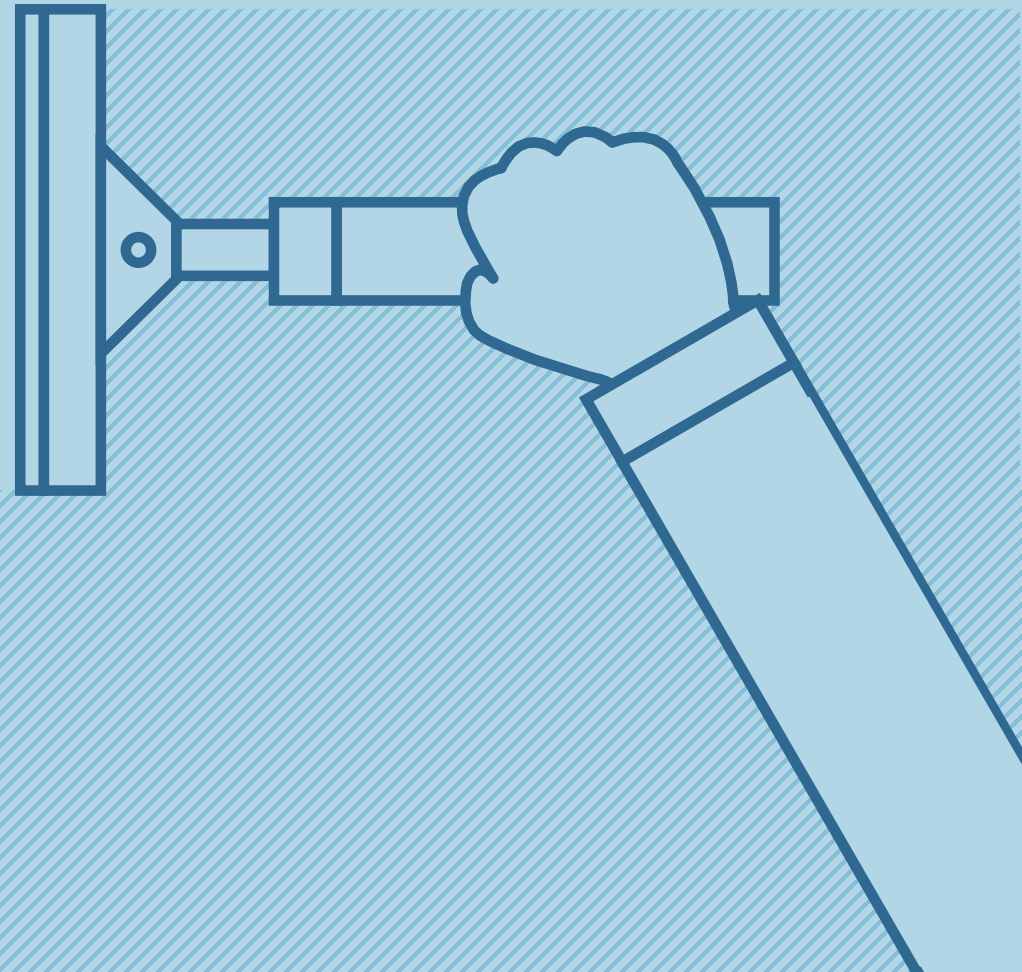
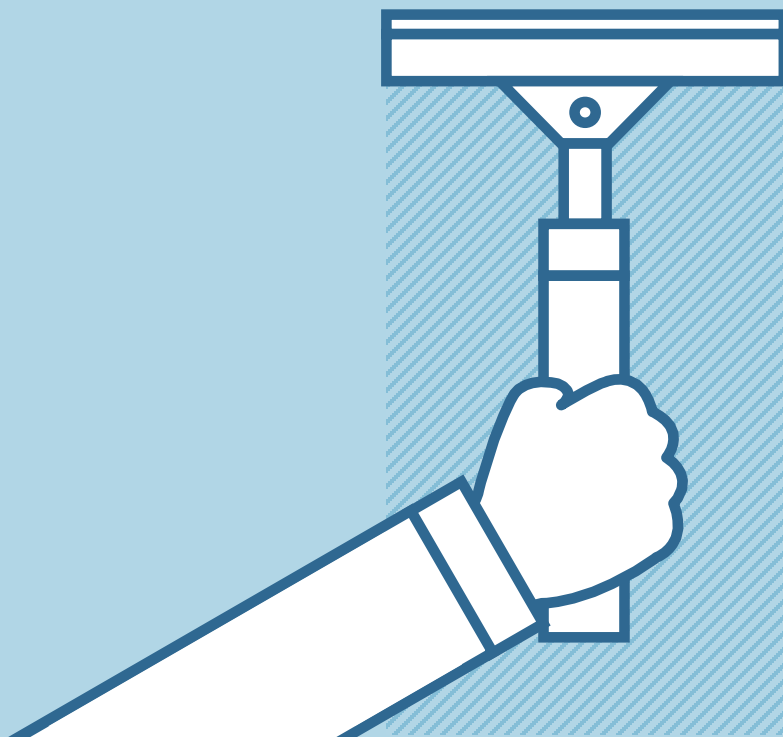


# 시각화 이론

디자인팀 서지현



# 게슈탈트 이론 (Gestalt Principle)





# 등장 배경

과거



현재

데이터의 크기와 다양성이 문제가 되지 않음.

-> 데이터 분석은 아주 간단한 과정

엄청나게 많은 양의 데이터가 존재하며,  
시각화는 사람이 정보를 인지하는 데 도움을 줌.

-> 데이터 시각화의 발전

데이터 시각화의 큰 장점 중 하나는  
언어적 정보보다 **시각적 정보**를 빠르게 처리하는 능력을 향상시키는 것이다.

-> 1920년대 독일 심리학자들은 지각 조직화를 연구했고,  
그 첫번째 그룹이 “게슈탈트” 이론가들임.



# 게슈탈트 이론

인지과정 중에 감각 자료가 갖는 **조직**과 의미를 강조 / 전체는 부분의 총합 이상이다

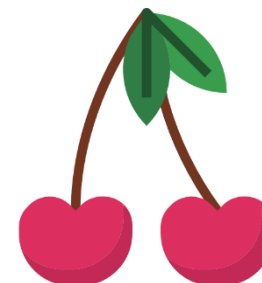
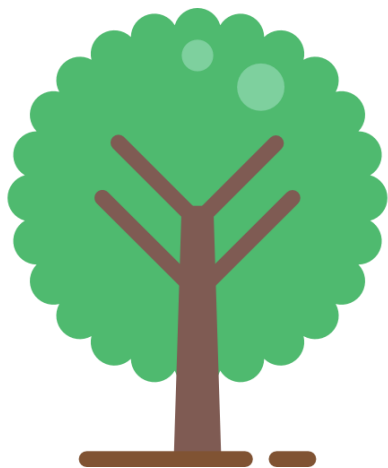
1. 근접성

2. 유사성

3. 단순성

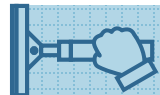
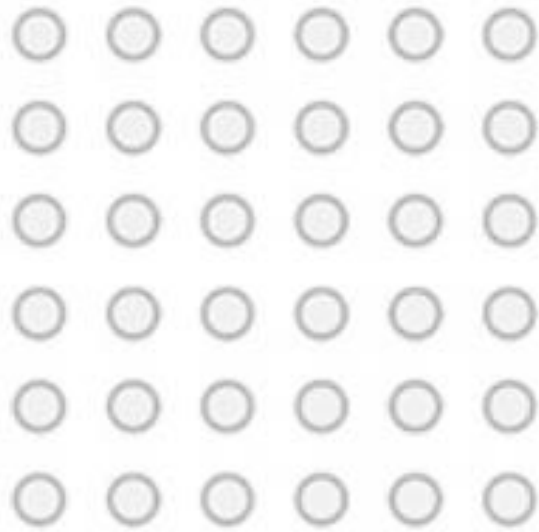
4. 좋은 연속성

5. 폐쇄성



# 1. 근접성 (Proximity)

물체가 서로 가까이 있거나 서로 연결되어 있을 때,  
그룹으로 인식해 물체들의 분리를 줄이려고 한다.



Print

Printer: Canon MF4360-4390(09:C6:D7) ▾

Presets: Default Settings ▾

Copies & Pages ▾

Copies: 1 ▴ ▾ ☒ Collated

Slides: ☒ All (1 slide)

☐ From: 1

to: 1

☐ Selected Slides

Print What: Slides ▾

Slide Show: All Slides ▾

Output: Color ▾

☐ Scale to Fit Paper

☐ Print Hidden Slides

☐ Frame Slides



1 of 1



☒ Show Quick Preview

Page Setup...



PDF ▾

Cancel

Print

Print

Printer: Canon MF4360-4390(09:C6:D7) ▾

Presets: Default Settings ▾

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Copies & Pages ▾

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Copies: 1 ▾ ☒ Collated

Slides: ☒ All (1 slide)  
☐ From: 1 to: 1  
☐ Selected Slides

Print What: Slides ▾

Slide Show: All Slides ▾

Output: Color ▾

☐ Scale to Fit Paper  
☐ Print Hidden Slides  
☐ Frame Slides

1 of 1

☒ Show Quick Preview

Page Setup...

? PDF ▾ Cancel Print

Print

Printer: Canon MF4360-4390(09:C6:D7) ▾

Presets: Default Settings ▾

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Copies & Pages ▾

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Copies: 1 ▾ ☒ Collated

Slides: ☒ All (1 slide)  
☐ From: 1 to: 1  
☐ Selected Slides

Print What: Slides ▾

Slide Show: All Slides ▾

Output: Color ▾

☐ Scale to Fit Paper  
☐ Print Hidden Slides  
☐ Frame Slides

1 of 1

☒ Show Quick Preview

Page Setup...

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## Print & Scan



Show All



### Printers



Canon MF4360-4390...

Idle, Last Used



HP LaserJet M1536dn...

Paused



HP\_LaserJet\_M1536d...

Idle



Samsung SCX-4500 S...

In use

### Scanners



HP LaserJet M1536dn...



**Canon MF4360-4390(09:C6:D7)**

Open Print Queue...

Options & Supplies...

Location:

Kind: Canon MF4360-4390 UFR II LT (US)

Status: Idle

☐ Share this printer on the network

Sharing Preferences...

Default printer: Last Printer Used

Default paper size: A4



Click the lock to prevent further changes.



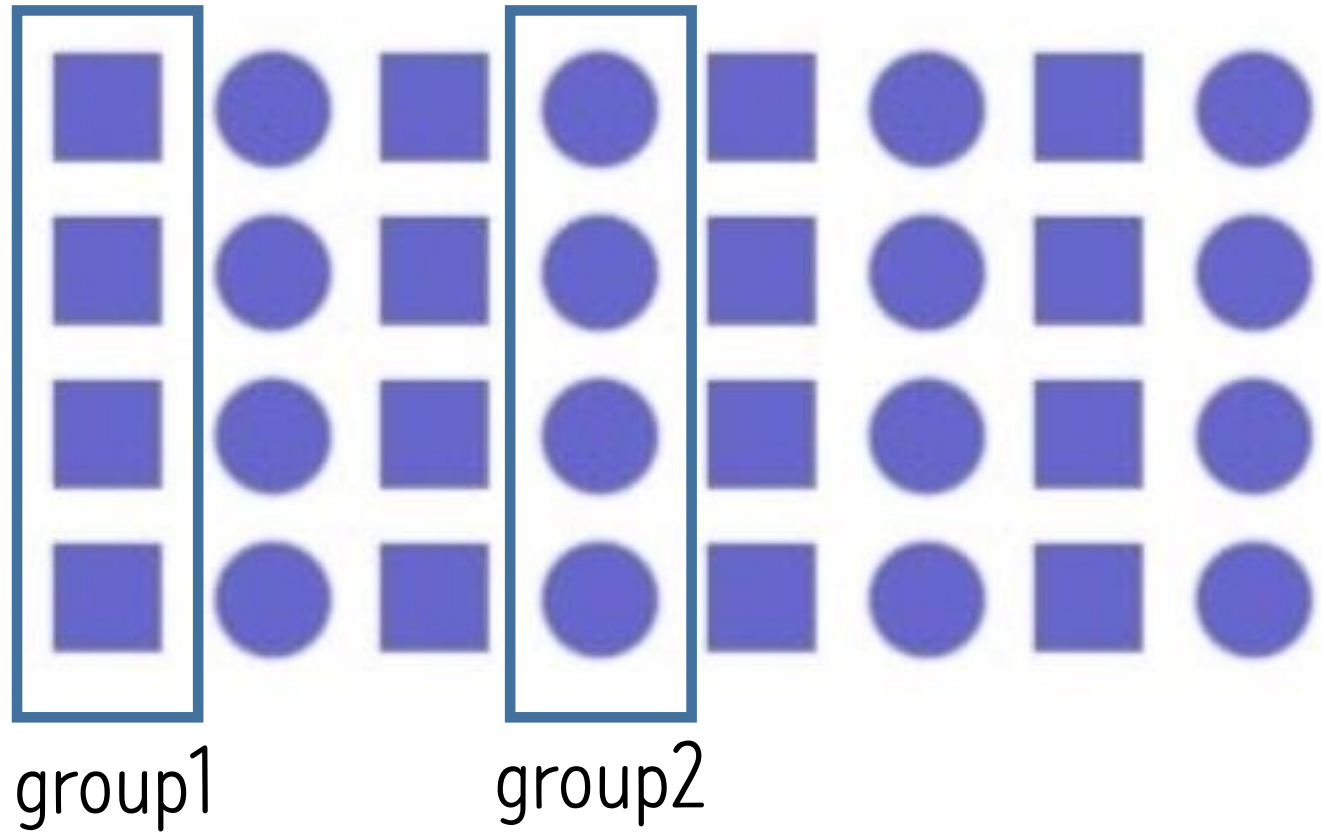
## 2. 유사성 ( Similarity )

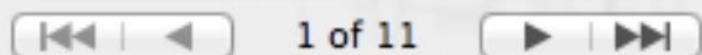
물체들이 비슷한 속성, 색, 형태를 가지면 같은 그룹으로 인식한다



## 2. 유사성 ( Similarity )

물체들이 비슷한 속성, 색, 형태를 가지면 같은 그룹으로 인식한다





Printer: Canon MF4360-4390(09:C6:D7) ▾

Presets: Default Settings ▾

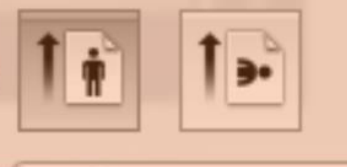
Copies: 1

Pages: ☒ All

☐ From: 1 to: 1

Paper Size: A4 ▾ 210 by 297 mm

Orientation:



