## Date management 101

## How to prepare your survey data for statistical analysis

ICME Yuki Izumi, D2

## What we image (or hope)



If you have read the surver request and are willing to completet the surver. please
click beow to p poceed to the surey.


O lagre and proceest to the surver

Google Form


Excel


Statistical Analysis

## What actually it is



Google Form


Statistical Analysis

## Steps to prepare your survey data for statistical analysis

1. Review Data Structure
2. Handle missing values
3. Correct errors
4. Deal with outliers

Data cleaning
5. Format Variables

Today's topic
6. Rename Variables
7. Organize Data
8. Remove Unnecessary Information
9. Create a data dictionary

## Your goals



## Correctly

Formatted, organized, and clean data

## Data dictionary

## Suggested data format

| 1 | ID | Q01 | Q02 | Q03 | Q04 | Q05 | Q06 | Q07-1 | Q07-2 | Q07-3 | Q07-4 | Q08 | Q09-1 | Q09-2 | Q09-3 | Q09-4 | Q09-5 | Q09-6 | Q09-7 | Q09-8 | Q09-9 | Q09-10 | Q09-11 | Q09-12 ${ }^{\text {c }}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2 | 1 | 54 | 30 | 1 | 1 | 1 | 7 | 1 | 1 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 2 | 31 | 9 | 0 | 0 | 1 | 3 | 1 | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 3 | 59 | 37 | 1 | 0 | 1 | 9 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |
| 5 | 4 | 34 | 13 | 1 | 1 | 0 | 8 | 1 | 0 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 6 | 5 | 54 | 32 | 1 | 0 | 1 | 6 | 1 | 0 | 1 | 0 | 3 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 7 | 6 | 27 | 5 | 1 | 0 | 0 | 6 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 8 | 7 | 48 | 19 | 0 | 1 | 1 | 4 | 1 | 1 | 1 | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 9 | 8 | 30 | 5 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 9 | 32 | 9 | 0 | 0 | 0 | 4 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 10 | 37 | 16 | 1 | 0 | 1 | 7 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| 12 | 11 | 34 | 14 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 13 | 12 | 51 | 8 | 1 | 1 | 1 | 8 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 13 | 25 | 3 | 1 | 0 | 0 | 5 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 15 | 14 | 49 | 28 | 0 | 0 | 1 | 6 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| 16 | 15 | 23 | 2 | 1 | 0 | 0 | 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |

## Suggested data format

1. All variables are represented with numbers.
2. Information for a single subject is contained within a single row.
3. Each column contains only one characteristic.
4. Numeric values used for analysis should be precomputed.
5. Delete all the unnecessary columns unrelated to the analysis.
6. All questions are displayed with an Item Number.
7. Use "general format" for all cells.

## Suggested data format

## 1. All variables are represented with numbers.

2. One subject, one row.
3. One characteristic, one column.
4. Numeric values used for analysis should be precomputed.
5. Delete all the unnecessary columns unrelated to the analysis.
6. All questions are displayed with an Item Number.
7. Use "general format" for all cells.

## 1. Label all the categorical values with numbers



Make sure to make a note for each label!

## 1. Label all the categorical values with numbers



## The order of replacement is tricky!

- Strongly agree
- Agree

■ Somewhat agree

If you replace all "agree" with 2 first, you will get. .

- Strongly 2
- 2
- Somewhat 2


## The order of replacement is tricky!

Start by replacing "strongly agree" first. 1<br>Start by replacing "strongly agree" first.<br>- Agree<br>- Somewhat agree

Then, replace "somewhat agree" with 3

- 1
- Agree
- 3

Replace "agree" with 2 at the end.
■ 1

- 2
- 3


## Suggested data format

1.All variables are represented with numbers.
2.One subject, one row.
3.One characteristic, one column.
4.Numeric values used for analysis should be precomputed.
5.Delete all the unnecessary columns unrelated to the analysis.
6.All questions are displayed with an Item Number.
7.Use "general format" for all cells.

