

Once
pastayı
yesinler!



@minebocek



mine-cetinkaya-rundel



cetinkaya.mine@gmail.com



bit.ly/pasta-yesinler



Pasta yapmayı yeni öğrenmeye
yeni başladığınızı ve bir pastacılık
dersinde olduğunuzu hayal edin.
Derse başlamak için iki seçenek
sunacağım. Hangisi size yapmayı
öğreneceğiniz pasta hakkında
daha iyi fikir verir?

Ananas ve Hindistan cevizli sandviç kek



Ananas ve hindistan cevizli sandviç kek

kızarmış
hindistan
cevizi gevreği

ananas çiçeği



3 yanlış kani

1 bağlam

5 tasarım ilkesi

**yanlış
kani**



"Öğrenciler yeni bir programlama dilini
senelerdir öğretildiği şekilde ve sırada
öğrenmelidir."

"Öğrenciler, yeni bir programlama dilini
veri yapıları ve algoritmalarla
başlayarak öğrenmelidir."

"Öğrenciler, yeni bir programlama dilini
o dilde kod yazman için gereken
yazılımı yükleyerek başlayarak öğrenmelidir."



bağlam

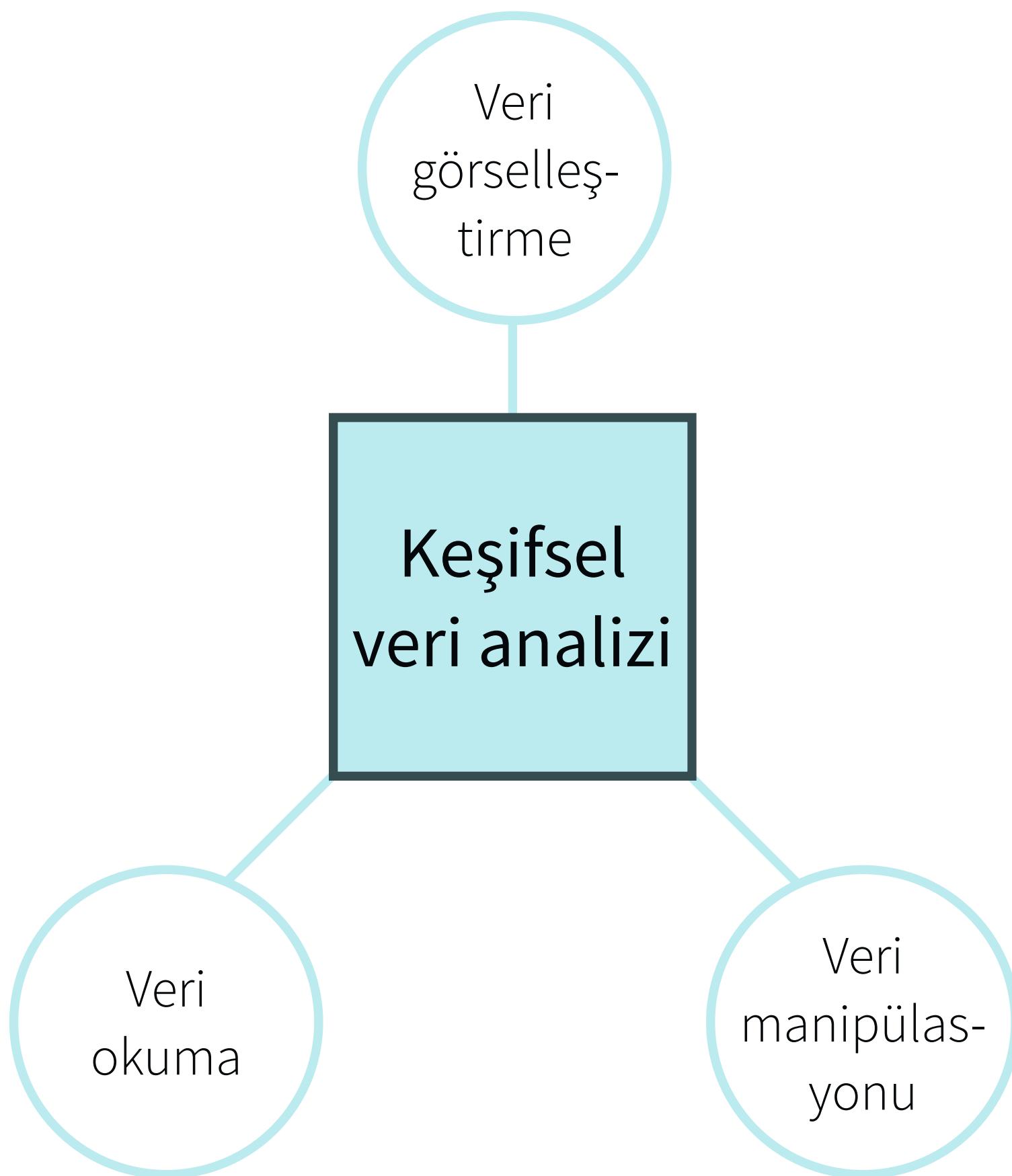


Introduction to Data Science

Fall 2020

University of Edinburgh

 introds.org



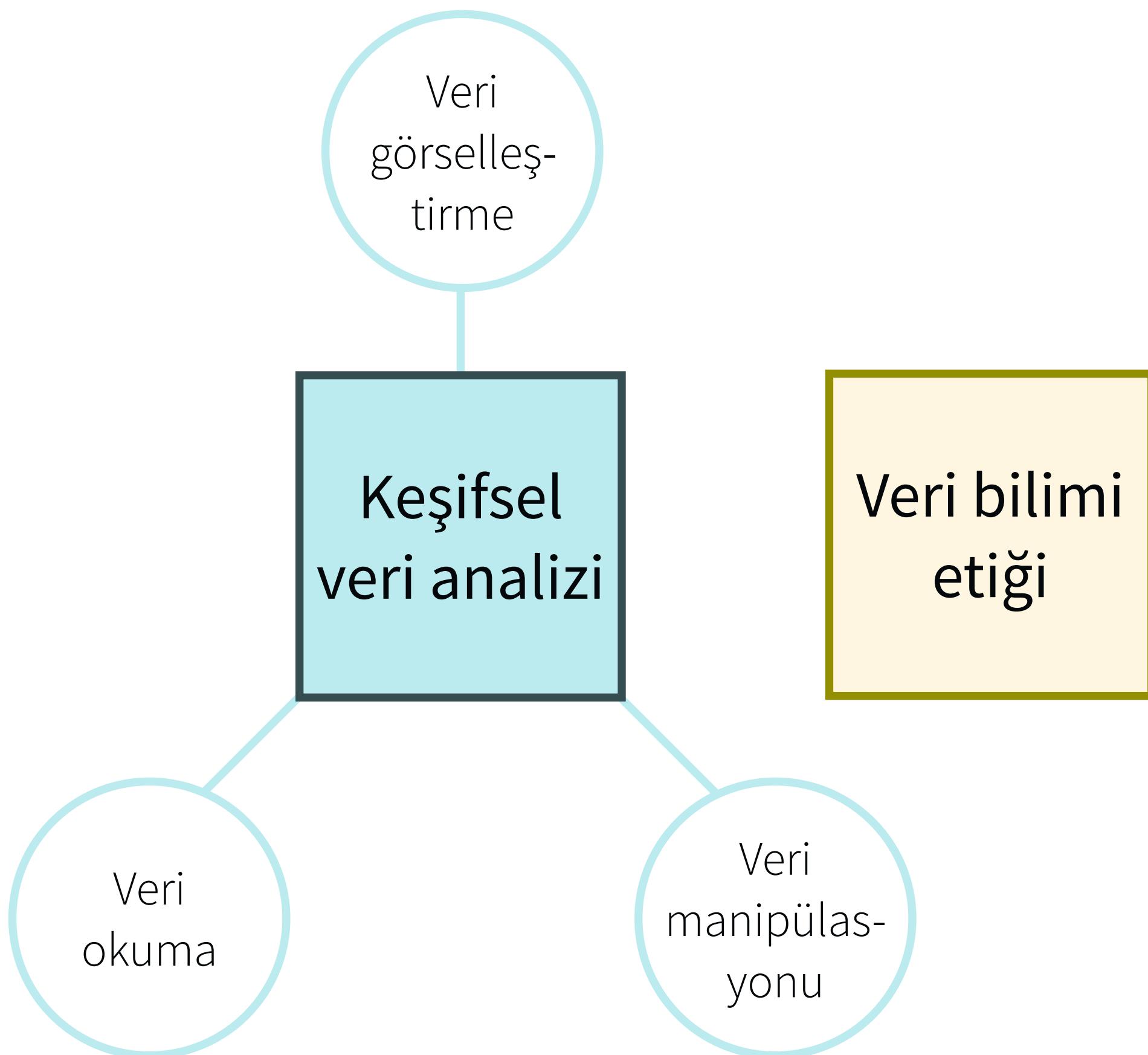


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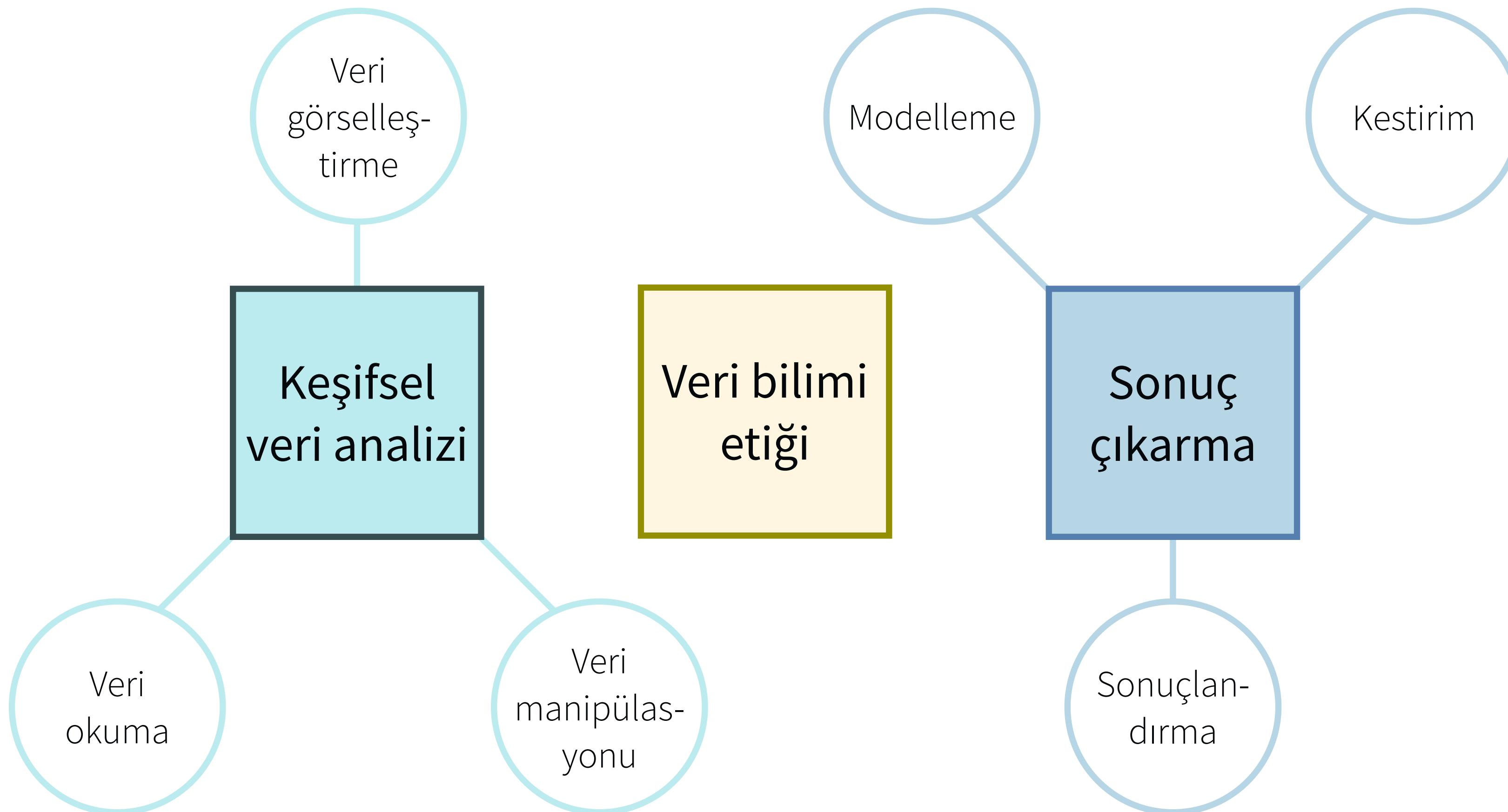


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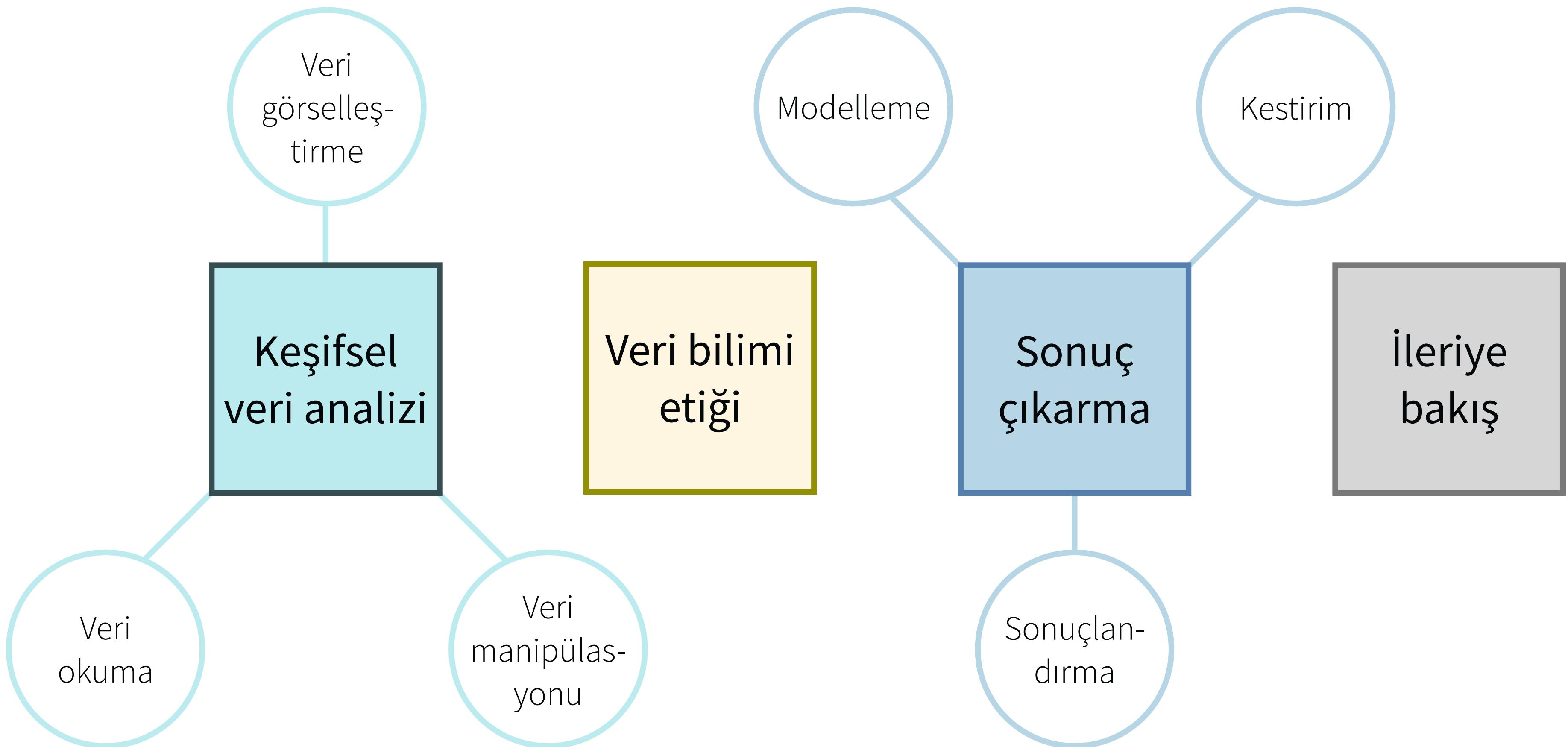