Scale: 100 %

Safari ▾

☐ Print backgrounds

☐ Print headers and footers

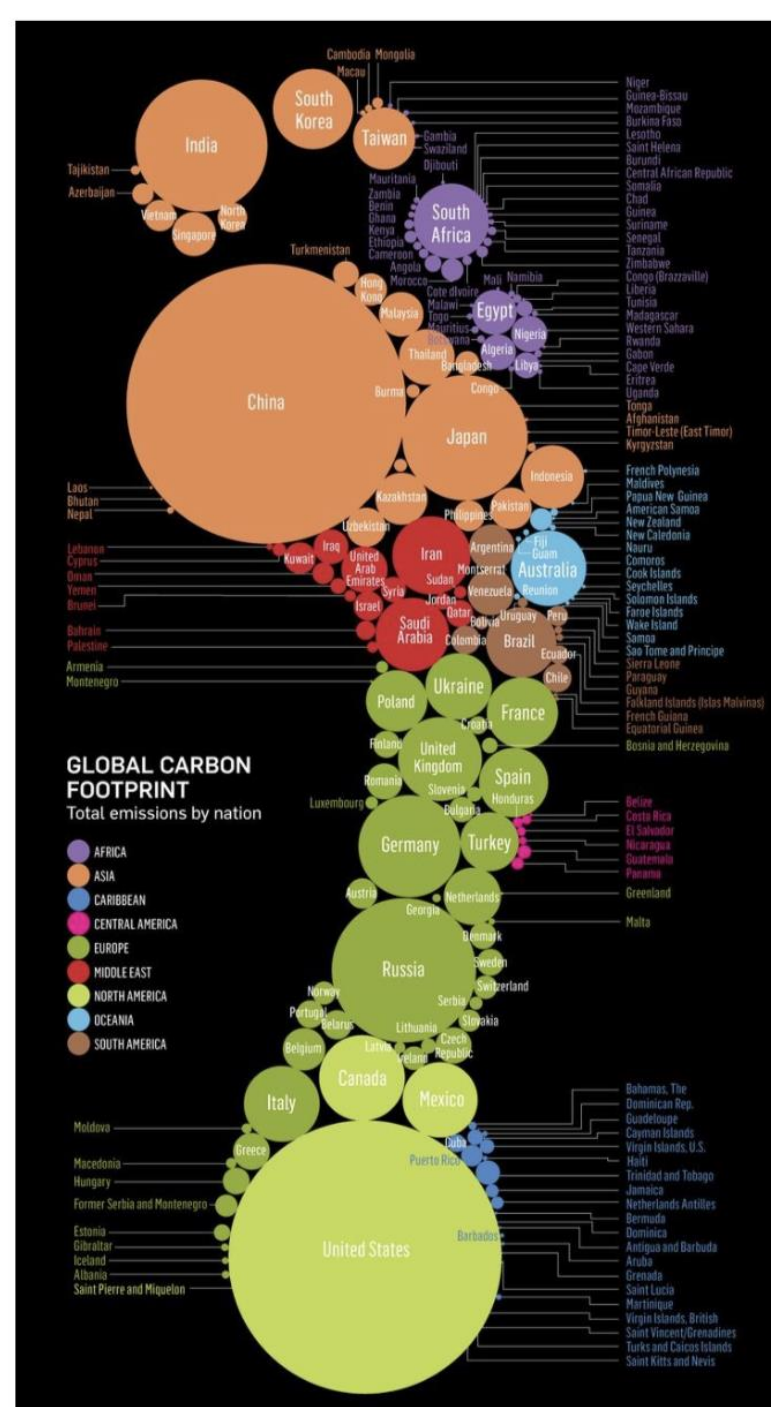


PDF ▾

Hide Details

Cancel

Print







PINTEREST

**SOCIAL SITE  
THAT IS ALL ABOUT  
DISCOVERY**

**LARGEST  
OPPORTUNITIES**



**USERS ARE:**

**32% MALE**  
**68% FEMALE**

**70  
MILLION  
ACTIVE USERS**



TWITTER

**MICRO BLOGGING  
SOCIAL SITE  
THAT LIMITS EACH  
POST TO 140  
CHARACTERS**

**LARGEST  
PENETRATION**



**BUT SPREADING  
SLOWLY AND STEADILY**

**5,700 TWEETS  
HAPPEN  
EVERY SECOND**

**560  
MILLION  
ACTIVE USERS**



FACEBOOK

**SOCIAL SHARING  
SITE THAT HAS  
1 BILLION  
USERS WORLDWIDE**

**LARGEST  
OPPORTUNITIES**



**COMMUNICATING WITH  
CONSUMERS  
IN A NON-OBTRUSIVE WAY**

**USERS SHARE  
2.5 BILLION  
PIECES OF CONTENT EACH DAY**

**1  
BILLION  
ACTIVE USERS**



INSTAGRAM

**SOCIAL SHARING  
SITE ALL AROUND  
PICTURES  
AND NOW 15 SECOND  
VIDEOS**

**MANY BRANDS  
ARE PARTICIPATING  
THROUGH THE USE OF**

**# HASHTAGS**

**AND POSTING  
PICTURES  
CONSUMERS  
CAN RELATE TO**

**MOST FOLLOWED  
BRAND IS**

**150  
MILLION  
ACTIVE USERS**



GOOGLE+

**SOCIAL NETWORK  
BUILT BY GOOGLE  
THAT ALLOWS FOR  
BRANDS  
AND USERS  
TO BUILD CIRCLES**

**NOT AS MANY  
BRANDS  
ACTIVE,  
BUT THE ONES THAT ARE  
TEND TO BE A  
GOOD FIT WITH A  
GREAT FOLLOWING**

**GROWING RAPIDLY  
WITH 925,000**

**NEW USERS  
EVERY DAY**

**400  
MILLION  
ACTIVE USERS**



LINKEDIN

**BUSINESS  
ORIENTED**  
SOCIAL NETWORKING SITE

**BRANDS THAT ARE  
PARTICIPATING  
ARE CORPORATE  
BRANDS**  
GIVING POTENTIAL AND  
CURRENT ASSOCIATES  
A PLACE TO NETWORK  
& CONNECT



**79% OF USERS  
ARE 35  
OR OLDER**

**240  
MILLION  
ACTIVE USERS**

# WHO ARE THE SAFER DRIVERS?

## TEENS



## SENIORS



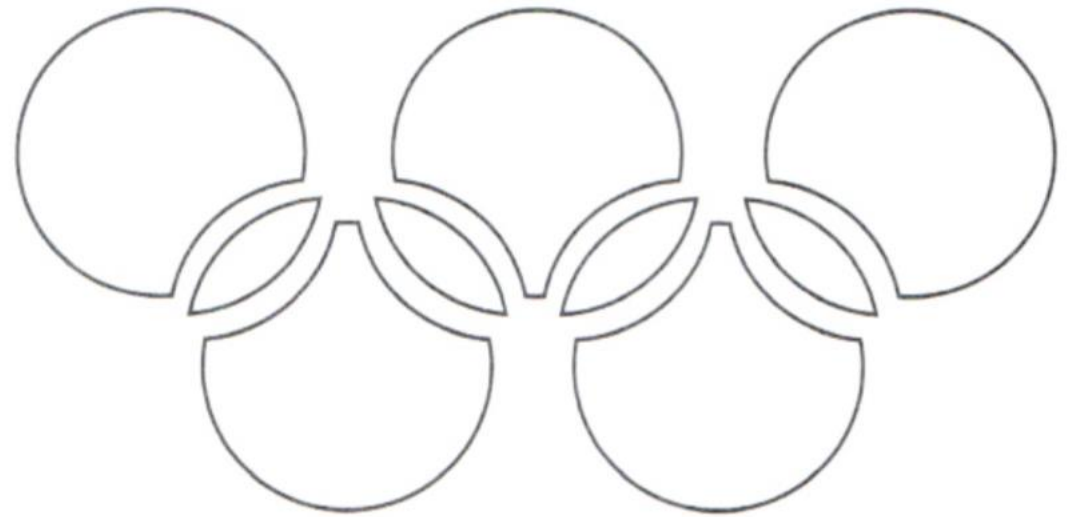
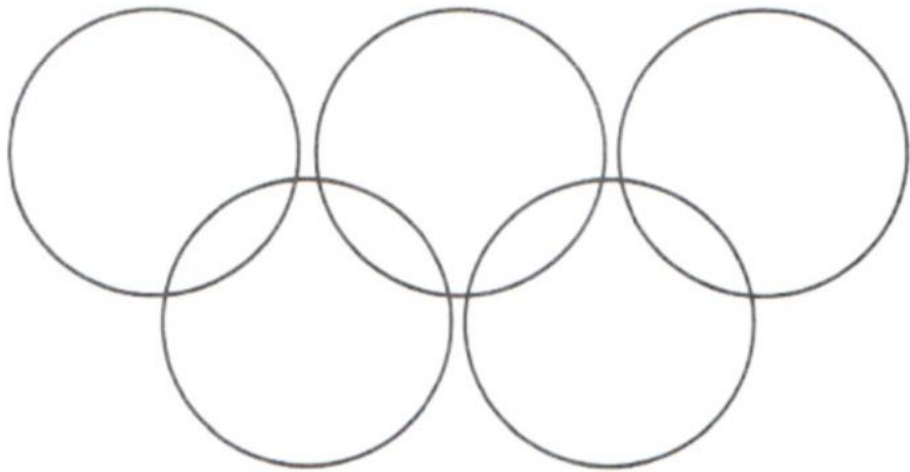
### INVOLVEMENT IN FATAL CRASHES



### FATALITIES IN CRASHES BY STATE

### 3. 단순성 ( Simplicity )

물체들을 주어진 조건 하에서 최대한 단순하고 간결하게 인식한다





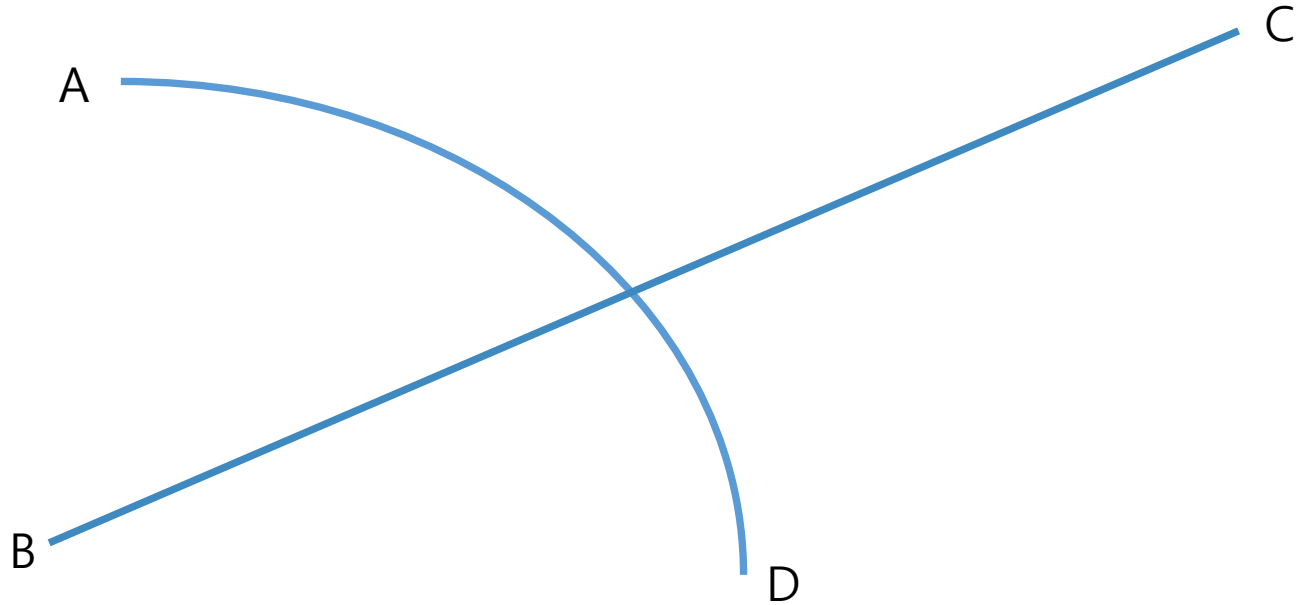
# What Makes a Good Infographic?



## 4. 좋은 연속성 ( Continuity )

어떤 것들은 전체로서 중요하다. 만약 끊어진 부분이 있다면 직관적으로 이해한다.

다음 이미지의 경우, 우리는 4개의 선이 가운데서 만났다고 생각하지 않고,  
2개의 선이 교차된다고 인지한다



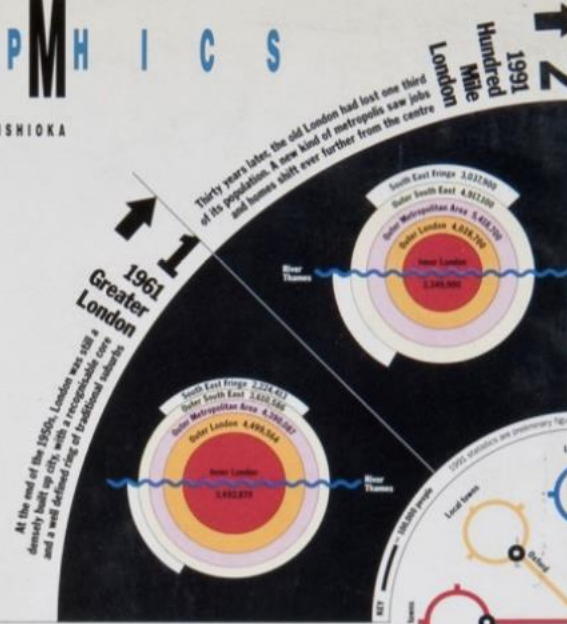




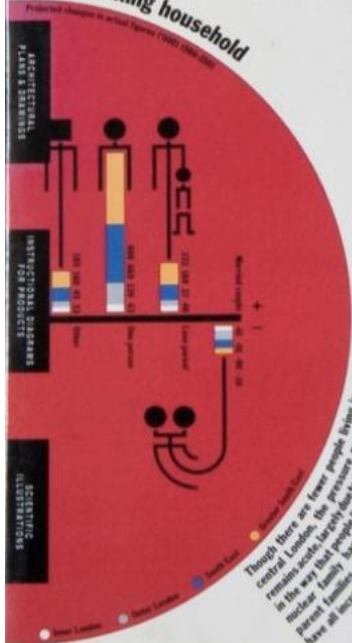
# DIAGRAMHICS

EDITORIAL CONSULTING BY FUMIHIKO NISHIOKA

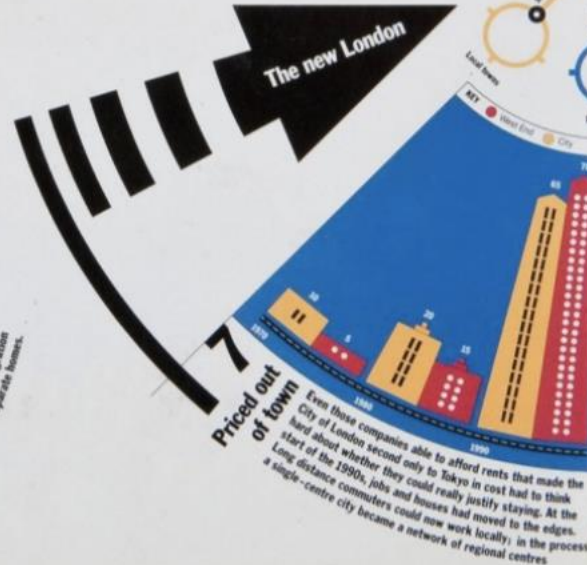
THE BEST IN  
GRAPHS,  
CHARTS,  
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AND  
TECHNICAL  
ILLUSTRATION



## The shrinking household

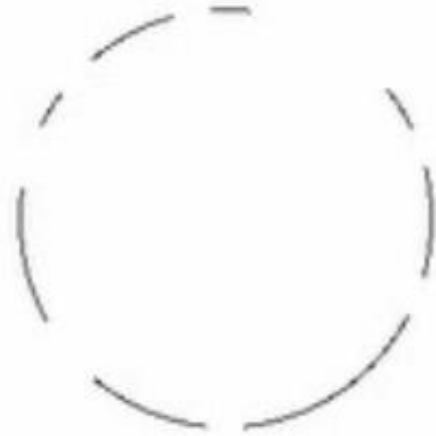
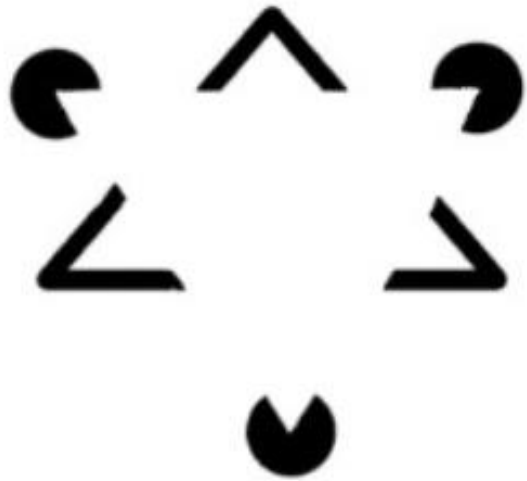


Through there are fewer people living in central London, the pressure on housing remains acute, largely due to the rapid change in the way that people live. The more dominant pattern family has been marginalised. Single person families, diverse, temporary and migration have all increased the demand for separate homes.



## 5. 폐쇄성 ( Closure )

부분의 경계가 손실되더라도 우리는 틸새를 무시하고  
경계가 연결된 하나의 모양으로 보려고 한다.





**PANDA**

www.shutterstock.com - 323590309





Designs with good closure requires minimal effort to understand. You can still see the panda even with its missing parts.



Designs with poor closure makes you struggle to identify the object



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Created by Stanley Morison  
Approved by Victor Lundberg  
Trade Dress

Victor Lundberg was the supervisor during the whole process of work that was commissioned by the Old English Monotype Foundry.