## 2. one subject, one row

| 1 | ID | Q01 | Q02 | Q03 | Q04 | Q05 | Q06 | Q07-1 | Q07-2 | Q07-3 | Q07-4 | Q08 | Q09-1 | Q09-2 | Q09-3 | Q09-4 | Q09-5 | Q09-6 | Q09-7 | Q09-8 | Q09-9 | Q09-10 | Q09-11 | Q09-12 ${ }^{\text {c }}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 2 | 1 | 54 | 30 | 1 | 1 | 1 | 7 | 1 | 1 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 2 | 31 | 9 | 0 | 0 | 1 | 3 | 1 | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 3 | 59 | 37 |  |  |  | 9 | 1 | 1 | 1 | 0 |  |  |  | 0 | - 0 | 1 | 0 |  | 1 | -1 | 1 | 0 | 0 |
| 5 | 4 | 34 | 13 | 1 | 1 | 0 | 8 | 1 | 0 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 6 | 5 | 54 | 32 | 1 | 0 | 1 | 6 | 1 | 0 | 1 | 0 | 3 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 7 | 6 | 27 | 5 | 1 | 0 | 0 | 6 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 8 | 7 | 48 | 19 | 0 | 1 | 1 | 4 | 1 | 1 | 1 | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 9 | 8 | 30 | 5 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 9 | 32 | 9 | 0 | 0 | 0 | 4 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 10 | 37 | 16 | 1 | 0 | 1 | 7 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| 12 | 11 | 34 | 14 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 13 | 12 | 51 | Q | 1 | 1 | 1 | Q | 1 | 1 | 1 | 0 | 1 | 1 | 1 | $n$ | $n$ | n | $n$ | n | 0 | $n$ | $n$ | $n$ | n |

## 2. One subject, one row

Mr. A: $1^{\text {st }}$ response
Mr. B: $1^{\text {st }}$ response
Mr. C: $1^{\text {st }}$ response
Mr. D: $1^{\text {st }}$ response
Mr. A: $2^{\text {nd }}$ response
Mr. B: $2^{\text {nd }}$ response
Mr. C: $2^{\text {nd }}$ response
Mr. A: $1^{\text {st }}$ response $\mathrm{Mr} . \mathrm{A}: 2^{\text {nd }}$ response Mr. A: $3^{\text {rd }}$ response
Mr. B: $1^{\text {st }}$ response $M r$ B: $2^{\text {nd }}$ response $M r$ B: $3^{\text {rd }}$ response
Mr. C: $1^{\text {st }}$ response Mr C: $2^{\text {nd }}$ response Mr C: $3^{\text {rd }}$ response
Mr. D: $1^{\text {st }}$ response $M r$. D: $2^{\text {nd }}$ response $M r$ D: $3^{\text {rd }}$ response
Mr. D: $2^{\text {nd }}$ response
Mr. A: $3^{\text {rd }}$ response
Mr. B: $3^{\text {rd }}$ response
Mr. C: $3^{\text {rd }}$ response
Mr. D: $3^{\text {rd }}$ response

## Suggested data format

1.All variables are represented with numbers.
2.One subject, one row.
3.One characteristic, one column.
4.Numeric values used for analysis should be precomputed.
5.Delete all the unnecessary columns unrelated to the analysis.
6.All questions are displayed with an Item Number.
7.Use "general format" for all cells.

## 3. One characteristic, one column



## 3. One characteristic, one column

## Checkbox question

Q4.
Please select all the medical fields below that apply to the ones you are regularly engaged with to provide prostheses/orthoses.orthopedicrehabilitationlower extremity woundothers

## 3. One characteristic, one column

| Engaged fields |
| :--- |
| orthopedic, rehabilitation, others |
| orthopedic, lower extremity wound |
| rehabilitation, lower extremity wound, others |
| orthopedic |
| orthopedic, rehabilitation |
| orthopedic, lower extremity wound |
| rehabilitation, lower extremity wound, others |


| Orthopedic | Rehabilitation | LE wounds | Others |
| :---: | :---: | :---: | :---: |
| 1 | 1 | 0 | 1 |
| 1 | 0 | 1 | 0 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 0 |
| 1 | 1 | 0 | 0 |
| 1 | 0 | 1 | 0 |
| 0 | 1 | 1 | 1 |

=COUNTIF(A2,"*Orthopedic*")

## Suggested data format

1.All variables are represented with numbers.
2.One subject, one row.
3.One characteristic, one column.
4. Numeric values used for analysis should be precomputed.
5.Delete all the unnecessary columns unrelated to the analysis.
6.All questions are displayed with an Item Number.
7.Use "general format" for all cells.

