Introduction to Excel
CA A-kasse

by Analytics Group, Aarhus University

Agenda

- Who are we?

- Formulas and Functions
  - Everyday functions
  - Charts
  - If functions

- Data Management
  - Sorting, filtering and validation
  - Pivot
  - Graphic display (Pivot Charts)

- Presentation of the Spreadsheet
  - Conditional formatting
  - Page setup (for printing, etc.).
  - Commenting, and protection of the sheet

- Streamline Workflow
  - Adapting the work environment

- If time allows us
  - Goal seek

- Appendix
  - Built-in analysis

All topics will be covered with examples and exercises

Introduction

- A large table composed of columns (A, B, C) and rows (1, 2, 3), creating the cells (A1, B2, C3)
  - Cell B3 selected
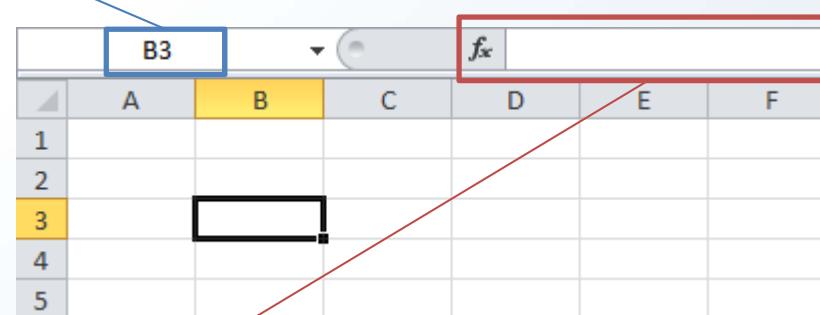
  - Formula bar

References

- Excel uses either relative or absolute references
  - Relative references are used if you want to use numbers from cells which have a location relative to the result cell

References

– Absolute references are used if you want to use numbers from the same cell, regardless of how the result cell is located

- = $ A $ 1 is an absolute reference, and will always refer back to A1
- = A $ 1 will always refer to number 1, but the column would vary
- = $ A1 will always refer to column A, but the row would vary

Formulas and Functions

- Formulas are entered directly in the cells or in the formula bar:

| SUM | ▼ ⊙ ✕ ✓ f_x | =D29+SUM(D30:D35) | ▼ |
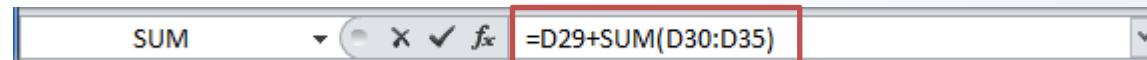
  – May contain mathematical expressions, or built-in functions. E.g. SUM

- Functions accept input, perform a specific action, and provide output in the same cell.

  – f_x provides an overview of functions.

Overview of Data

- Average, sum and number are constantly being calculated in the lower right corner:

Middel: 4,5   Antal: 4   Sum: 18

Use it to keep track of your data !!!

Formulas and Functions

- The functions are all described with input type and action
  - Divided into categories
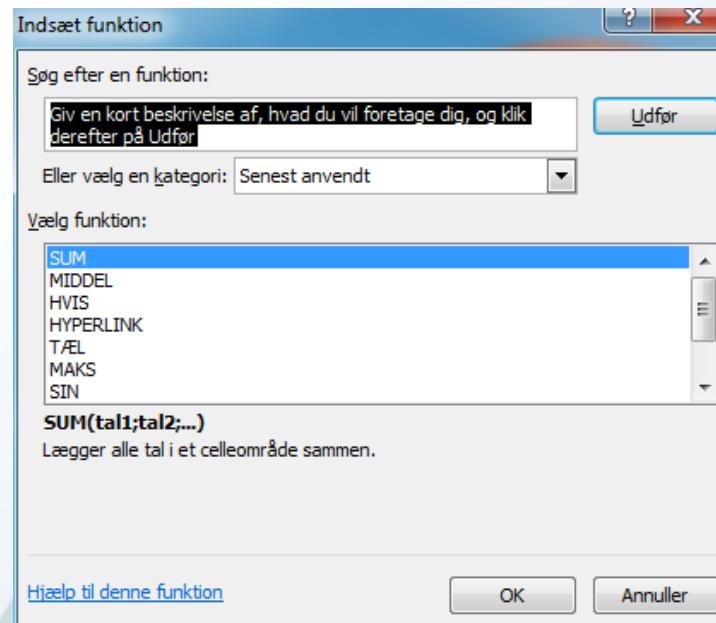
Everyday Functions

- SUM (number1; number2, ...)

