NOVA IMS Information Management School

Introduction to MS Excel

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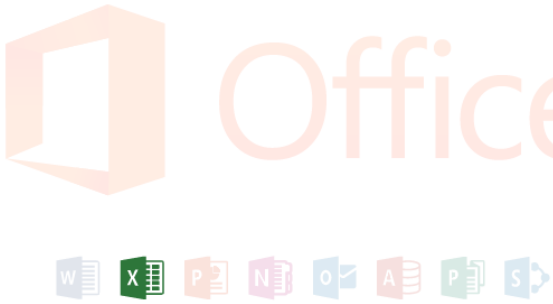
Acreditações e Certificações

Introduction to MS Excel

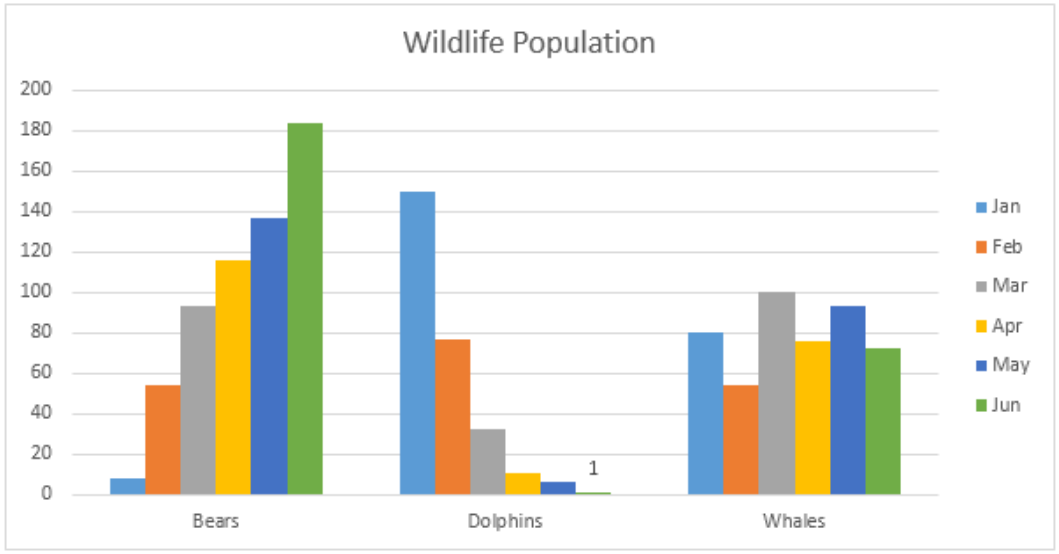
1. What is MS Excel and Why I should learn how to use it
2. Formulas
    1. Basic Functions: COUNT, SUM, AVERAGE, VAR.x, STDEV.x, MIN and MAX
    2. Logic Functions: IF
    3. Text Functions
        1. UPPER / LOWER
        2. CONCATENATE
        3. RIGHT / LEFT
    4. VLOOKUP
    5. Pivot tables
    6. Macros

What is MS Excel and Why I should learn how to use it

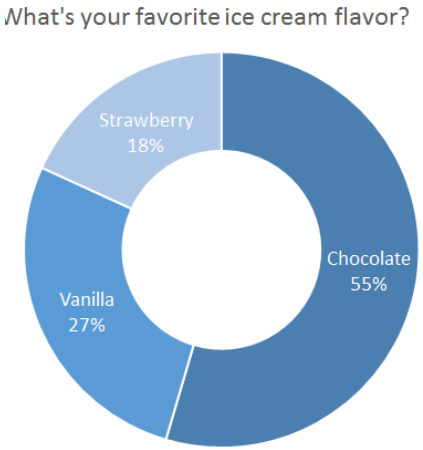
- Microsoft Excel is a software program that belongs to the Microsoft Office suite.
- It was released in 1985 and is one of the most used software in all kind of businesses.
- Even if you work with other softwares (eg. SAS), it is essential to know how to work in excel and at least know how to do some simple calculations, use formulas and build some graphs.
- Excel is a spreadsheet application where cells are arranged into rows and columns to organize and manipulate data.
- Of course, excel has some limitations regarding the number of rows or columns, or even their length. However, it remains as an indispensable tool.



