

## Excel-ent Research: Understanding Spreadsheet Use, Creation, and Maintenance at ABB

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### Problem and Motivation

Spreadsheets are abundant, but little is known about how they are used in practice.

### Population

To better understand how spreadsheets are used, we surveyed and interview ABB employees.

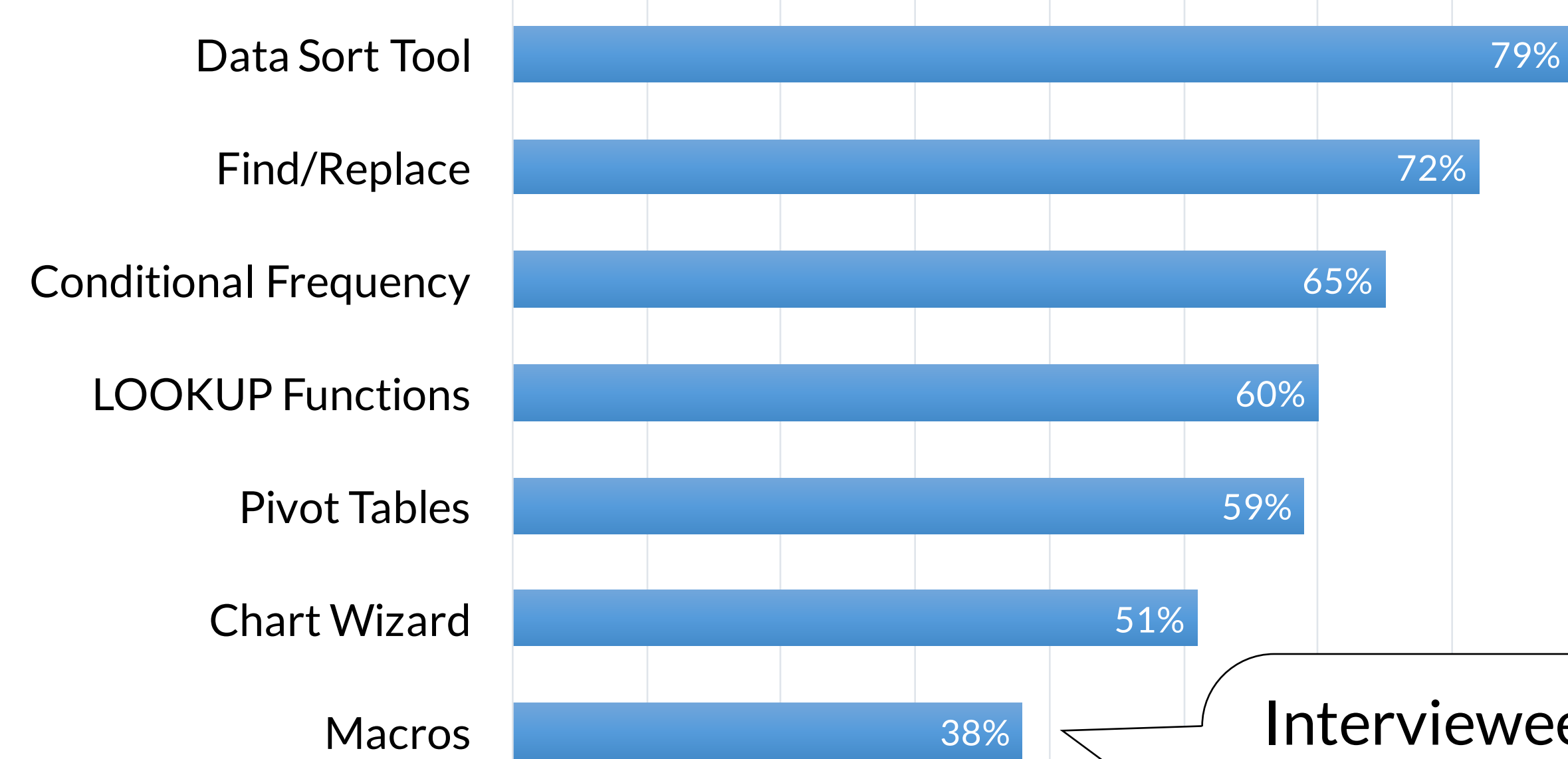


Surveyed **180** respondents across **5** divisions and **26** business units, the typical user...

