

# Data Analysis Using

# EXCEL

*Presented by:*

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# OUTLINES

- *Introduction*
- *Data Importing*
- *Data Cleansing*
- *Data Manipulation*
- *Functions*
- *Chart*
- *Pivoting*
- *Sorting*
- *Advanced Filter*
- *Slicers*
- *Calculated Fields*



# Basics Review



# ***WORKSHOP EXPECTATIONS***



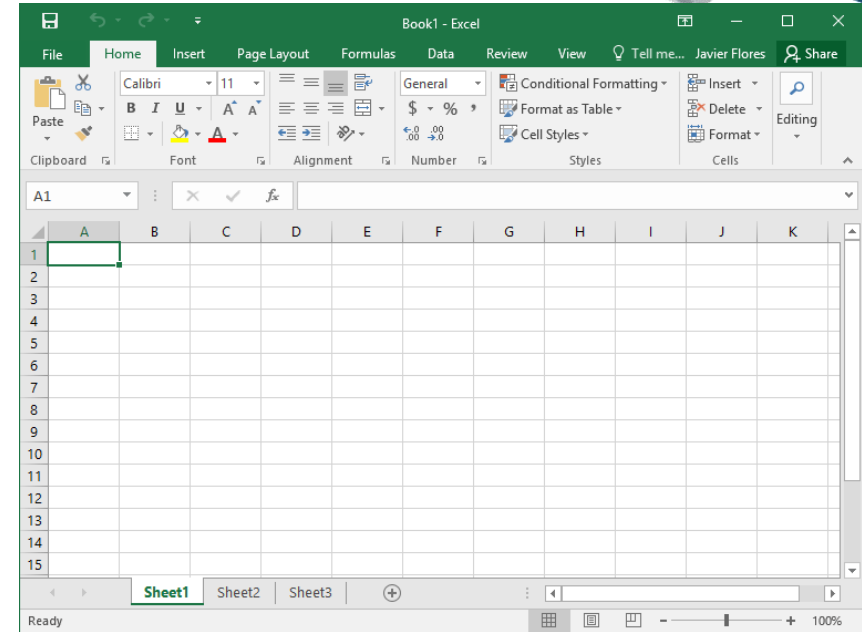
# What is MS-EXCEL?

- Excel is an **electronic spreadsheet** program that can be used for **storing** , **organizing** and **manipulating data**.
- It has a number of built in features and tools such as **functions**, **formulas**, **charts**, and **data analysis** tools that make it easier to work with large amounts of data.