What is MS Excel and Why I should learn how to use it

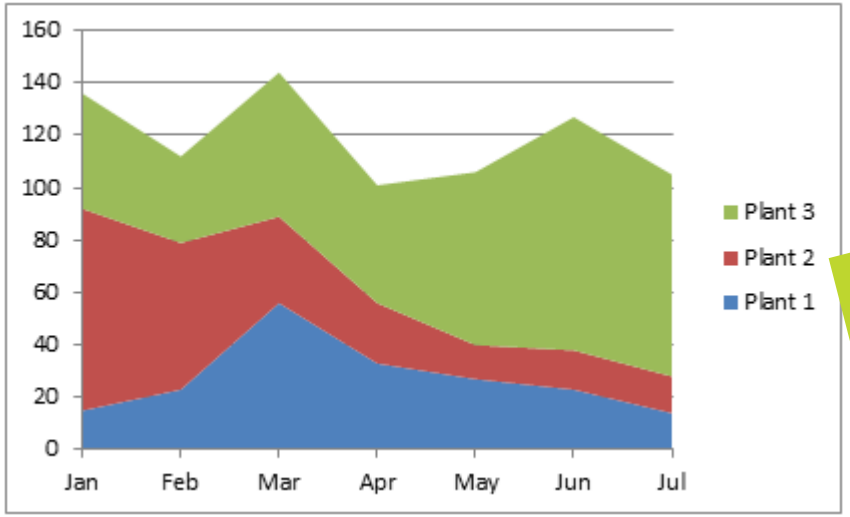


EXCEL

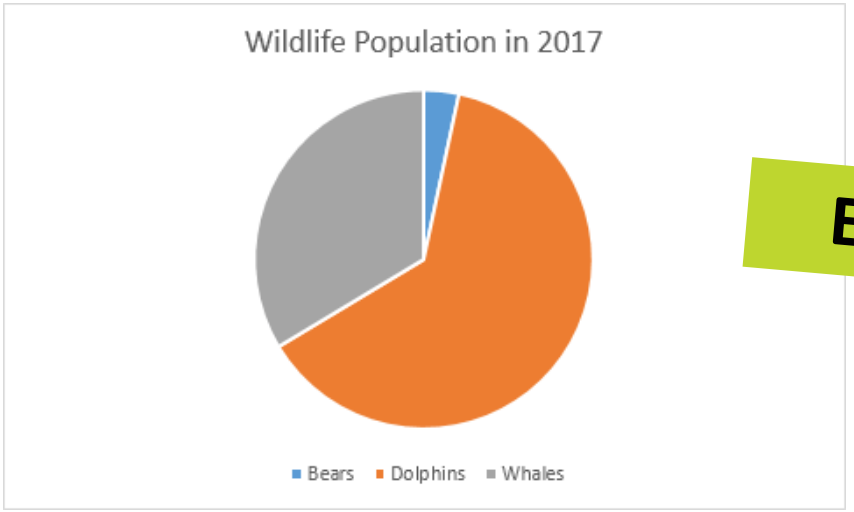


EXCEL

