2026년 대한부인종양학회
제7회 동계학술대회 with Chemo-TIP Review

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장소 세종대학교 컨벤션센터

Discussion

Comparison of Data Analysis Tools: Excel, R, and Python

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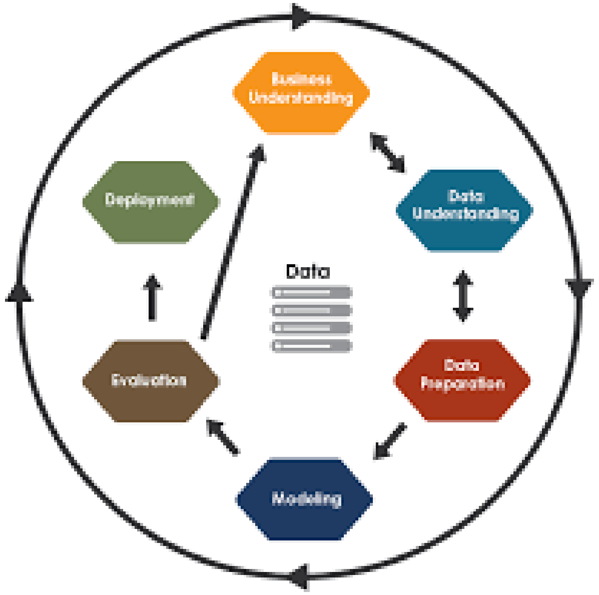
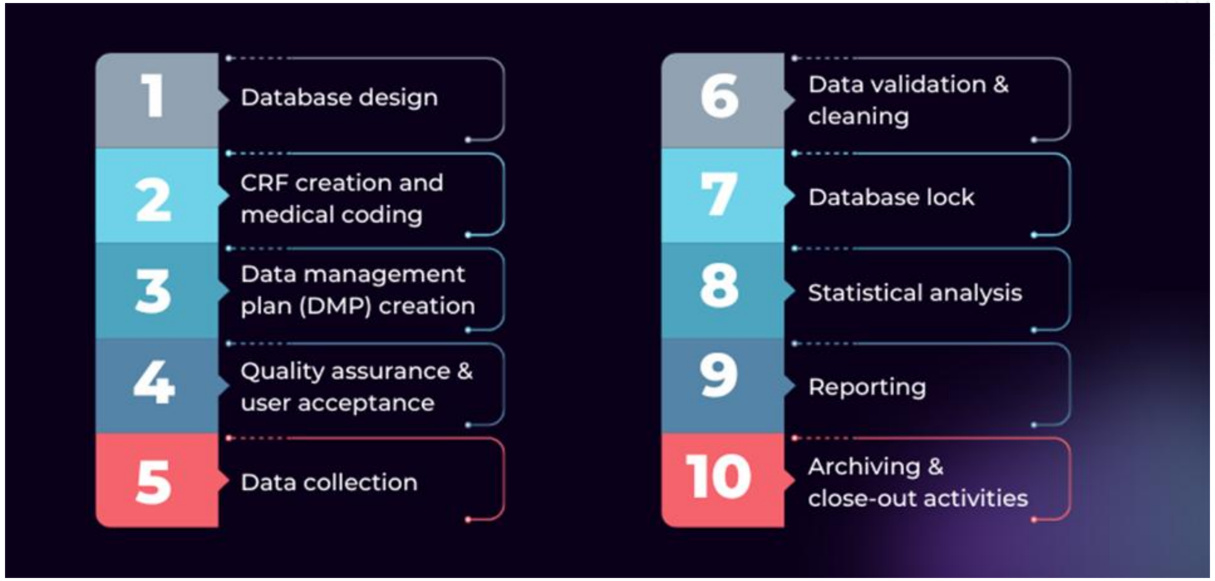
DECLARATION OF INTERESTS

Nothing to declare

Q1. 도구 선택 오류는 언제 발생하는가?





