

# RM4Es V 0.2 System Introduction

By the RM Institute, California, USA

The RM4Es software is a research flow management system. A research flow is a collection of analytical steps such as regression model specification and ordinary least squares estimation, as ordered by research logic. For example, specifying a multiple regression equation, then select dependent variable and independent variables, then select ordinary least square method, then check R-square, and finally interpret the results is a simple but common used research flow.

With this RM4Es system, users can easily create a research flow by drag and drop RM4Es components, and run it to get desired results by clicking on RUN. The created research flows can be saved for future use or for sharing with colleagues. The advanced features of the RM4Es system will provide log file management functions and intelligent guidance to help designing research flows.

In general, this RM4Es system allows researchers, analysts and research managers to manage research and knowledge systematically. It will increase research productivity and research quality. It will also help research organizations to meet regulatory requirements. Specifically, systematically managing research flows can improve work efficiency for researchers and analysts. Then, information saved in logfile management folders may be used for professors to help advising students or to meet corporation management & regulatory requirements.

To install the RM4Es V 0.2 system, just simply click on the installation file.

However, before your installation, please install JRE and JDK in your system. These JAVE software are free and can be found in

<http://java.sun.com/javase/downloads/index.jsp>

[http://java.com/en/download/windows\\_ie.jsp?locale=en&host=java.com&bhcp=1](http://java.com/en/download/windows_ie.jsp?locale=en&host=java.com&bhcp=1)

[http://java.com/winoffline\\_installer/](http://java.com/winoffline_installer/)

Then, you need to install R in your system. R is a good statistical software and can be downloaded free from [www.r-project.org](http://www.r-project.org). Please note that our RM4Es system is a research flow management system, not a statistical system. In other words, our system needs to work together with a statistical software such as R or SPSS to serve researchers. Besides this version for R, the RM Institute also is developing other versions working with SPSS and other statistical packages.

After you installed R and Java, you may click on the installation file rm4es.msi and follow the screen instructions. To use all the existing flows, please put our emailed datasets into a folder named Data in your C disk.

As soon as you get the RM4Es system installed, now you can use the system for following actions:

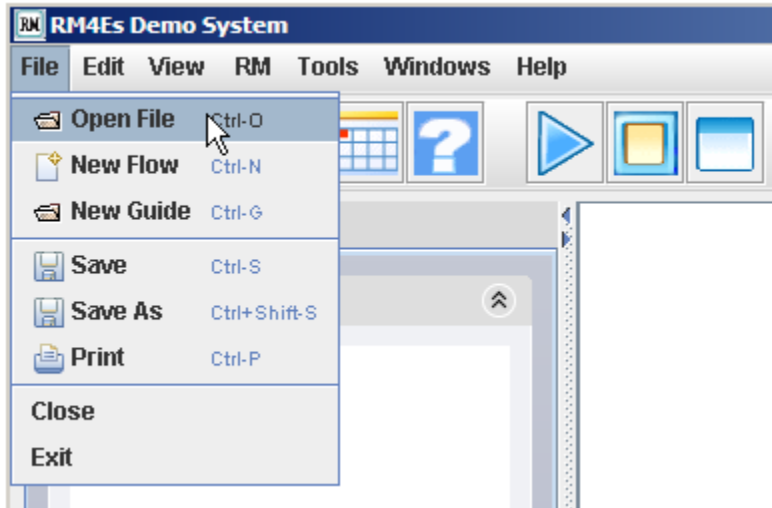
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## Open a existing flow

*Follow steps below to open a flow*

- a. File -> Open File -> Select the xml file in Open dialogue -> Open;

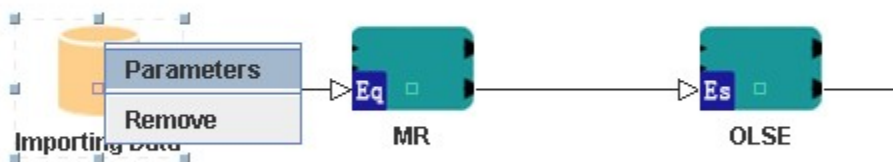


Then select your desired flow, say GradRate.xml, then click on OPEN. Then, you see a flow in the right upper box.