## 4. Calculate all the necessary variables

| subscale1 | subscale2 | subscale3 | subscale4 | age | Yrs in practice |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 1 | 2 | 1 | 56 | 44 |
| 3 | 3 | 1 | 4 | 62 | 88 |
| 4 | 1 | 5 | 1 | 33 | 66 |
| 3 | 2 | 4 | 0 | 58 | 43 |
| 4 | 1 | 4 | 4 | 70 | 78 |
| 5 | 3 | 1 | 5 | 43 | 97 |
| 2 | 1 | 1 | 1 | 28 | 43 |


| subscale1 | subscale2 | subscale3 | subscale4 | total | ave | age | Yrs in practice |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 1 | 2 | 1 | 5 | 1.25 | 56 | 44 |
| 3 | 3 | 1 | 4 | 11 | 2.75 | 62 | 88 |
| 4 | 1 | 5 | 1 | 11 | 2.75 | 33 | 66 |
| 3 | 2 | 4 | 0 | 9 | 2.25 | 58 | 43 |
| 4 | 1 | 4 | 4 | 13 | 3.25 | 70 | 78 |
| 5 | 3 | 1 | 5 | 14 | 3.5 | 43 | 97 |
| 2 | 1 | 1 | 1 | 5 | 1.25 | 28 | 43 |

## Suggested data format

1.All variables are represented with numbers.
2.One subject, one row.
3.One characteristic, one column.
4.Numeric values used for analysis should be precomputed.
5. Delete all the unnecessary columns.
6.All questions are displayed with an Item Number.
7.Use "general format" for all cells.

## 5. Delete unnecessary column




## Suggested data format

1.All variables are represented with numbers.
2.One subject, one row.
3.One characteristic, one column.
4.Numeric values used for analysis should be precomputed.
5.Delete all the unnecessary columns unrelated to the analysis.
6.All questions are displayed with an Item Number.
7.Use "general format" for all cells.

## 6. Label questions with item numbers

|  | A | B | C | D | E | F | G | H | I | J | K | L | M | N | 0 | P | Q | R | S | T | U | $\checkmark$ | W | X |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 |  | Q01 | Q02 | Q03 | Q04 | Q05 | Q06 | Q07-1 | Q07-2 | Q07-3 | Q07-4 | Q08 | Q09-1 | Q09-2 | Q09-3 | Q09-4 | Q09-5 | Q09-6 | Q09-7 | Q09-8 | Q09-9 | Q09-10 | Q09-11 | Q09-12 |  |
| 2 | 1 | 54 | 30 | 1 | $1$ | 1 | 7 | $1$ | - 1 | 1 | 0 | 3 | - 1 | - 0 |  |  |  | $0$ |  |  | $0$ | $0$ |  |  |  |
| 3 | 2 | 31 | 9 | 0 | 0 | 1 | 3 | 1 | 1 | 0 | 0 | 2 | 1 | 1 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| 4 | 3 | 59 | 37 | 1 | 0 | 1 | 9 | 1 | 1 | 1 | 0 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | 4 | 34 | 13 | 1 | 1 | 0 | 8 | 1 | 0 | 1 | 0 | 3 |  | A |  | B |  | C |  | D |  | $E$ |  | $F$ | $G$ |
| 6 | 5 | 54 | 32 | 1 | 0 | 1 | 6 | 1 | 0 | 1 | 0 | 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | 6 | 27 | 5 | 1 | 0 | 0 | 6 | 1 | 1 | 0 | 0 | 1 | $1$ |  |  | Q01 |  | Q02 |  | 03 |  | 04 | $Q$ | 5 | 06 |
| 8 | 7 | 48 | 19 | 0 | 1 | 1 | 4 | 1 | 1 | 1 | 0 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | 8 | 30 | 5 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 1 |  | I |  |  | $54$ |  | $30$ |  | 1 |  |  | 1 | 7 |
| 10 | 9 | 32 | 9 | 0 | 0 | 0 | 4 | 1 | 1 | 0 | 0 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | 10 | 37 | 16 | 1 | 0 | 1 | 7 | 1 | 1 | 1 | 0 | 1 |  | 2 |  |  |  |  | O |  |  |  |  | 1 | 3 |
| 12 | 11 | 34 | 14 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 4 |  |  |  |  |  |  | 9 |  |  |  |  | 1 | 3 |
| 13 | 12 | 51 | Q | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 1 |  | 2 |  |  |  |  |  |  |  |  |  |  |  |

Don't: Q1, Q2, $\rightarrow$ DO: Q01, Q02 to avoid sorting Q1,Q10

## 6. Label questions with item numbers

| Engaged fields |
| :--- |
| orthopedic, rehabilitation, others |
| orthopedic, lower extremity wound |
| rehabilitation, lower extremity wound, others |
| orthopedic |
| orthopedic, rehabilitation |
| orthopedic, lower extremity wound |
| rehabilitation, lower extremity wound, others |


| Orthopedic | Rehabilitation | LE wounds | Others |
| :---: | :---: | :---: | :---: |
| 1 | 1 | 0 | 1 |
| 1 | 0 | 1 | 0 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 0 |
| 1 | 1 | 0 | 0 |
| 1 | 0 | 1 | 0 |
| 0 | 1 | 1 | 1 |