|  |  |   |
|--|--|---|
| Uses<br><b>2-10</b><br>spreadsheets per week | Uses spreadsheets for<br><b>3-10</b><br>hours per week | Uses 2+ spreadsheets<br><b>daily, weekly, monthly, yearly</b> |
|--|--|---|

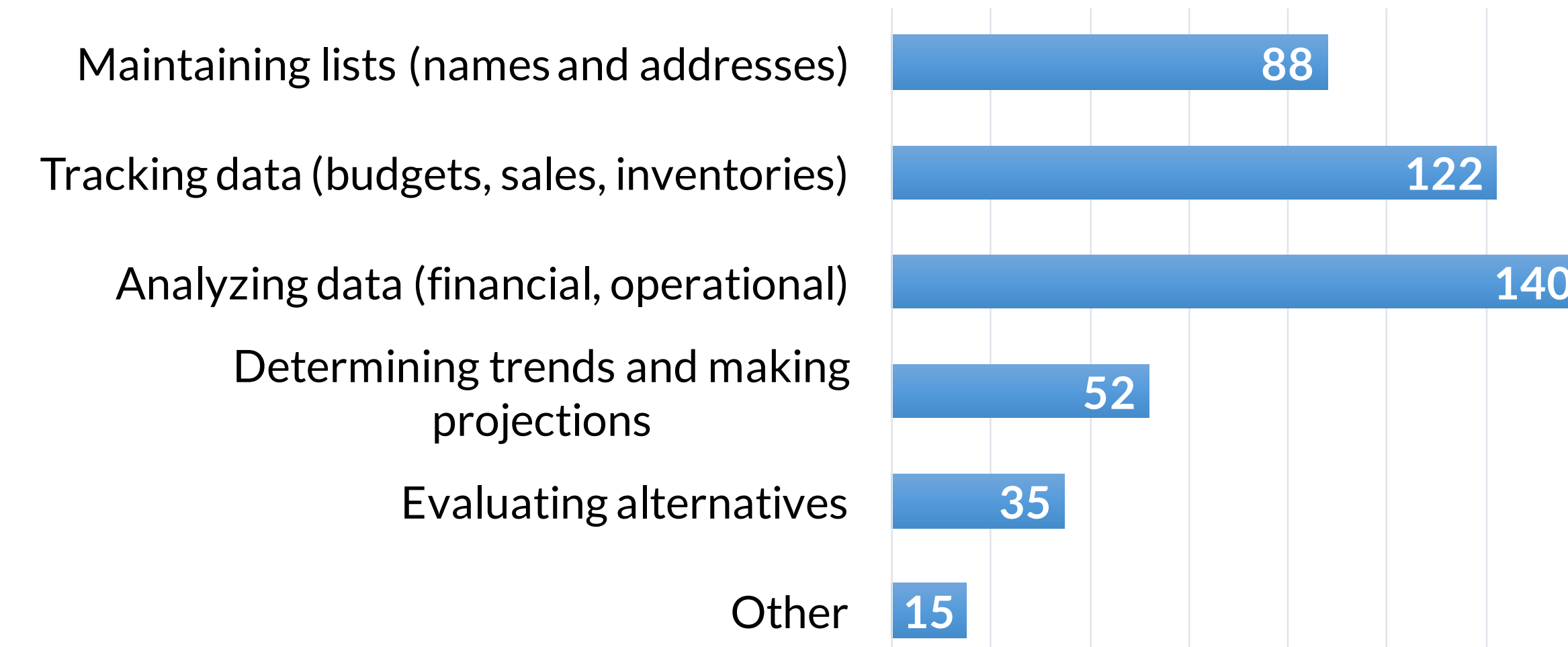
### Spreadsheet Usage

End-users use a variety of Excel functions in their everyday work.