1 Database design

2 CRF creation and medical coding

3 Data management plan (DMP) creation

4 Quality assurance & user acceptance

5 Data collection

6 Data validation & cleaning

7 Database lock

8 Statistical analysis

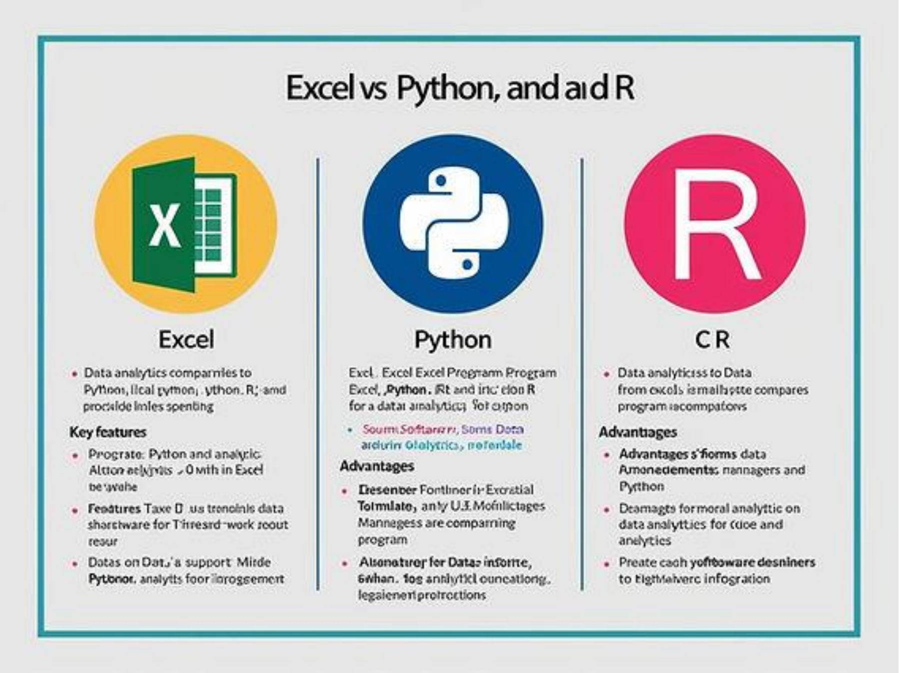
9 Reporting

10 Archiving & close-out activities

- **Excel–R–Python을 역할로 구분했을 때, 임상 연구에서 가장 흔한 오류는 어느 분석 단계에서 발생합니까?**

Reference: Data analysis is an iterative process from question formulation to interpretation. *Shearer C. The CRISP-DM model. J Data Warehousing, 2000.*

Q2. Excel에서 R/Python으로 넘어가는 기준



Excel vs Python, and aid R

Excel

- Data analytics comparnies to Pythoon, llcal tymon; . ython. R; amd prockide lmles spenting