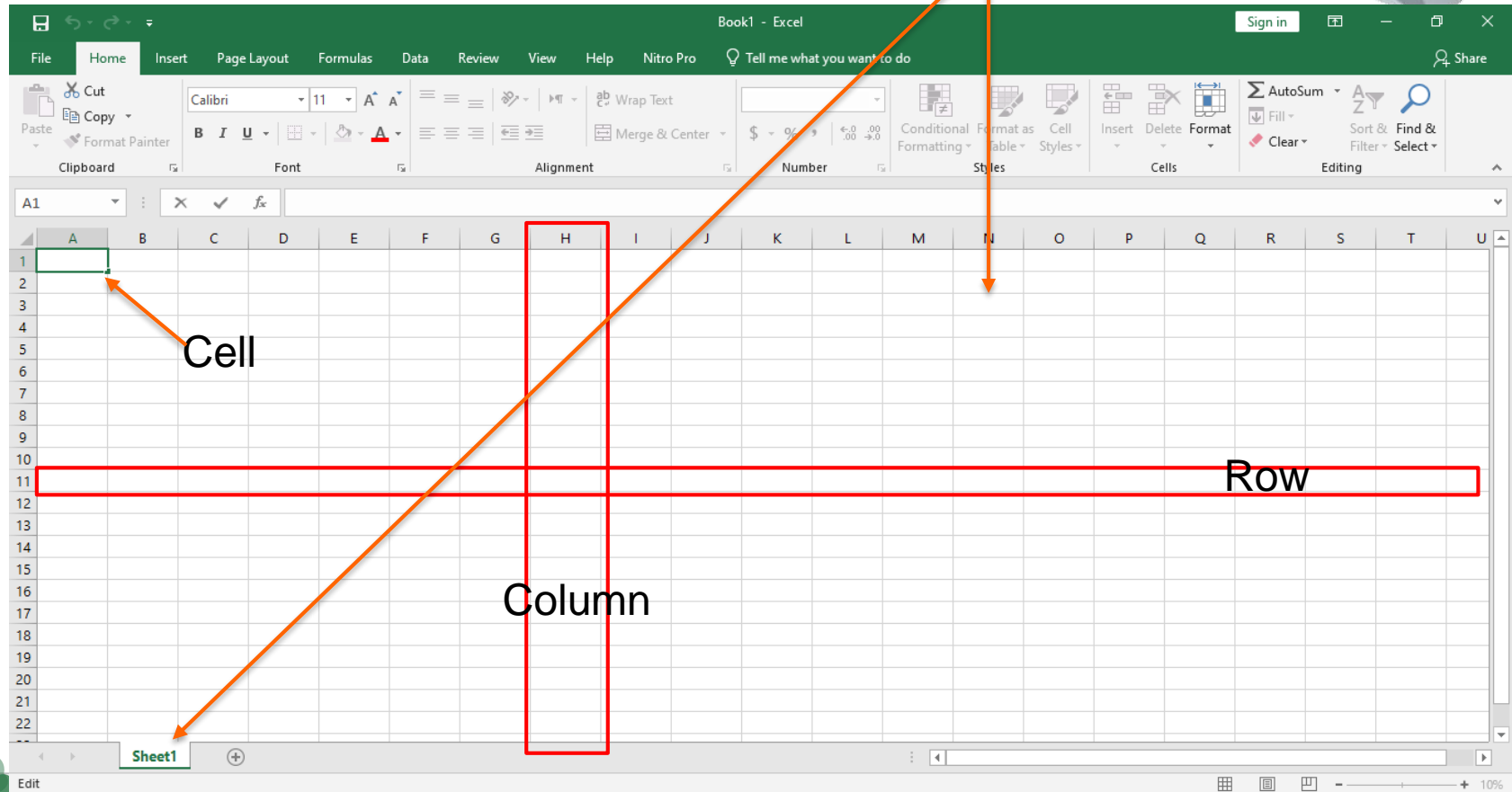


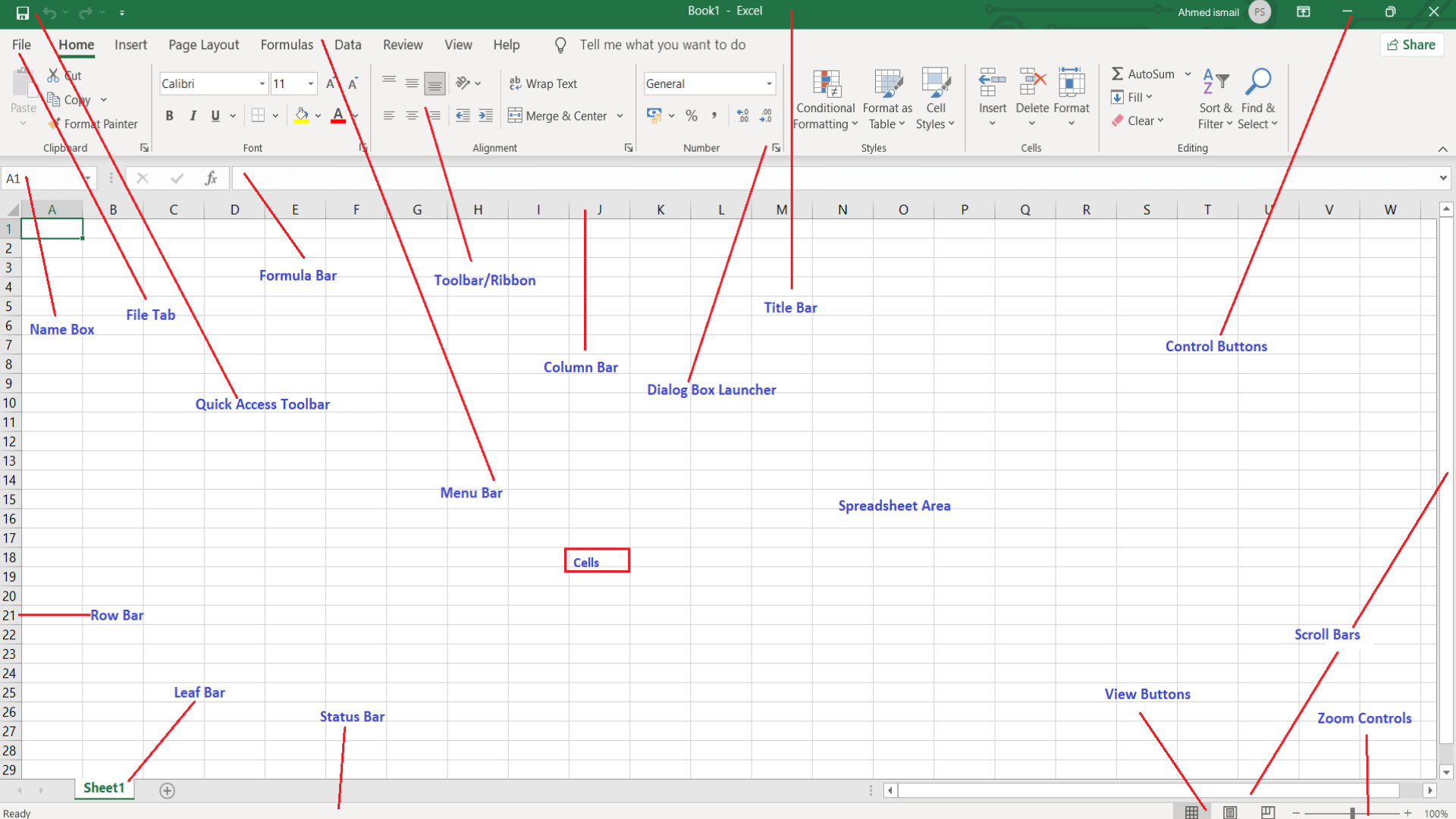
# Spread sheet

- A spreadsheet is a grid of rows and columns in which you enter text, numbers, and the results of calculations
- In Excel, a computerized spreadsheet is called a **worksheet**.
- The file used to store worksheets is called a **workbook**.
- Cells are arranged in rows and columns with each row being identified by a number and each column by a letter to make it easier to find and use the stored information.



# Spread sheet







# N.B

- The **cell** in the worksheet in which you can type data is called the **active cell**.
- The **Name Box**, or cell reference area, displays the cell reference of the active cell.
- The **Formula Bar** displays a formula when a worksheet cell contains a calculated value.
- A **formula** is an equation that calculates a new value from values currently in a worksheet.



# Data Types

In each cell there may be the following data types:

- Labels -- (text with no numerical value)
- Number data (constant values)
- Formulas (mathematical equation used to calculate)

Data Types	Examples	Descriptions
Label	Name or Wage or Days	anything that is <b>just text</b>
Constant	5 or 3.75 or -7.4	<b>any number</b>
Formula	=5+3 or = 8*5+3	<b>Math equation</b>



# Parameters Meaning

NUMBERS are VALUES

While

SYMBOLS are FUNCTIONS



Order	Symbols	Operation	Example
1	()	Parentheses	= $(5-2)*4 = 12$
2	:,	Reference operators	=SUM(A1:A5)
3	-	Negation	= $-3^2 = 9$
4	%	Percent	= $5\%*100 = 5$
5	^	Exponentiation	= $5^2*2 = 50$
6	* /	Multiplication and Division	= $7-6/2 = 4$
7	+ -	Addition and Subtraction	= $6/2+1 = 4$
8	&	Concatenation	= "score: "& $5+1 = \text{score: } 6$
9	> < = <>	Logical comparisons	= $3^2>5+3 = \text{TRUE}$



# Absolute Reference

\$A1	Allows the row reference to change, but not the column reference.
A\$1	Allows the column reference to change, but not the row reference.
\$A\$1	Allows neither the column nor the row reference to change.