Interviewees frequently requested training in macros.

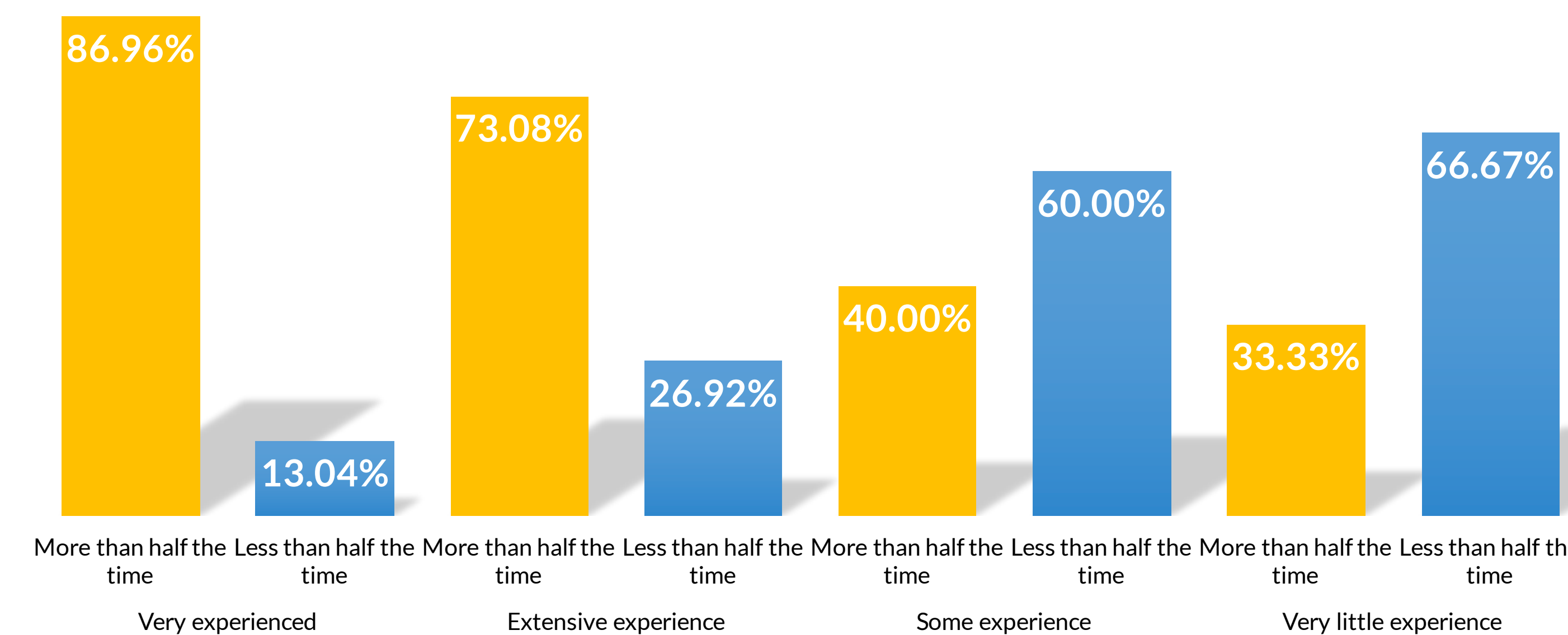
These functionalities serve a variety of purposes.