- SUMPRODUCT (array1; array2; ...)

- ROUND (number; number of digits)

- COUNT (value1; value2; ...)

- COUNTIF (range; criteria)
  – Counts number of cells in a table (if criteria met)

- RAND ()

- RANDBETWEEN (bottom; top)
  – Generates a random number between 0 and 1 (or self-selected interval)

Translations

Dansk	Engelsk
HVIS	IF
SLUMP (SLUMPMELLEM)	RAND (RANDBETWEEN)
GENNEMSNIT	AVERAGE
TÆL (TÆLHVIS)	COUNT (COUNTIF)
MAKS/MIN	MAX/MIN
STDAFV	STD.DEV
LOPSLAG	VLOOKUP
VOPSLAG	HVLOOKUP
AFRUND	ROUND
KVROD	SQRT

Select Entire Rows / Columns

- Ctrl + Arrows: Moves to the next filled cell

- Shift + Arrow: Selects cells

- Ctrl + Space: Selects an entire column

- Shift + Space: Selects an entire row

- Ctrl + A: Selects a region

Entering Data

- To enter data in adjacent cells, first select an area

- Then start entering data, click Enter when you want to advance to the next cell

- If you want to have the same value in all cells can you hold the Ctrl key when you press Enter
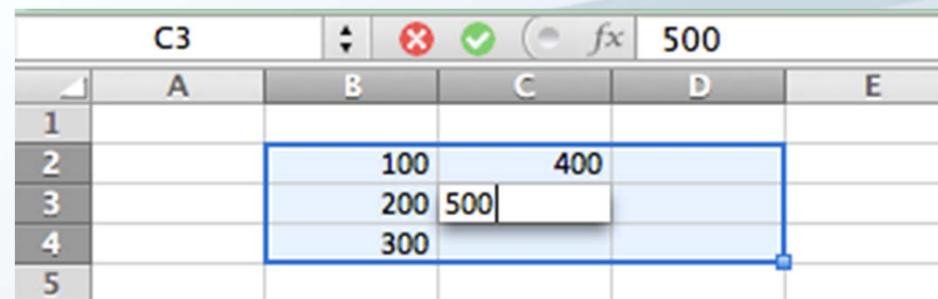
Copying Multiple Elements

- Open Clipboard

- Every time you now copy / cut something, then it can save up to 24 items in this menu
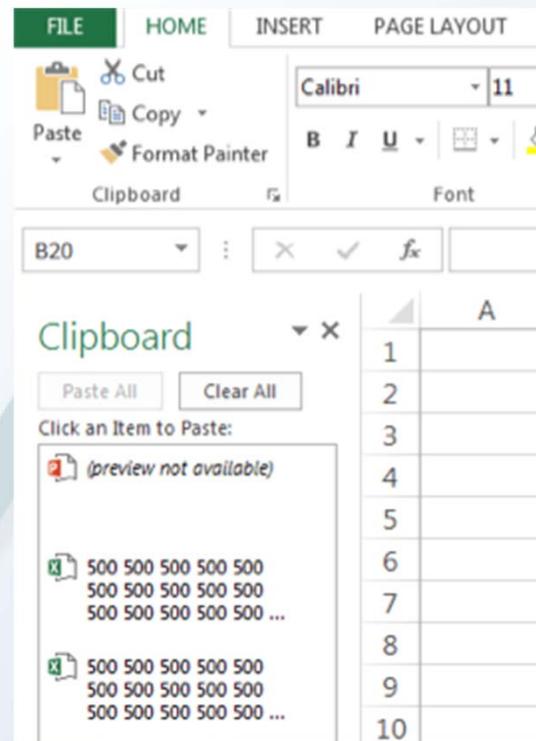
Skipping Blank Cells

- 'Paste special' box contains the option' Skip Blanks '

- If the copied field contains blank cells, then it does not replace the cells in the insertion area that already contain text

Moving Cells

- Move the cell by dragging

- Clip and paste cells by holding down Shift (between rows / columns)