## Modify R function

*Modify parameters in R component according to your requirements;*

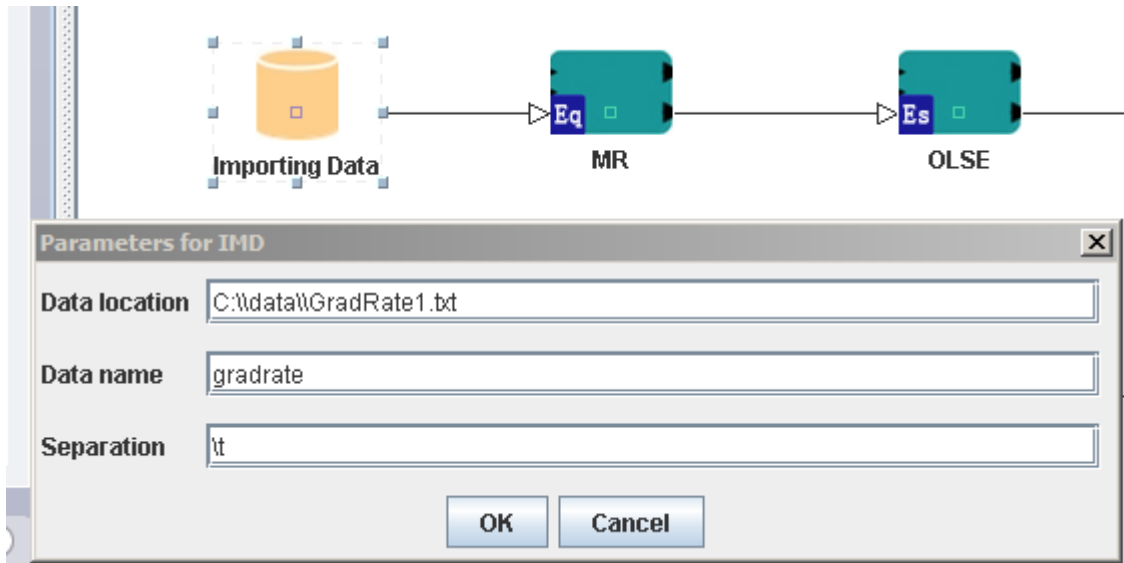
- a. Move your computer Mouse on the R component – ImportingData - which you are going to modify, then right click on it



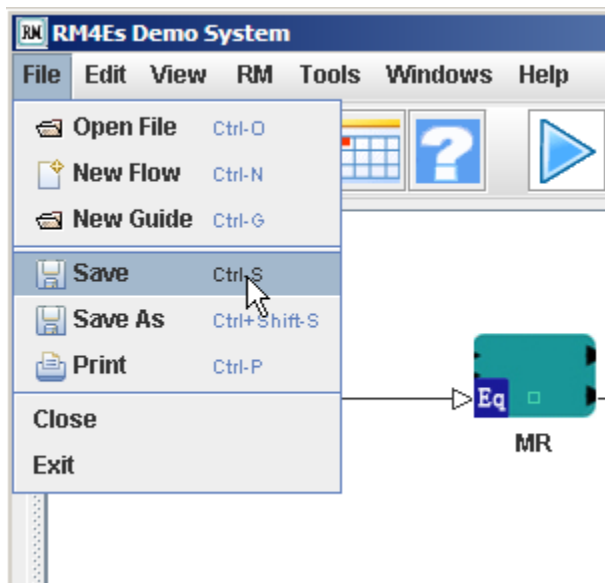
- b. Modify R command in the opened text area to specify the data location and data format. Here, assume your data GradRate1.txt is in folder c\data\