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tasarım

ilkesi



Hangi mutfakta pasta
yapmayı tercih edersiniz?



Hangi mutfakta pasta
yapmayı tercih edersiniz?

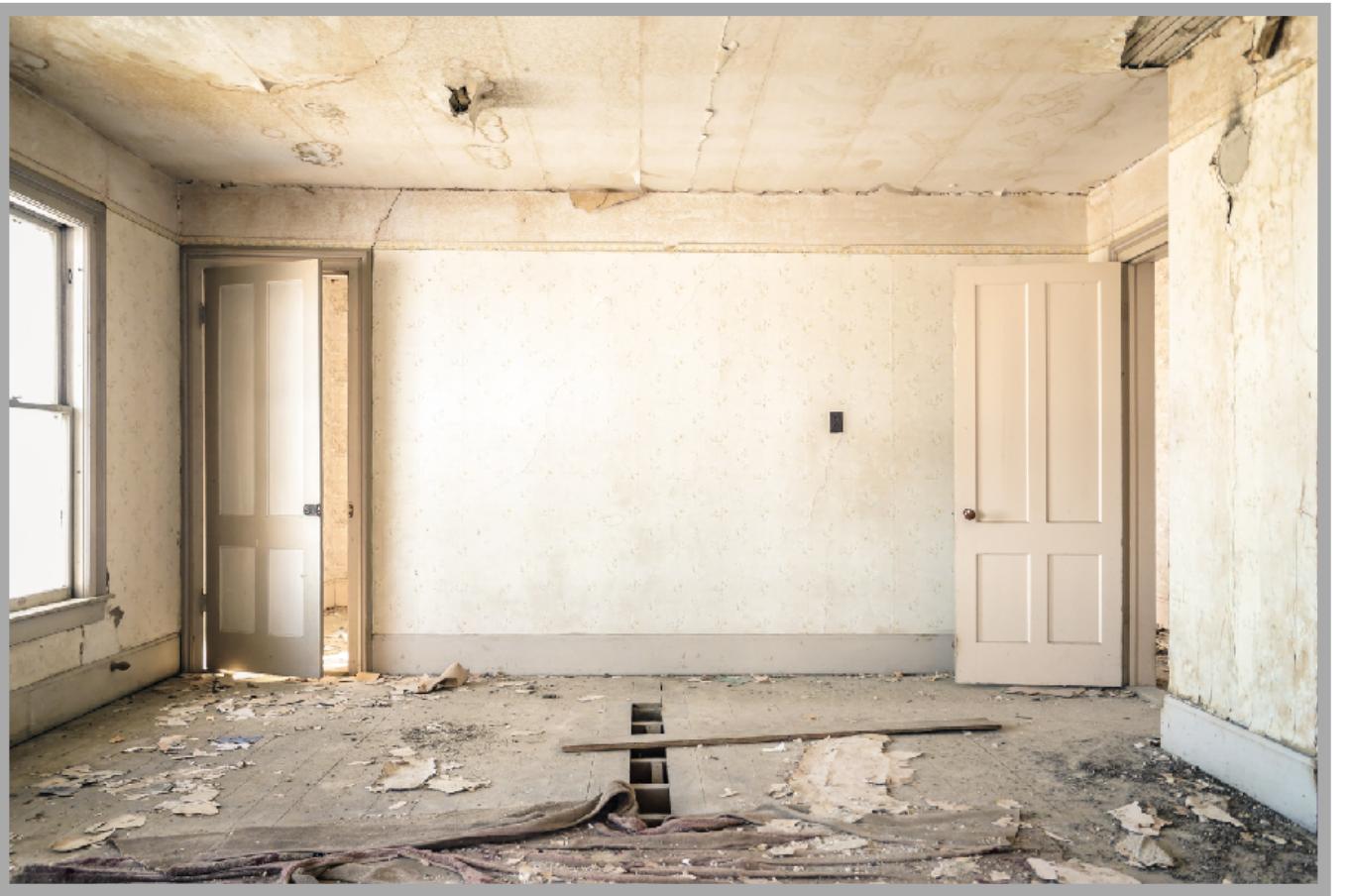


birinci



günü

değerlendir

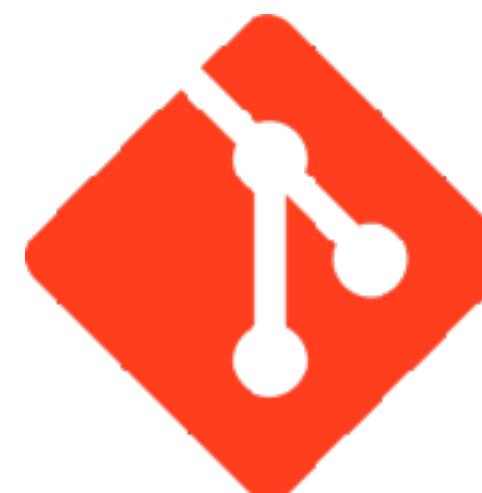
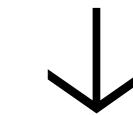
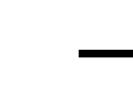


- R yükle
- RStudio yükle
- Bu paketleri yükle:
 - tidyverse
 - rmarkdown
 - ...
- git yükle

- rstudio.cloud'a git
 - Oturum aç
- > merhaba R!



R Studio Cloud



UN Votes

Mine Çetinkaya-Rundel

2018-09-26

Let's take a look at the voting history of countries in the United Nations General Assembly. We will be using data from the `unvotes` package. Additionally, we will make use of the `tidyverse` and `lubridate` packages for the analysis, and the `DT` package for interactive display of tabular output.

Data

The `unvotes` package provides three datasets we can work with: `un_roll_calls`, `un_roll_call_issues`, and `un_votes`. Each of these datasets contains a variable called `roid`, the roll call id, which can be used as a unique identifier to join them with each other.

