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The Online R-FETPV 1st Module : Basic Epidemiology and Surveillance Data Analysis

5 April -28 May 2021



Food and Agriculture
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Basic Computer Skill and Data Management in Field Epidemiology Using MS Excel

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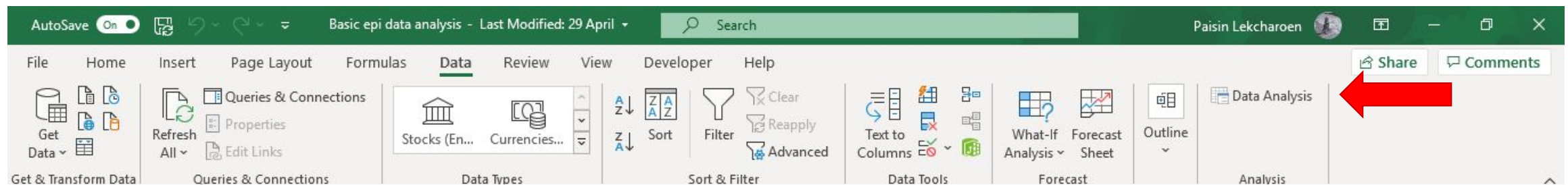


Outline

- Review basic calculations
- Part 1 Data entry & validation
- Part 2 Data conversion & grouping
- Part 3 Data cleaning & recoding
- Part 4 Data analysis: Pivot table
- Part 5 Data analysis: Data validation

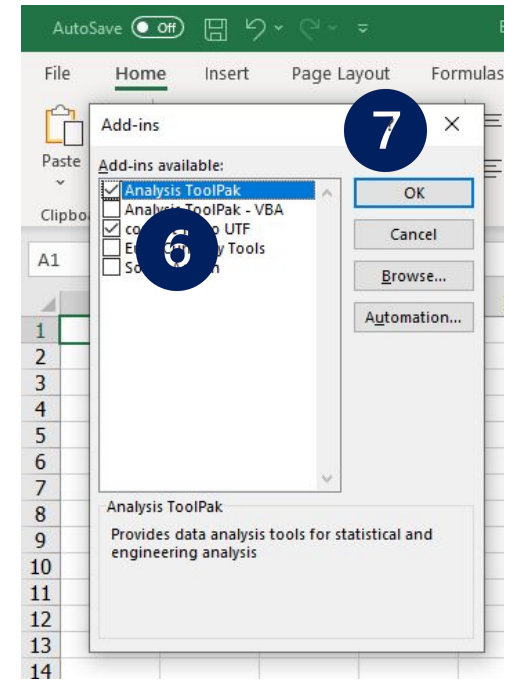
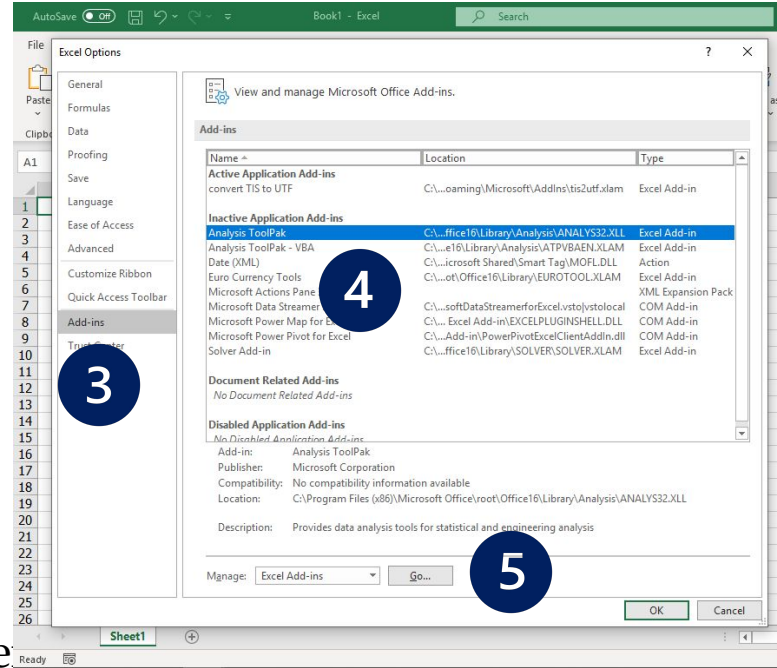
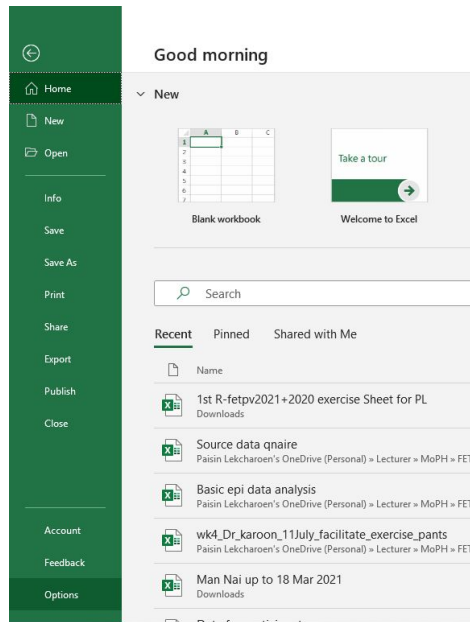
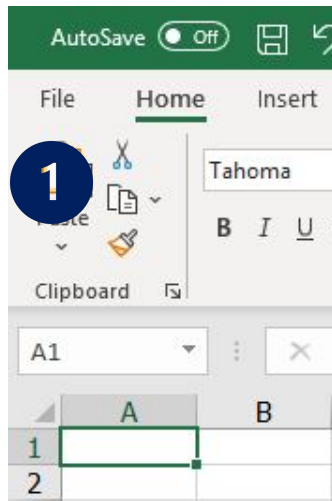
Pre-requirement