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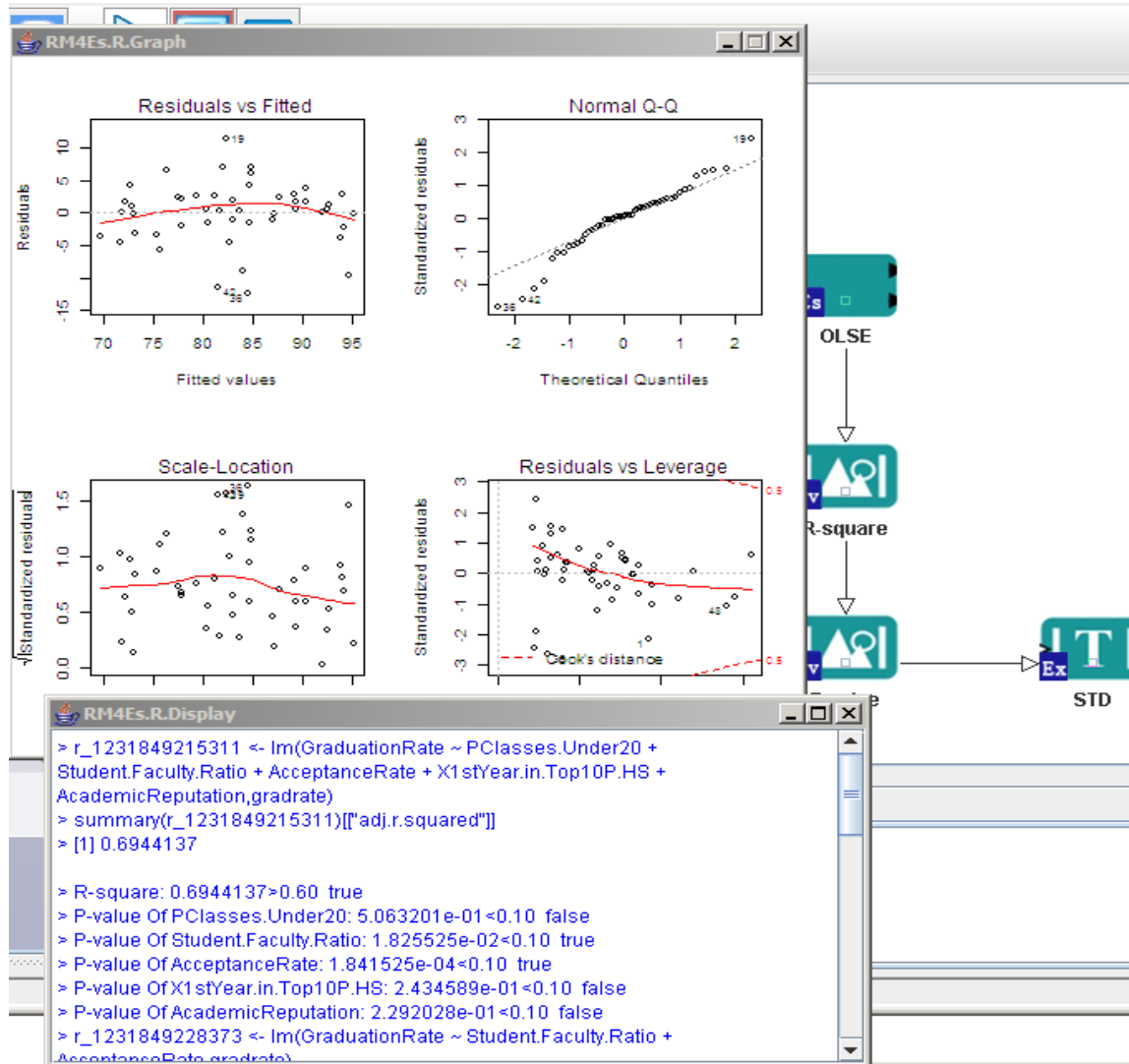
Save the research flow.



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Click Run button on the tool bar



Then, you will get the above results by clicking on RUN. Please note this is just a V 0.2, and the results may be modified per users' needs. Here, you get a statement telling dependent variable is significantly affected by a few independent variables, and a few graphs as examples.