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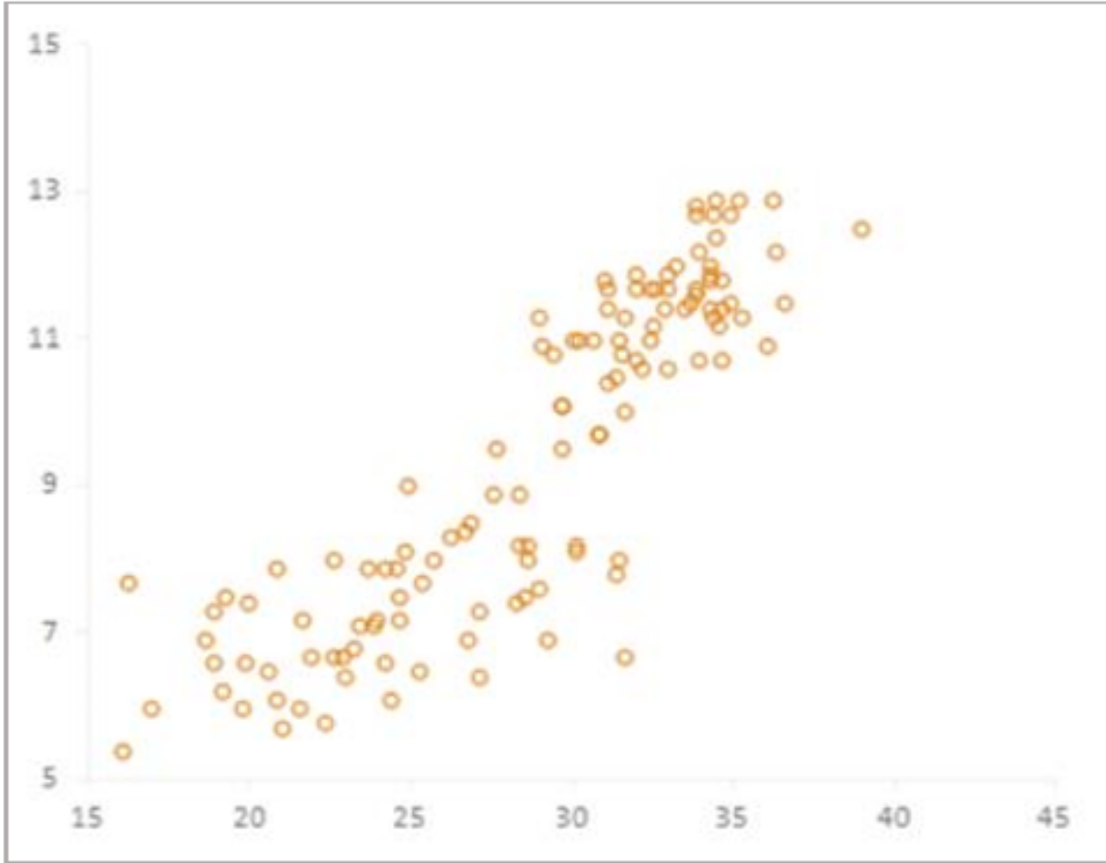
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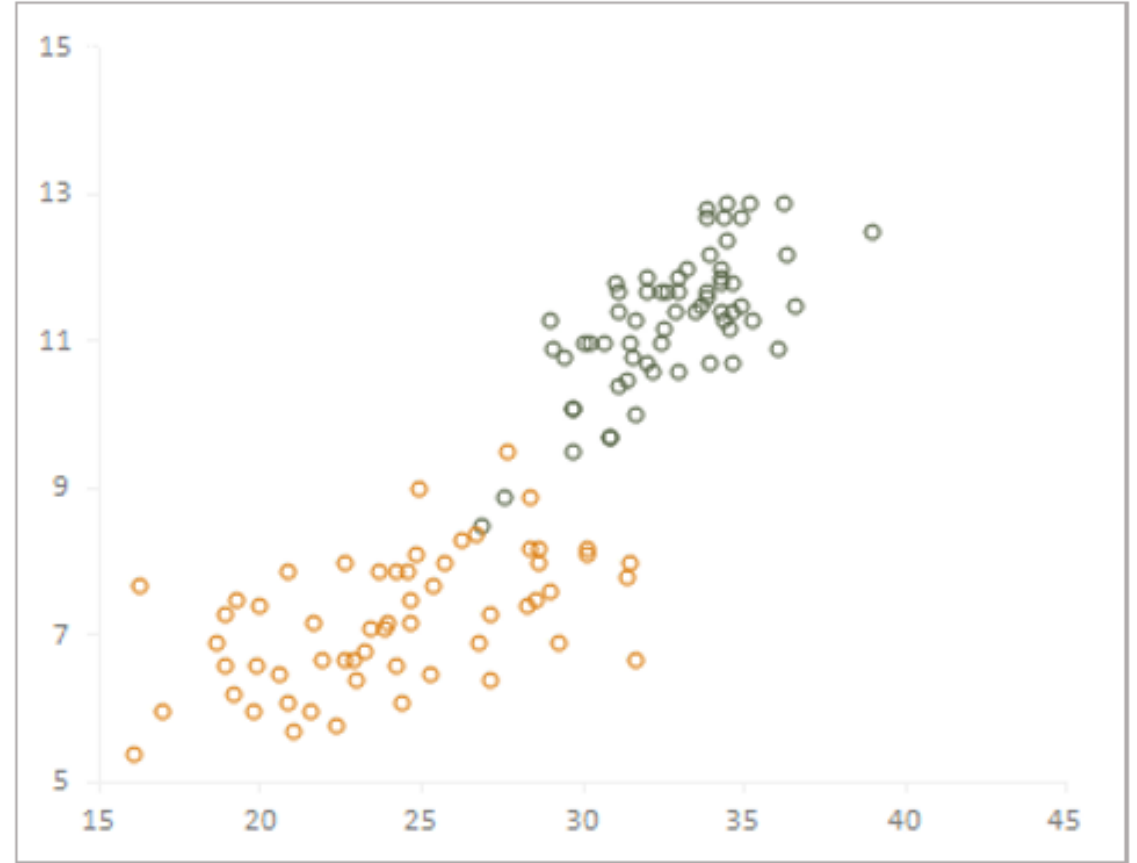
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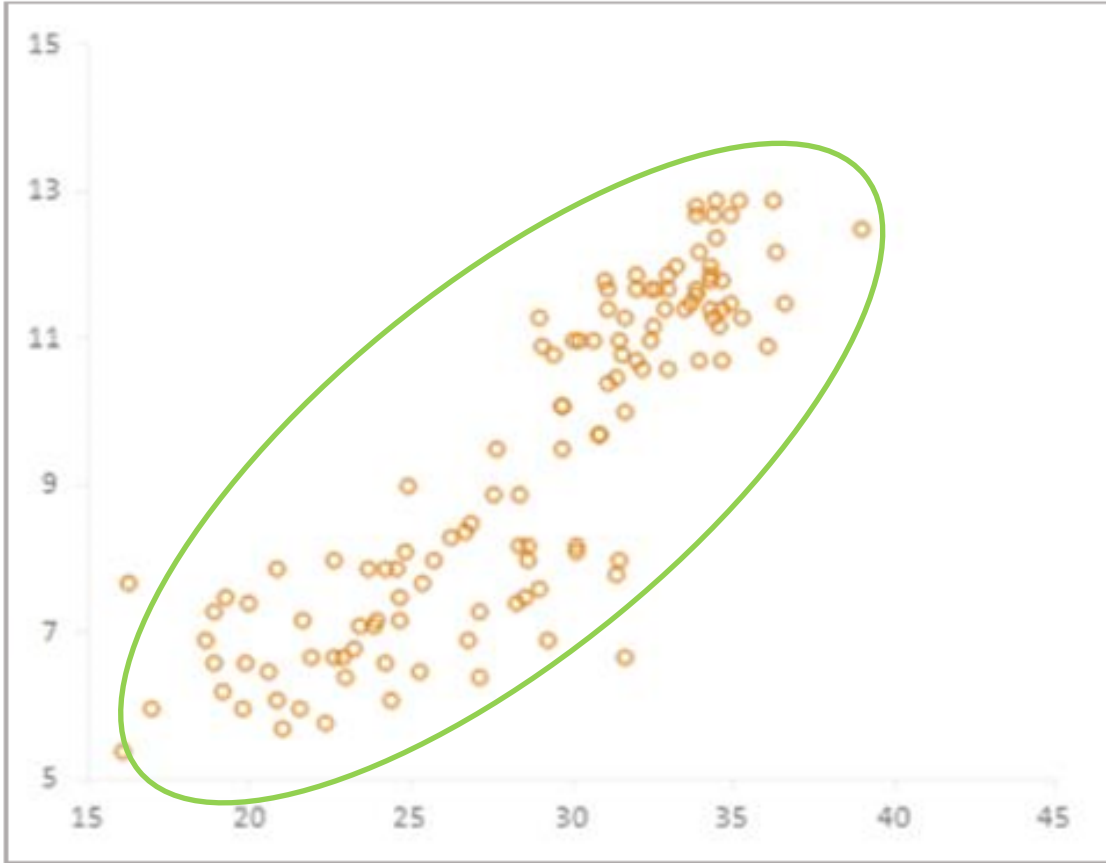


근접성(Proximity)

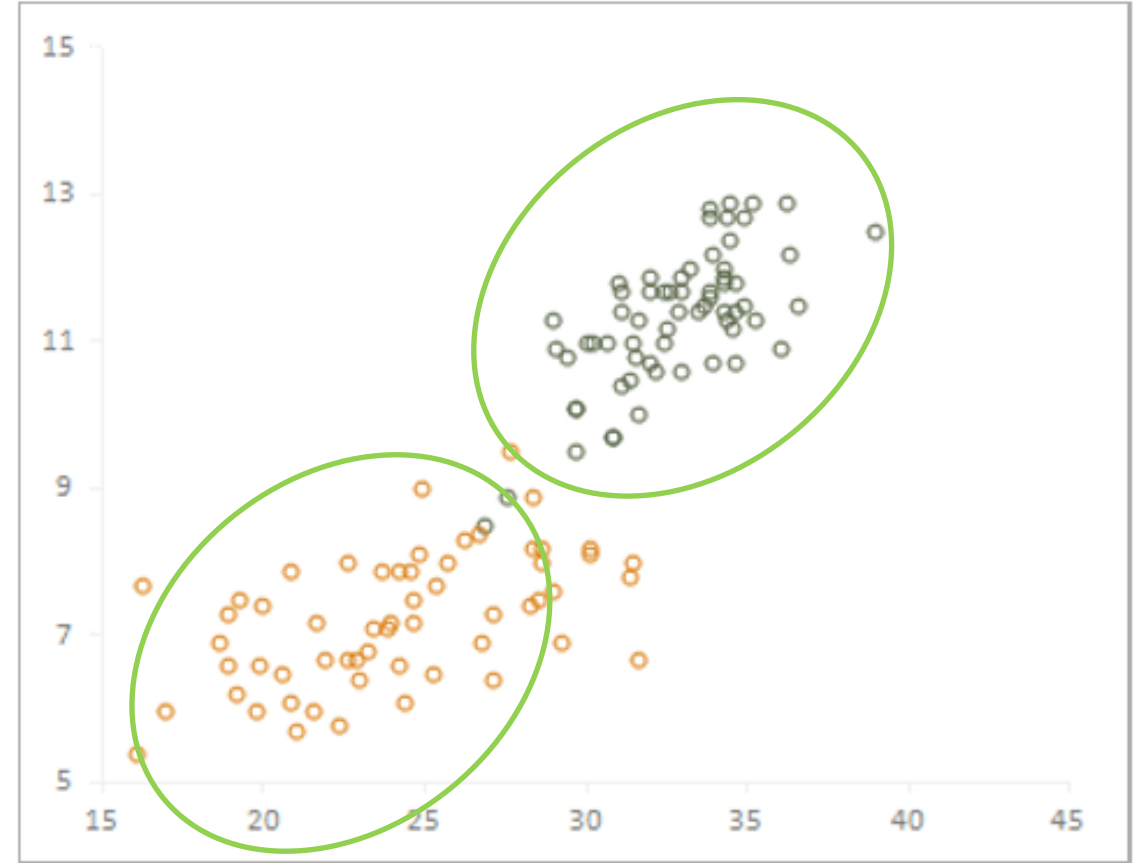


유사성(Similarity)





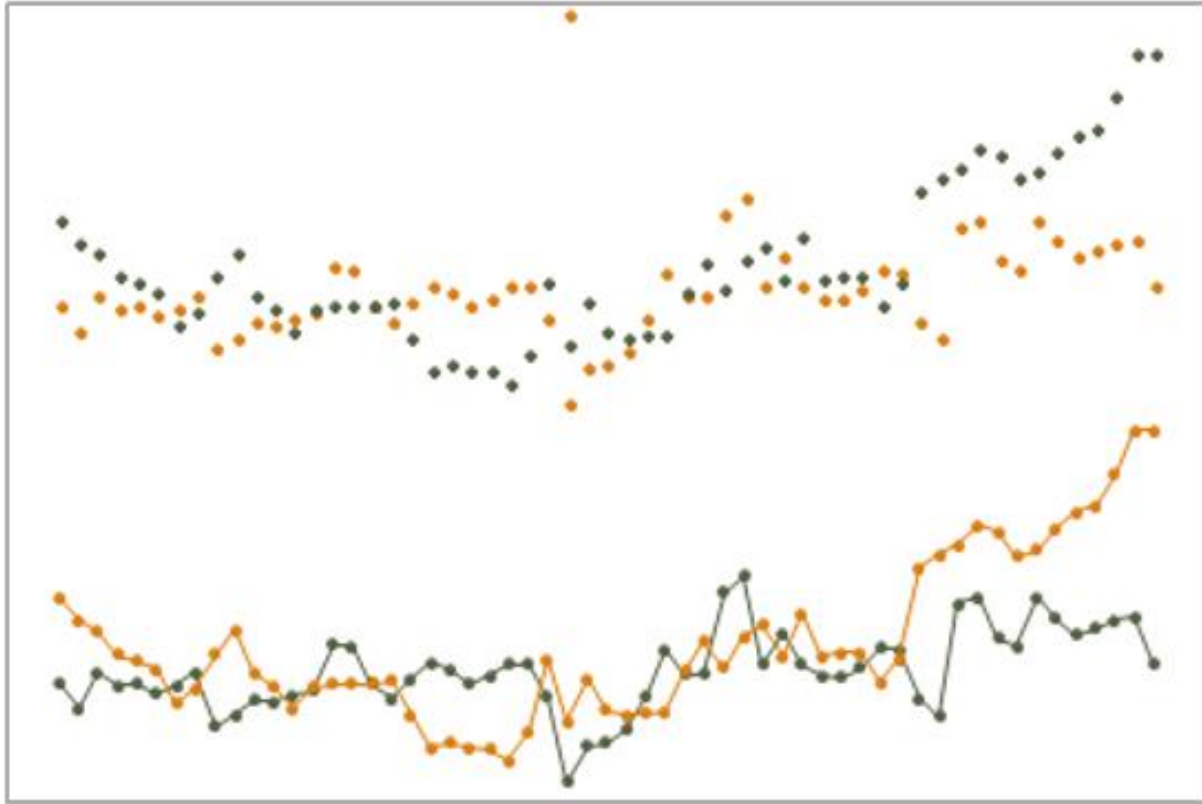
근접성(Proximity)



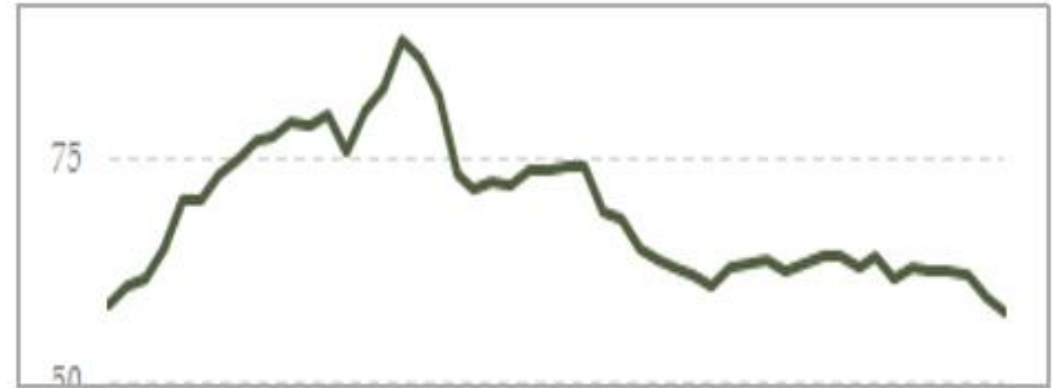
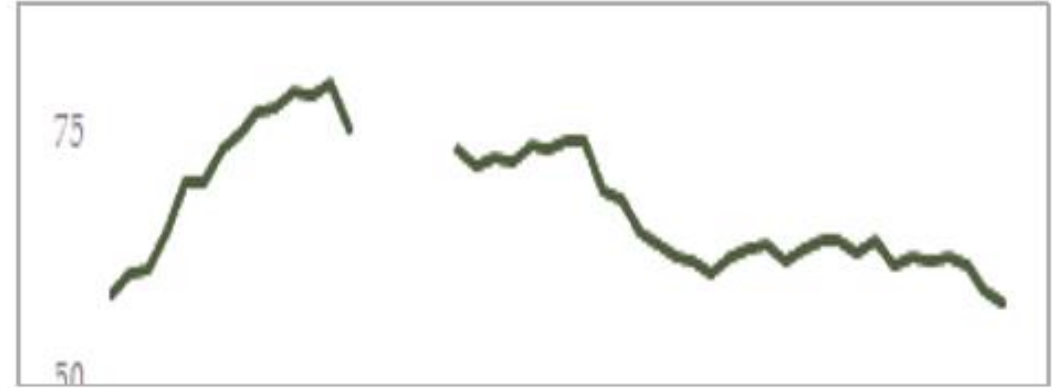
유사성(Similarity)



오류를 범하지 말자!