Key features

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Python

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Advantages

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C R

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Advantages

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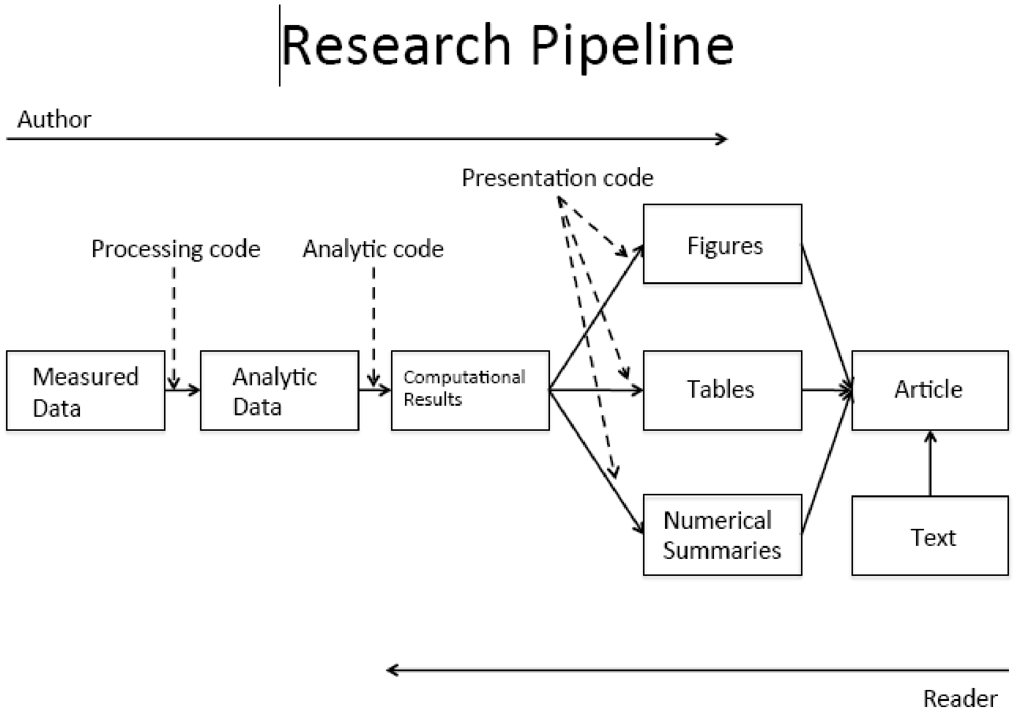
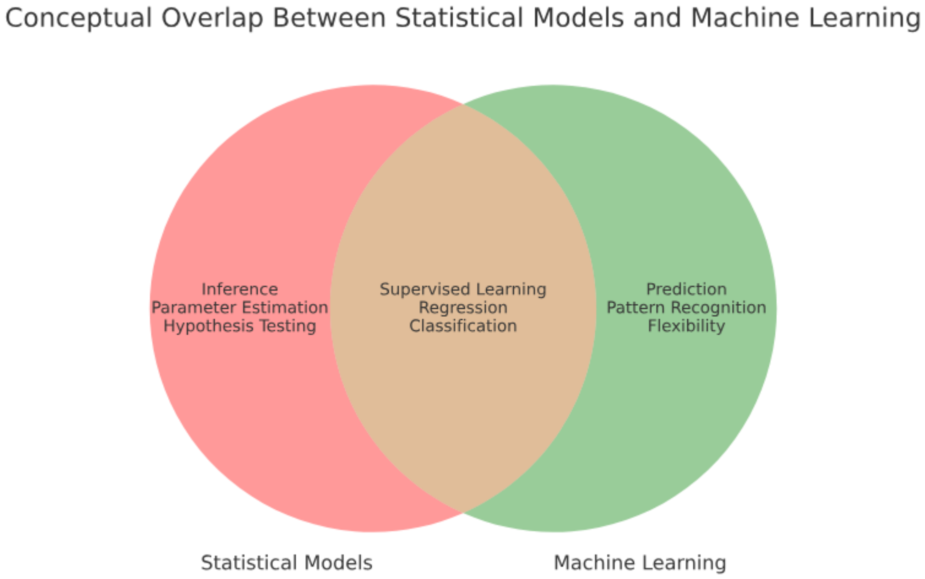
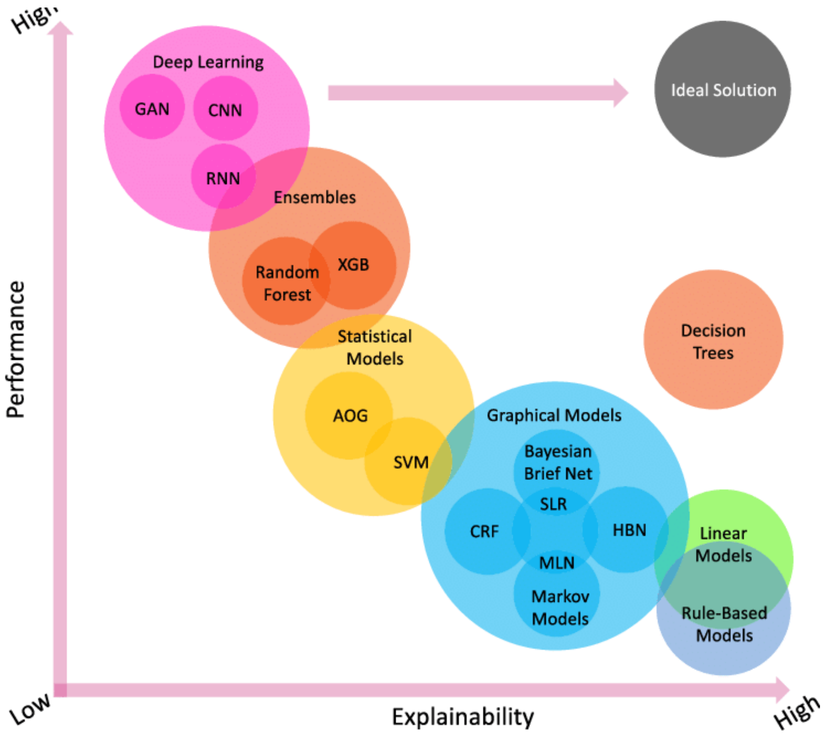


- 언제부터 Excel을 넘어서 R 또는 Python으로 전환해야 할까요?