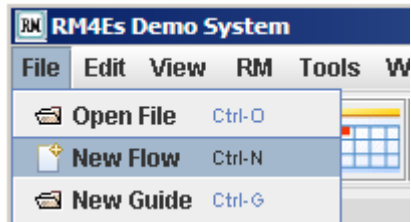
## [Create a new research flow \(an example\)](#)

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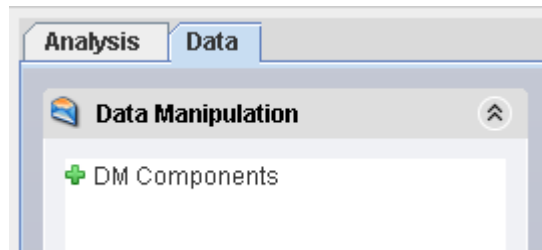
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## Sample (GradRate.xml) for data file GradRate.txt

Click File >> New Flow;

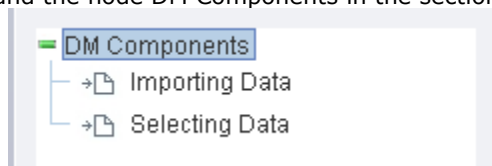


Click Tab page Data on the left side;

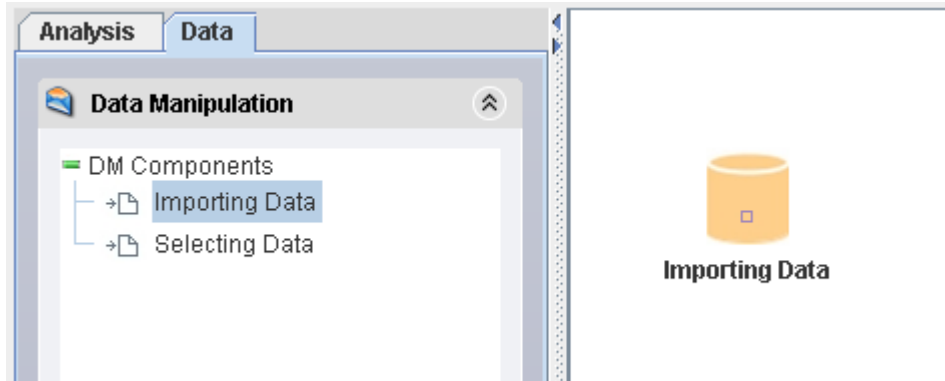


### New DM component

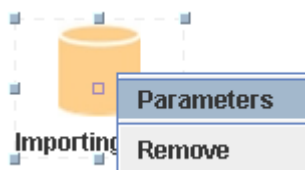
- Double click to expand the node DM Components in the section Data Manipulation



- Press node Importing Data and drag it to editable area on the right side, then drop it there.



- Click component **Importing Data(IMD)** to focus on it, then right click on it
- Choose option **Parameters**



- Fill in required items for DM component

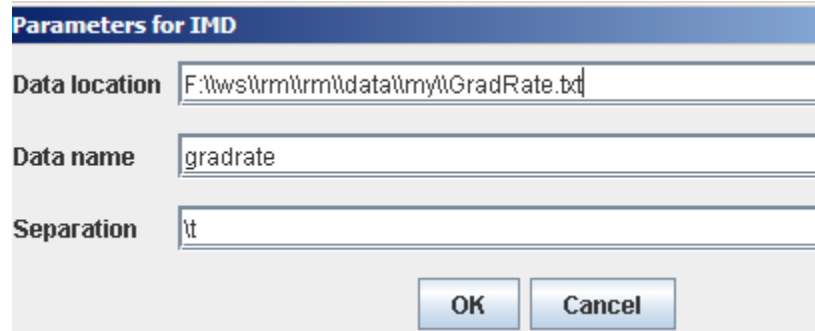
- Data location: F:\ws\rm\rm\data\my\GradRate.txt

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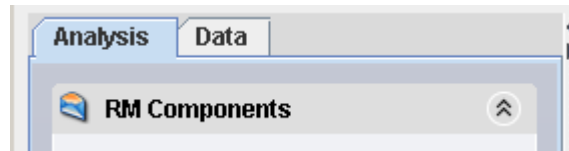
Note: data location should be the actual path of target file. YOUR is different from the above.

- Data name: gradrate
  - Separation: \t
- f. Click button **OK**.



The image shows a dialog box titled "Parameters for IMD". It has three input fields: "Data location" with the text "F:\wsw\rm\rm\data\my\GradRate.txt", "Data name" with the text "gradrate", and "Separation" with the text "\t". At the bottom right, there are two buttons: "OK" and "Cancel".

