

2.1: General purpose software

Almost every computer or smart phone has the **calculator**. Typically, it can do simple arithmetics, sometimes also square roots and degrees. This is enough for the basic data processing. However, to do any statistical analysis, such calculator will need statistical tables which give approximate values of *statistics*, special characteristics of data distribution. Exact calculation of these statistics is too complicated (for example, it might require integration) and most programs use embedded statistical tables. Calculators usually do not have these tables. Even more important disadvantage of the calculator is absence of the ability to work with sequences of numbers.

To deal with many numbers at once, **spreadsheets** were invented. The power of spreadsheet is in data visualization. From the spreadsheet, it is easy to estimate the main parameters of data (especially if the data is small). In addition, spreadsheets have multiple ways to help with entering and converting data. However, as spreadsheets were initially created for the accounting, they oriented still to the tasks typical to that field. If even they have statistical functions, most of them are not contemporary and are not supported well. Multivariate methods are frequently absent, realization of procedures is not optimal (and frequently hidden from the user), there is no specialized reporting system, and so on.

And thinking of data visualization in spreadsheets—what if the data do not fit the window? In that case, the spreadsheet will start to prevent the understanding of data instead of helping it.

Another example—what if you need to work simultaneously with three non-neighboring columns of data? This is also extremely complicated in spreadsheets.

This is why specialized statistical software come to the scene.

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