- The `un_votes` dataset provides information on the voting history of the United Nations General Assembly. It contains one row for each country-vote pair.

```
us_votes
## # A tibble: 738,754 x 4
##   roid country      country_code vote
##   <int> <chr>        <chr>       <fct>
## 1 3 United States of America US     yes
## 2 3 Canada          CA     no
## 3 3 Cuba            CU     yes
## 4 3 Haiti           HT     yes
## 5 3 Dominican Republic DO     yes
## 6 3 Mexico          MX     yes
## 7 3 Guatemala        GT     yes
## 8 3 Honduras        HN     yes
## 9 3 El Salvador      SV     yes
## 10 3 Nicaragua        NI    yes
## # ... with 738,754 more rows
```

- The `un_roll_calls` dataset contains information on each roll call vote of the United Nations General Assembly.

```
un_roll_calls
## # A tibble: 5,429 x 9
##   roid session importantvote date      unres amend para short descr
##   <int> <dbl> <dbl> <date> <dbl> <dbl> <dbl> <dbl>
## 1 3 1 1 0 1946-01-01 8/1/66 1 0 AMEN_ TO ADD_
## 2 4 1 0 1946-01-02 8/1/79 0 0 SECU_ TO ADD_
## 3 5 1 0 1946-01-04 8/1/98 0 0 VOTI_ TO AD_
```

Pasta tariflerinizi nasıl tercih edersiniz? Yalnızca kelimelerle mi yoksa resimlerle de mi?



Ingredients

For the Cake:

16 ounces plain or **toasted sugar** (about 2 1/4 cups; 455g)

4 1/2 teaspoons baking powder

2 teaspoons (8g) Diamond Crystal kosher salt; for table salt, use about half as much by volume or the same weight

8 ounces unsalted butter (15 tablespoons; 225g), soft but cool, about 60°F (16°C)

3 large eggs, brought to about 65°F (18°C)

1/2 ounce vanilla extract (about 1 tablespoon; 15g)

16 ounces whole milk (about 2 cups; 455g), brought to about 65°F (18°C)

16 ounces all-purpose flour (about 3 1/2 cups, spooned; 455g)

Directions

- For the Cake:** Adjust oven rack to lower-middle position and preheat to 350°F (180°C). Lightly grease three 8-inch anodized aluminum cake pans and line with parchment (explanation and tutorial [here](#)). If you don't have three pans, it's okay to bake the cakes in stages, the batter will keep at room temperature until needed.
- In the bowl of a stand mixer fitted with the paddle attachment, combine sugar, baking powder, salt, and butter. Mix on low speed to roughly incorporate, then increase to medium and beat until fluffy and light, about 5 minutes. About halfway through, pause to scrape the bowl and beater with a flexible spatula.
- With the mixer still running, add the eggs one at a time, letting each fully incorporate before adding the next, then dribble in the vanilla. Reduce speed to low and sprinkle in about 1/3 of the flour, then drizzle in 1/3 of the milk. Repeat with remaining flour and milk, working in thirds as before.
- Scrape the bowl and beater with a flexible spatula, and resume mixing on medium speed for about 3 seconds to ensure everything is well combined. The batter should look creamy and thick, registering between 65 and 68°F (18 and 20°C) on a digital thermometer. (Significant



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**pasta
ile
başla**



Ingredients	Directions
For the Cake:	
16 ounces plain or toasted sugar (about: 2 1/4 cups; 455g)	1. For the Cake: Adjust oven rack to lower-middle position and preheat to 350°F (180°C). Lightly grease three 8-inch anodized aluminum cake pans and line with parchment (explanation and tutorial here). If you don't have three pans, it's okay to bake the cakes in stages, the batter will keep at room temperature until needed.
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2 teaspoons (8g) Diamond Crystal kosher salt; for table salt, use about half as much by volume or the same weight	
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3 large eggs, brought to about 65°F (18°C)	3. With the mixer still running, add the eggs one at a time, letting each fully incorporate before adding the next, then dribble in the vanilla. Reduce speed to low and sprinkle in about 1/3 of the flour, then drizzle in 1/3 of the milk. Repeat with remaining flour and milk, working in thirds as before.
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16 ounces whole milk (about 2 cups; 455g), brought to about 65°F (18°C)	4. Scrape the bowl and beater with a flexible spatula, and resume mixing on medium speed for about 3 seconds to ensure everything is well combined. The batter should look creamy and thick, registering between 65 and 68°F (18 and 20°C) on a digital thermometer. (Significant
16 ounces all-purpose flour (about: 3 1/2 cups, spooned; 455g)	