- Paste copied cells, hold down Shift + Ctrl whilst "moving" cells

Customize Ribbon

- File → Options → Customize Ribbon

- Commands can be created for shortcuts (Alt + a number)
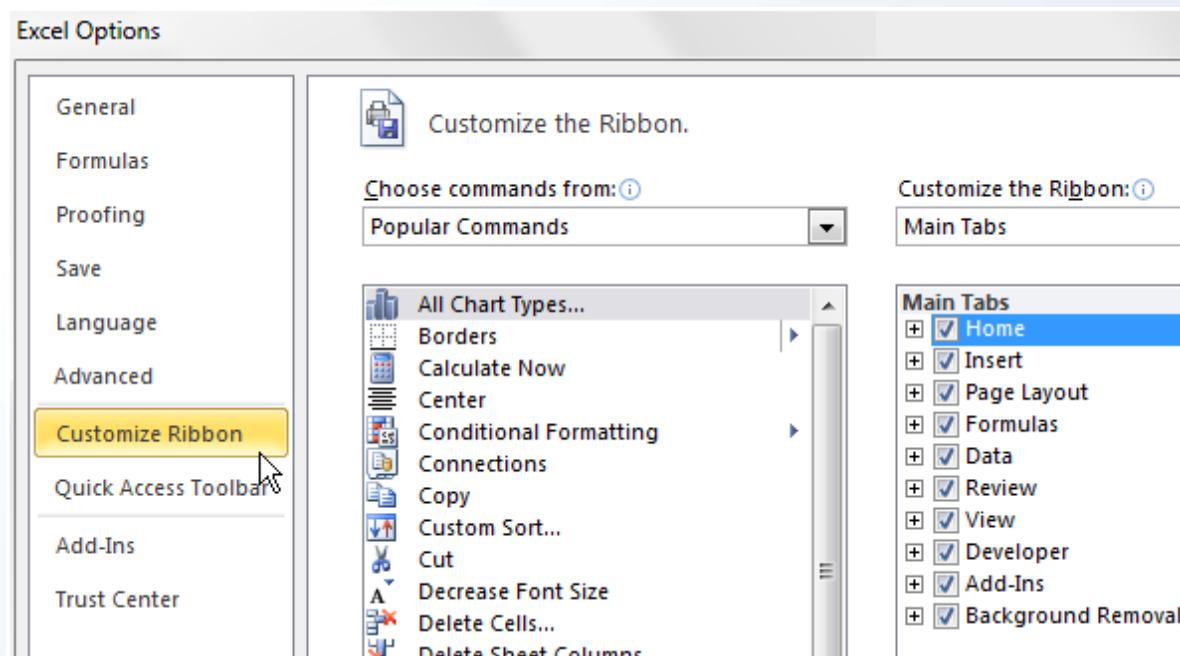
Charts

- Charts can be inserted using the Insert tab → Charts:
  - Then select the chart type that best represents the data (can be changed later if necessary)
  - It may be an advantage to select the data range first
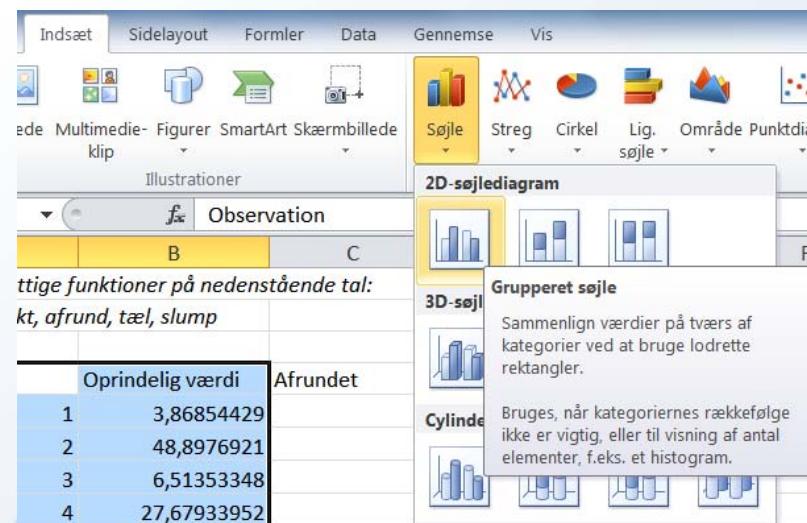
Charts