# Relative and absolute cell reference

## Relative Reference

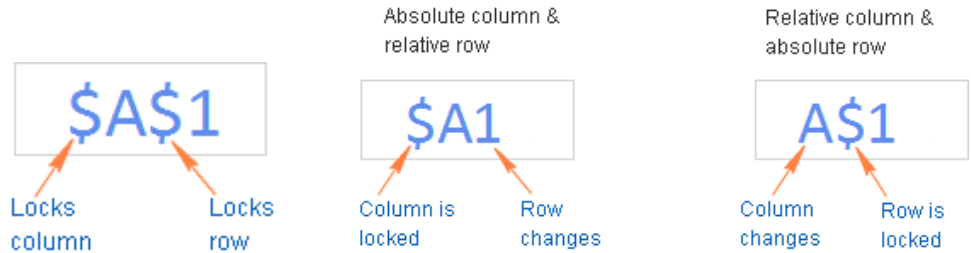
- Excel Default

COUNTIF	:	X	✓	<i>f<sub>x</sub></i>	=B2*C2
	A	B	C	D	E
1	Product	Quantity	Price	Amount	
2	bread	2	1.5	=B2*C2	
3	butter	1	1.2		
4	cheese	3	2		
5	ham	3	1.8		
6					

COUNTIF	:	X	✓	<i>f<sub>x</sub></i>	=B5*C5
	A	B	C	D	E
1	Product	Quantity	Price	Amount	
2	bread	2	1.5	3	
3	butter	1	1.2	1.2	
4	cheese	3	2	6	
5	ham	3	1.8	=B5*C5	
6					

## Absolute Reference

- An absolute reference refers to a **fixed location** on a worksheet.



		X	✓	<i>f<sub>x</sub></i>	=C3*\$D\$3
	B	C	D	E	F
	product	Quantity	price	total	Total 2
	bread	2	10	20	20
	butter	1	20	20	10
	cheese	3	30	90	30

# Starting

# Analysis

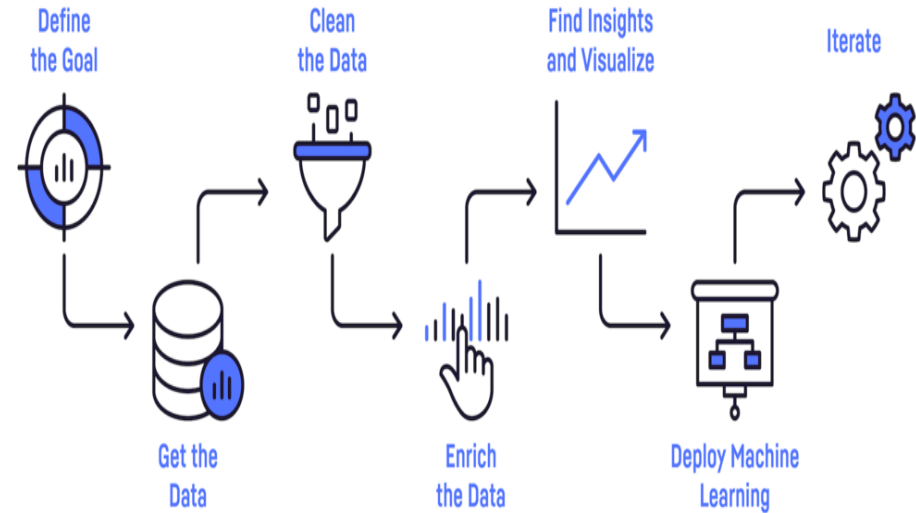


# What is Data Analysis?

Data analysis is the **process** of **cleansing**, **transforming**, and **analyzing** raw data to **obtain usable and understandable data** and information that can assist businesses in making educated decisions.

Data Analysis Process is comprised of the following phases:

1. Specification of Data Requirements
2. Data Gathering
3. Data Processing
4. Data Cleaning
5. Data Analysis
6. Data Communication



1. *List & Custom List*
2. *Text Separation*
3. *Sparklines*
4. *Basic Math Function*
5. *Functions*

<i>Logical Fun</i>	<i>Statistical Fun</i>	<i>Math</i>
<i>IF</i>	<i>AVERAGE</i>	<i>Sum</i>
<i>Nested IF</i>	<i>COUNT</i>	<i>Sum IF</i>
<i>OR</i>	<i>MAX</i>	<i>Even / ODD</i>
<i>And</i>	<i>MIN</i>	<i>Power</i>





# Functions

1

## Text

- Right
- Left
- Len
- Mid
- Trim
- Substitute
- Find
- Replace
- Concatenate

2

## Aggregation

- Max
- Min
- Sum
- Sum IF
- Sum IFs
- Subtotal

3

## Logical

- IF
- And
- OR
- IFS
- IF Error

4

## Statistical

- Average
- Average IF
- Average IFS
- Count
- Count IF
- Count IFs
- Count A
- Count blank
- Rank