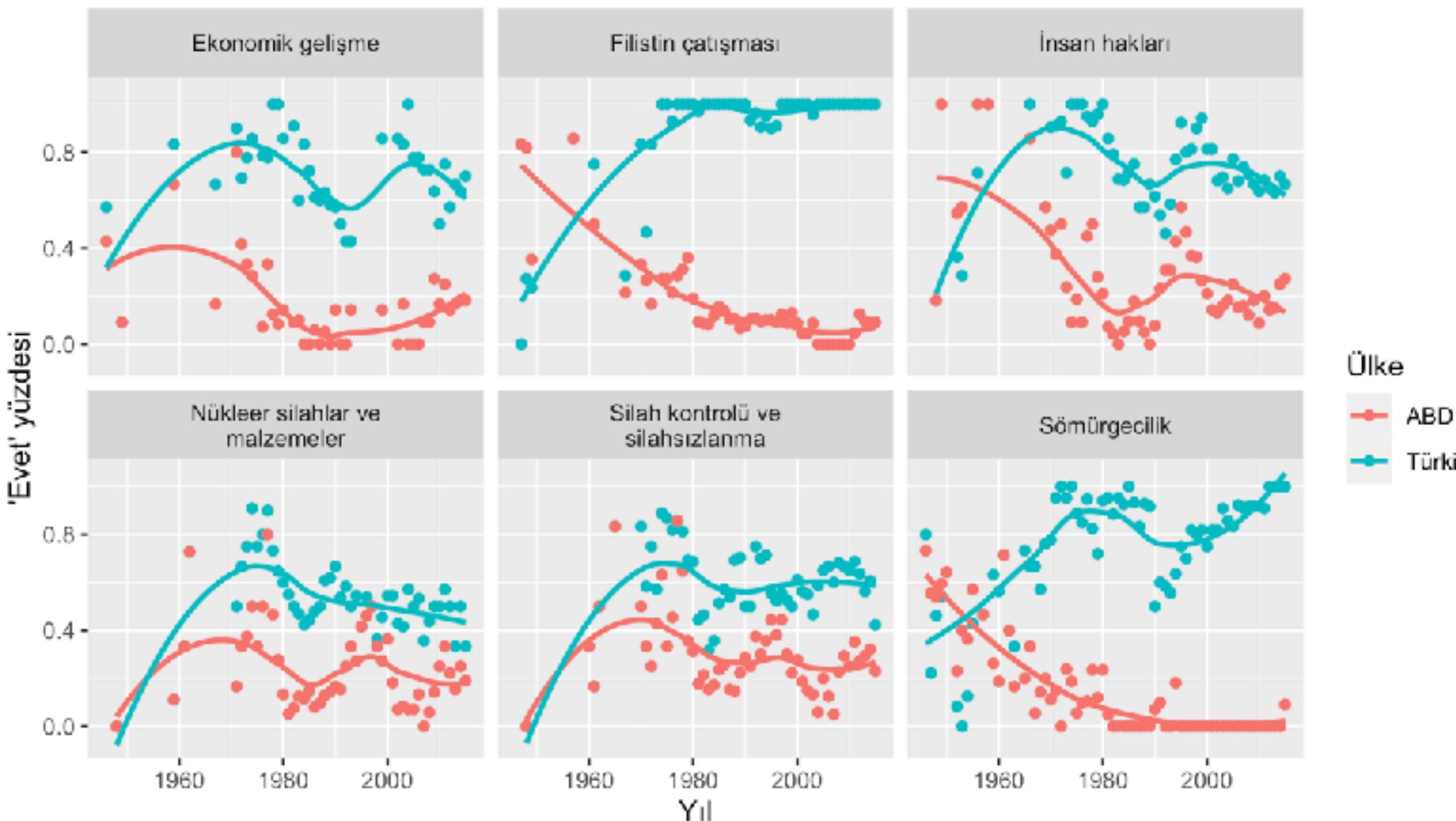


- Aşağıdaki değişkenleri bildirin
- Ardından, her bir değişkenin sınıfını belirleyin

```
# Declare variables
x ← 8
y ← "monkey"
z ← FALSE
class(x)
#> [1] "numeric"
class(y)
#> [1] "character"
class(z)
#> [1] "logical"
```

- Bugünkü demo projeyi açın
- Belgeyi knit edin ve sonuçları sınıf arkadaşlarınızla tartışın

BM Genel Kurulu'nda 'Evet' oylarının yüzdesi
1946 - 2015



- Sonra Türkiye'yi başka bir ülkeyle değiştirin ve tekrar görselleştirin

harika örnekler,
bol miktarda kod ile gelir ...

ama elimizdeki göreve odaklanalım ...

- Bugünkü demo projeyi açın
- Belgeyi knit edin ve sonuçları sınıf arkadaşlarınızla tartışın
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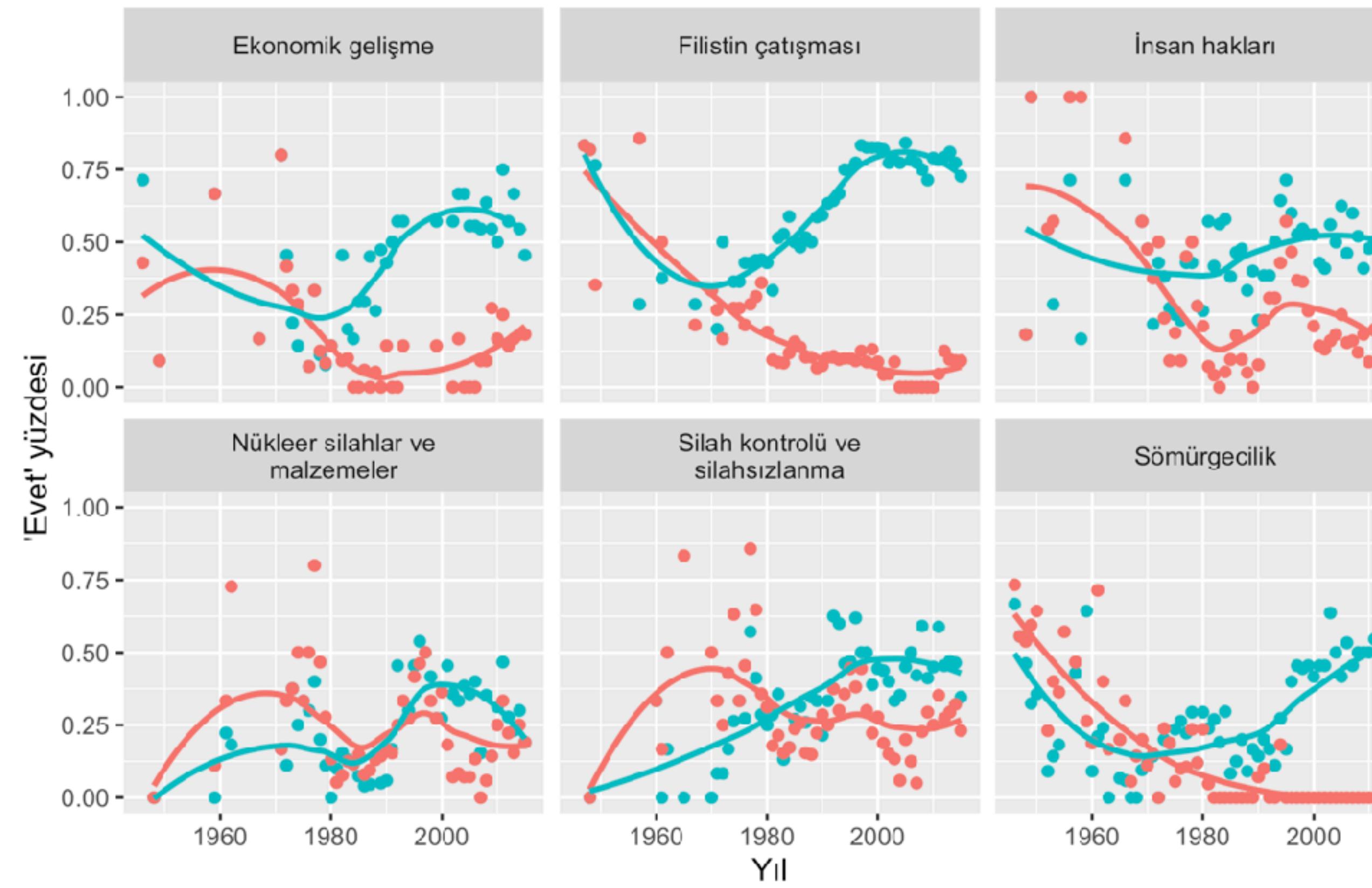
```
un_votes %>%
  filter(country %in% c("United States of America", "Turkey")) %>%
  inner_join(un_roll_calls, by = "rcid") %>%
  inner_join(un_roll_call_issues, by = "rcid") %>%
  group_by(country, year = year(date), issue) %>%
  summarize(
    votes = n(),
    percent_yes = mean(vote == "yes")
  ) %>%
  filter(votes > 5) %>%
  ggplot(mapping = aes(x = year, y = percent_yes, color = country)) +
  geom_point() +
  geom_smooth(method = "loess", se = FALSE) +
  facet_wrap(~ issue, labeller = label_wrap_gen(20)) +
  labs(
    title = "BM Genel Kurulu'nda 'Evet' oyalarının yüzdesi",
    subtitle = "1946 - 2015",
    y = "'Evet' yüzdesi",
    x = "Yıl",
    color = "Ülke"
  )
```

```
un_votes %>%  
filter(country %in% c("United States of America", "Turkey")) %>%  
inner_join(un_roll_calls, by = "rcid") %>%  
inner_join(un_roll_call_issues, by = "rcid") %>%  
group_by(country, year = year(date), issue) %>%  
summarize(  
  votes = n(),  
  percent_yes = mean(vote == "yes")  
) %>%  
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ggplot(mapping = aes(x = year, y = percent_yes, color = country)) +  
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facet_wrap(~ issue, labeller = label_wrap_gen(20)) +  
labs(  
  title = "BM Genel Kurulu'nda 'Evet' oylarının yüzdesi",  
  subtitle = "1946 - 2015",  
  y = "'Evet' yüzdesi",  
  x = "Yıl",  
  color = "Ülke")  
)
```

```
un_votes %>%  
filter(country %in% c("United States of America", "France")) %>%  
inner_join(un_roll_calls, by = "rcid") %>%  
inner_join(un_roll_call_issues, by = "rcid") %>%  
group_by(country, year = year(date), issue) %>%  
summarize(  
  votes = n(),  
  percent_yes = mean(vote == "yes")  
) %>%  
filter(votes > 5) %>%  
ggplot(mapping = aes(x = year, y = percent_yes, color = country)) +  
geom_point() +  
geom_smooth(method = "loess", se = FALSE) +  
facet_wrap(~ issue, labeller = label_wrap_gen(20)) +  
labs(  
  title = "BM Genel Kurulu'nda 'Evet' oylarının yüzdesi",  
  subtitle = "1946 - 2015",  
  y = "'Evet' yüzdesi",  
  x = "Yıl",  
  color = "Ülke")  
)
```