- Download:
 - MS Excel workbook named 'Basic epi data analysis'
 - Questionnaire_for_RFETPV_2021.pdf
 - Lab instruction MS Excel.pdf □ Answer the questions in Google form 'Epi Excel Exercise'
- Review basic calculation functions of MS Excel
- Check if 'Analysis Toolpak' add-in is already installed, the 'Data Analysis' tool must appear on MS Excel's toolbar



- If not, follow the instruction on the next page (*or in lab instruction page 4*)


Installing Analysis ToolPak

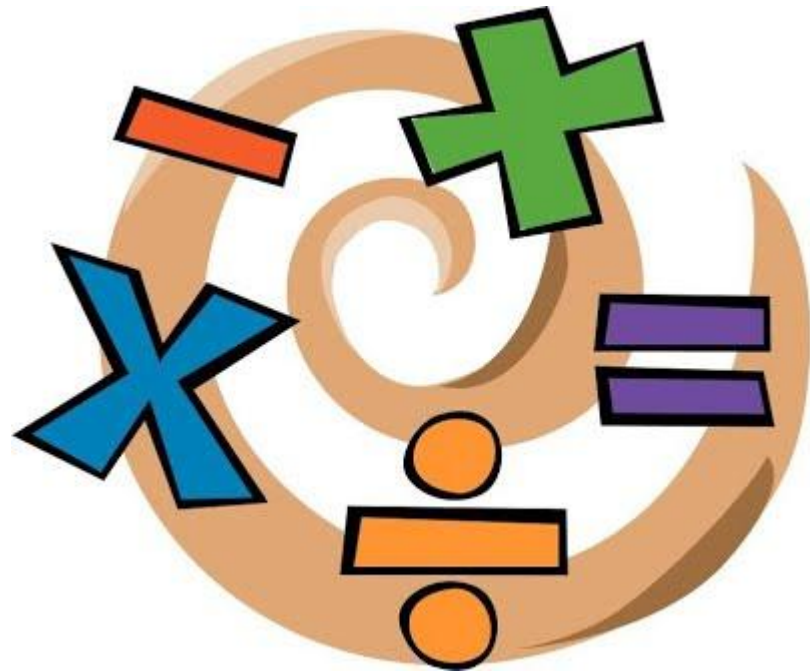


- This add-in is automatically installed when you install Microsoft Office
- Or you can do a custom install following above instructions
- If the add-in doesn't appear in 'Add-in' list, you can download it from:

<https://support.microsoft.com/th-th/office/%e0%b9%82%e0%b8%ab%e0%b8%a5%e0%b8%94-analysis-tool-pak-%e0%b9%83%e0%b8%99-excel-6a63e598-cd6d-42e3-9317-6b40ba1a66b4?ui=th-th&rs=th-th&ad=th>

Basic calculation functions

- Plus '+', minus '-', multiply '*', and divide '/'
- Power '^'
- Fix row and/or column '\$'
- Summation 'Sum'
-  *sheet 'BasicCommand'*



Part 1 Data entry and validation

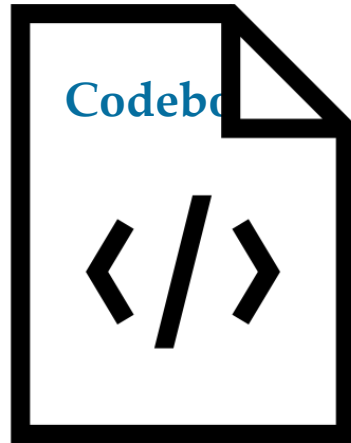
● Data entry

Familiarize with type of data

Data entry form



Codebook



- ✓ Heading
- ✓ Data format

- ✓ Keys linking variables and their possible values for each question
- ✓ Guide for interpretation

Questionnaire for R-FETPV trainee, 2021


Part I Personal information

- Q1. Given name - Last name ឈ្មោះអតិថិជន/ឈ្មោះស្រី | Q2. Age អាយុ ឈ្មោះស្រី Years
 Q3. Gender: Male Female Other Q4. Weight ទម្ងន់ Kg
 Q5. Height មុខងារ cm
 Q6. Nationality: Bhutanese Burmese Cambodian Chinese Filipino Indonesian
 Laotian Malaysian Nepalese Thai Vietnamese Other
 Q7. Education: Bachelor Master PhD Other
 Q8. Affiliation: Government Non-government Academic Other
 Q9. How long have you been in recent position? អាយុ Year(s)


Part II R-FETPV training

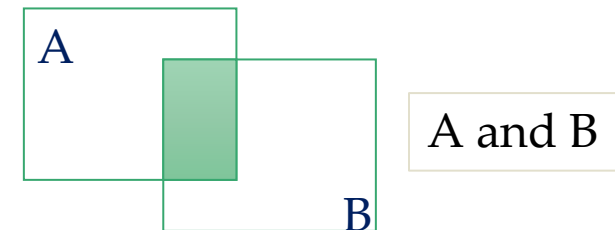
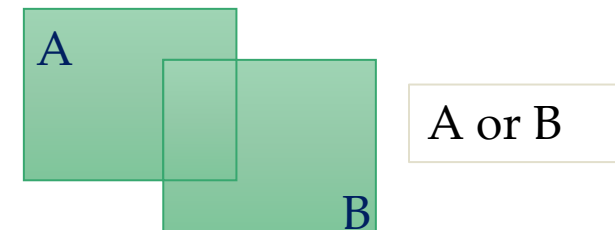
- Q10. Do you have previous experience in field epidemiology training? Yes No
- Q11. What species are studied in your animal health situation analysis? (choose all that applicable) Aquatic Poultry Ruminant Swine Horse Dog and cat Wildlife Other
- Q12. What types of health problem related to your animal health situation analysis? Non-infectious Infectious >> (Virus Bacteria Protozoa Helminth Multiple) Other
- Q13. How often is your activity when you free from this training in a week?
- | | |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Going to cinema | <input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always |
| Watching TV | <input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always |
| Watching YouTube | <input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always |
| Physical exercise | <input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always |
| Shopping | <input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always |
| Go walking/sightseeing | <input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> <u>Always</u> |
| Eating | <input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always |
| Sleeping | <input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always |
| Reading magazine/comics | <input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always |
| Cooking | <input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always |
| Meditation | <input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always |
| Talking with friends | <input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always |
| Chatting via social media | <input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Sometimes <input type="checkbox"/> Often <input type="checkbox"/> Always |

Part 1 Data entry and validation

- Data validation (when entering data)
 - Define cell property (text, number, date, time, ...)
 - Define a list of values allowed
- Codebook
 - A sheet indicating detail, type, and possible values of variables
 - Use as reference, esp. when more than one people entering data
- Data protection
 - Lock/unlock cell to allow/disallow data manipulation
 - Protect worksheet to prevent accidental change of your setting on your worksheet by other people
-  sheet '*Prt1Entry&Validation*'