- When the chart is created, using the tabs Design, and Format you can change virtually every aspect
  - Design is used to change the data used in the graph. Amongst others:
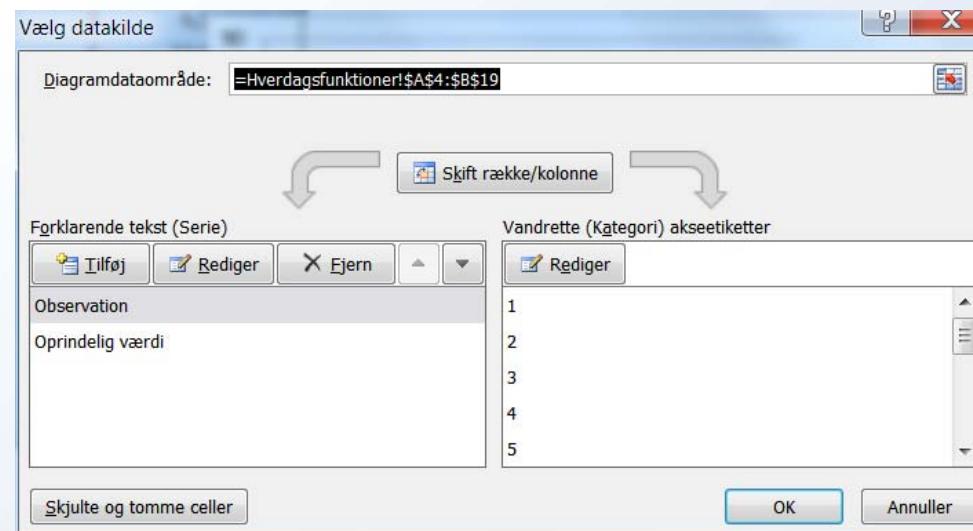
Charts

- Layout is used to change the appearance of the chart
    - Among other things, axis titles, series explanation, grid lines and so on.
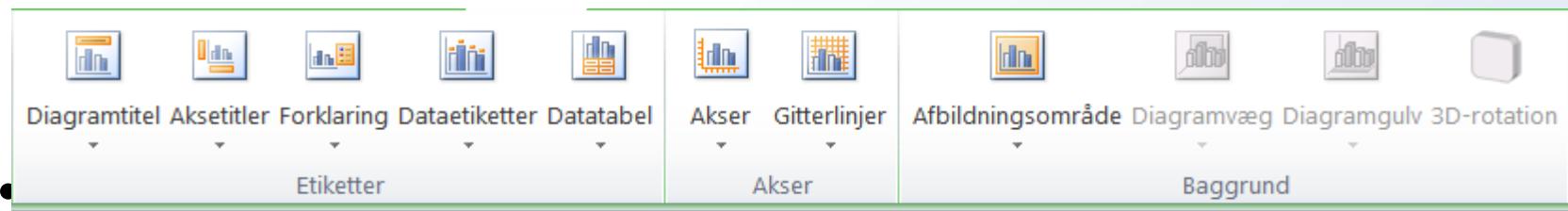
- know it from Word)

The diagram's strength lies in the many layout options. Explore!

If functions

- IF(logical test; value if *true*; value if *false*)
  - Creates true / false check, performs corresponding action
  - If two or more conditions must be fulfilled, then use: IF (AND (test1, test2); if true; if false)
  - If one of the two or more conditions must be fulfilled used: IF (OR (test1, test2); if true; if false)

Exercises

- Checklist
  - Ex. 1 – COUNT and RAND: 'Yes' + 10-15 'drop-in'
  - Ex. 3 – IF functions: 7795.8 kr.
    - Subsection 2: 6876.24 kr.

Data Management and Sorting

- Data management is often easiest if you make data tables:
  - Insert → Table → Select Table

- Formulas applied to all rows

- Sorting is indicated by:

- Sorting can be done by:
  - A-Z, 1-10, oldest-newest etc.
  - Sort Lists (days or similar)

Data Management, Filtering

- Filter is indicated by

- Filtering can be done by:
  - Conditions
  - Manual selection

- Filtering can be done on more than one variable

Data Management, Validation

- Apply a validation to selected cells
  - Drop-down list can be created by having a list of possible values as the source