BM Genel Kurulu'nda 'Evet' oylarının yüzdesi

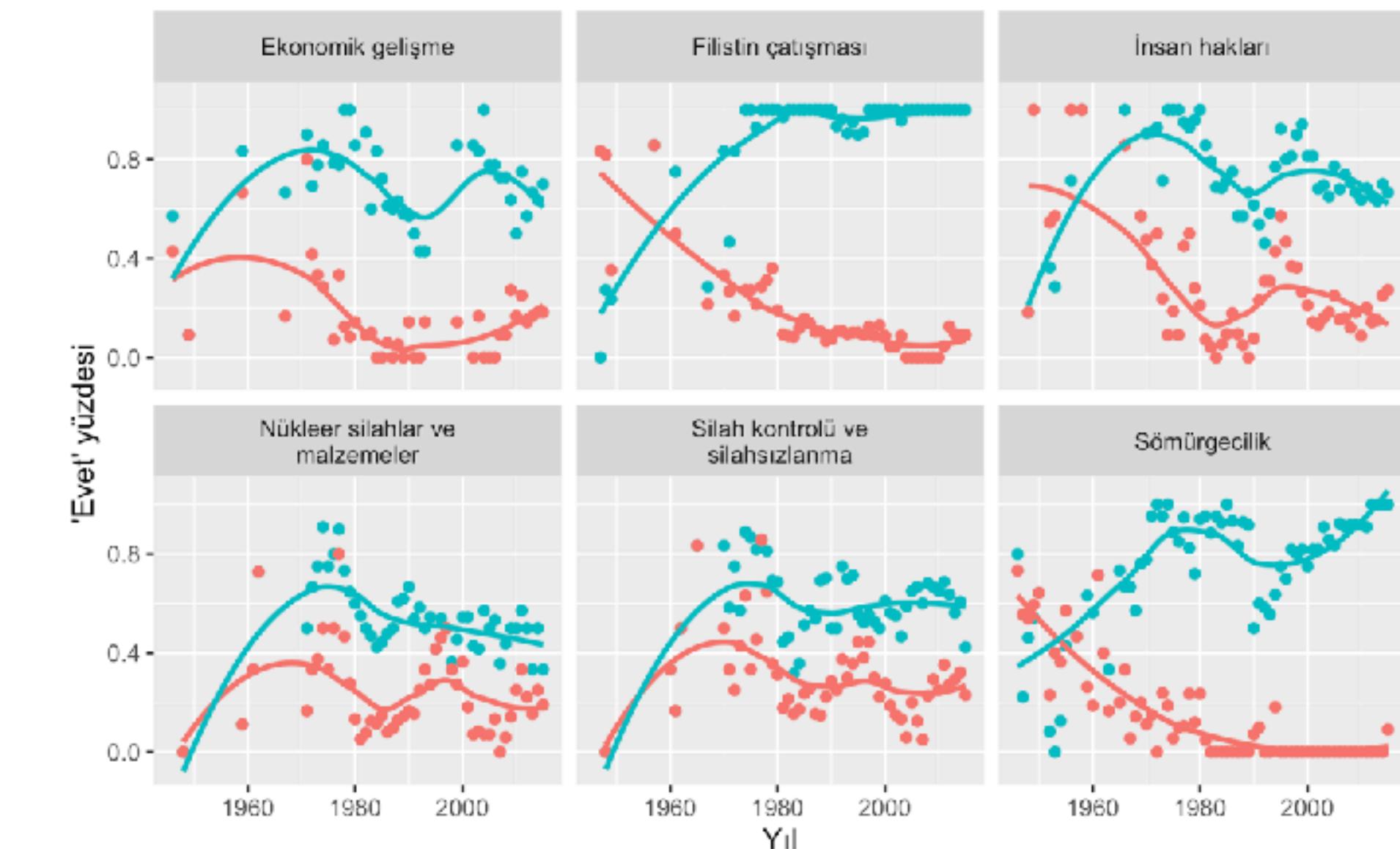
1946 - 2015



Ülke

- ABD
- Fransa

BM Genel Kurulu'nda 'Evet' oylarının yüzdesi 1946 - 2015



Ülke

- ABD
- Türkiye



bit.ly/pasta-yesinler

Q

Hangisi sizi yemek yapmayı öğrenmek için daha çok motive ediyor: mükemmel doğranmış soğan mı yoksa ratatouille mi?



Q

Hangisi sizi yemek yapmayı öğrenmek için daha çok motive ediyor: mükemmel doğranmış soğan mı yoksa ratatouille mi?