5

## Lookup

- Vlookup
- Hlookup
- Xlookup
- Index
- Match
- GetPivotdata

6

## Validation

- ISBLANK
- ISFORMULA
- ISERROR

7

## Date & Time

- Network days
- Days
- Now



# Working with Data

6. *Conditional Formatting*
7. *Data Validation*
8. *Power Query & Data Manipulation*
  - *Files Importing*
  - *Data Transformation*
  - *Merge (Joins)*
  - *Append*
  - *Custom Columns*
  - *Loading types*
9. *Pivot Tables*
10. *Pivot Chart*
11. *Slicer*
12. *Calculated Field*
13. *Sorting*
14. *Advanced Filter*
15. *Simple Dashboard*



# What is Data Cleaning?

*Refining raw data, it is the process of identifying, deleting, and/or replacing inconsistent or incorrect information from the database. this technique ensures high quality of processed data and minimizes the risk of wrong or inaccurate conclusions. as such, it is the foundational part of data science.*



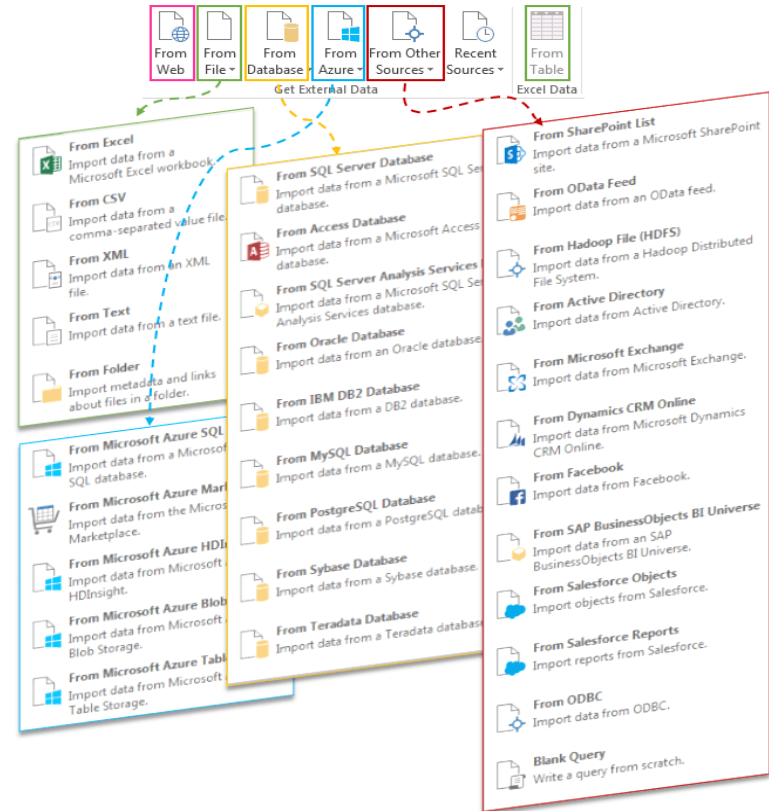
# Data Cleansing Techniques

1. *Removing Duplicates*
2. *Handling Missing Data*
3. *Correcting Incorrect Data*
4. *Handling Outliers*
5. *Normalizing Data*
6. *Validating Data Consistency*
7. *Transforming Data*



# What does Power Query do?

1. *Importing Data*
2. *Data types*
3. *Data Transformation*
4. *Merge & Joins*
5. *Append*
6. *Custom Columns*