| Q. 04 |
| :--- |
| orthopedic, rehabilitation, others |
| orthopedic, lower extremity wound |
| rehabilitation, lower extremity wound, others |
| orthopedic |
| orthopedic, rehabilitation |
| orthopedic, lower extremity wound |
| rehabilitation, lower extremity wound, others |


| Q.04-1 | Q.04-2 | Q.04-3 | Q.04-4 |
| :---: | :---: | :---: | :---: |
| 1 | 1 | 0 | 1 |
| 1 | 0 | 1 | 0 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 0 |
| 1 | 1 | 0 | 0 |
| 1 | 0 | 1 | 0 |
| 0 | 1 | 1 | 1 |
| Y. Izumi, 4/3/2024 |  |  |  |

## Suggested data format

1.All variables are represented with numbers.
2.One subject, one row.
3.One characteristic, one column.
4.Numeric values used for analysis should be precomputed.
5.Delete all the unnecessary columns unrelated to the analysis.
6.All questions are displayed with an Item Number.
7.Use "general format" for all cells.

## 7. Use the "General" format for all cells



## Suggested data format

1.All variables are represented with numbers.
2.One subject, one row.
3.One characteristic, one column.
4.Numeric values used for analysis should be precomputed.
5.Delete all the unnecessary columns unrelated to the analysis.
6.All questions are displayed with an Item Number.
7.Use "general format" for all cells.

# Steps to prepare your survey data for statistical analysis 

1. Review Data Structure
2. Handle missing values
3. Correct errors

Data cleaning
4. Deal with outliers
5. Format Variables

Today's topic
6. Rename Variables
7. Organize Data
8. Remove Unnecessary Information
9. Create a data dictionary

## Suggested data dictionary format

1. Transpose the item number
2. One item, one row
3. Use Arial font

## Suggested data dictionary format

1. Transpose the item number
2. One item, one row
3. Use Arial font

## 1.Transpose the item number

| A | B | C | D | E | F | G | H |  | J | K | L |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ID | Q01 | Q02 | Q03 | Q04 | Q05 | Q06 | Q07-1 | Q07-2 | Q07-3 | Q07-4 | Q08 |
| 1 | 54 | 30 | 1 | 1 | 1 | 7 | 1 | 1 | 1 | 0 | ミ |
| 2 | 31 | 9 | 0 | 0 | 1 | 3 | 1 | 1 | 0 | 0 | 2 |
| 3 | 59 | 37 | 1 | 0 | 1 | 9 | 1 | 1 | 1 | 0 | 1 |
| 4 | 34 | 13 | 1 | 1 | 0 | 8 | 1 | 0 | 1 | 0 | § |
| 5 | 54 | 32 | 1 | 0 | 1 | 6 | 1 | 0 | 1 | 0 | ¿ |
| 6 | 27 | 5 | 1 | 0 | 0 | 6 | 1 | 1 | 0 | 0 | 1 |
| 7 | 48 | 19 | 0 | 1 | 1 | 4 | 1 | 1 | 1 | 0 | 2 |
| 8 | 30 | 5 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 1 |
| 9 | 32 | 9 | 0 | 0 | 0 | 4 | 1 | 1 | 0 | 0 | 1 |

Data


Data dictionary

## Suggested data dictionary format

1. Transpose the item number
2. One item, one row
3. Use Arial font

## 2. One item, one row

|  | A | B | C |  | D |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Item number | Item | type |  | answer |
| 2 | ID | ID | ordinal | number |  |
| 3 | Q01 | age | numerical | number |  |
| 4 | Q02 | Years of experience as a prosthetist/Orthotists | numerical | number |  |
| 5 | Q03 | Have you ever attended a training course on "Multidisciplinary Education"? | categorical | 1: Yes 0:No |  |
| 6 | Q04 | Do you have any experienceworking as a "non-prosthetist" | categorical | 1: Yes 0:No |  |
| 7 | Q05 | Do you have any experience in"management positions? | categorical | 1: Yes 0:No |  |
| 8 | Q06 | Time spent per week atonefacility | numerical | number |  |
| 9 | Q07-1 | Are you involved in orthopedic prosthetics? | categorical | 1: Yes 0:No |  |
| 10 | Q07-2 | Are you involved with prostheticsthe rehabilitationfield? | categorical | 1: Yes 0:No |  |
| 11 | Q07-3 | Are you involved with prostheticsthe lower extremity woundarea? | categorical | 1: Yes 0:No |  |
| 12 | Q07-4 | involved inotherareas of prosthetics? | categorical | 1: Yes 0:No |  |
|  | Q08 | Of the areas vou chose inQ07, please select one area that vou are most involved | categorical | 1 Orthopedic | s. 4: Other |
| 14 | Q09-1 | Are you involved with orthopedic surgeons in your daily clinical practice? | categorical | 1: Yes 0:No |  |
| 15 | Q09-2 | Are you involved withphysiatrist? | categorical | 1: Yes 0:No |  |
| 16 | Q09-3 | Are vou involved withCardiovascularSurgeon/Vascular Suraeon? | cateaorical | 1: Yes 0:No |  |