Click Tab page **Analysis** on the left side;

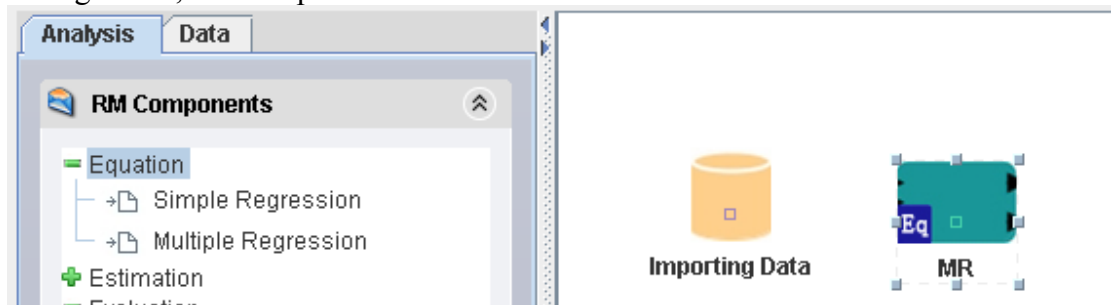


**New Equation component**

- a. Double click to expand the node **Equation** in the section **RM Components**



- b. Press node **Multiple Regression (MR)** and drag it to editable area on the right side, then drop it there.



- c. Click component **MR** to focus on it, then right click on it
- d. Choose option **Parameters**
- e. Fill in required items for Equation component (If not variable inputted, system will use the first numeric variable as default dependent variable and the rest as Independent Variable )
- Dependent Variable: GraduationRate
  - Independent Variable:

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PClasses.Under20;Student.Faculty.Ratio;AcceptanceRate;X1stYear.in.Top10P.HS;Academic  
Reputation

f. Click button **OK**.



## Link components from IMD to MR

- Click component **IMD** to focus on it.
- Move the mouse to the center of **IMD**. When the icon of mouse changes from an arrow to a hand, press it and move the mouse to the center of **MR**.



- After the line between **IMD** and **MR** can be viewed, release the mouse.



## New Estimation component

- Double click to expand the node **Estimation** in the section **RM Components**
- Press node **Ordinary Least Square Estimation (OLSE)** and drag it to ediatble area on the right side, then drop it there.

## Link components from MR to OLSE

- Please refer to 6) Link components from **IMD** to **MR**



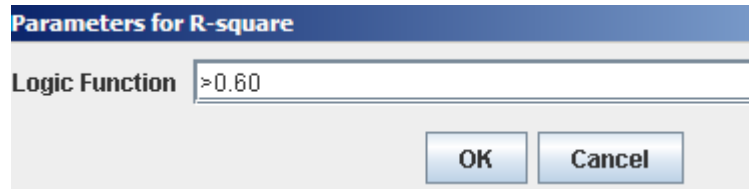
## New Evaluation component

- Double click to expand the node **Evaluation** in the section **RM Components**
- Press node **R-square** and drag it to editable area on the right side, then drop it there.
- Click component **R-square** to focus on it, then right click on it
- Choose option **Parameters**

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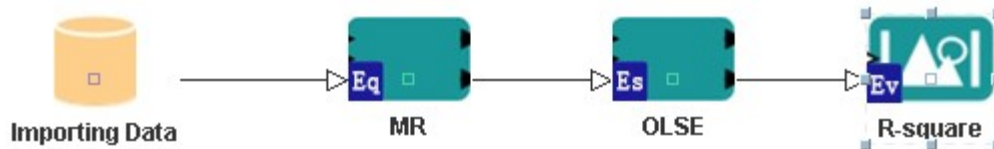
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- e. Fill in required items for Equation component  
Logic Function:  $>0.60$
- f. Click button **OK**.