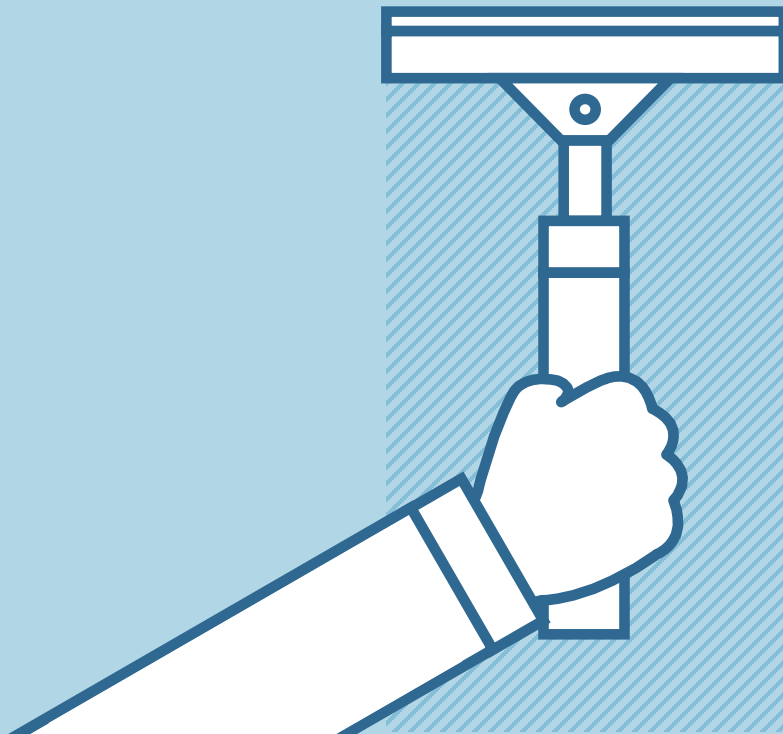
연속성(Continuity)



폐쇄성(Closure)

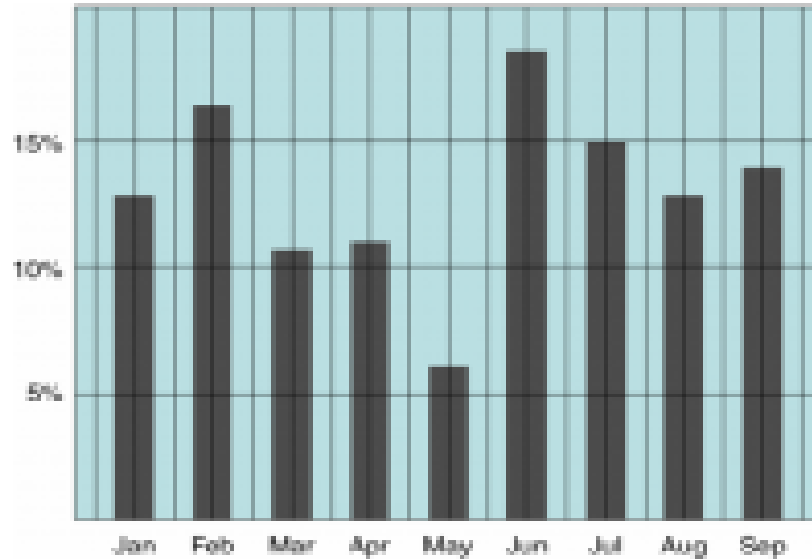


# 좋은 그래프 그리기

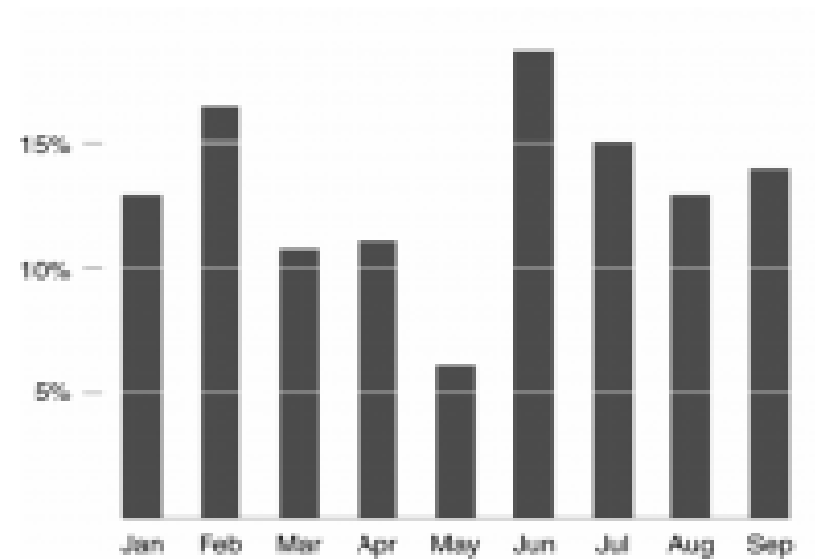


# Data Ink Ratio

$$\text{Data ink ratio} = \frac{\text{Data-ink}}{\text{Total ink used to print the graphic}}$$