What is MS Excel and Why I should learn how to use it



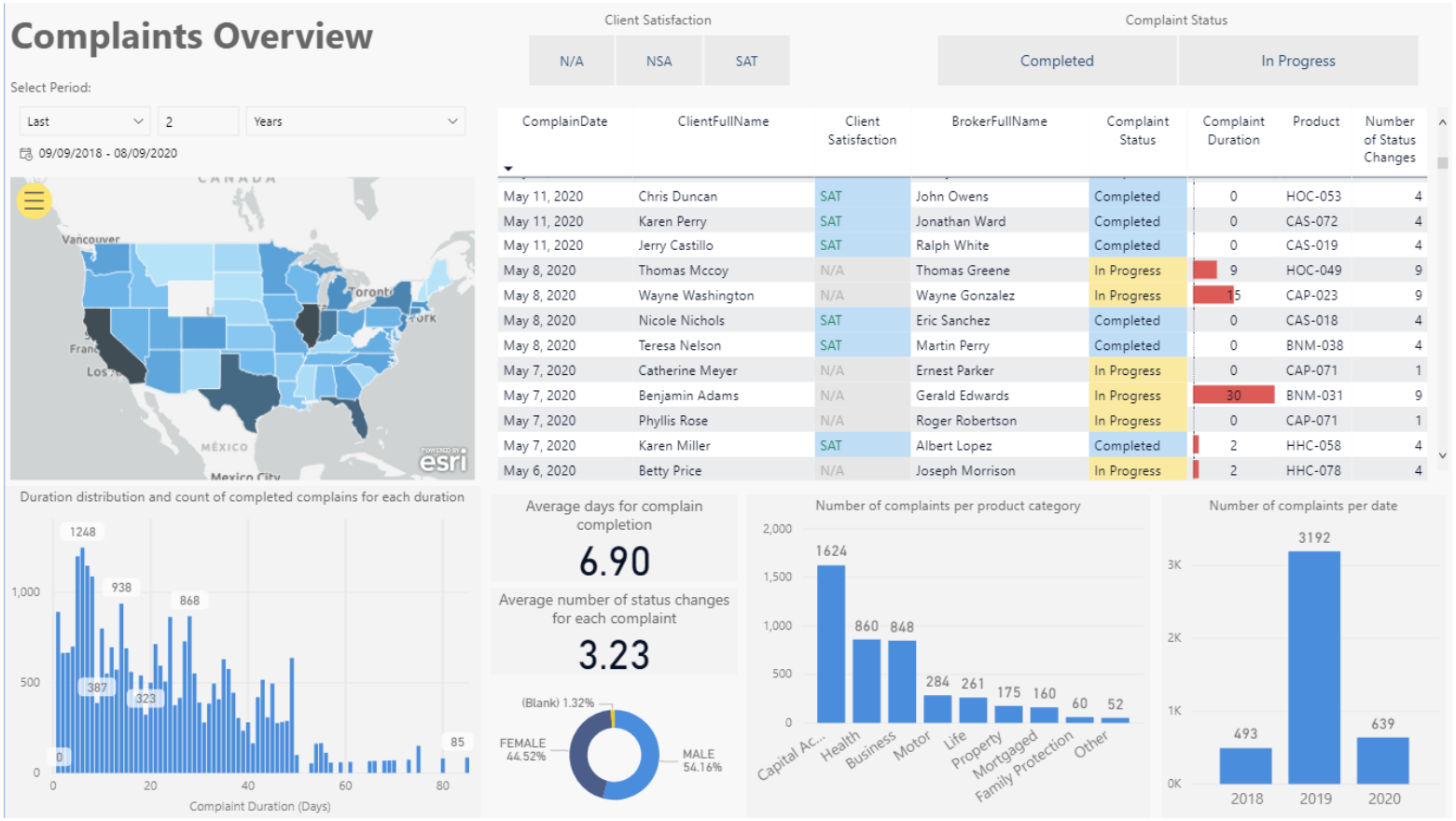
EXCEL



EXCEL

What is MS Excel and Why I should learn how to use it

this is PowerBI...