# Dashboard Sample



## Data Visualization of Bike Sharing Consumer Marketing Research

Powered by 

### Average Sharing

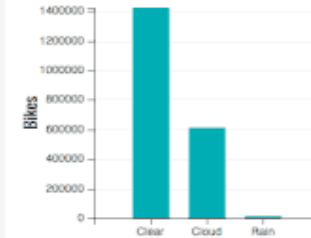
**Average**  
5600

**Standard  
Deviation**  
1786.22

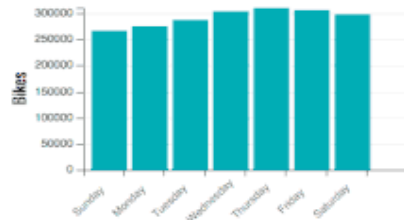
### Weekly Sharing



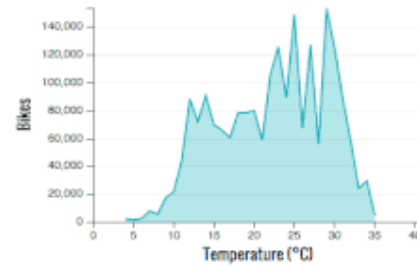
### Share By Weather



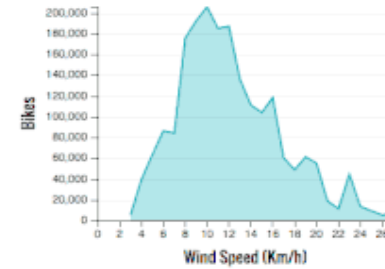
### Share By Day



### Share By Temperature



### Share By WindSpeed



# HR Management Dashboard

Source: Obvience

Actives Dashboard

Separations Dashboard

Total Emp 650  
54%  
46%  
353  
297

Hourly 92%  
Salary 8%  
82%  
18%

Full Time 28%  
Part Time 72%  
50%  
50%

172 165  
81 105  
44 83  
<30 30-49 50+  
F M

Turnover  
255% 256% 254%

Year  
2015 2016  
2017 2018

Full/Part

FT PT

Gender

F M

Region

Central

East

Midwest

North

Northwest

South

West

Ethnicity

Group A

Group B

Group C

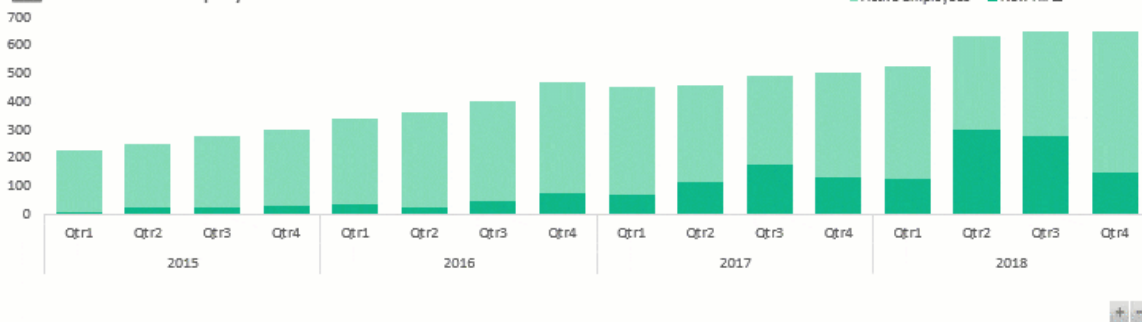
Group D

Group E

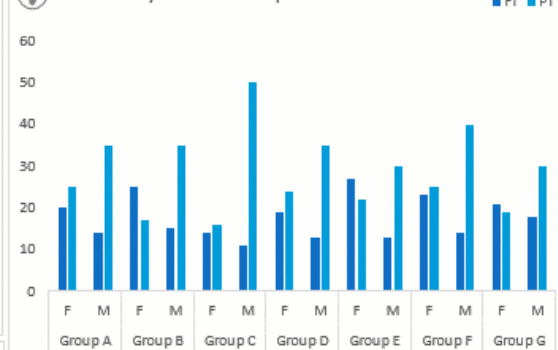
Group F

Group G

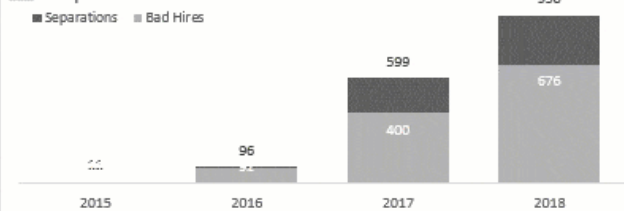