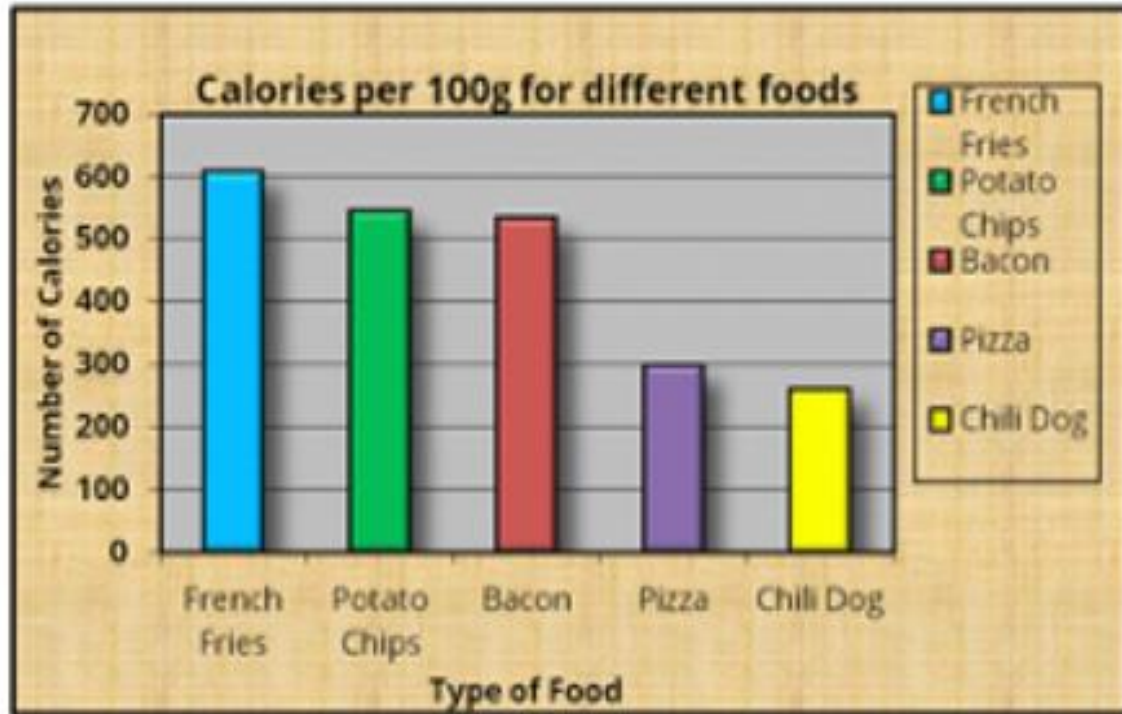
Low Data/Ink



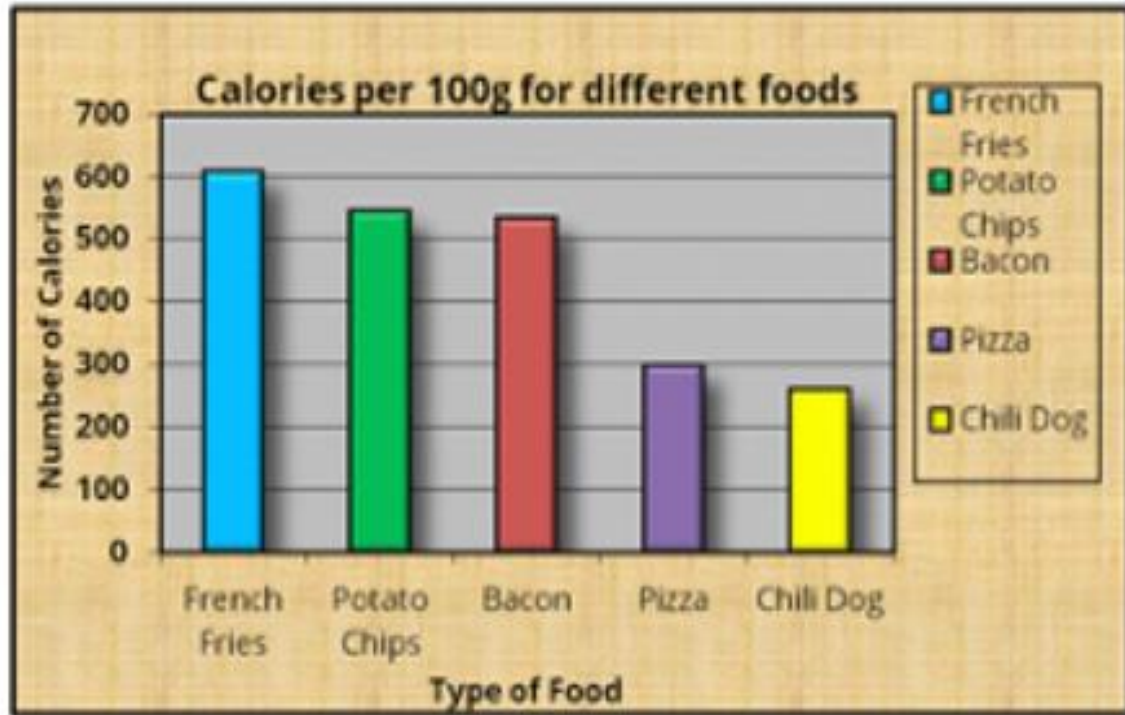
High Data/Ink



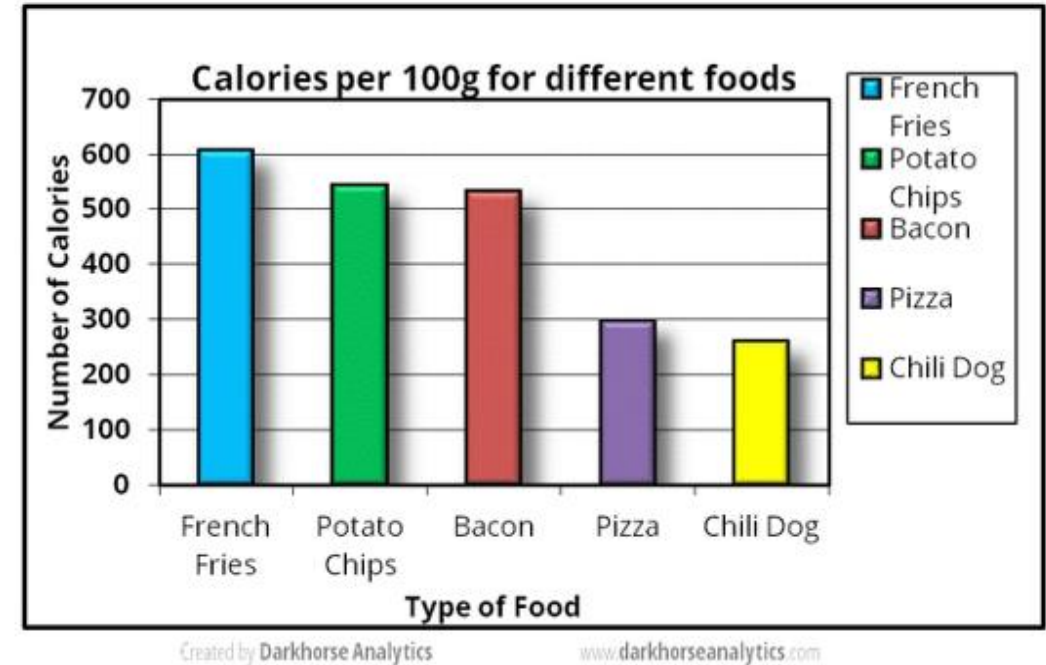
# Data Ink Ratio



# Data Ink Ratio



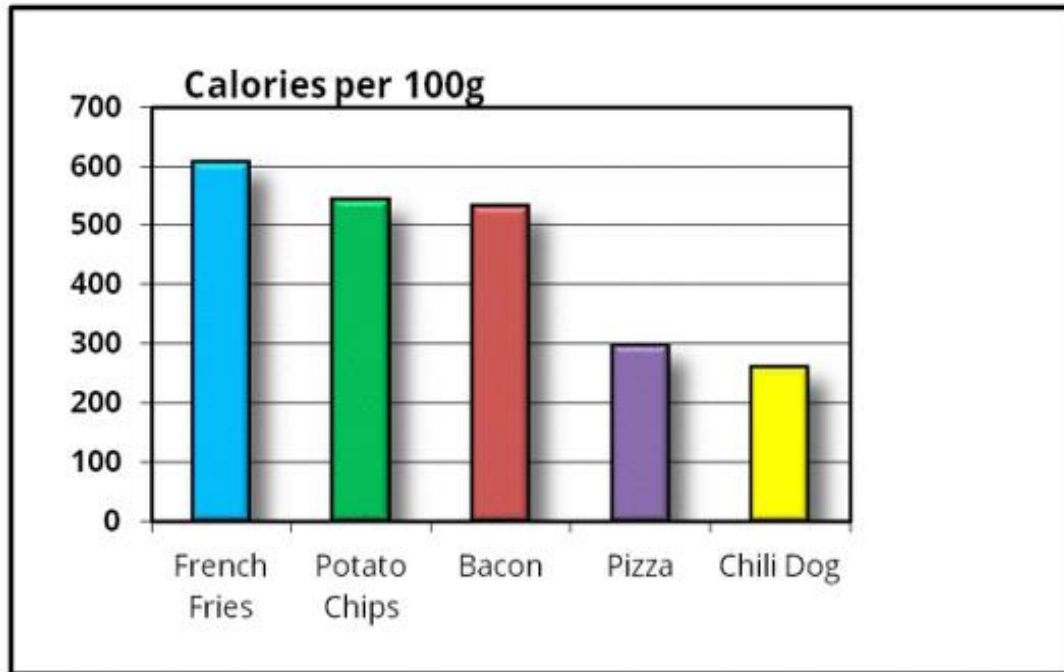
Remove backgrounds





# Data Ink Ratio

Remove redundant labels



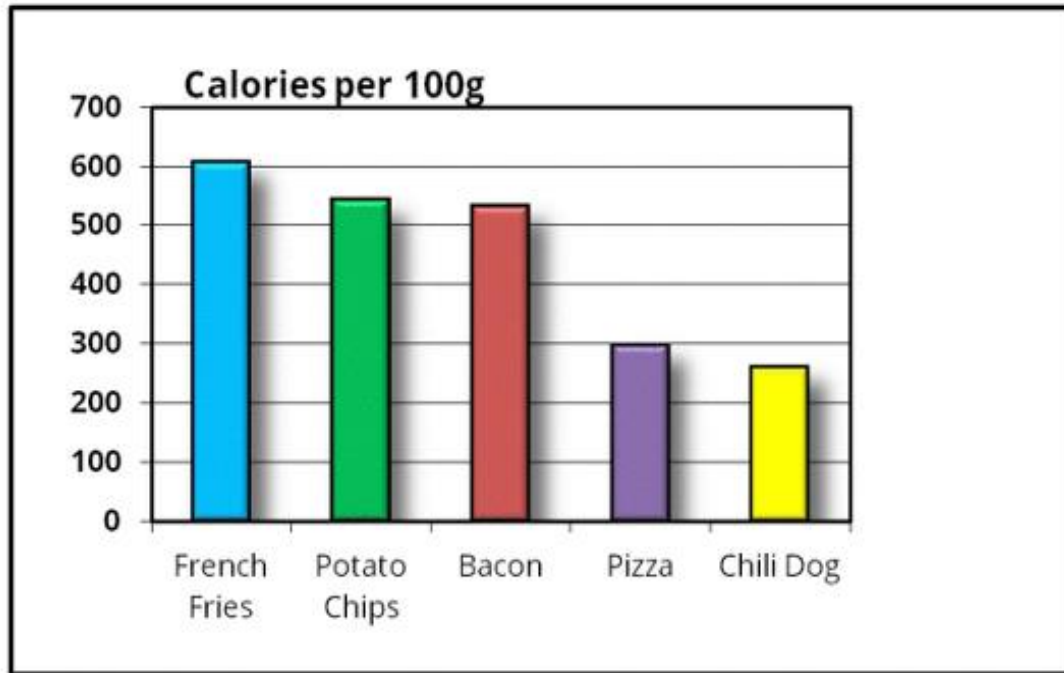
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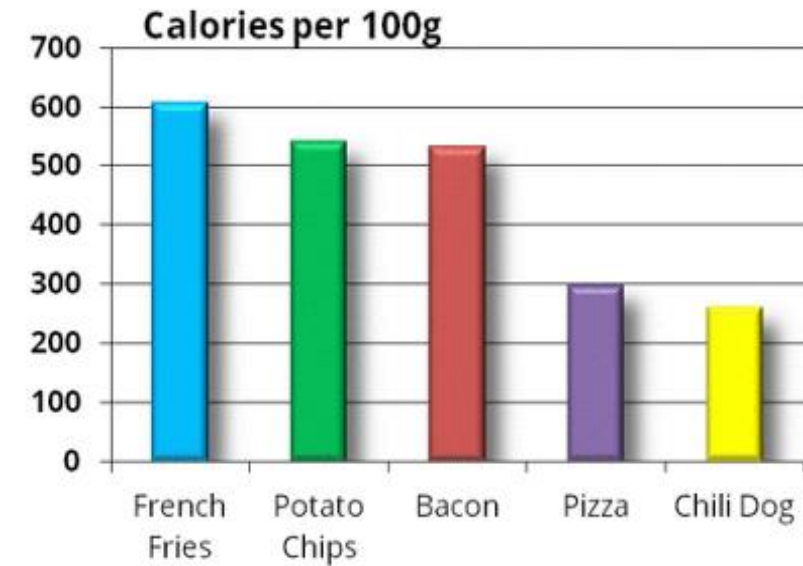
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[www.darkhorseanalytics.com](http://www.darkhorseanalytics.com)

Remove borders



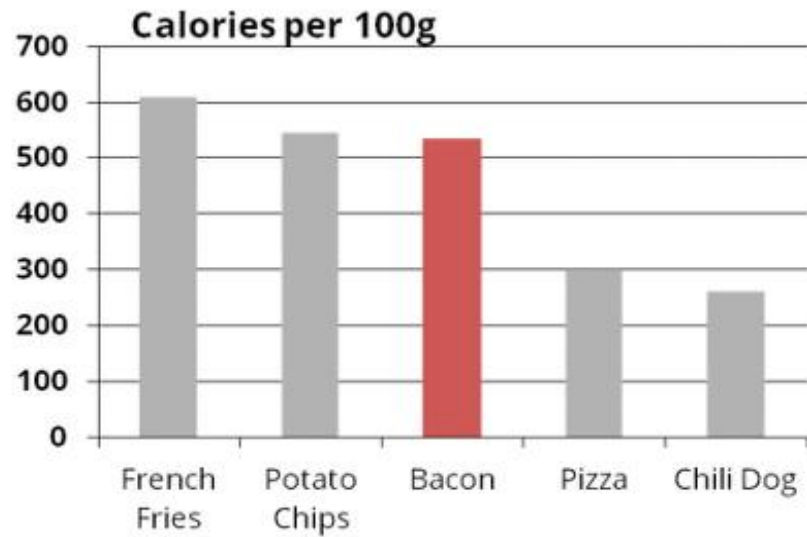
Created by Darkhorse Analytics

[www.darkhorseanalytics.com](http://www.darkhorseanalytics.com)



# Data Ink Ratio

Remove special effects



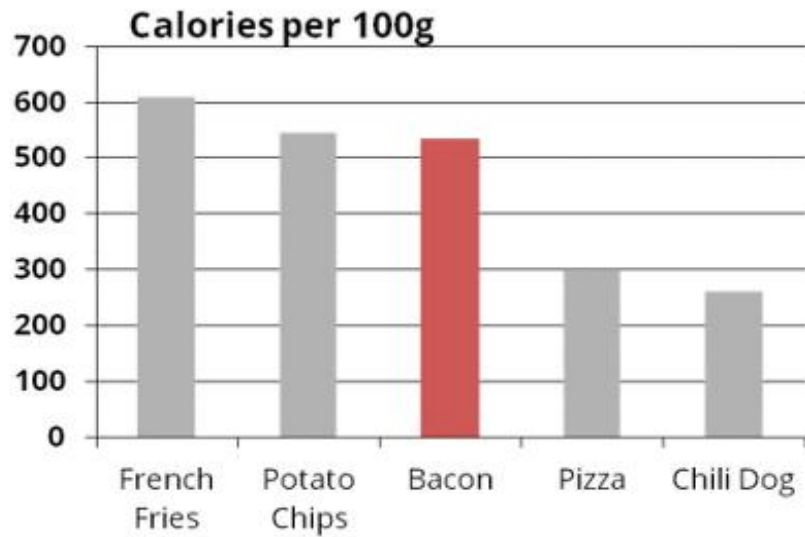
Created by Darkhorse Analytics

[www.darkhorseanalytics.com](http://www.darkhorseanalytics.com)



# Data Ink Ratio

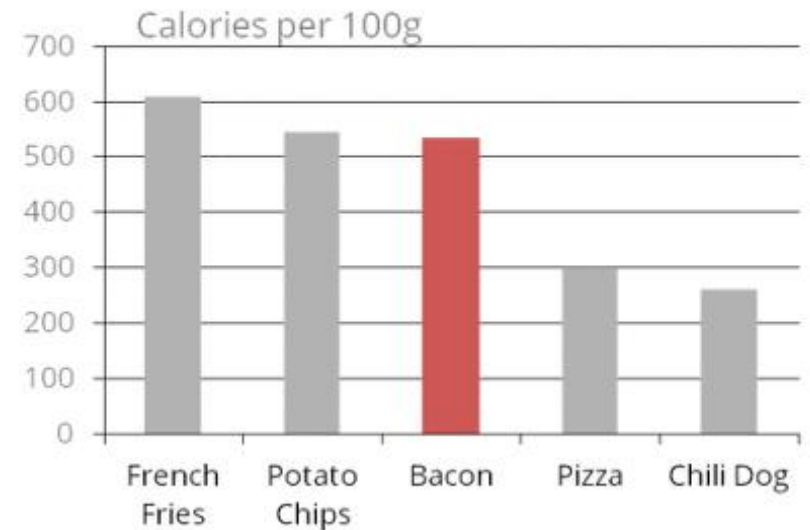
Remove special effects



Created by Darkhorse Analytics

[www.darkhorseanalytics.com](http://www.darkhorseanalytics.com)

Lighten labels



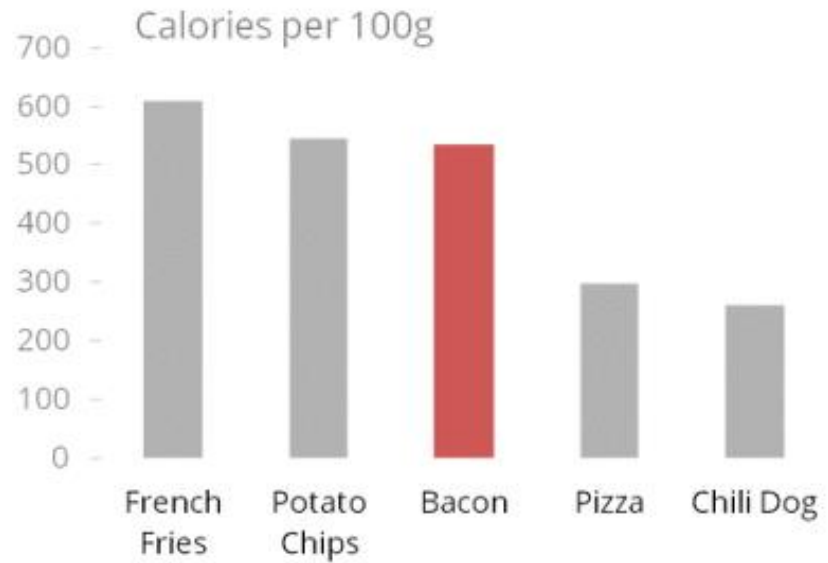
Created by Darkhorse Analytics

[www.darkhorseanalytics.com](http://www.darkhorseanalytics.com)



# Data Ink Ratio

Or remove lines



Created by Darkhorse Analytics

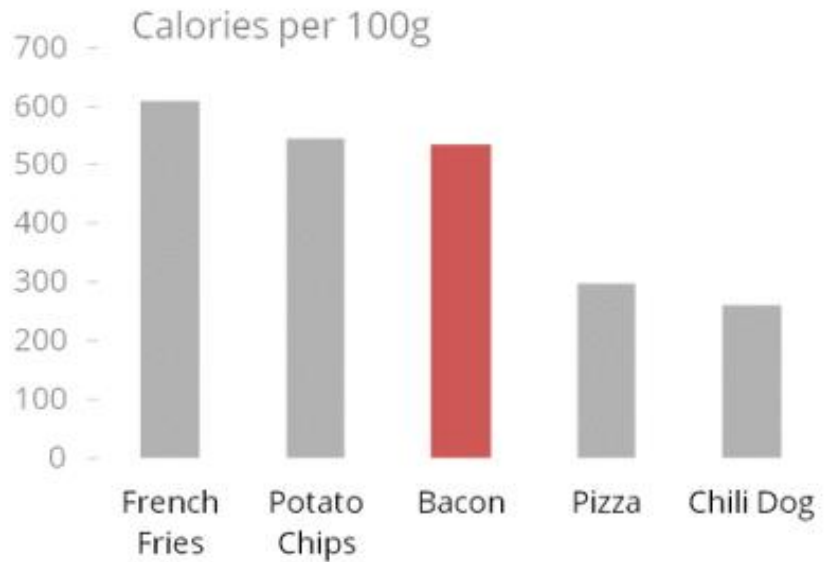
[www.darkhorseanalytics.com](http://www.darkhorseanalytics.com)



# Data Ink Ratio

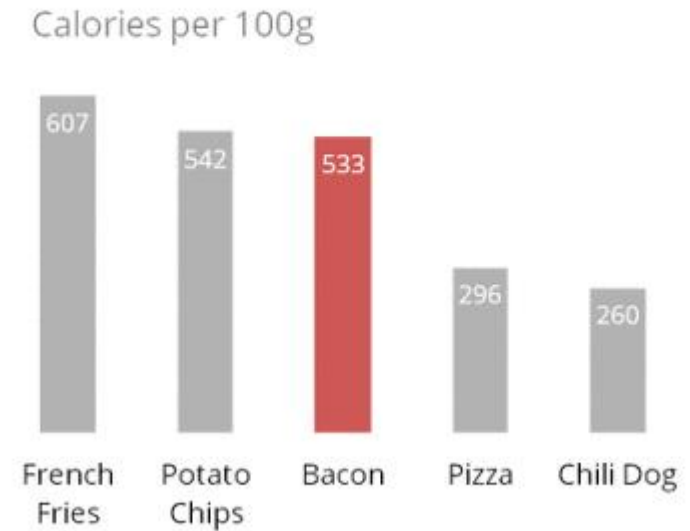
Or remove lines

Direct label



Created by Darkhorse Analytics

[www.darkhorseanalytics.com](http://www.darkhorseanalytics.com)

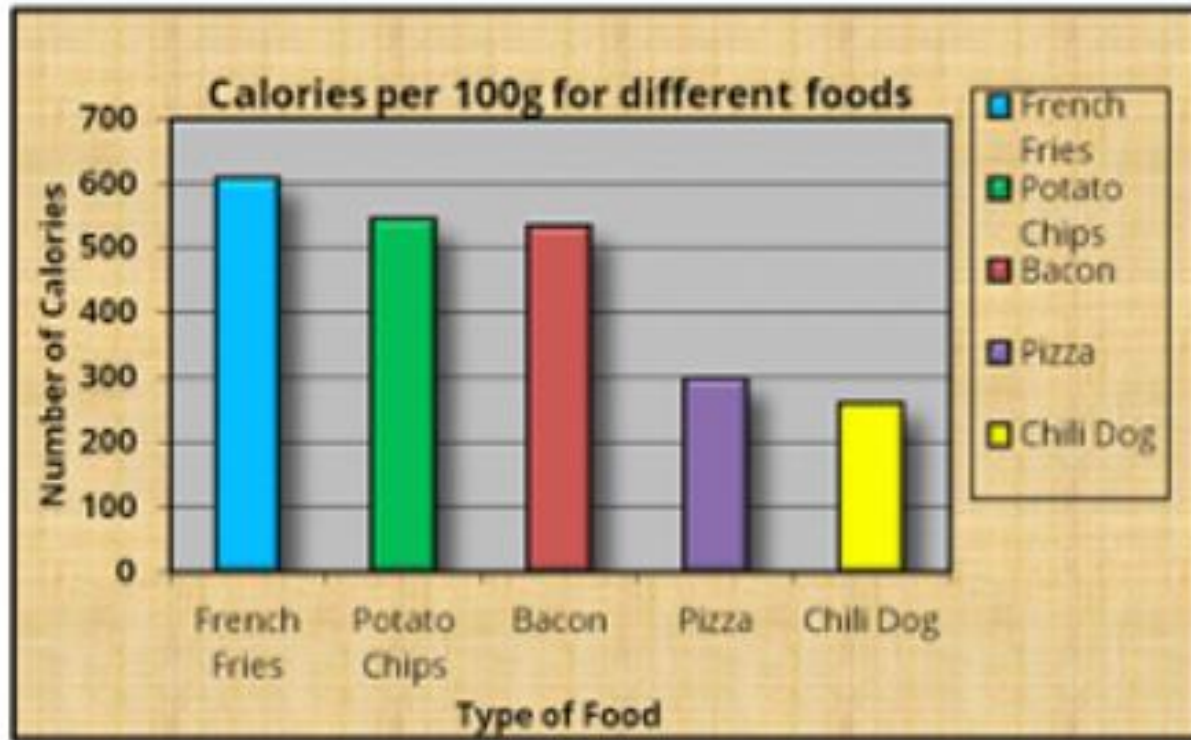


Created by Darkhorse Analytics

[www.darkhorseanalytics.com](http://www.darkhorseanalytics.com)