Reference: Reproducibility and transparency are improved with code-based analyses. *Peng RD. Reproducible research. Science, 2011..*

Q3. 통계 검정 vs 예측 모델

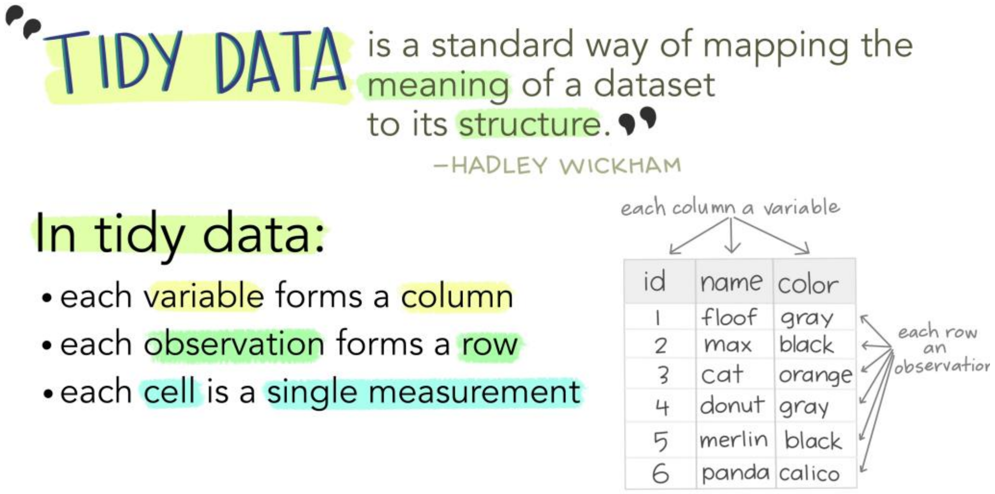




- 통계 검정 중심 연구와 예측 모델 연구는 어떤 연구 질문에서 명확히 구분된다고 보십니까?

Reference: Statistical modeling and machine learning differ in goals: inference vs prediction. *Shmueli G. Stat Sci, 2010.*

Q4. Tidy data의 최소 기준



"TIDY DATA is a standard way of mapping the meaning of a dataset to its structure."

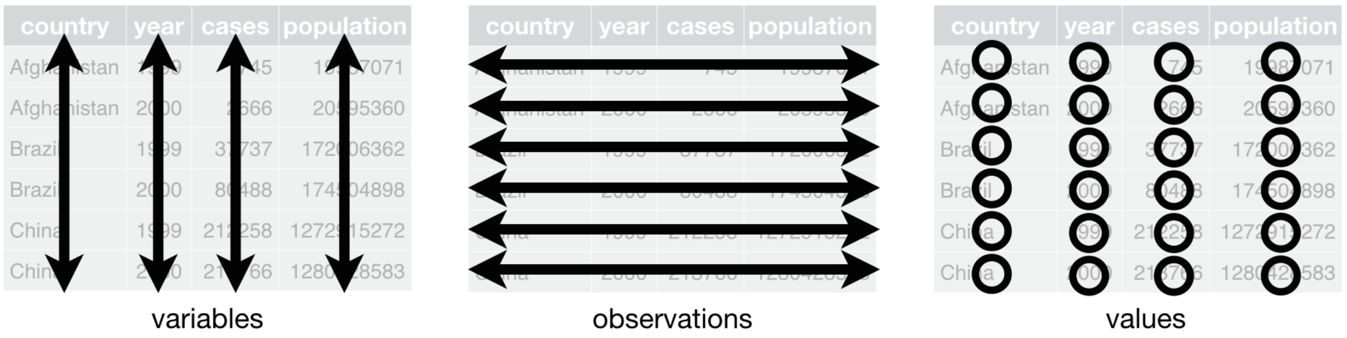
—HADLEY WICKHAM

In tidy data:

- each variable forms a column
- each observation forms a row
- each cell is a single measurement

id	name	color
1	floof	gray
2	max	black
3	cat	orange
4	donut	gray
5	merlin	black
6	panda	calico