Part 2 Data conversion & grouping

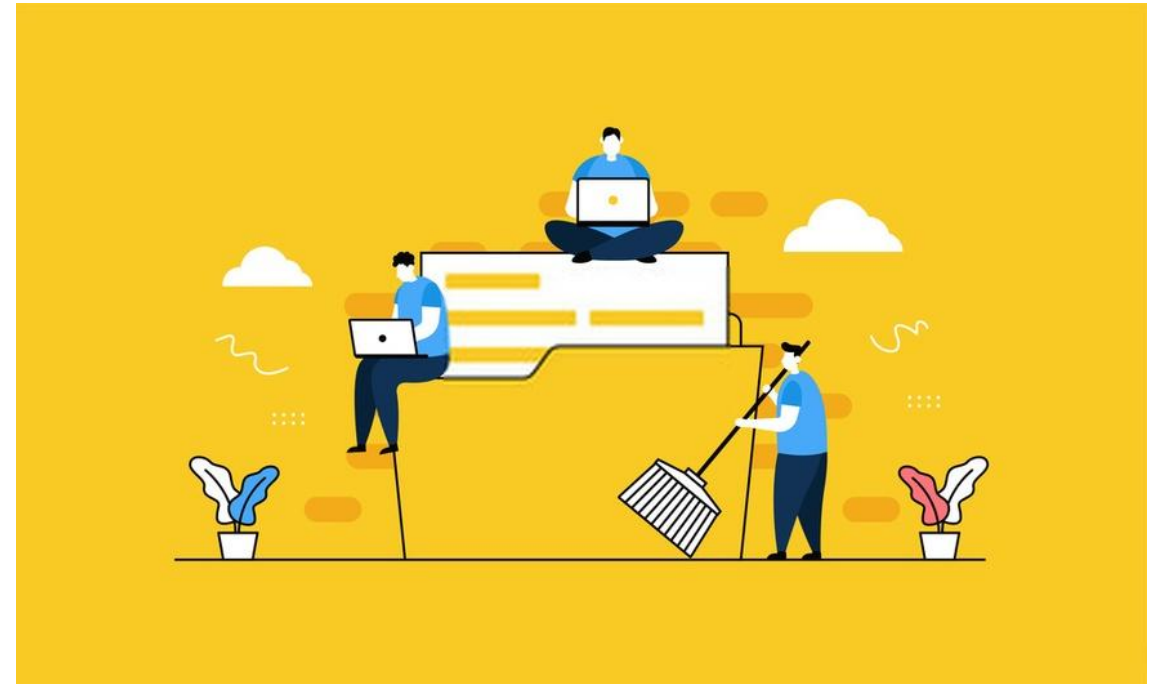
- 'Text to columns'
 - Split a single column of text into multiple columns
- 'If', 'Or' and 'And'
 - Checks whether a condition is met, returns a specified value if TRUE, another value if FALSE
 - Checks whether an argument is TRUE or FALSE
- 'Left', 'Right', 'Concatenate'
 - Returns a specified number of character from the 'start' or 'end' of a text string
 - Joins several text strings into one text string
- Vlookup
 - Looks for a value in the leftmost column of a table, then return a value in the same row from a column you specify
-  sheet 'Prt2Conversion' & 'Vlookup'



Var1	Var2
A	1
B	2
C	1
D	3

Part 3 Data cleaning and recoding

- Process of fixing/removing incorrect, corrupted, incorrectly formatted, duplicate, or incomplete data within a dataset
- If data is incorrect, outcomes & algorithms are unreliable
- No one absolute way to prescribe exact steps in cleaning processes
 - Removing duplicate or irrelevant observations
 - Fix structural errors
 - Filter unwanted outliers
 - Handle missing data
 - Validate and QA




Part 3 Data cleaning and recoding

- Basic validation
 - ❑ Does data make sense?
 - ❑ Does data follow appropriate rules for its field?
 - ❑ Does it prove or disprove your working theory, or bring any insight to light?
 - ❑ Can you find trends in data to help you form your next theory? If not, is that because of a data quality issue?



