Click the "Toolbar" button, which will launch the vertical floating toolbar. (This step is just to illustrate the alternative menus.) The vertical floating toolbar can also be launched by hitting Control-G. If the RegressIt ribbon does not appear after you have loaded your data file and opened and enabled the program file, then you should hit Control-G to see if it is actually running. It is possible that the ribbon isn't working but the program is otherwise active. If that is the case, you will still have its full functionality. There is also a horizontal version of the floating toolbar which is launched from the "Toolbar H" button on the vertical toolbar. (After opening this you can close the vertical one.) The horizontal toolbar can be placed below the Excel window if that location is preferred. When using one of the floating toolbars, you can temporarily hide the ribbon by clicking the "Collapse the ribbon" button at its right end.



The vertical and horizontal floating toolbars are alternatives to the ribbon which can be placed to one side or below the Excel window, and they have bigger buttons which may be better for use on touchscreens.

The vertical toolbar is launched by hitting the "Toolbar" button on the ribbon or by hitting Ctrl-G. The horizontal toolbar is launched by hitting the"Toolbar H" button on the vertical toolbar, after which the vertical toolbar can be closed by clicking the X in the upper right corner.

A fully detailed analysis can be driven on a tablet or touchscreen computer by tapping your finger on the screen. No typing is needed unless you want to customize the names of analyses.

| RegressIt | | | | | × |
|---|------------------------------|-----------------------------------|---------------------|------------------------|-----------------|
| - Analysis | Model Space | Worksheet | Cells | Utilities | Support |
| | Data Left Right | Summaries Up Zoom In Show All | Titles Colors Fonts | Select Data Gridlines | Instructions |
| Descriptive Linear Statistics Regression | Last Stats History Relatives | Compare Down Zoom Out Show Tables | Conf+ | Create Names Toolbar V | Troubleshooting |
| | Last Model Filter Remove | R code Top Zoom 100% Show Charts | Conf- Notes View | Export Data Undo | Info |

8. In the test models file, follow the instructions on the data worksheet to re-run all the analyses. You just need to go to each analysis worksheet and re-run it by clicking Descriptive Analysis or Linear Regression and then hitting Run.

- **a.** Re-run the Stats 1 analysis. Go to its worksheet, hit the Descriptive Statistics button on the ribbon, then hit the Run button to re-run it with the same output selections. The default name assigned to the new analysis will be Stats 3. Watch the progress reports in the status bar in the lower left corner of the screen. When it is finished it will say "Finished with output for Stats 3." By default, all the tables and charts on the new worksheet will be hidden at first, and only their title rows will appear. This is done because there could potentially be very large tables or very large numbers of charts. Click the "Show All" button on the ribbon to unhide all the output. The hit the Last Stats button to toggle back and forth between the new analysis and original one. They should look identical. (Normally you will use this button to jump to the last viewed stats sheet from a regression model sheet.)
- After running the Stats 1 analysis, save the file under a new name (say, RegressItPCTest1), and save it again after each new analysis is run so that you will have a backup point in case anything goes wrong. (You don't need to change the name on each subsequent run if it ran OK.) Next, go to the other descriptive stats worksheets and the regression model worksheets and re-run them. For the regression models you will hit Linear Regression button on the ribbon, followed by Run. When Model 1.0 run is re-run, the default name of the new model will be Model 1.1, and so on.

9. Also play with the model space and worksheet navigation buttons on the ribbon to fully explore the output.

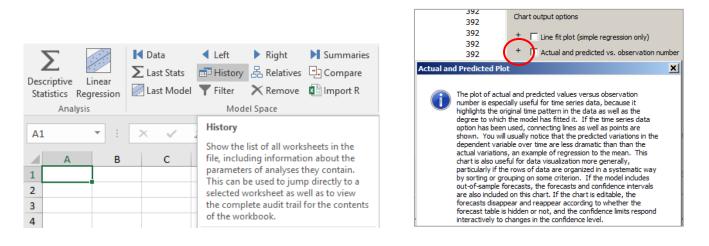


The **VCR buttons** move you to the left or right in the file one sheet at time, or jump directly to the data sheet (first sheet) or the Model Summaries sheet (last sheet). The Model Summaries sheet contains a complete audit trail for all the models that are currently in the file or were previously present in the file, with side by side statistics in journal article format, suitable for presentation. The **Last Model** button allows you to toggle back and forth to the last model sheet you were on, useful for model comparisons. The **History** and **Relatives** buttons allow you to navigate the analysis trail by random access or by parent-child model connections.

The **Up** and **Down arrows** move you up or down a worksheet by whole table or whole chart, so the topmost one is always aligned with the top of the window. (This also minimizes redrawing time for charts as you are scrolling.) The **Zoom** buttons zoom *all the worksheets in the file at once*, in predefined steps, which is useful for adapting the view to a new monitor or projector as well as examining results more closely. The **Compare** button resets the viewpoint of all *other* worksheets so that the same table or chart is at the top of the screen for comparison when flipping back and forth. The **Show-All** button shows or hides all tables and charts. The **Titles** button shows or hides the title rows above tables and charts. *If you show the title rows while hiding all tables and charts, you see an outline view of the contents of the workbook*.

The **Colors** and **Fonts** buttons turn color and fond coding on and off, and the **Notes** button turns on and off the red flags that indicate the presence of *teaching notes* in cells. If you hover the mouse over a cell with a red flag, the note will pop up.