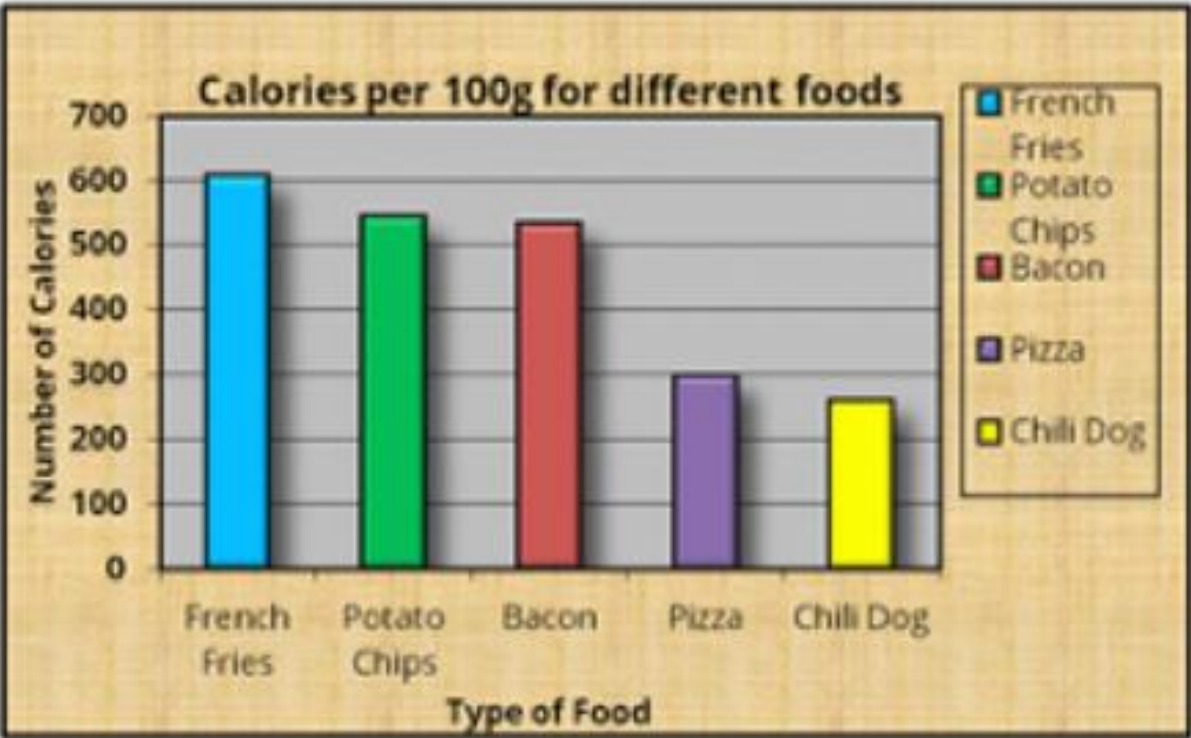
# Data Ink Ratio



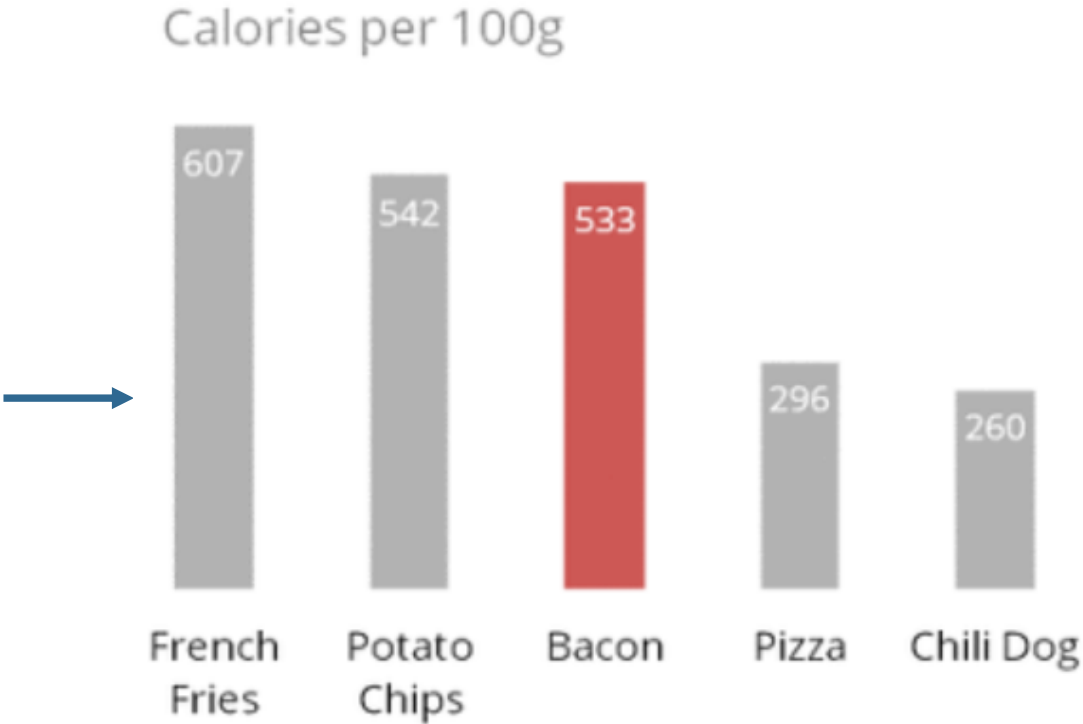
Before



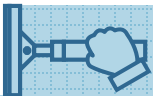
# Data Ink Ratio



Before

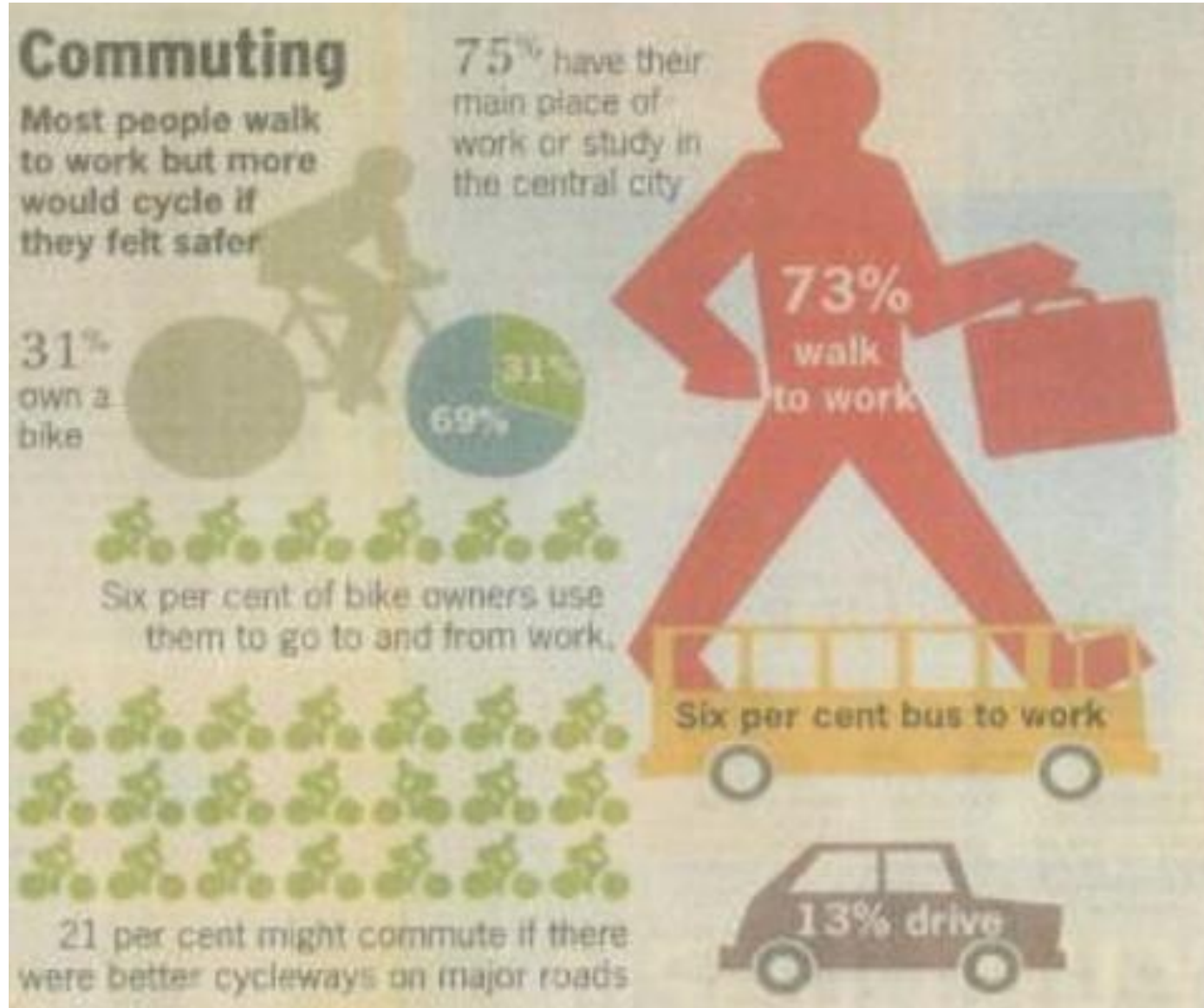


After

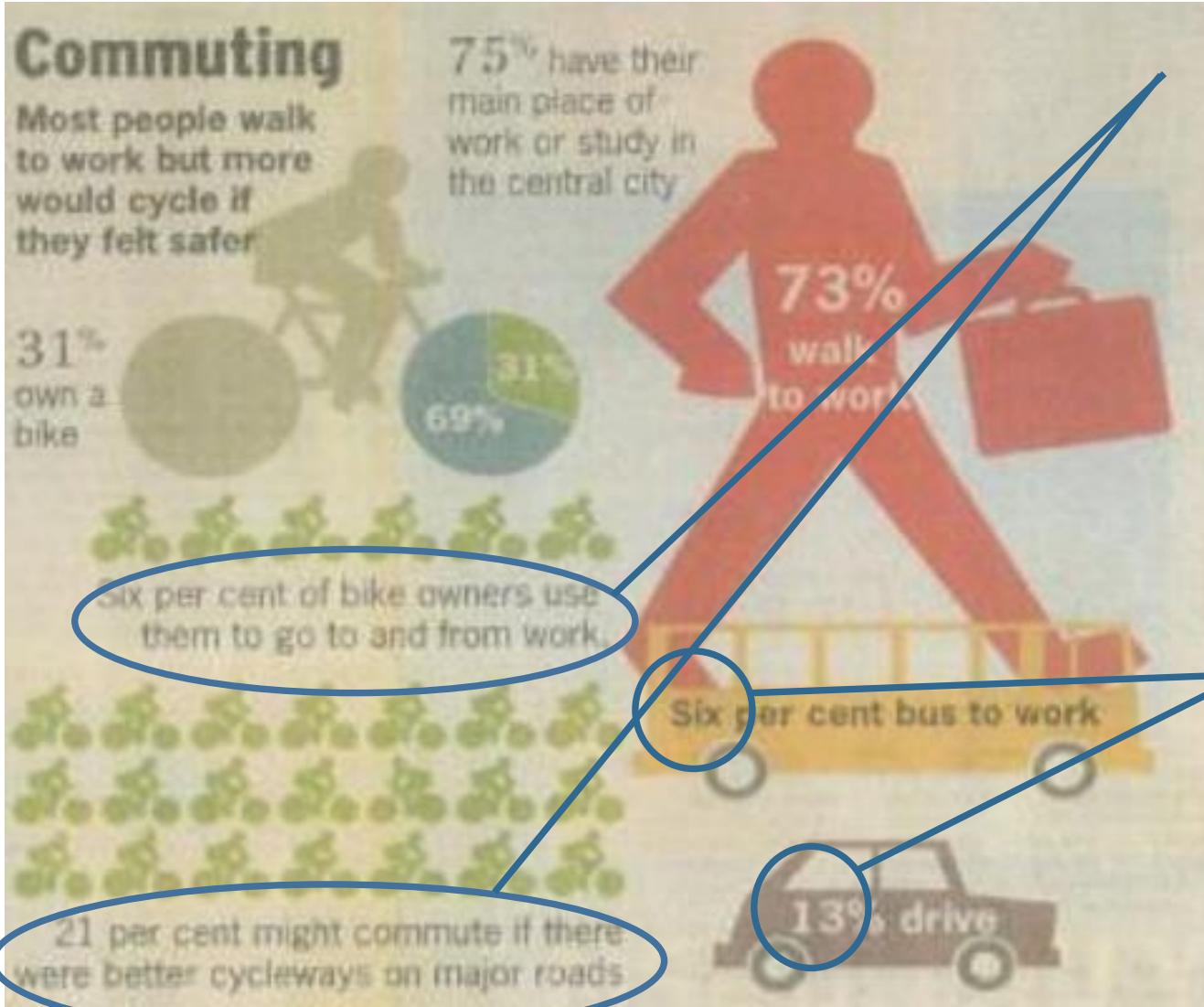




# 잘못된 그래프



# 잘못된 그래프



출퇴근시 자전거를 사용하는 사람들

특정 상황에서 출퇴근시 자전거를 사용하는 사람들(better cycleway가 있는 경우)

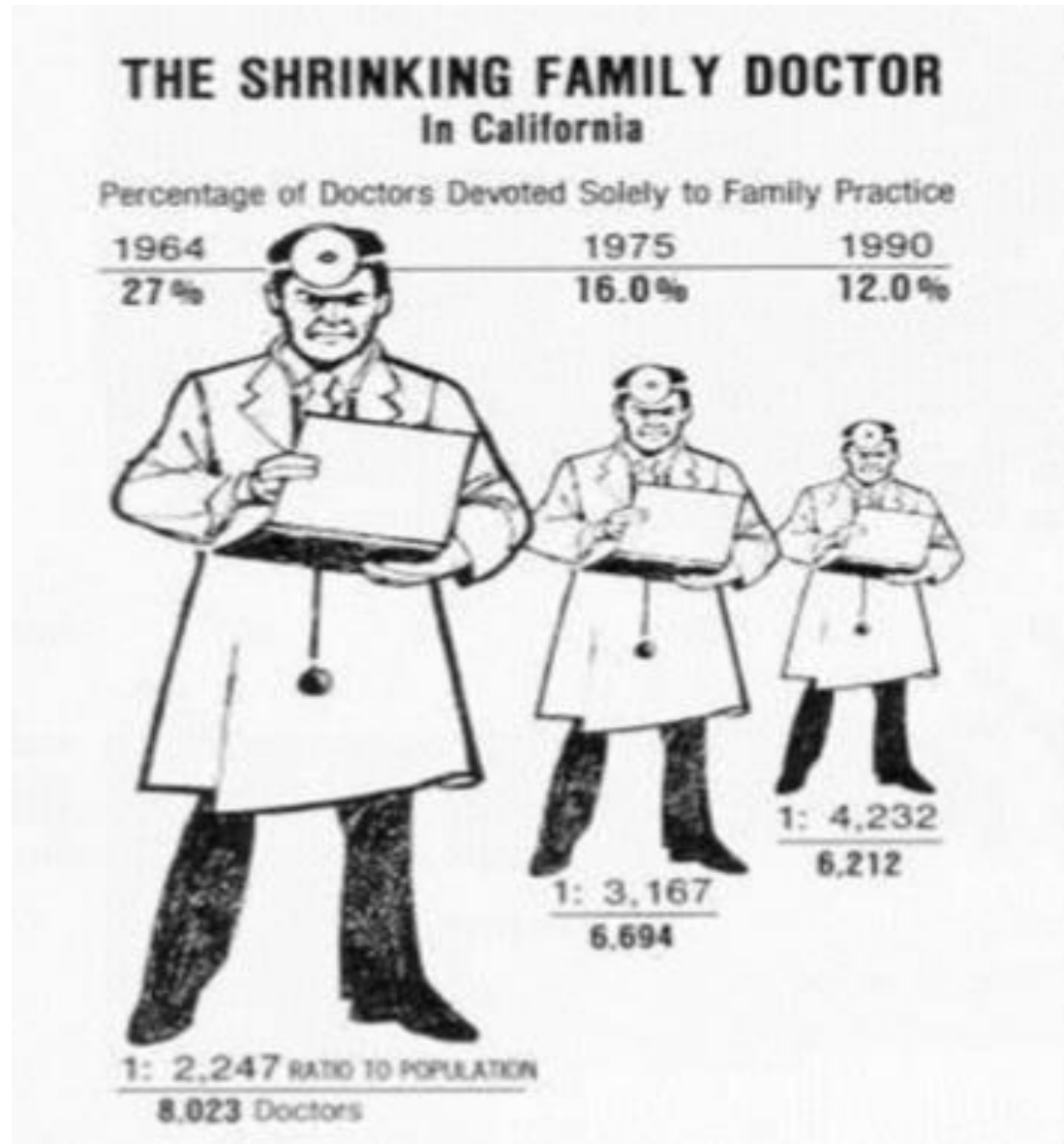
→ 다른 종류의 정보인데 같은 픽토그램 사용!