bebek



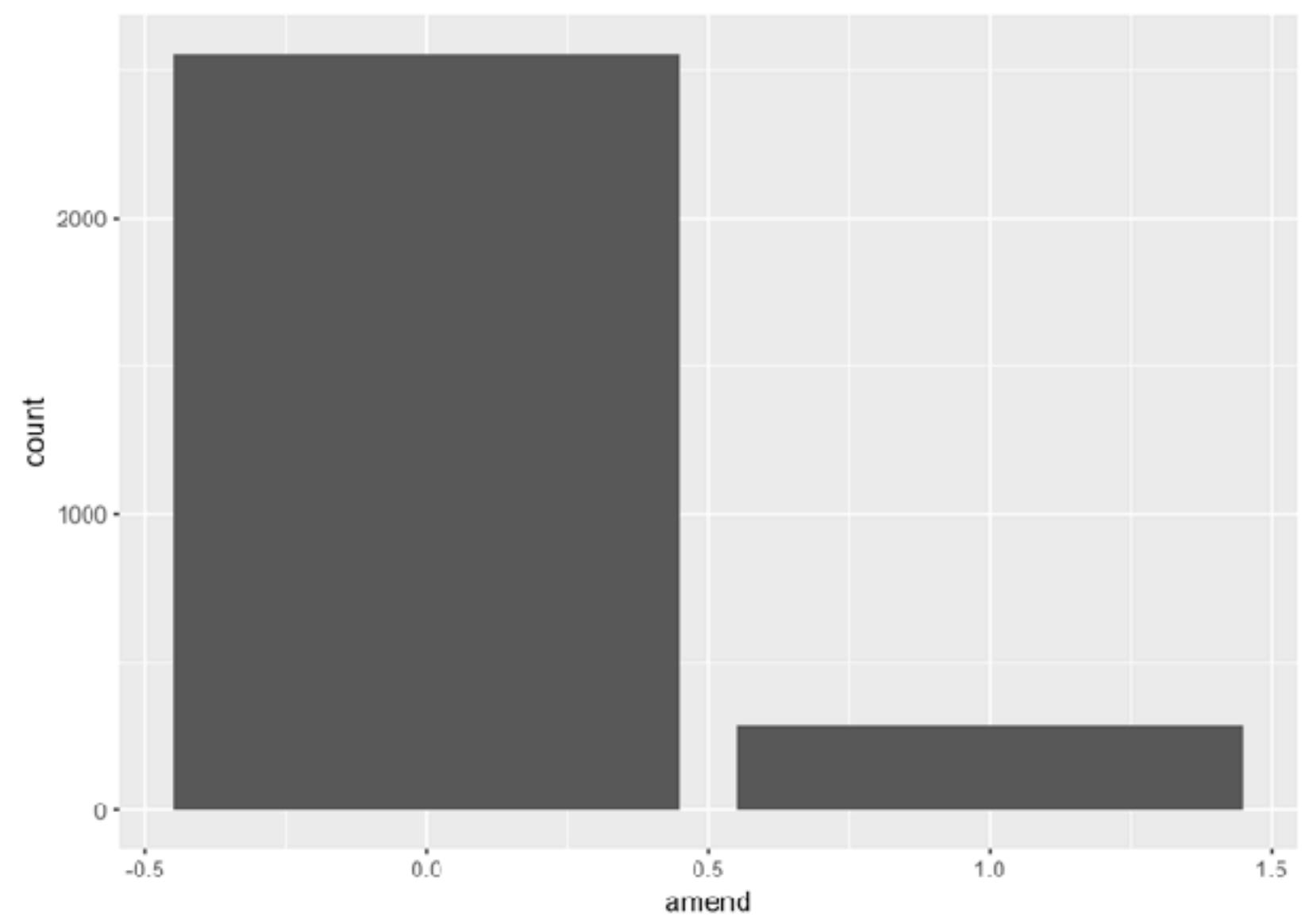
adimlarini



atla

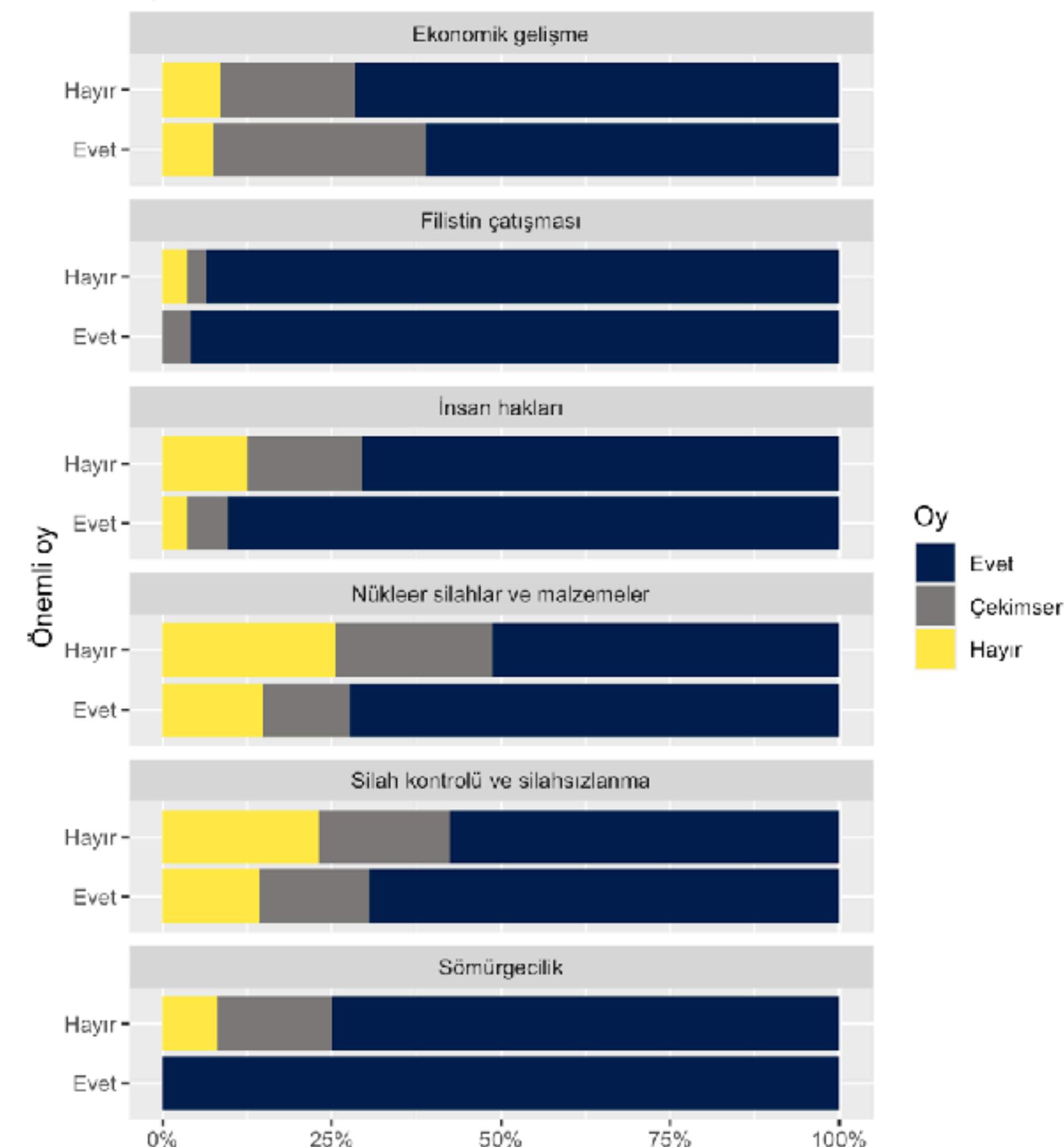


Oylamanın bir değişiklik üzerinde olup olmadığını gösteren bir görselleştirme oluşturun.



Türkiye BM'de nasıl oy kullandı?

Oyun konusu ve önemi ile



önemli örnekler motive edici olabilir,
ama ⚡dan kaçınılması gerekiyor!

Baykuş nasıl çizilir



1. Birkaç daire çizin

2. Baykuşun geri kalanını çizin

Baykuş nasıl çizilir

1.



iskele kur +
katman ekle

1. Birkaç daire çizin

2.