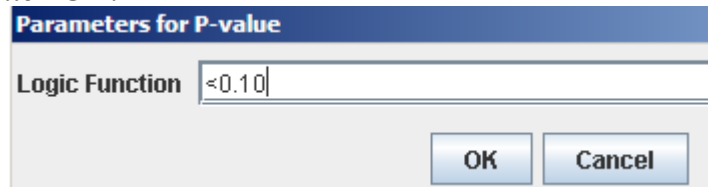
## Link components from OLSE to R-square

- a. Please refer to 6) Link components from **IMD** to **MR**



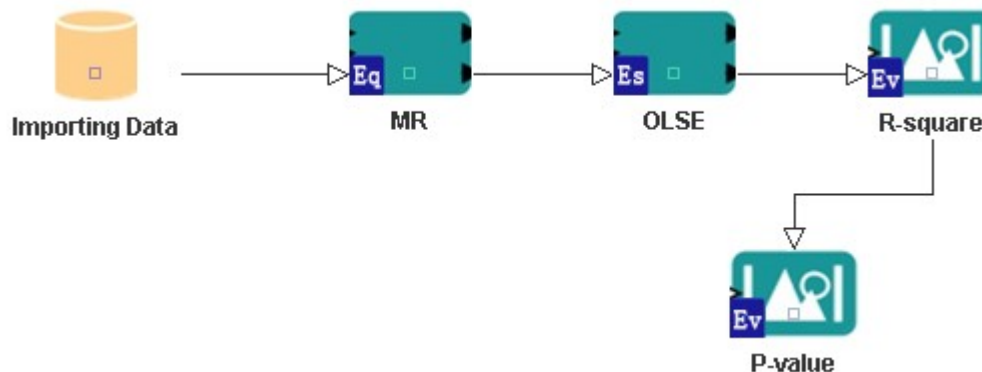
## New Evaluation component

- a. Double click to expand the node **Evaluation** in the section **RM Components**
- b. Press node **P-value** and drag it to ediatble area on the right side, then drop it there.
- c. Click component **P-value** to focus on it, then right click on it
- d. Choose option **Parameters**
- e. Fill in required items for Equation component  
Logic Function:  $<0.10$
- f. Click button **OK**.



## Link components from R-square to P-value

- a. Please refer to 6) Link components from **IMD** to **MR**





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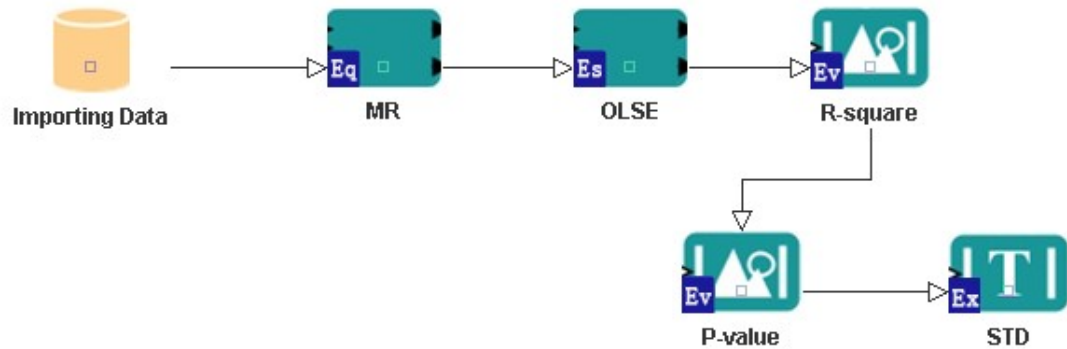
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## ***New Explanation component***

- Double click to expand the node **Explanation** in the section **RM Components**
- Press node **Standard Explanation (STD)** and drag it to ediatble area on the right side, then drop it there.