- Error messages can be used to tell that you have entered an illegal value
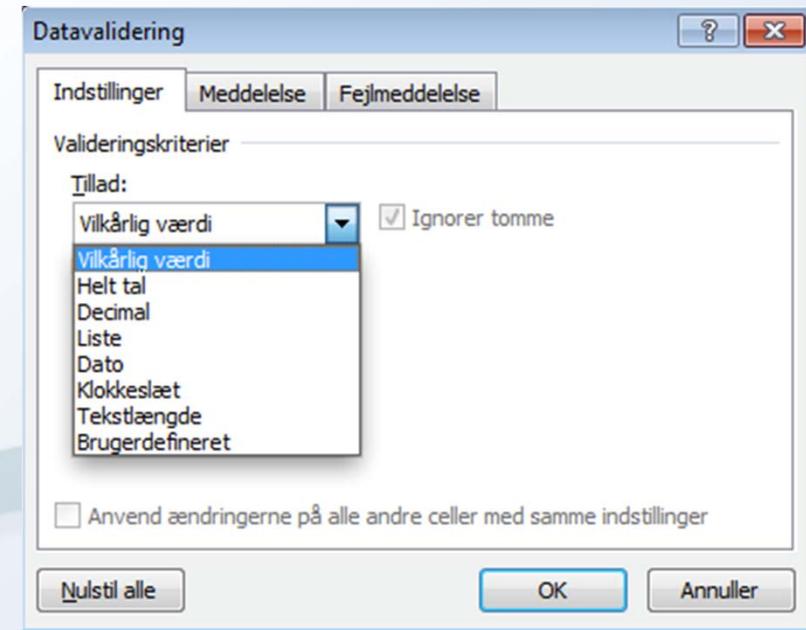
Data Management, Grouping

- Data → Group

- Rows and columns can be grouped so that they can easily be hidden or displayed

- Difference between filtering (data still included in the calculations)
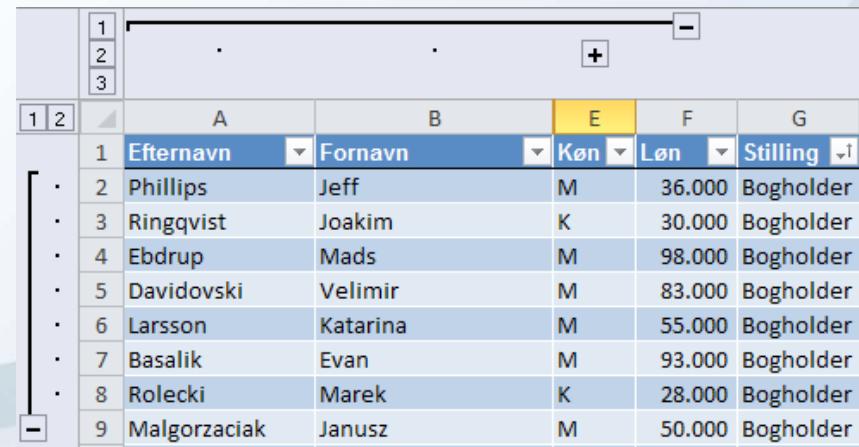
Data Management, PivotTable

- Pivot tables are used to summarize data
    - Provides an overview of categories
    - That can be examined in detail
    - You can make automatic graphs of tables

- Insert → PivotTable → Select data and output-location

Data Management, PivotTable

Antal af Efternavn	Kolonnenavne ▼					
Rækkenavne ▼	Bogholder	Forsker	Leder	Sekretær	Sælger	Hovedtotal
⊟ Bogholderi						
K	22					22
M	69	3	1	6		79
⊟ Direktion						
K				2		2
M			1	17		18
⊟ Marketing						
K					37	37
M		3	4	3	134	144
⊟ Udvikling						
K		8	3	11	12	34
M		16	2	4		22
Hovedtotal	**91**	**30**	**11**	**43**	**183**	**358**