## Suggested data dictionary format

1. Transpose the item number
2. One item, one row
3. Use Arial font

## 3. Use Arial Font



## Suggested data format

1. All variables are represented with numbers.
2. One subject, one row.
3. One characteristic, one column.
4. Numeric values used for analysis should be precomputed.
5. Delete all the unnecessary columns unrelated to the analysis.
6. All questions are displayed with an Item Number.
7. Use "general format" for all cells.

## Suggested data dictionary format

1. Transpose the item number
2. One item, one row
3. Use Arial font

## Your goals

|  |  |  |  |  |  |  | G | н |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | po menerece | 3. "Multidisciplinary Cooperation Education" Training Course |  | 5. Manaeement experience |  |  |
|  | 1 |  |  |  |  |  |  |  |
|  | 2 |  |  |  | Nective- |  |  |  |
|  | 3 |  |  | be usu ot masimate ovecse | Sot (veb- |  |  |  |
|  | 4 |  |  | (iss) of hanimate oblects) |  |  |  |  |
|  | 5 |  |  |  | ${ }^{\text {mer }}$ |  |  |  |
|  | 6 |  |  | not (verb-negating suffox; may |  | Not (vet-regatin sultx may |  |  |
|  | 7 |  |  |  |  |  |  | Ornbpedics (provison of posssmetus tor cetommees and trumatic inju |
|  | 8 |  |  |  |  |  |  |  |
|  | 9 |  |  |  |  | 9 sulix may insate |  |  |
|  | 10 |  |  | dims sulte | mex vere- |  |  | Sixh as tractues spains, and amuvators) |
|  |  |  |  |  |  |  |  |  |
|  | 11 |  |  | De (Lsu) or indimate obiects) |  | De (is, of ernainate obiecs) |  |  |
|  | 12 |  |  | Chanimate obl | nea | e (usu) Of innenimate oblects) |  | asstrve pocaucs (eo wheel crais peatio aiss etc) |
|  | 13 |  |  | of haninate oblecs) |  | (susu ot manimate obiecss) |  |  |
|  | 14 |  |  | of manimate oblecs) | not (veto |  |  |  |
|  | 15 |  |  | (c) |  |  |  |  |
|  | 16 |  |  | Simite oblects) |  | Rot (veet-regating su |  |  |
|  | 17 |  |  |  | cot (1)e- |  |  |  |
|  | 18 |  |  | not (veb-b-regating sumbx may | mot |  |  |  |
|  | 19 |  |  | 55 De (sus of inaninate oblecs) |  | ces) |  | work tor manulatwe and do not povise diectr |
|  | 20 |  |  |  | De cise |  |  |  |
|  | 21 |  |  |  | ner veer- | I vee-r-mesampesinich |  |  |
|  | 22 |  |  |  | Delicu ar |  |  |  |
|  | 23 |  |  | not ver-megatum sultx may | De (lusio al |  |  |  |
|  | 24 |  |  | not (veb-omegatime sultx may | nect veto- |  |  |  |
|  | 25 |  |  |  | meeder |  |  |  |
|  | 26 |  |  |  | cex vero- | eot |  |  |
|  | 27 |  |  |  | Set (veeo | at |  |  |
|  |  |  |  |  | neastio | or inviaten weth rishe |  | mpac (puson p |
|  | 28 |  |  |  |  |  |  |  |
|  | 29 |  |  | Sulta may |  | Not (vee-regatin sultx may in |  |  |
|  | 30 |  |  |  |  |  |  |  |
|  | 31 |  |  | net |  |  |  |  |
|  | 32 |  |  |  |  | se (us) of inainate obiecs) |  |  |
|  | 33 |  |  |  |  | dects) |  |  |
|  | 34 |  |  | mot (veeb-regatung sulfe mat | not (veb- |  |  |  |

## Correctly <br> Formatted, organized, \& Clean Data

## Data dictionary

## Steps to prepare your survey data for statistical analysis

1. Review Data Structure
2. Handle missing values
3. Correct errors
4. Deal with outliers

Data cleaning
5. Format Variables
6. Rename Variables
7. Organize Data
8. Remove Unnecessary Information
9. Create a data dictionary