13% > 6%

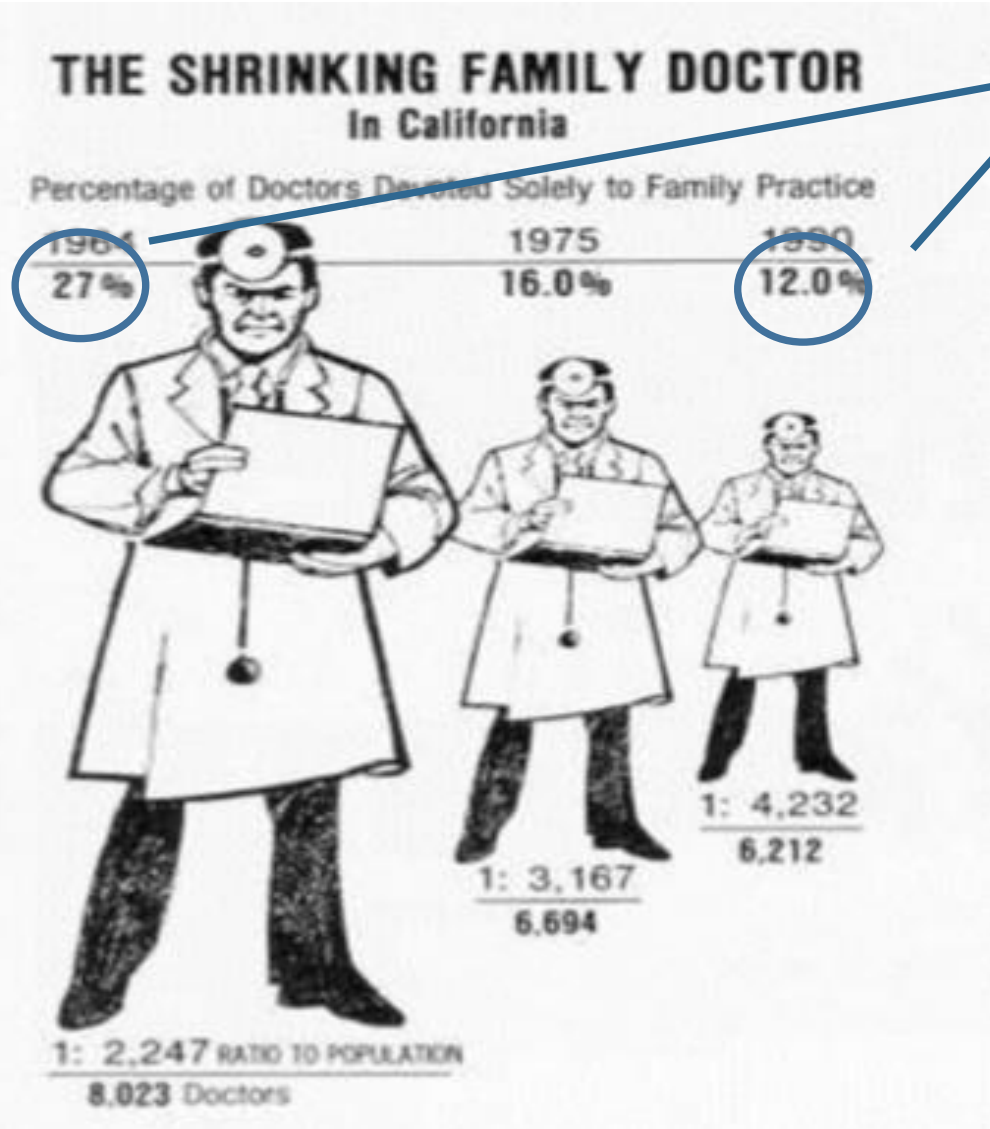
하지만, 픽토그램의 크기!



# 잘못된 그래프



# 잘못된 그래프



Family Doctor : 27% → 12%

의사의 키 감소 = family doctor의 수 감소

그러나!

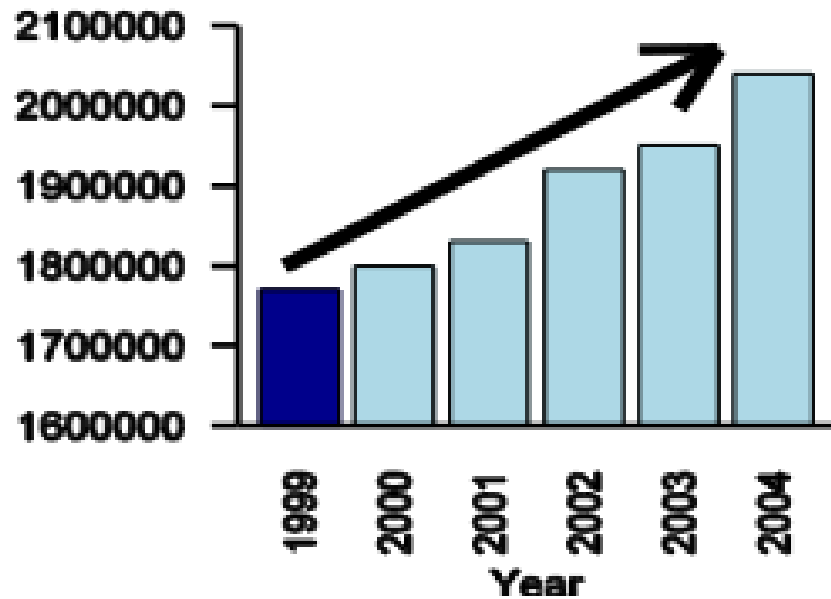
의사의 위치가 달라 마치 원근법처럼 보이는 문제가 생김.



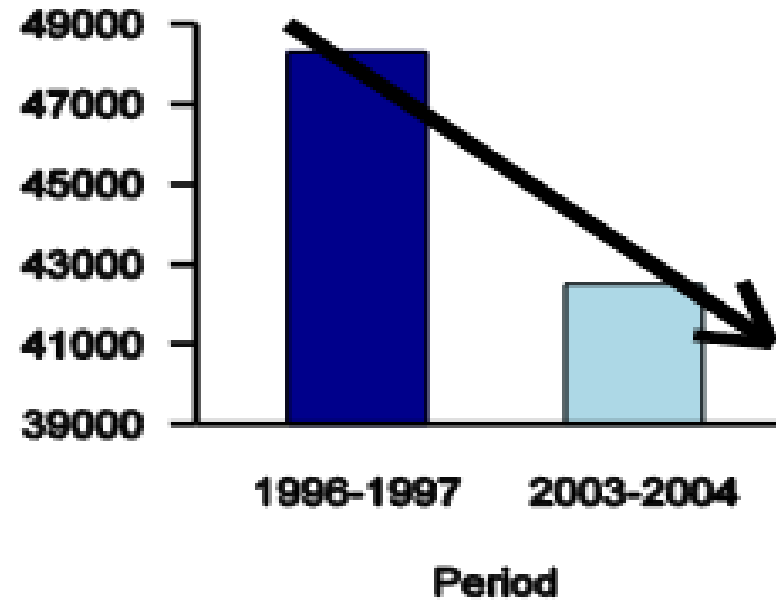
# 잘못된 그래프 (바 그래프)

Wrong

**New Zealanders in Jobs**



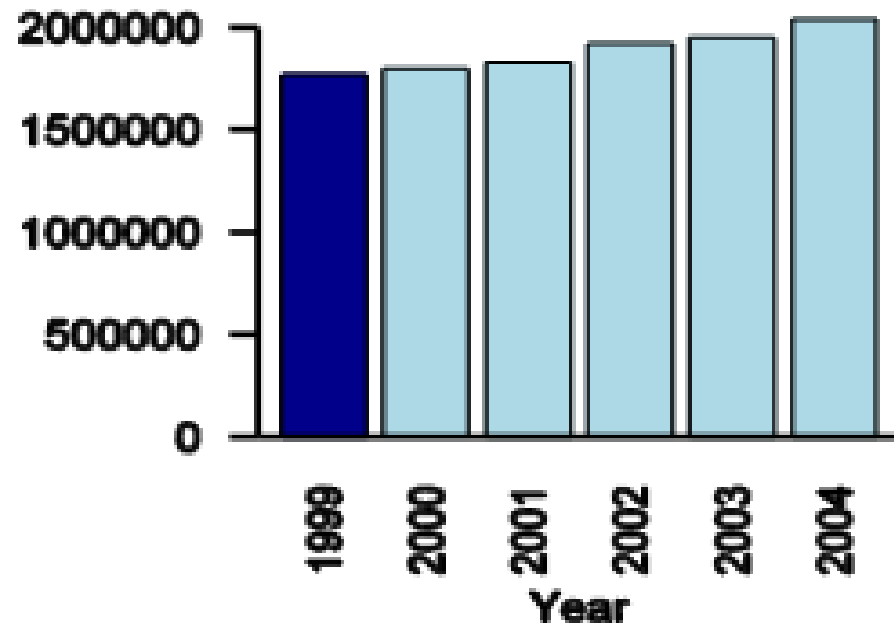
**Numbers of Crimes**



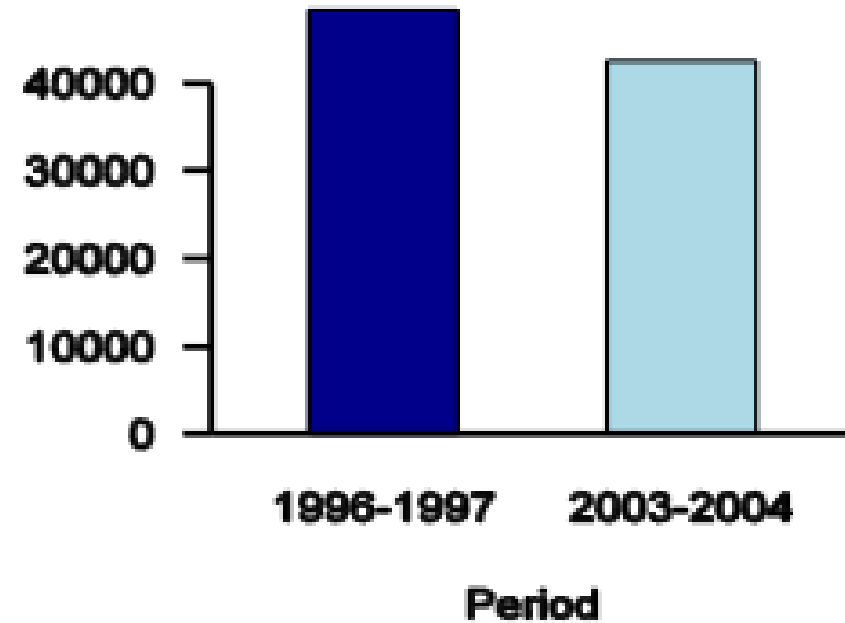
# 잘못된 그래프 (바 그래프)

Right

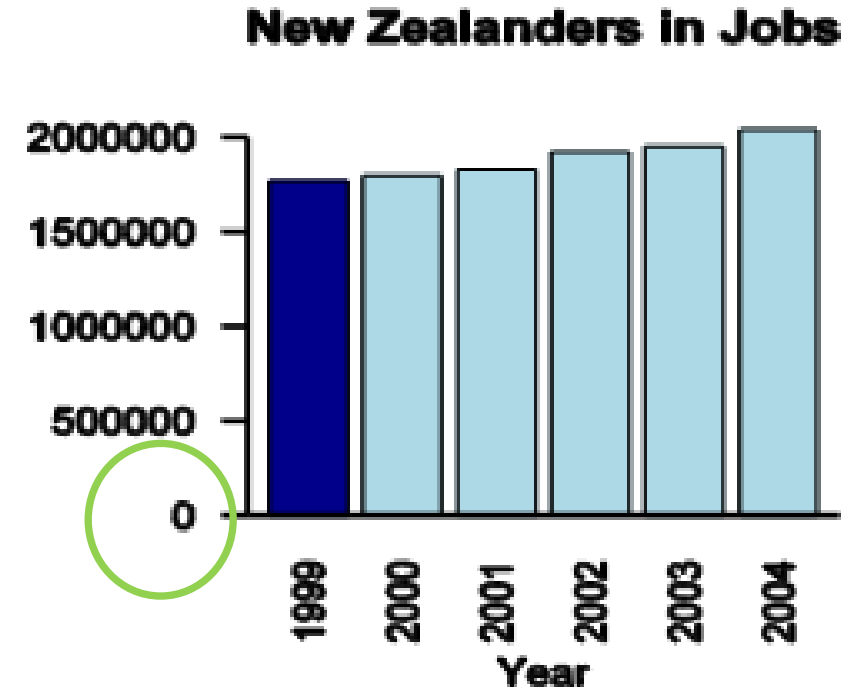
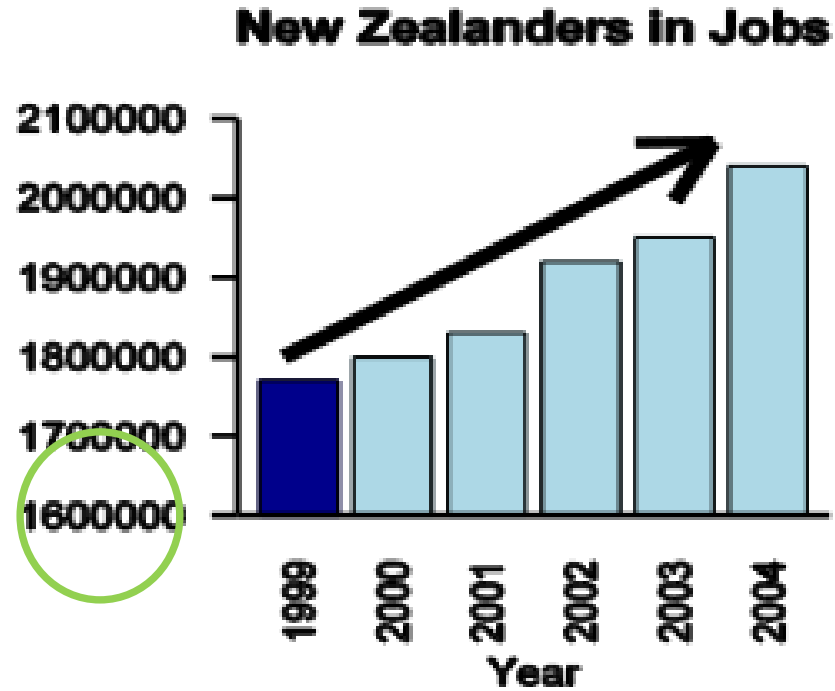
**New Zealanders in Jobs**



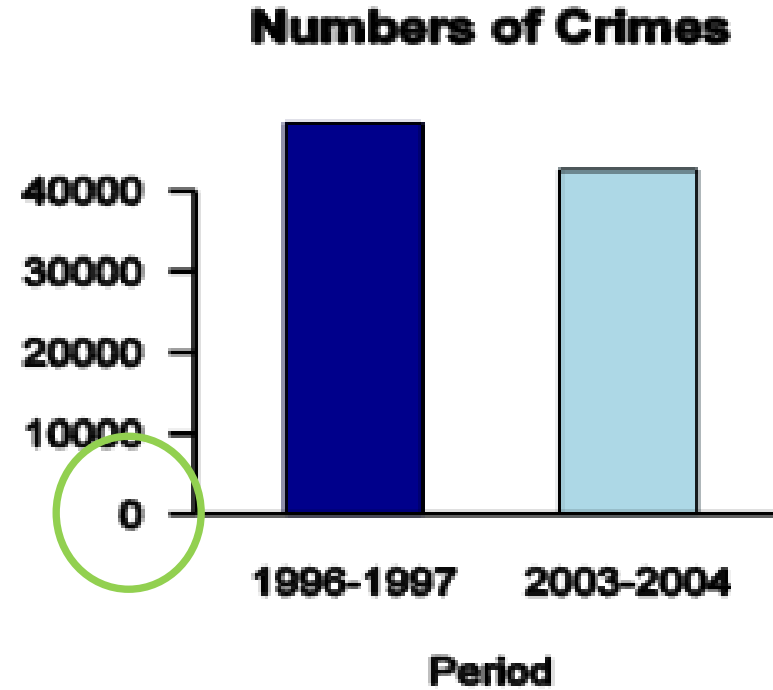
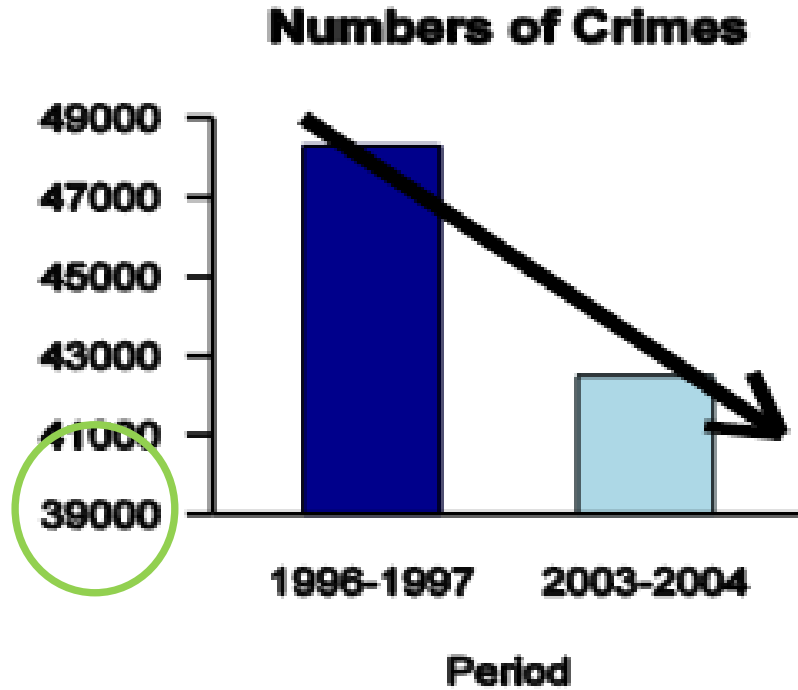
**Numbers of Crimes**