## Total Active Employees



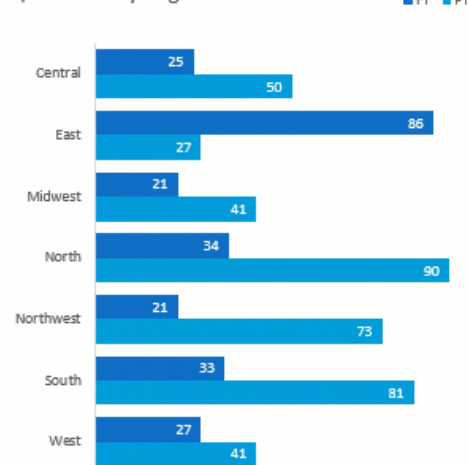
## Actives by Ethnic Group



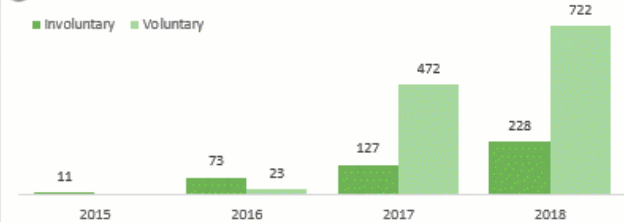
## Separations



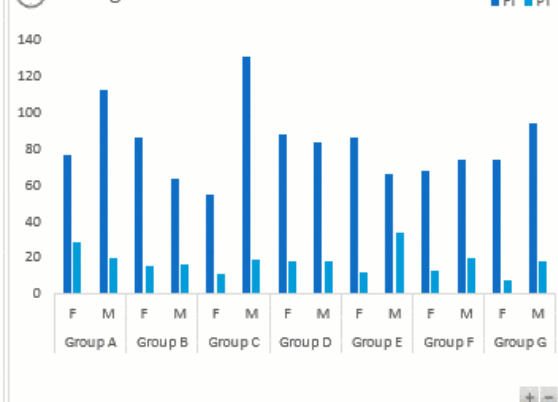
## Actives by Region



## Termination Reason



## Average Tenure - Months







Timeline

02y - 09m



Distribution Areas

5



Producers Brands

6



Unique Products

17



Sold Products

43,608



Sales Amount Achived

EGP 160,073,913



Gross Profit Margin

EGP 10,247,457

6.40%



2012 2013 2014

Qtr1 Qtr2 Qtr3 Qtr4

Jan Feb Mar

Apr May Jun

Jul Aug Sep

Oct Nov Dec

HTC iPhone

Microsoft Nokia

Samsung Sony

Galaxy Note

Galaxy S

HTC ONE

iPhone 5C

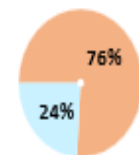
iPhone 5S

Lumia

Sony Xperia

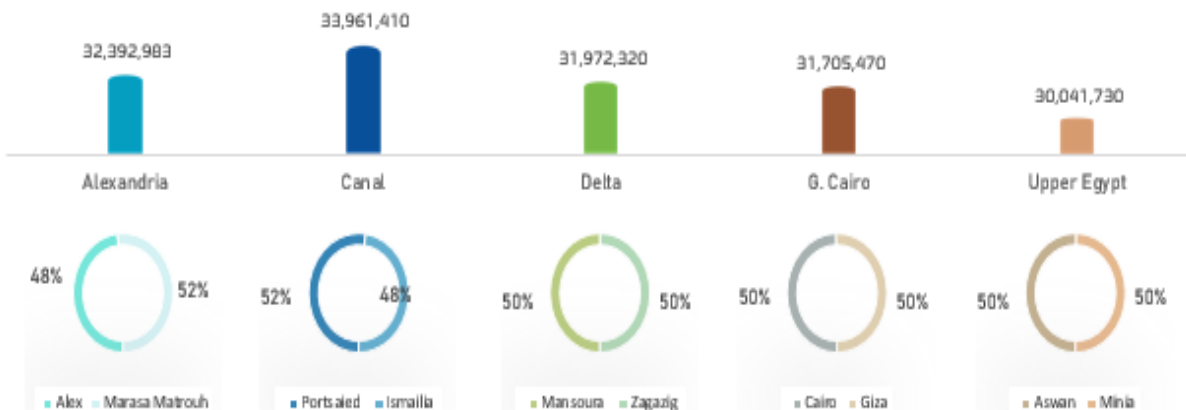
Surface Pro

## Achived Sales Timeline

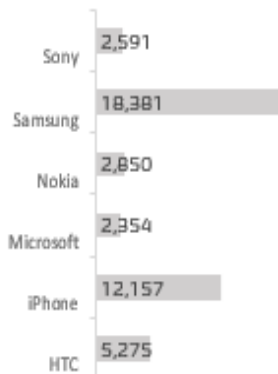


Smartphones Tablets

## Distribution Areas - Achived Sales



## Sold Products Quantities



# Questions?



# Thank You

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