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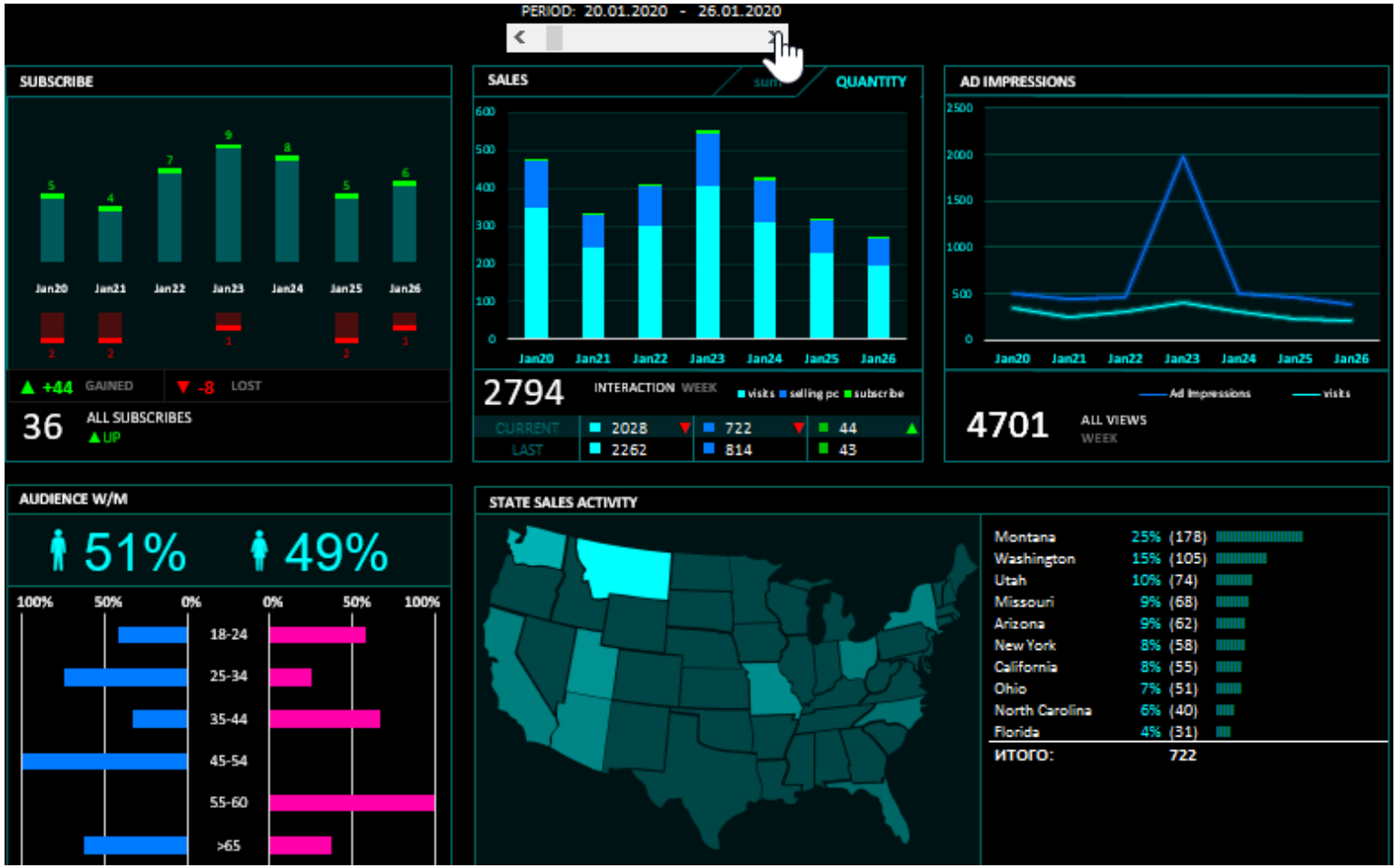
May 11, 2020	Chris Duncan	SAT	John Owens	Completed	0	HOC-053	4
May 11, 2020	Karen Perry	SAT	Jonathan Ward	Completed	0	CAS-072	4
May 11, 2020	Jerry Castillo	SAT	Ralph White	Completed	0	CAS-019	4
May 8, 2020	Thomas Mccoy	N/A	Thomas Greene	In Progress	9	HOC-049	9
May 8, 2020	Wayne Washington	N/A	Wayne Gonzalez	In Progress	15	CAP-023	9
May 8, 2020	Nicole Nichols	SAT	Eric Sanchez	Completed	0	CAS-018	4
May 8, 2020	Teresa Nelson	SAT	Martin Perry	Completed	0	BNM-038	4
May 7, 2020	Catherine Meyer	N/A	Ernest Parker	In Progress	0	CAP-071	1
May 7, 2020	Benjamin Adams	N/A	Gerald Edwards	In Progress	30	BNM-031	9
May 7, 2020	Phyllis Rose	N/A	Roger Robertson	In Progress	0	CAP-071	1
May 7, 2020	Karen Miller	SAT	Albert Lopez	Completed	2	HHC-058	4
May 6, 2020	Betty Price	N/A	Joseph Morrison	In Progress	2	HHC-078	4