# 잘못된 그래프 (바 그래프)

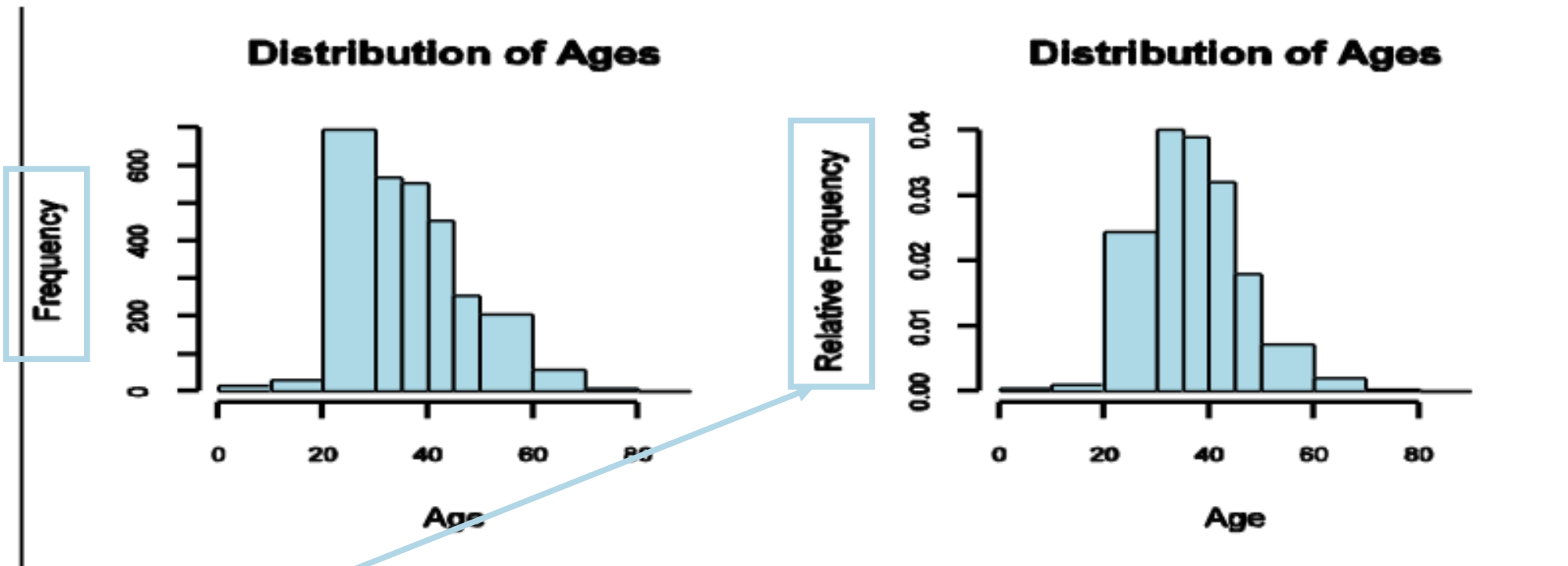


# 잘못된 그래프 ( 바 그래프 )





# 잘못된 그래프 (바 그래프)



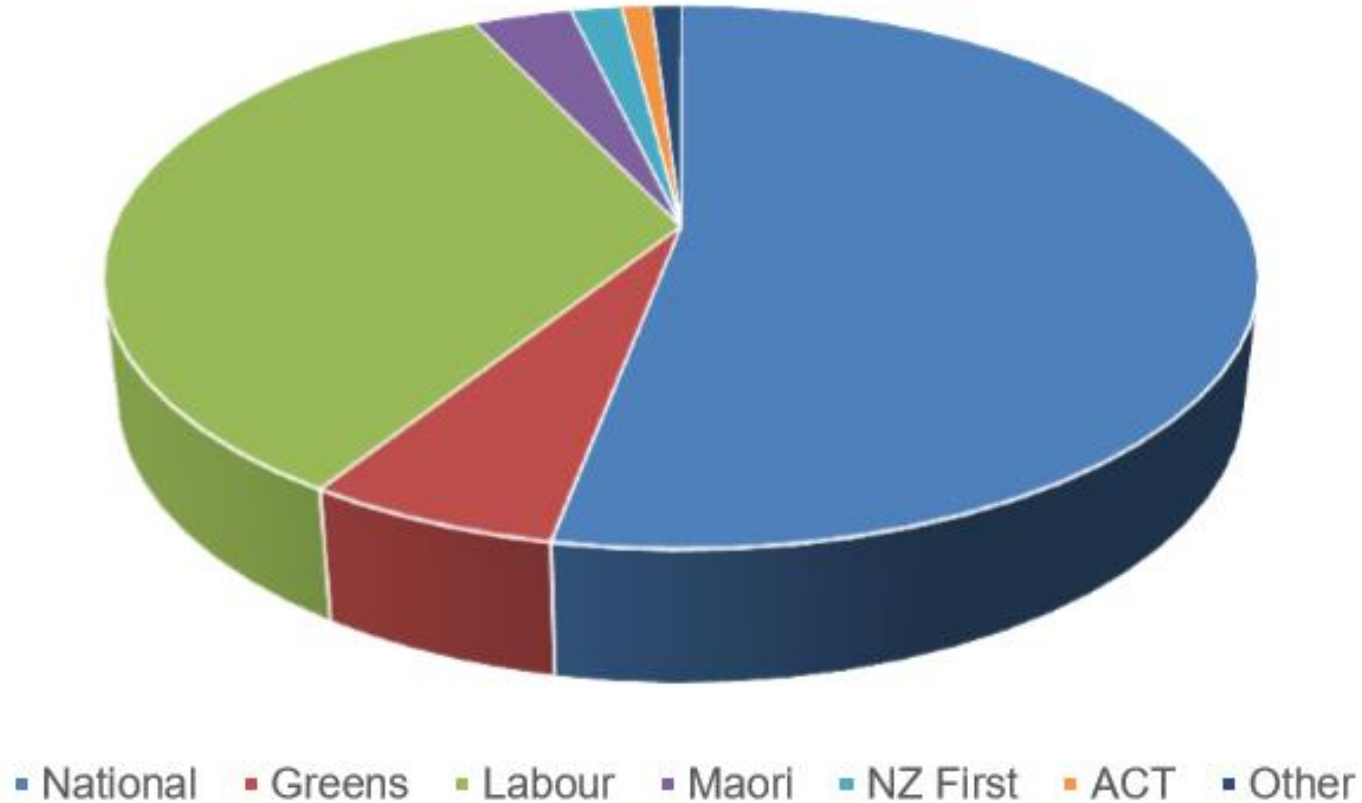
단순한 절댓값  
사용의 문제!

**상대도수:** 각 계급의 도수를 전체도수로 나눈 값.  
\*주로, 자료의 수가 다른 두 집단의 분포를 비교할 때 쓰임.

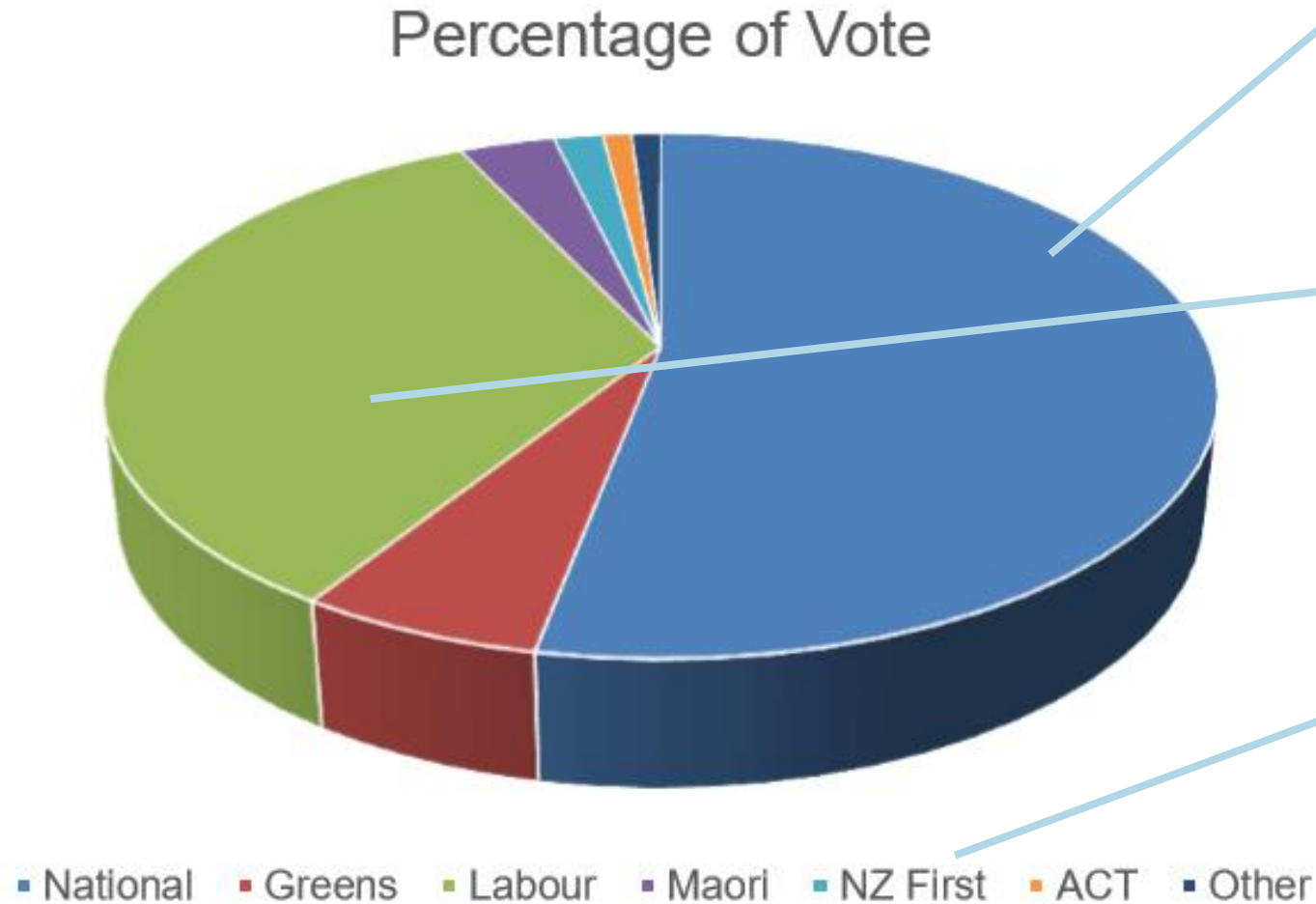


# 잘못된 그래프 ( 파이 차트 )

Percentage of Vote



# 잘못된 그래프 ( 파이 차트 )



가장 큰 비중을 차지하는  
National이 앞에 위치해 과도하  
게 큰 사이즈를 가지고 있다.

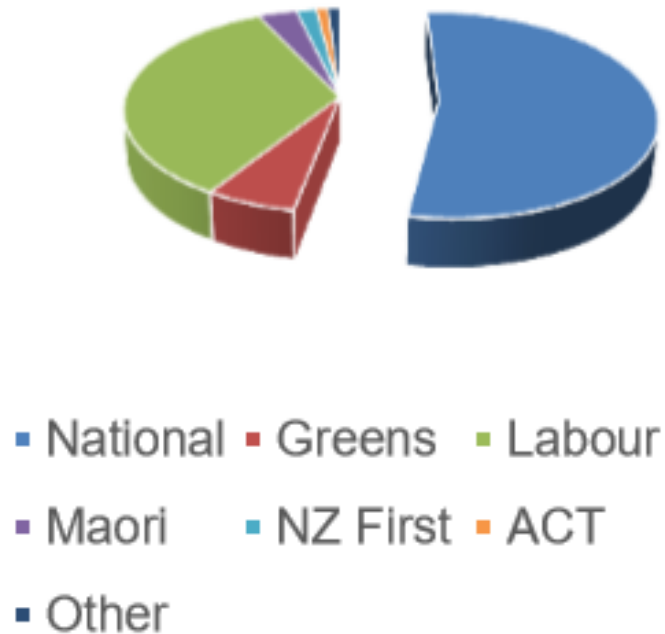
두번째로 큰 비중을 차지하는  
Labour이 뒤에 있기 때문에 원래  
보다 작아 보인다.

각 집단의 퍼센티지가 나와  
있지 않다.



# 잘못된 그래프 ( 파이 차트 )

Percentage of Vote



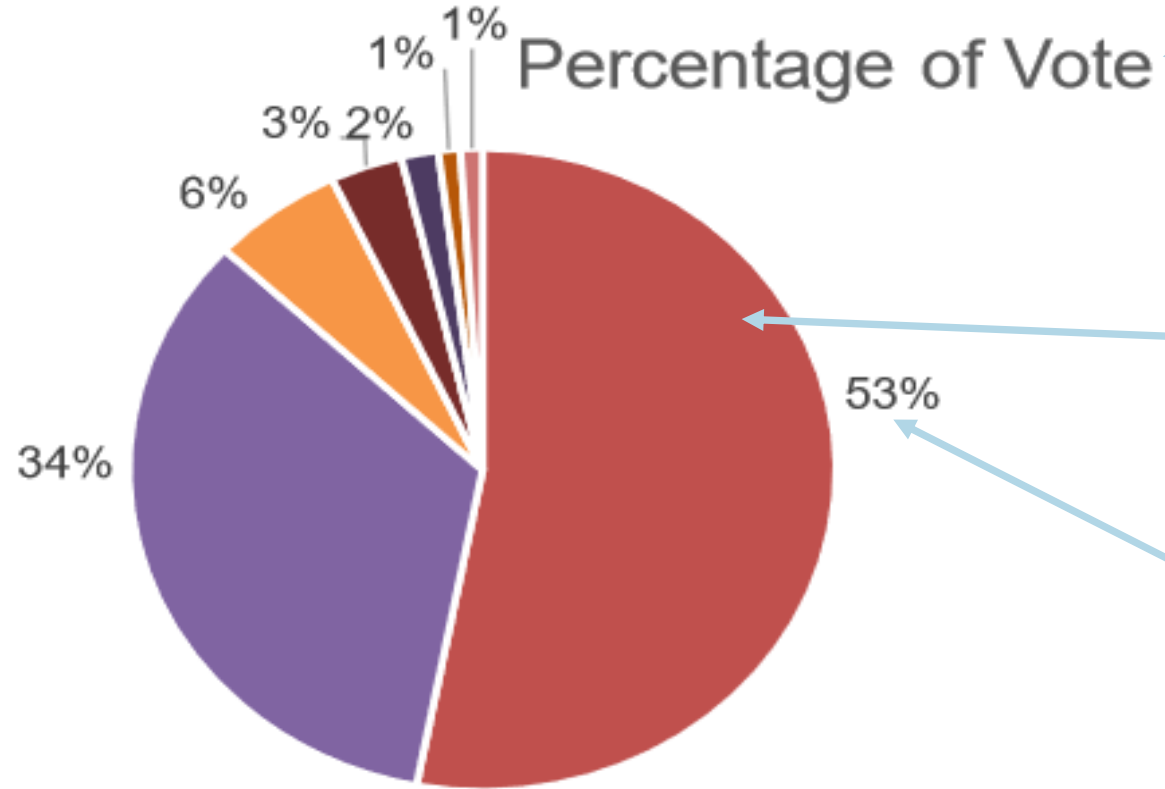
Percentage of Vote



‘Explode’ 기능(move apart)은 이전에 잘못 되었던 효과들을 오히려 강조하는 기능을 함.



# 바른 그래프 ( 파이 차트 )



무엇에 대해 나타내는지  
제목이 있음.

그래프가 입체적이지 않아  
과장이나 축소가 없음.

퍼센티지가 표시됨.

■ National ■ Labour ■ Greens ■ Maori  
■ NZ First ■ ACT ■ Other

각각의 Sector가 무엇인지 알 수 있음.



감사합니다