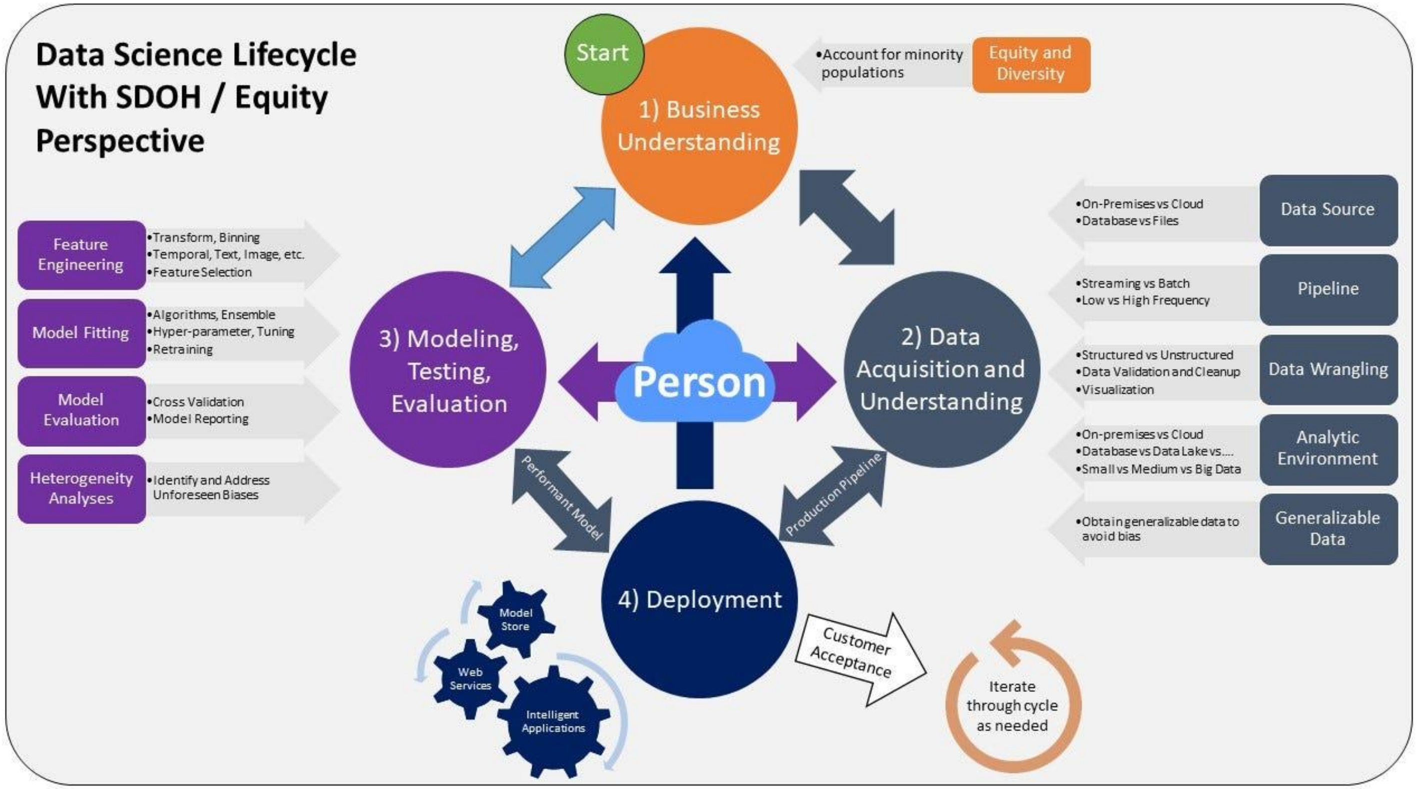
Wickham, H. (2014). Tidy Data. Journal of Statistical Software 59 (10). DOI: 10.18637/jss.v059.i10



- **실제 임상 데이터에서 최소한 지켜야 할 Tidy data 기준은 무엇일까요?**

Reference: Tidy data provides a standard way to organize datasets. *Wickham H. J Stat Softw, 2014.*

Q5. Garbage In, Garbage Out



Data Science Lifecycle With SDOH / Equity Perspective

Start

1) Business Understanding

Equity and Diversity
- Account for minority populations

2) Data Acquisition and Understanding

Data Source
- On-Premises vs Cloud
- Database vs Files

Pipeline
- Streaming vs Batch
- Low vs High Frequency

Data Wrangling
- Structured vs Unstructured
- Data Validation and Cleanup
- Visualization

Analytic Environment
- On-premises vs Cloud
- Database vs Data Lake vs....
- Small vs Medium vs Big Data

Generalizable Data
- Obtain generalizable data to avoid bias

3) Modeling, Testing, Evaluation

Feature Engineering
- Transform, Binning
- Temporal, Text, Image, etc.
- Feature Selection

Model Fitting
- Algorithms, Ensemble
- Hyper-parameter, Tuning
- Retraining

Model Evaluation
- Cross Validation
- Model Reporting

Heterogeneity Analyses
- Identify and Address Unforeseen Biases

Person

4) Deployment

- 임상 연구에서 결과는 그럴듯하지만 위험한 대표적인 GIGO 사례에는 무엇이 있을까요?

Reference: Model performance is fundamentally limited by data quality. *Kuhn M, Johnson K. Applied Predictive Modeling, 2013.*