What is MS Excel and Why I should learn how to use it



this is excel

Basic Functions: COUNT, SUM, AVERAGE, VAR.x, STDEV.X, MIN and MAX

exm: A|B|C|D
2|2|X|3

COUNT function

- counts the number of cells that contain numbers. (ignored otherwise)
- Eg. To count the number of cells in the range (with numbers) A1:A20, you just simply do **=COUNT(A1:A20)**

syntax: =<cmd>(<args>)

SUM function

- sums the values. You can add individual values, cell references or ranges or a mix of all three.
- Eg. **=SUM(A2:A10)**
  =SUM(A2:A10, C2:C10)

=sum(A1:D1)
=7

AVERAGE

- returns the arithmetic mean of the arguments used in the formula. For example, if the range A1:A20 contains numbers, the formula **=AVERAGE(A1:A20)** returns the average of those numbers.
- Attention: if the argument contains text, logical values, or empty cells, those values are ignored.

=average(A1:D1)
=(2+2+3)/3=...

Basic Functions: COUNT, SUM, AVERAGE, VAR.x, STDEV.X, MIN and MAX

VAR.x

.S = 1/(n-1) \sum_n(X-X_n)^2

.P = (1/n)\sum_n(X-X_n)^2

- returns the variance based on a sample (.S) or on the entire population (.P)
- **VAR.S** assumes that its arguments are a sample of the population. If your data represents the entire population, then compute the variance by using **VAR.P.**

variance is basically the distance from the mean
(for some reason it's squared and then rooted)

Syntax

VAR.x(number1,[number2],...)

Number1 - Required. The first number argument corresponding to a sample of a population / population

Number2, ... - Optional. Number arguments 2 to 254 corresponding to a sample of a population / population

first thing to do when working
with datasets: get the statistics

STDEV.x

- returns the standard deviation based on a sample (.S) or on the entire population (.P)
- syntax – the same as VAR.x

Basic Functions: COUNT, SUM, AVERAGE, VAR.x, STDEV.X, MIN and MAX

MAX

- returns the largest value in a set of values.

Syntax

MAX(number1, [number2], ...)

MIN

- returns the smallest number in a set of values.

Syntax

MIN(number1, [number2], ...)

Basic Functions: COUNT, SUM, AVERAGE, VAR.x, STDEV.X, MIN and MAX

1st DEMO

Logic Functions: IF, AND & OR

IF function

- is one of the most used functions in excel – it is a logic function
- with this function you can compare values with a certain one defined by yourself
- it can have 2 possible results. If the comparison is TRUE, then a first result is shown. The other result is shown if the comparison is FALSE

- Eg. =IF(A3=”Apple”,0,1)
  it means
  IF(A3 = Apple, then return 0, otherwise the cell value will be 1).

syntax:

=if(condition, value<=true, value<=false)

Logic Functions: IF, AND & OR

- You can also use a function as an argument of another function. When you do so, it is called nesting – it is a **nested function.**
- This happens a lot with the **IF** function.
- Sometimes it is necessary to nest the SUM function, for example. Or even you can nest another logic functions as AND and OR, as is shown further..
- You can nest up to 64 levels of functions within a formula.

- **Eg. =IF(SUM(A2:A5)<20, AVERAGE(A2:A5), 1)**

Text Functions: LEFT/RIGHT

LEFT

- returns the first character or characters in a text string, based on the number of characters you specify.
- LEFT(text, [num_chars])

RIGHT

- returns the last character or characters in a text string, based on the number of characters you specify.
- RIGHT(text,[num_chars])

- **Text** Required. The text string containing the characters you want to extract.
- **Num_chars** Optional. Specifies the number of characters you want to extract.

Text Functions: UPPER / LOWER & CONCATENATE

UPPER function

- It converts text to uppercase.

Syntax

UPPER(text)

LOWER function

- It converts all uppercase letters in a text string to lowercase.

Syntax

LOWER(text)

CONCATENATE function

- join two or more text strings into one string.

Syntax

CONCATENATE(text1, [text2], ...)

•Eg.