10. Notice that there are 3 layers of internal documentation in RegressIt, which provide you with explanations of the program features as well as instruction in linear regression analysis. First, if you hold the mouse over one of the buttons on its ribbon, you will see a pop-up box with a brief description of its function. Second, if you click the plus (+) symbols in the Linear Regression dialog box, you will see pop-up boxes with fairly detailed descriptions of the model options. Third, if you choose the teaching-notes option when running the model, the output worksheet will contain teaching notes in the form of cell comments attached to title rows and column headings. The presence of a cell comment is indicated by a red flag that appears in the corner of the cell. (Click the Notes button on the ribbon to toggle the flags on and off, as mentioned above.) If you move the mouse over a cell that contains a comment (when its flag is on), or if you click on the cell and hit the View button on the ribbon, you will see it displayed. At present there are about 10,000 words of internal documentation and teaching notes.



| R-Squared Adj.R-Sqr. Std.Err.Reg. Std.Dep.Var. # Fitted # Missing t 0.783 0.776 1.664 392 0 Variable Coefficient Coefficient Constant -0.380 Office the dependent variable per unit of change in the predicted value of the dependent variables fixed at any values of their own. In a multiple regression model its value depends to some extent on which other variables are included (i.e., on which other things are held to be equal as it is hypothetically varied), and its magnitude or even its sign may change if other variables with which it is correlated are added or removed. Model 1.0 f Predicted Gallo The coefficient is measured in units of the dependent variable divided by units of the independent variable, so its value depends on how the variables are scaled as well as on the estimated strength of their statistical relationships. | t(2.50%,33 1.966 VIF 0.000 1.000 |
|--|--|
| Variable Coefficient Constant -0.380 Weight1000lb 1.734 The coefficient of an independent variable is the change in the predicted value of the dependent variable per unit of change in that variable, value of the dependent variables fixed at any values of their own. In a multiple regression model its value depends to some extent on which other variables are included (i.e., on which other things are held to be equal as it is hypothetically varied), and its magnitude or even its sign may change if other variables with which it is correlated are added or removed. Model 1.0 for Predicted Gallo The coefficient is measured in units of the dependent variable divided by units of the independent variable, so its value depends on how the variables are scaled as well as on the estimated strength of their statistical relationships. | VIF 0.000 |
| Variable Coefficient Constant -0.380 Weight1000lb 1.734 Weight1000lb 1.734 Model 1.0 fc Predicted Gallo The coefficient is measured in units of the dependent variable, so its value depends to some extent on which other variables are included (i.e., on which other things are held to be equal as it is hypothetically varied), and its magnitude or even its sign may change if other variables with which it is correlated are added or removed. Model 1.0 fc Predicted Gallo 12 The coefficient is measured in units of the dependent variable divided by units of the independent variable, so its value depends on how the variables are scaled as well as on the estimated strength of their statistical relationships. | 0.000 |
| Weight1000lb 1.734 multiple regression model its value depends to some extent on which other variables are included (i.e., on which other things are held to be equal as it is hypothetically varied), and its magnitude or even its sign may change if other variables with which it is correlated are added or removed. Model 1.0 fe Predicted Gallo The coefficient is measured in units of the dependent variable divided by units of the independent variable, so its value depends on how the variables are scaled as well as on the estimated strength of their statistical relationships. | |
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| 12 by units of the independent variable, so its value depends on how the variables are scaled as well as on the estimated strength of their statistical relationships. | |
| 12 variables are scaled as well as on the estimated strength of their statistical relationships. | |
| statistical relationships. | |
| | |
| | |
| 8 If the coefficient of an important variable is huge or tiny relative to the number of digits visible in the cell in all of your models, | |
| 6 - then for easier reading of the results you may wish to consider changing | |
| its units by rescaling it by several powers of 10 before doing your | |
| 4 analysis. | |
| 2 | |
| 0 Lower 95% | |
| 1.5 2.5 3.5 4.5 5.5 | |
| | |
| Weight1000lb | |

11. Installation on the add-ins menu (optional). It is possible (though not necessary) to add RegressIt to your official Excel add-ins menu so that it will autoload without the macro security prompt every time. However, it is recommended that you test the program first to make sure it is working OK on your computer. If you do choose to install it on the add-ins menu at some point, don't install it multiple times under different names or in different locations. To install it, go to File/Options/Addins on the Excel menu, and click the Go button at the bottom of the screen:

| General | 📑 🔁 View and r | nanage Microsoft Office Add-ins. | | |
|---------------------------------|--|----------------------------------|---|------------------|
| Formulas | — | | | |
| Proofing | Add-ins | | | |
| Save | Name 🔺 | | Location | Туре |
| anguage | Active Application Analysis ToolPak | | C:\Office\Office16\Library\Analysis\ANALYS32.XLL | Excel Add-in |
| Advanced | Analysis ToolPak | | C:\ice\Office16\Library\Analysis\ATPVBAEN.XLAM | Excel Add-in |
| Customize Ribbon | Solver Add-in Add-in: | Team Foundation Add-in | C:\ Office\Office16\Library\SOLVER\SOLVER.XLAM | Excel Add-in |
| Quick Access Toolbar Add-ins | Publisher: Compatibility: | | | |
| rust Center | Location: | 2 | licrosoft Shared\Team Foundation Server\14.0\x86\TFSC |)fficeAdd-in.dll |
| | Description: | Team Foundation Add-in | | |
| | M <u>a</u> nage: Excel | Add-ins <u>G</u> o |) | |

This will open the box that shows add-ins currently installed, with checkboxes to indicate which ones are currently active.



To add RegressIt, click the Browse button and navigate to the folder where you stored the program file, and select it from there. You should end up a list that now includes RegressIt, and it will appear or not appear on your ribbon in any given session according to whether its box is checked here.