## ***Link components from R-square to STD***

- Please refer to 6) Link components from **IMD** to **MR**



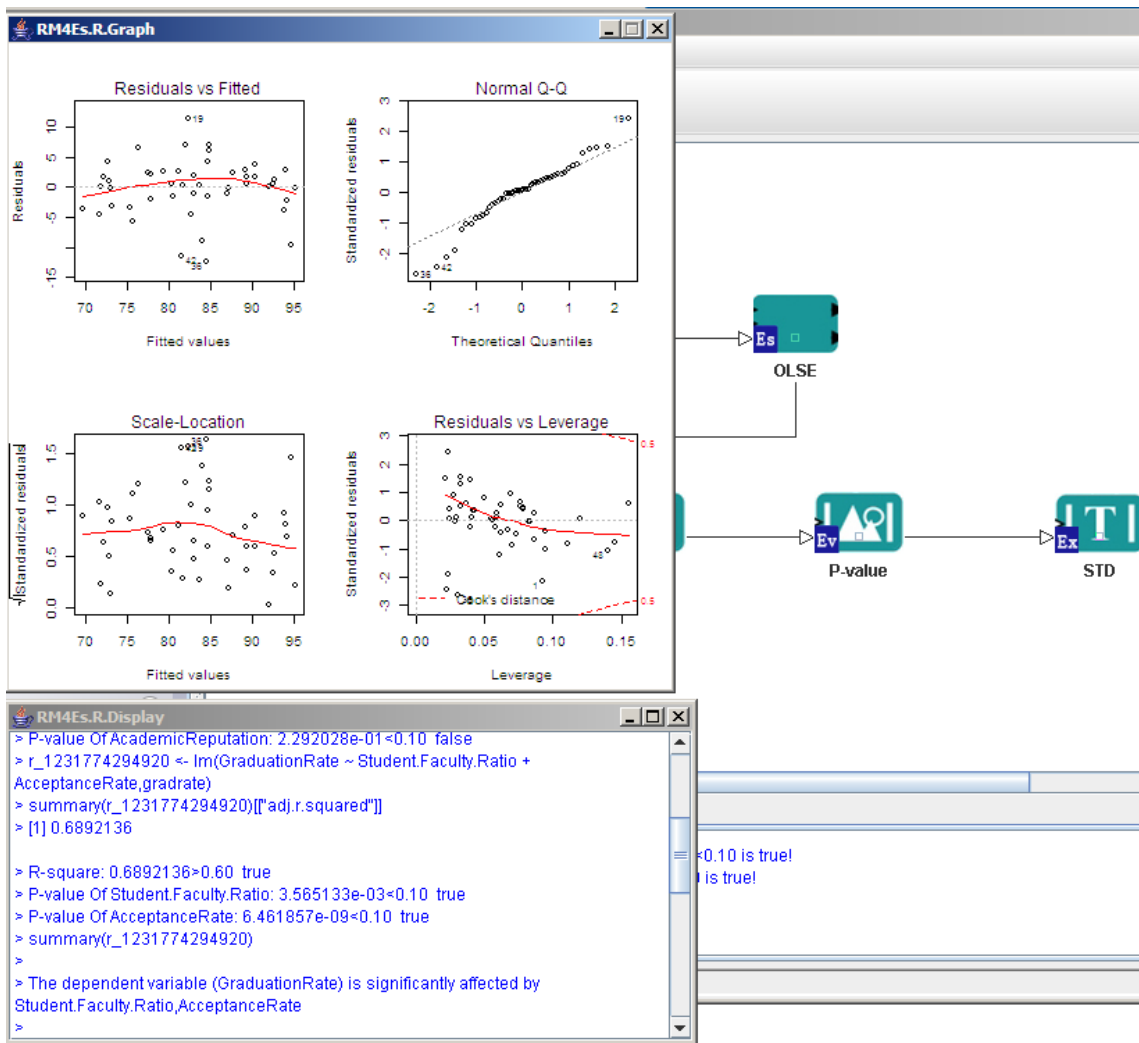
***Click Run button on toolbar***



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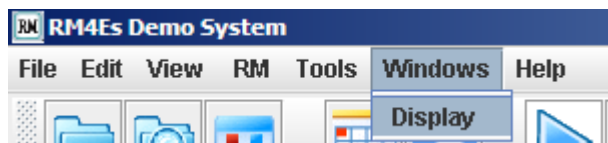
## Check the final result



## Display the result again

### Click Display to check the result

- If above two windows of result are closed, you can use following button to show them again immediately.



Please contact Dr. Alex Liu at [alex@researchmethods.org](mailto:alex@researchmethods.org) OR the RM Institute at [info@rminst.org](mailto:info@rminst.org) for assistance.