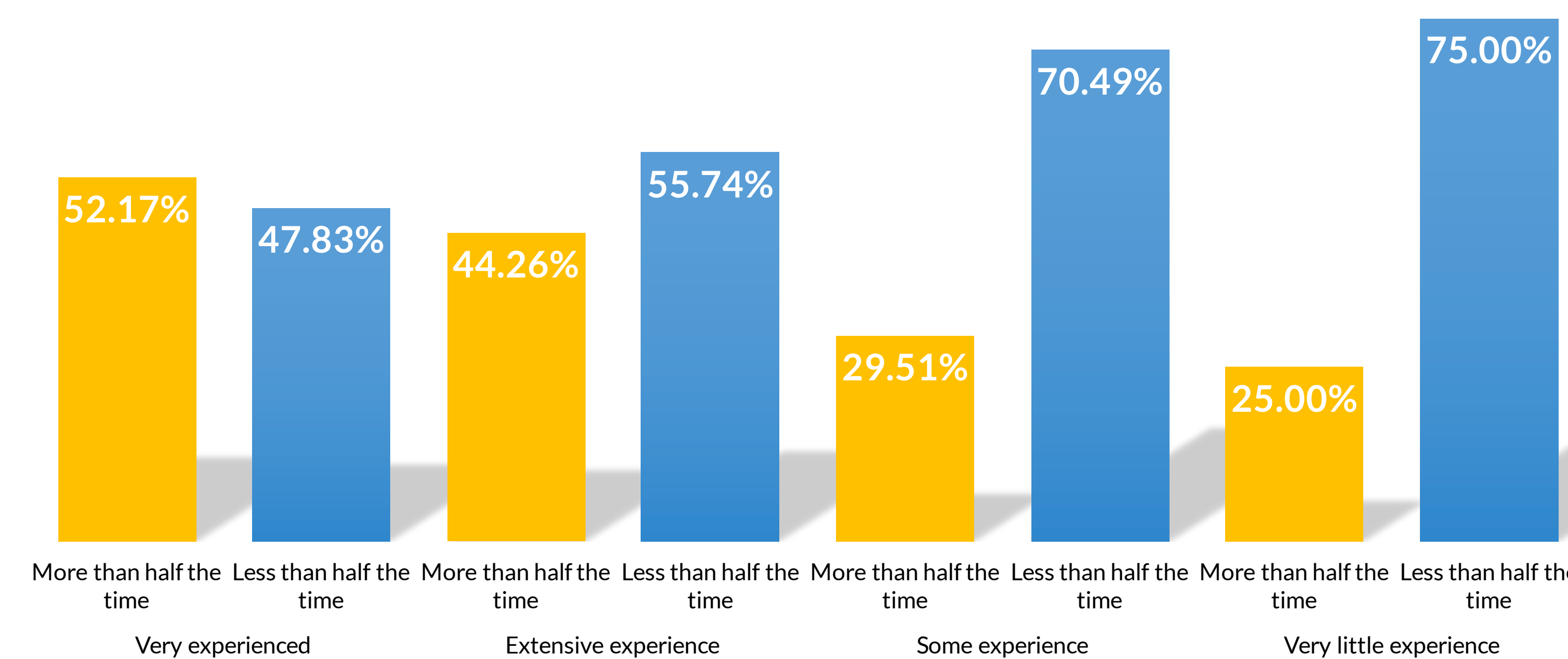
### Findings

The resulting survey and interview data identified practices and problems related to the use, creation, and maintenance of spreadsheets.

How often do you divide sheets into separate sections?



How often do you test spreadsheets you are given?



Inexperienced users are less likely to apply best spreadsheet practices – this includes dividing and testing spreadsheets.



End-users turn to **online resources** for immediate help when working with spreadsheets. This includes end-users of all experience types.

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### What practices have helped improve the quality of your spreadsheets?

| Practice                             | Mentions |
|--------------------------------------|----------|
| <b>Look at existing spreadsheets</b> | 11       |
| Participate in training              | 7        |
| Use macros                           | 5        |
| <b>Seek help from colleagues</b>     | 5        |
| Document spreadsheets                | 5        |
| Organize spreadsheets well           | 5        |
| Learn to use pivot tables            | 5        |
| Label data using tables              | 1        |
| Finalize formulas before formatting  | 1        |