Data Management, Pivot Chart
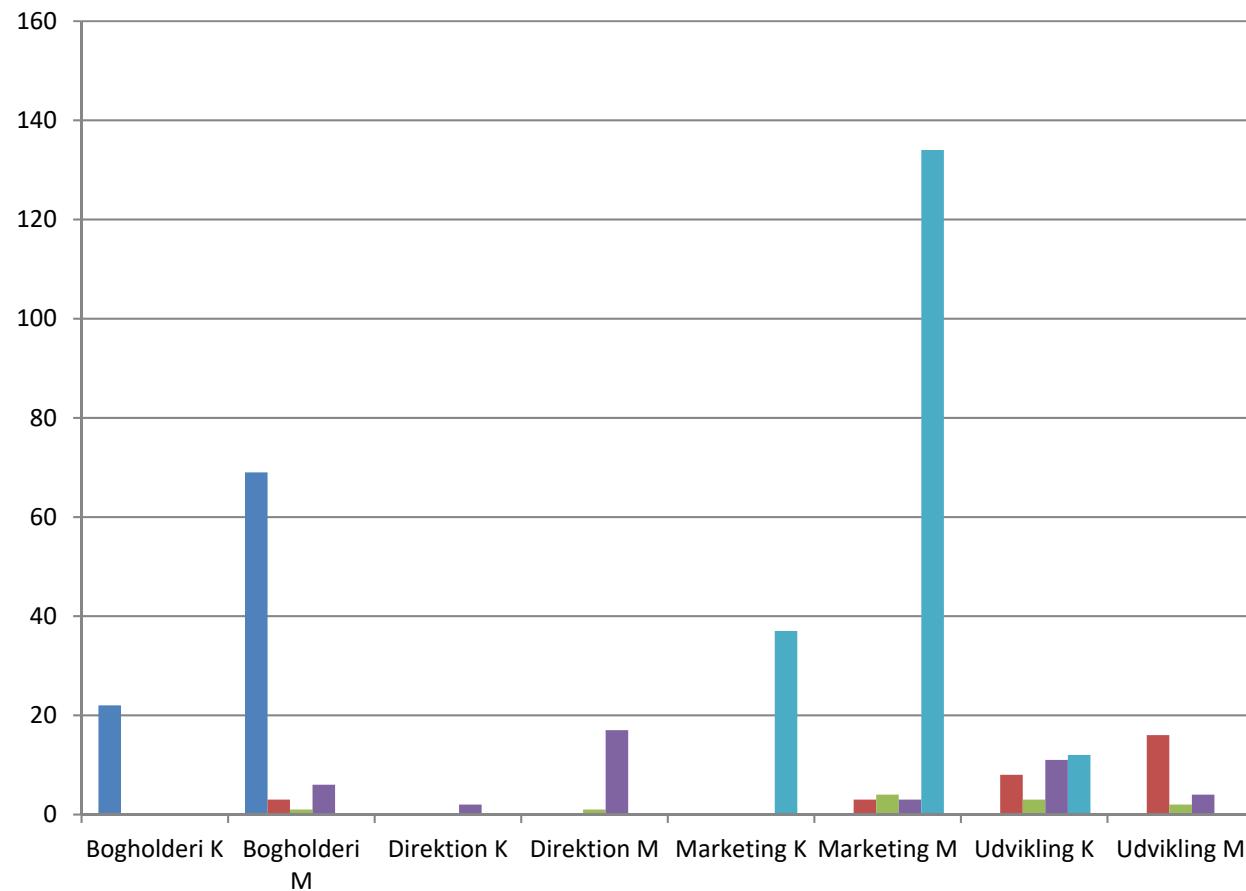
Exercises

- Checklist

  - Ex. 6: Bottom row (Total)

| Total	723.39	1048.97	55191.39	206.25	57170

Presentation, Conditional Formatting

- Format (colors, underlines etc.) Cells based on content:
  - Highlight individual cells, for example. larger than average, equal to 4 or the like.
  - Highlight top / bottom in series such. Top 10 largest values, at least 10% similar.
  - Low color scales such. From red over yellow to green

- There can be applied more than one rule to each cell
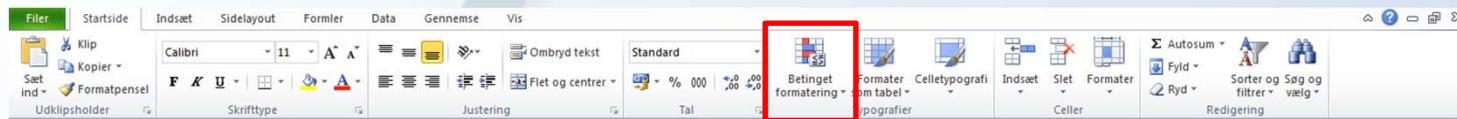
Presentation, Page Setup

- Going from the Page Layout tab
  - (File → Print → Page Setup)

- Overview page break → Page Break

- Better understanding of formulas when naming cells / areas
 - Formulas tab → Name Manager
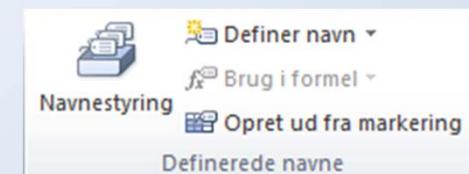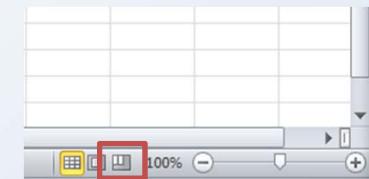
Commenting

- Often used for clarifications on formulas or results.
  - Can contain information about the input data etc.
  - Advantageously, allowing more people to use the workbook, or if you have to use it repeatedly (and are forgetful, etc.)

