

Time Trials for Lertap 5.10.8.1

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Computers (laptops):

Dell **XPS**-13, Intel i7-7560U, 8GB / 256 SDD
HP Spectre x360, Intel i5-6200U, 8GB / 256GB SDD
MacBookPro (**MBP**) Late 2013, Core i5, 8GB / 128GB SDD

Software:

On the **XPS**:

Windows 10 Home, Excel 2016 (16.0.8229.2073, 64-bit).

On the **HP**:

Windows 10 Home; Excel 2010 (14.0.7165.5000, 64-bit);
Excel 2016 (16.0.6326.1010, 64-bit).

On the **MBP**:

OSX 10.11.12; Excel 2011 (14.5.9, 151119).

Notes:

The three machines used were laptop computers designed to provide good battery life, something they do at the expense of processor speed. Note they were running 64-bit versions of Excel. *The 32-bit versions of Excel 2013 and 2016 are quite likely to run into memory restrictions when Lertap 5 is run with N=5,000 or more.*

Times below are shown in minutes:seconds. A time of 1:02, for example, means 1 minute 2 seconds. N is number of students. Subs is number of subtests in use.

The datasets may be found at, and downloaded from, [this site](#).

No.	Dataset Name	N	Items	Subs	HP Excel 2010	HP Excel 2016	XPS Excel 2016
1	Cook's Tour	60	35	3	0:07	0:13	0:09
2	HalfTime	424	100	1	0:15	0:32	0:17
3	MNursing	1,769	60	1	0:18	0:52	0:22
4	Zmed	2,470	100	1	0:27	1:02	0:34
5	LenguaBIg	5,504	50	1	0:36	2:44	0:50
6	LenguaBIg	5,504	50	3	1:33	8:09	2:58

Two larger datasets were also put through time trials. With N=35,000 items=44 and subs=1, times with HP 2010, HP 2016, and XPS 2016 were: 3:16, 15:45, and 4:15. The same test with N=70,000 gave these times: 6:53, 32:11, and 8:51.

On the **MacBookPro** with Excel 2011 and Lertap 5.9.2.2 (version of 10 January 2016), the Cook's Tour took 1:49; HalfTime 5:49; MNursing 6:30; Zmed 9:10, and LenguaBIg (subs=1) 13:25.

Production mode

The figures above were derived by using a stopwatch to time Lertap version 5.10.8.1 as it ran in "[Production mode](#)". I put "yes" in row 35 of the System worksheet, and "no" in rows 36, 37, and 38. The result was equivalent to running the "[Interpret](#)" option followed immediately by the "[Elmillion](#)" option.

A check was made by running through each dataset twice.

The advantage gained by running on the XPS-13 i7¹ laptop is obvious, at least when compared to the HP i5 laptop. The latest HP Spectre also has an i7 processor and would without doubt give better performance, probably quite similar to that of the XPS-13 – for that matter, the XPS-15 also runs an i7 processor but a faster version of it than that in the XPS-13 – I would *guess* that an XPS-15 running Excel 2016 might turn in times as low as those seen above for Excel 2010.

Running times will be lowest when Excel is the only program running on the computer and when there are only two Excel workbooks open: Lertap5.xlsm and the workbook with test results (such as HalfTime, MNursing, and so on).

Running time may also be reduced by turning off a couple of Lertap 5's options. The [Stats1ul](#) report takes a lot of time to create; it may be turned off by putting "no" in row 10 of the [System](#) worksheet. After turning off this option, for example, the XPS-13 with Excel 2016 completed the analysis of the N=35,000 items=44 dataset in 3:01, down from the 4:15 previously required, about a 25% reduction in processing time.

Another (very) time consuming activity concerns getting Excel to adjust its page breaks so that quantile / [quintile plots](#) do not get split in the middle when they're printed. Adjusting page breaks may be turned off by putting "no" in row 92 of the [System](#) worksheet.

Excel 2010? It's the fastest version of Windows Excel I currently know of; its performance advantage is obvious in the table above. With 64-bit Excel 2010 installed on the XPS-13, Excel 2010 took 2:41 to process the N=35,000 items=44 dataset, and 6:44 to process the N=70,000 items=44 dataset². Given the LenguaBIg dataset to work on (Subs=1), Excel 2010 took 0:21 on the XPS-13, and 0:54 with the Subs=3 version of LenguaBIg.

Note on 32-bit Excel

Users should note the comments made above regarding 32-bit versions of Excel 2013 and 2016: they're subject to memory management limitations which are very likely to impede the application of Lertap when N exceeds 5,000. This is true even on computers with 8GB and more of memory; 32-bit Excel 2016 is constrained to operate in just 2GB of memory. Refer to [this webpage](#) for related comments.

¹ I used the standard laptop version of the XPS-13, not the "2-in-1" convertible version.

² Checked this four times; I thought the performance would be a bit better.

Macs and Excel and Lertap 5

There is now a version of Excel 2016 for Macintosh computers. However it does not yet work with Lertap 5. It looks ever so much like the Windows product, but its version of VBA, the programming language used in Excel and other Office products, is not yet as thoroughly developed (as of July 2017 this was still an issue, one that had been ongoing for about a year).

Updates Summary

As mentioned above, version 5.10.8.1 was used in these time trials. It was released in May 2017.

Users with version 5.10.7 or later should expect very similar run-time figures; earlier versions of Lertap 5 were significantly slower.

Visit [this document](#) to track Lertap 5 developments. Also, see [this webpage](#).