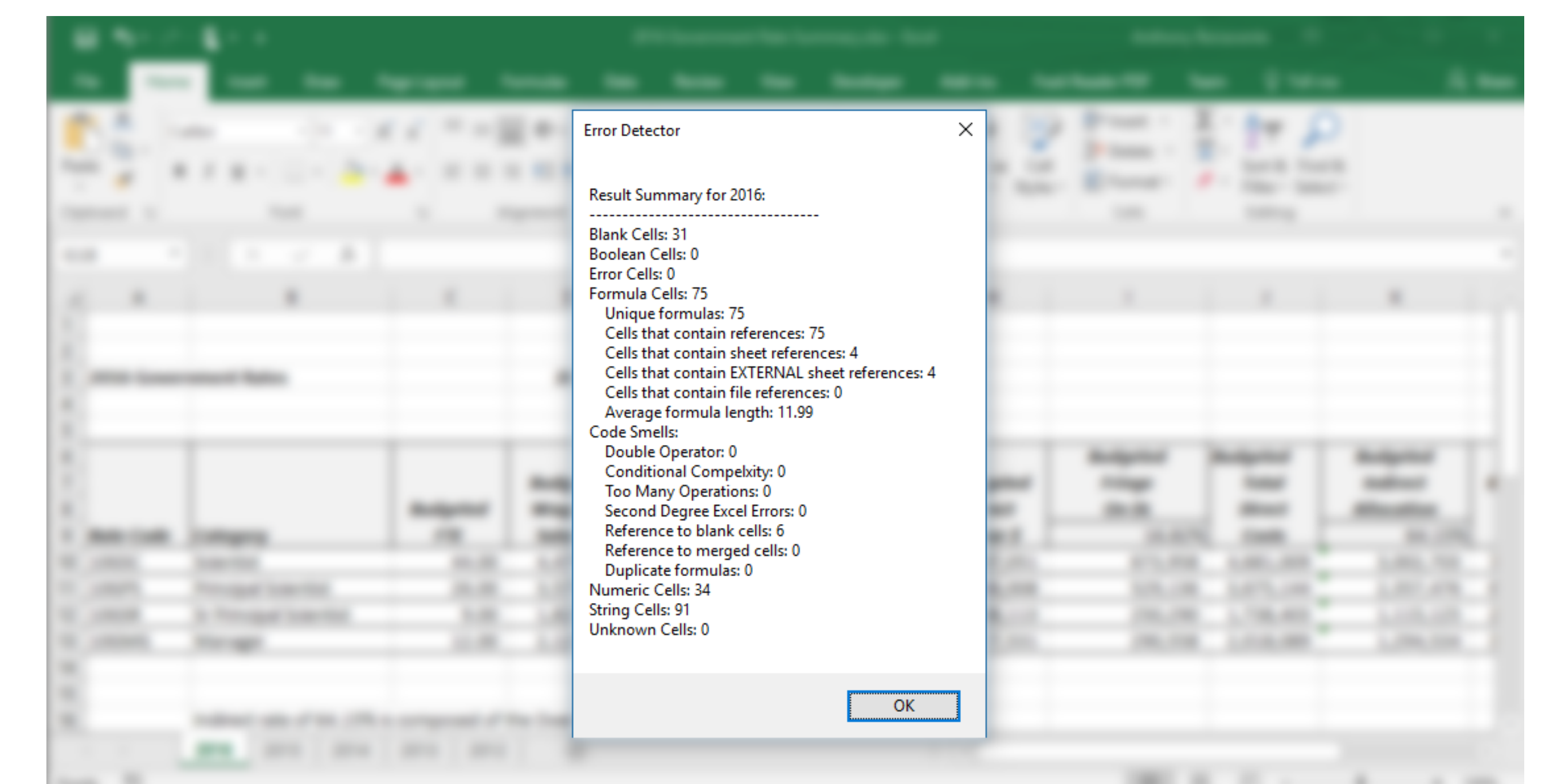


### Future Work

**Spreadsheet Playground** – Web application that enables users to learn different spreadsheet tools interactively.

**Company forum** – Website allowing users to address Excel problems through coworkers.

**Error Detector** – Plug-in for Excel that alerts users of poor practice (i.e. referencing error flagged cells).



Our prototype detects *code smells* that are symptoms of bad practice in Excel programming.