- Can be added by right click
  - Alternatively use Review tab → New Comment
  - Right-click again to show / hide comment

Protection of the Sheet

- The sheet can be protected so it is only possible to edit, select, etc. specific cells:
  - Eg. if there is a risk that the formula be changed

- This is done by selecting Format from the Home tab → Lock cell
- Then the Review tab → Protect Sheet
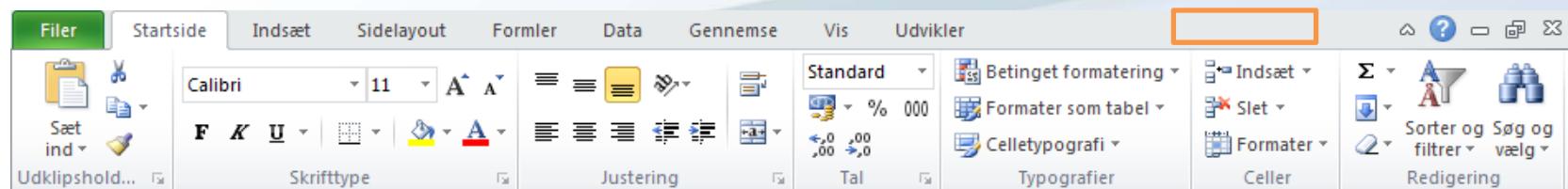
- Possible to enter a password

Efficiency, Adaptation of Buttons

- Custom menus can be added by the File tab →
  Options → Customize Ribbon:
  – Submenus or all tabs
  – All commands + macros can be used
- Use for example Quick Access Toolbar for much used
  commands:

Quick access

Custom menu

Custom tab
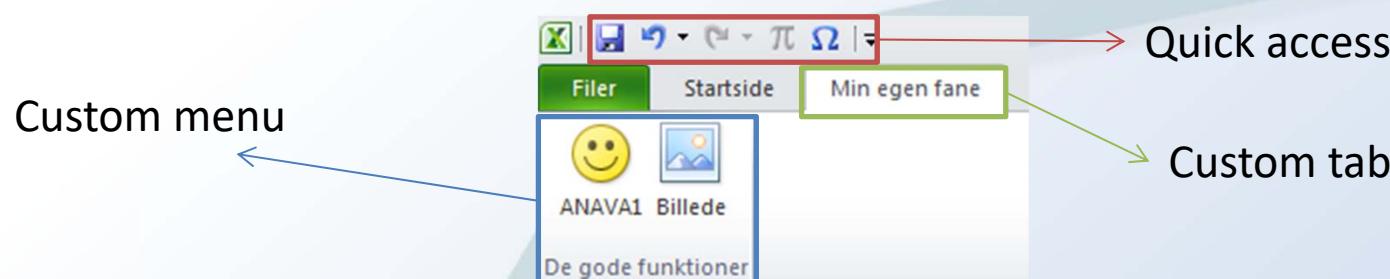
Questions

- If you have any further questions, please feel free to contact us at:
  - bss.it@au.dk
  - www.au.dk/it (which this presentation is also located)

Goal Seek

- Used to see the cause / effect of one variable
  - Available at Data tab → What-If Analysis → Goal Seek…

Finds the number of units that generates a turnover of 1000

- Expandable to Solver (not part of the course) if you have more than one criteria

Exercises

- Checklist
  - Extra Ex.: Conditional formatting: avg. = 0.466
  - Extra Ex.: Goal Seek: Interest rate = 6%

Appendix
Built-in Analysis and Descriptives

Built-in Analysis

- Add-in: File → Options → Add-Ins → Excel … → Analysis ToolPak → OK
  - Available under the Data tab → Data Analysis

- Contains various preinstalled outputs:
  - Descriptives
  - Z-tests
  - ANOVA (Analysis of variance, both one-sided / two-sided)
  - Correlation
  - Etc.

Built-in Analysis, ANOVA

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