

RExcel for Teaching and Using Statistics

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Excel, already on almost everyone's desk, provides a familiar interface with control mechanisms (menus, sliders, checkboxes, option buttons, double-clicking) with which users are comfortable.

RExcel is an add-in to Excel that places the full power of R, one of the best programs for statistical analysis and graphical display of data, into a familiar user environment. R is open source and publicly licensed, so everyone can have it on their own machine.

I use RExcel with Rcmdr as the primary software tool in introductory and advanced courses. We use it to access data, graph data, model data, make inference supported by data, and prepare reports about data. I recommend that our department, and other departments teaching statistics and data analysis courses, use RExcel as their teaching medium.

RExcel seamlessly integrates the entire set of R's statistical and graphical methods into Excel, allowing students to focus on statistical methods and concepts and minimizing the distraction of learning a new programming language. R and the RExcel interface is the computational tool that our students can take with them and use for the rest of their professional life. The New York Times reports "companies as diverse as Google, Pfizer, Merck, Bank of America, the InterContinental Hotels Group, and Shell use it."

- RExcel provides menu access to many R functions directly from Excel by placing the Rcmdr menu on the Excel menu bar. The menus provide the initial access to graphing and modeling data.
- RExcel allows the placement of complex R graphs into the Excel automatic recalculation model. The graphs are automatically updated when the data or the control mechanisms are changed on the spreadsheet. We use this technology to illustrate the concepts of hypothesis testing, confidence intervals, and least squares fitting.
- RExcel allows *any* R function to be used in Excel formulas, thus putting the entirety of R inside the spreadsheet automatic recalculation mechanism.