- 5 characteristics of quality data
 - **Validity**: the degree to which your data conforms to defined business rules or constraints
 - **Accuracy**: ensure your data is close to the true values
 - **Completeness**: the degree to which all required data is known
 - **Consistency**: ensure your data is consistent within the same dataset and/or across multiple data sets
 - **Uniformity**: the degree to which data is specified using the same unit of measure
- Some Excel functions
 - ❑ Filter
 - ❑ Data validation
 - ❑ Pivot table

Part 3 Data cleaning and recoding


- Recoding or transformation
 - Converting data from one format or structure into another
 - Data wrangling or munging
 - Transforming and mapping from 'raw' data form into another 'analyzable' format
- Some Excel functions
 - Vlookup
 - Find and Replace
-  sheet 'Prt3Clean' & 'Prt3recode'

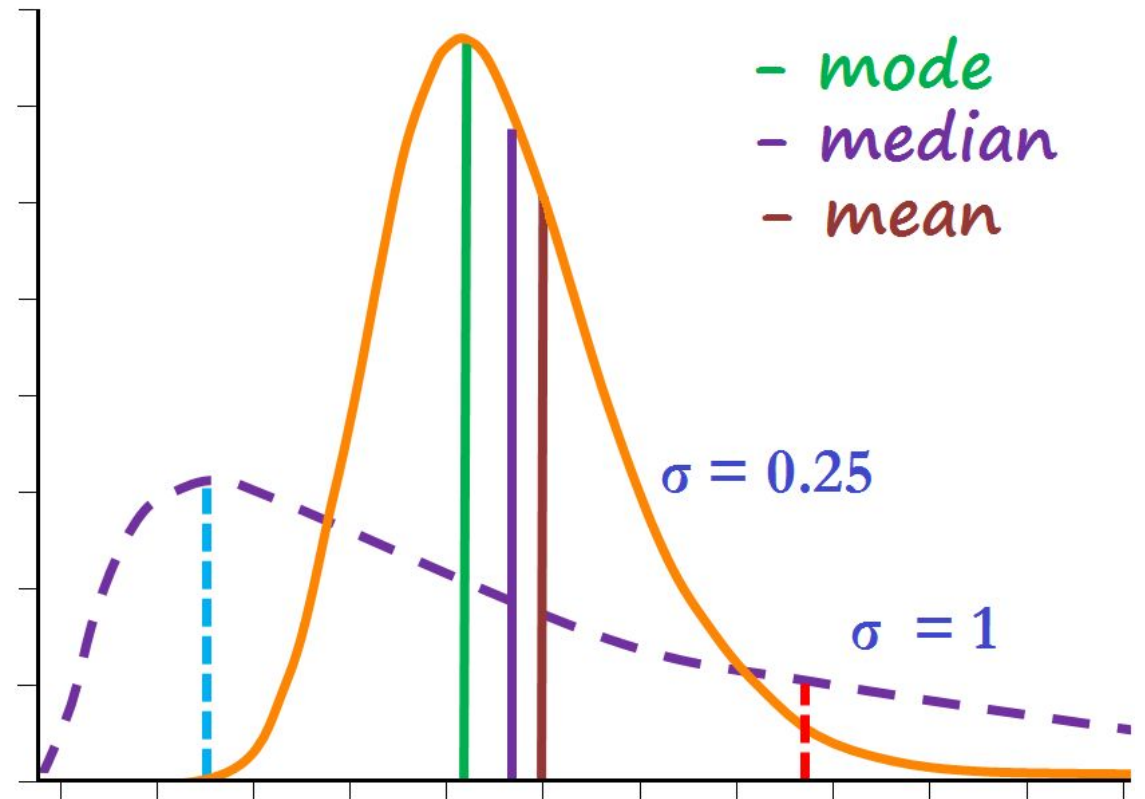
Raw data	Recoded data
<50	A
51-100	B
A	1
B	2
C	3

Part 4 & 5 Descriptive data analysis

- Central tendency & variability
 - Mean, Mode, Median
 - SD, range, min, max, IQR
- Frequency, proportion & percentage
- RR, OR & 95%CI

- Some Excel functions
 - Pivot table
 - Data analysis
 - Descriptive statistics
 - F-Test
 - t-Test
 - ANOVA

-  Sheet 'Prt4Pivot' & 'Prt5Dataana'



Thank You