=CONCATENATE("Data Treatment", A1, " ", A4, " is ", A9)

=CONCATENATE(C4, " ",A5)

2nd DEMO

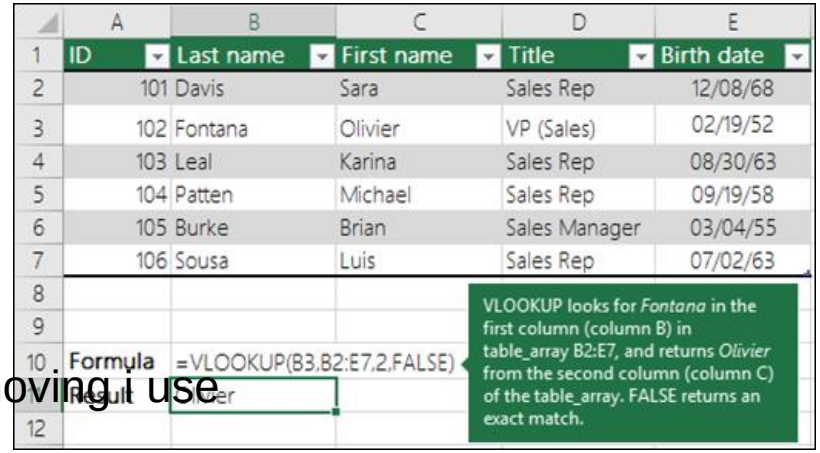
VLOOKUP

VLOOKUP function

- It allows you to find "things" within a table or a range, by row (if we want by column, we should use HLOOKUP, however this is not so used as VLOOKUP).

- =VLOOKUP(What you want to look up, where you want to look for it, the column number in the range containing the value to return, return an Approximate or Exact match – indicated as 1/TRUE, or 0/FALSE).

- When you specify TRUE, it means that the match can be approximate. When it is FALSE, then you want an exact. If you don't specify anything, the default value will always be TRUE.



	A	B	C	D	E
1	ID	Last name	First name	Title	Birth date
2	101	Davis	Sara	Sales Rep	12/08/68
3	102	Fontana	Olivier	VP (Sales)	02/19/52
4	103	Leal	Karina	Sales Rep	08/30/63
5	104	Patten	Michael	Sales Rep	09/19/58
6	105	Burke	Brian	Sales Manager	03/04/55
7	106	Sousa	Luis	Sales Rep	07/02/63
8					
9					
10	Formula	=VLOOKUP(B3,B2:E7,2,FALSE)			
11	Result	Olivier			
12					

VLOOKUP looks for *Fontana* in the first column (column B) in table_array B2:E7, and returns *Olivier* from the second column (column C) of the table_array. FALSE returns an exact match.

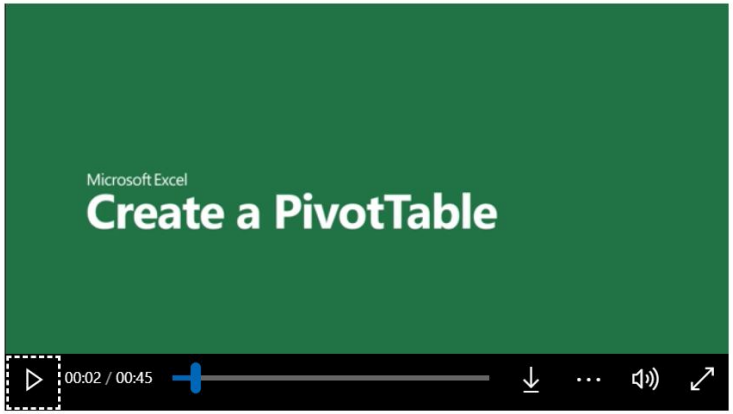
oss:

to block stuff from moving i use $<...>

3rd DEMO

Pivot Tables

- A PivotTable is a powerful tool to calculate, summarize, and analyze data that let you see comparisons, patterns, and trends in your data.



