Session Plan

KJA Statistical Round Session – 2023 KoreAnesthesia

4/8/2023.  
12/9/2023 revised.

23/9/2023 revised.

# Session details

### Title

A journey from data analysis to power analysis: R Hands-on session.

### Aims

Be familiar with the R software.  
Learn how to perform basic statistical analysis methods.  
Learn how to perform power analysis of basic statistical analysis methods.  
Understand the effect size for power analysis.

### Learning outcomes

*For all participants*- Understand the basic structure of R code.  
- Can modify sample R code for one’s purpose.  
- Understand the basic statistical analysis concepts.

*For most participants*- Can construct R code for the basic statistical analysis.  
- Can perform a power analysis (sample size calculation).  
For some participants  
- Understand the sampling distribution, the meaning of effect size, and confidence intervals.

### Date & time

11/11/2023 (Sat) 10:00AM – 12:30AM

### Venue

Grand Walkerhill  
177 Walkerhill-ro, Gwangjin-gu, Seoul, Korea,  
+82-2-455-5000

### Type

Korean session, Lecture, and Field practice.

### No. of lecture

9.

### No. assistant

10.

### Participant details

Number: No entry restrictions. Approximately 100 people due to the hall limitation.  
Level: Mixed (Resident, Professor)  
Target: Someone with any experience working with statistical programs. (esp. R software)  
 Someone who needs the basic concepts of statistics.  
Participant recruitment: News Letter, Personal contact.

### Resources required

Wireless network.  
Power strips, as possible as required.

### Person in charge of preparation

Dong Kyu Lee  
KJA statistical round member.  
Dongguk Univ. Ilsan Hospital.

# Detailed Session Information

### Participant preparation required

A Laptop equipped:

The latest R software installation (https://cloud.r-project.org/).  
The latest RStudio Desktop installation (https://posit.co/download/rstudio-desktop/).  
The latest G\*Power installation (https://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower).  
For the Windows system, the latest Rtools installation if possible (<https://cran.r-project.org/bin/windows/Rtools/>).

### Session 1: R software (Prepare for a long journey) 10:00am – 10:40am

*S1-0: Introduction*

Length - 3 min In-charge: 이상석  
Key point - 통계라운드 소개, 통계라운드 session 소개  
Method/Detail – Verbal presentation

*S1-1: R software, RStudio*

Length – 7 min In-charge: 이동규  
Key point – R software, R studio 활용에 대한 소개  
Method/Detail – Slide presentation   
 R code editor, R markdown, R shiny

*S1-2: Understand R: CSV file format, Packages, List, data frame, object.*

Length – 15 min In-charge: 이동규  
Key point – The difference between R software from other statistical programs  
Method/Detail – Slide presentation/Practice  
 How to convert from excl to csv, install a package,   
 data structure, object structure

*S1-3: R command structure: how to modify it for me?*

Length – 15 min In-charge: 이동규  
Key point – command format, indicating variables, argument.  
Method/Detail – Slide presentation/Practice  
 Copy a code and Paste it, then modify it.

### Session 2: Departure to coding for a statistical analysis 10:50am – 11:30am

*S2-1: introduction*

Length – as short as possible In-charge: 남상건

*S2-1: Basic concepts of statistical analysis*

Length – 10 min In-charge: 김종해  
Key point – Null hypothesis significance testing including normal distribution  
Method/Detail – Slide presentation  
 mean, SD, SEM, 95%CI, Sampling distribution, the statistical inference process

*S2-2: Descriptive statistics, Normality test, Equal variance test, Basic data explorations*

Length – 15 min In-charge: 홍부휘  
Method/Detail – Slide presentation/ Practice  
 Summary statistics, Normality test & Q-Q plot, Equal variance test,   
 histogram, correlation matrix plot

*S2-3: T-test (independent, paired), chi-square test, one-way ANOVA.*

Length – 15 min In-charge: 김혜진  
Method/Detail – Slide presentation/ Practice  
 Performing statistical analysis with sample data.

### Session 3: Back to your home – Prepare for the next journey 11:40am – 12:30pm

*S3-0: Introduction*

Length – as short as possible In-charge: 김태균

*S3-1: Basic concepts of power analysis*

Length – 10 min In-charge: 곽상규  
Key point – Four components of Power analysis  
Method/Detail – Slide presentation  
 Effect size, alpha error rate, beta error rate, sample size

*S3-2: Sample size calculation 1: R vs. G\*Power*

Length – 15 min In-charge: 강현  
Method/Detail – Slide presentation/ Practice  
 Performing power analysis (sample size calculation using the result of previous  
 session)

*S3-3: Sample size calculation 2: R vs. G\*Power*

Length – 15 min In-charge: 인준용  
Method/Detail – Slide presentation/ Practice  
 Performing power analysis (sample size calculation using the result of previous  
 session)

*S3-4: Q & A*

Length – 10 min In-charge: All statistical round members  
Method/Detail – Live Q&A

- EOF -