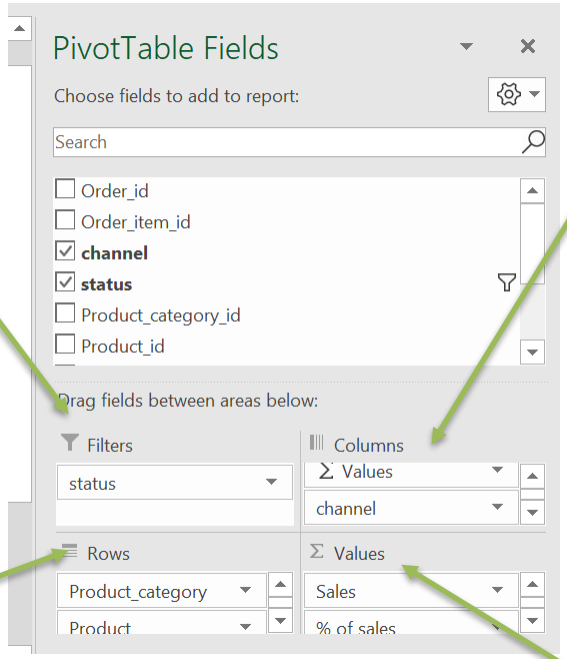
https://www.microsoft.com/en-us/videoplayer/embed/RWfyHX?pid=ocpVideo0-innerdiv-oneplayer&postJsllMsg=true&maskLevel=20&market=en-us

Use case: to get insights faster!

way of summarizing info faster

Pivot Tables

Filters – when you drag a field to the filters, your calculations can be filtered according with the attributes of that field. For example, you have a field named 'Store' that have as attributes: 'Store-Lisbon', 'Store-Porto', 'Store-Faro'. If you drag that field into the filters, your calculations can be filtered and only be based on the stores you selected



Columns – it is similar to the Rows field but here the attributes appear in the top of the table

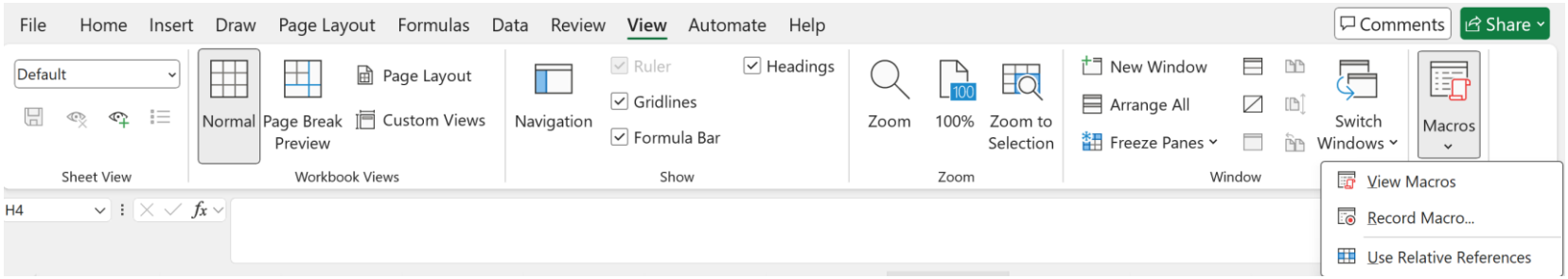
Rows - basically it selects the fields you want as rows. You can add many fields to the Row field. For example, if you put the fields 'Product category' and 'Product' as Rows, then the calculations will be summarized first by product category and then by product

Values – the field dragged here are summarized mathematically in the table. We can specify the type of calculation we want (sum, count, etc). However, if we don't specify, Excel will try to guess the best calculation to perform. You can change the type of calculation and other settings by clicking the data field and then Value Field Settings.

4th DEMO

Macros

- If you have tasks in Microsoft Excel that you do repeatedly, you can record a macro to automate those tasks. A macro is an action or a set of actions that you can run as many times as you want. When you create a macro, you are recording your mouse clicks and keystrokes. After you create a macro, you can edit it to make minor changes to the way it works.



5th DEMO

References

1. https://support.office.com/en-us/article/excel-functions-by-category-5f91f4e9-7b42-46d2-9bd1-63f26a86c0eb

2. Winston. Microsoft Excel 2016 Data Analysis and Business Modeling (2016).

3. Frederico Cruz Jesus (fjesus@novaims.unl.pt) and Catarina Neves (cneves@novaims.unl.pt) Data Treatment Slides (2019/2020).

Thank you!

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Acreditações e Certificações

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