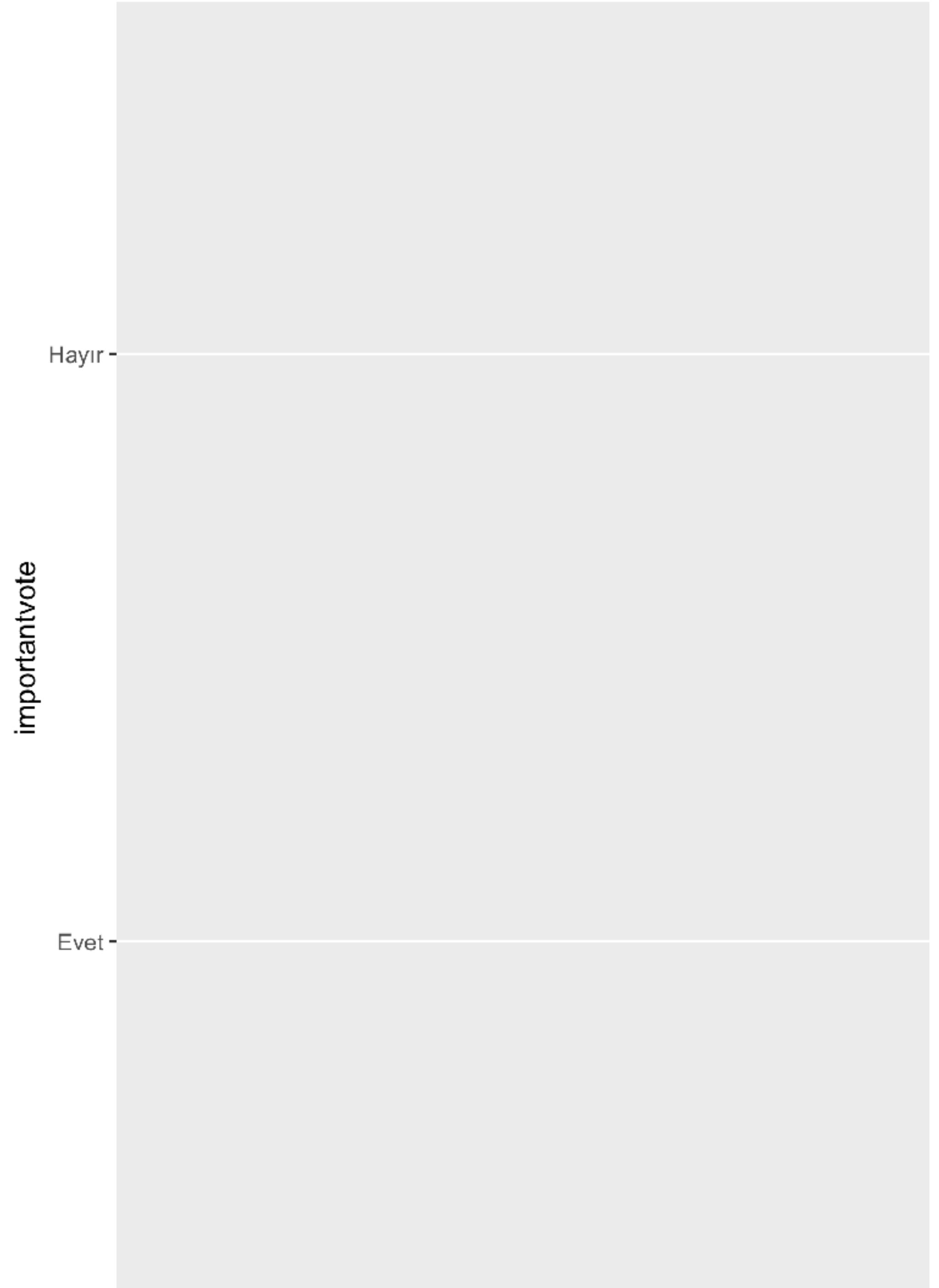
2. Baykuşun geri kalanını çizin

 Pre-process

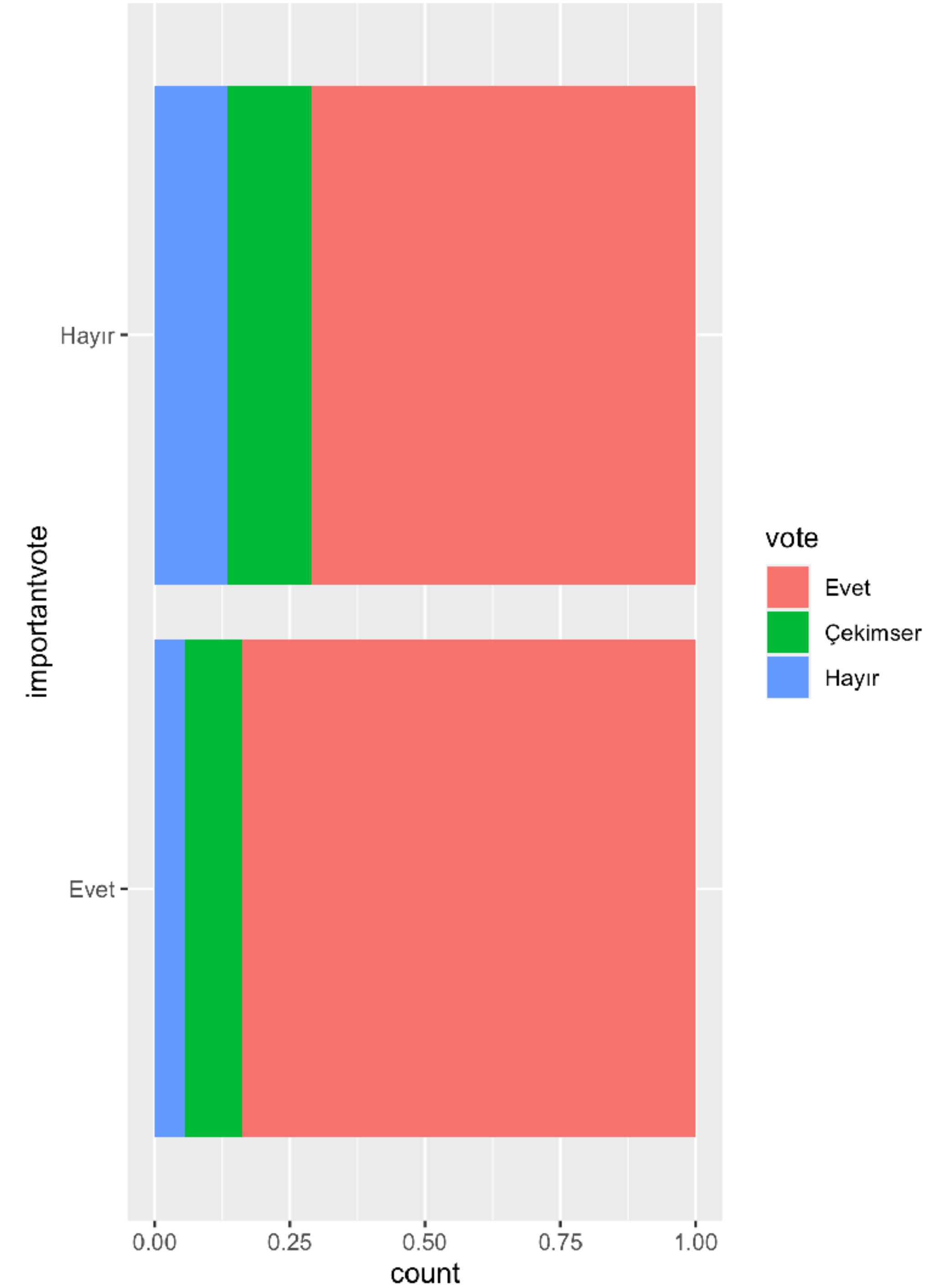
```
turkey_votes <- un_votes %>%
  filter(country %in% c("Turkey")) %>%
  inner_join(un_roll_calls, by = "rcid") %>%
  inner_join(un_roll_call_issues, by = "rcid") %>%
  mutate(
    importantvote = ifelse(importantvote == 0, "Hayır", "Evet"),
    issue = case_when(
      issue == "Human rights" ~ "İnsan hakları",
      issue == "Economic development" ~ "Ekonomik gelişme",
      issue == "Colonialism" ~ "Sömürgecilik",
      issue == "Palestinian conflict" ~ "Filistin çatışması",
      issue == "Nuclear weapons and nuclear material" ~ "Nükleer silahlar ve malzemeler",
      issue == "Arms control and disarmament" ~ "Silah kontrolü ve silahsızlanma"
    ),
    vote = case_when(
      vote == "yes" ~ "Evet",
      vote == "abstain" ~ "Çekimser",
      vote == "no" ~ "Hayır"
    ),
    vote = fct_relevel(vote, "Evet", "Çekimser", "Hayır")
  )
```

```
ggplot(turkey_votes)
```

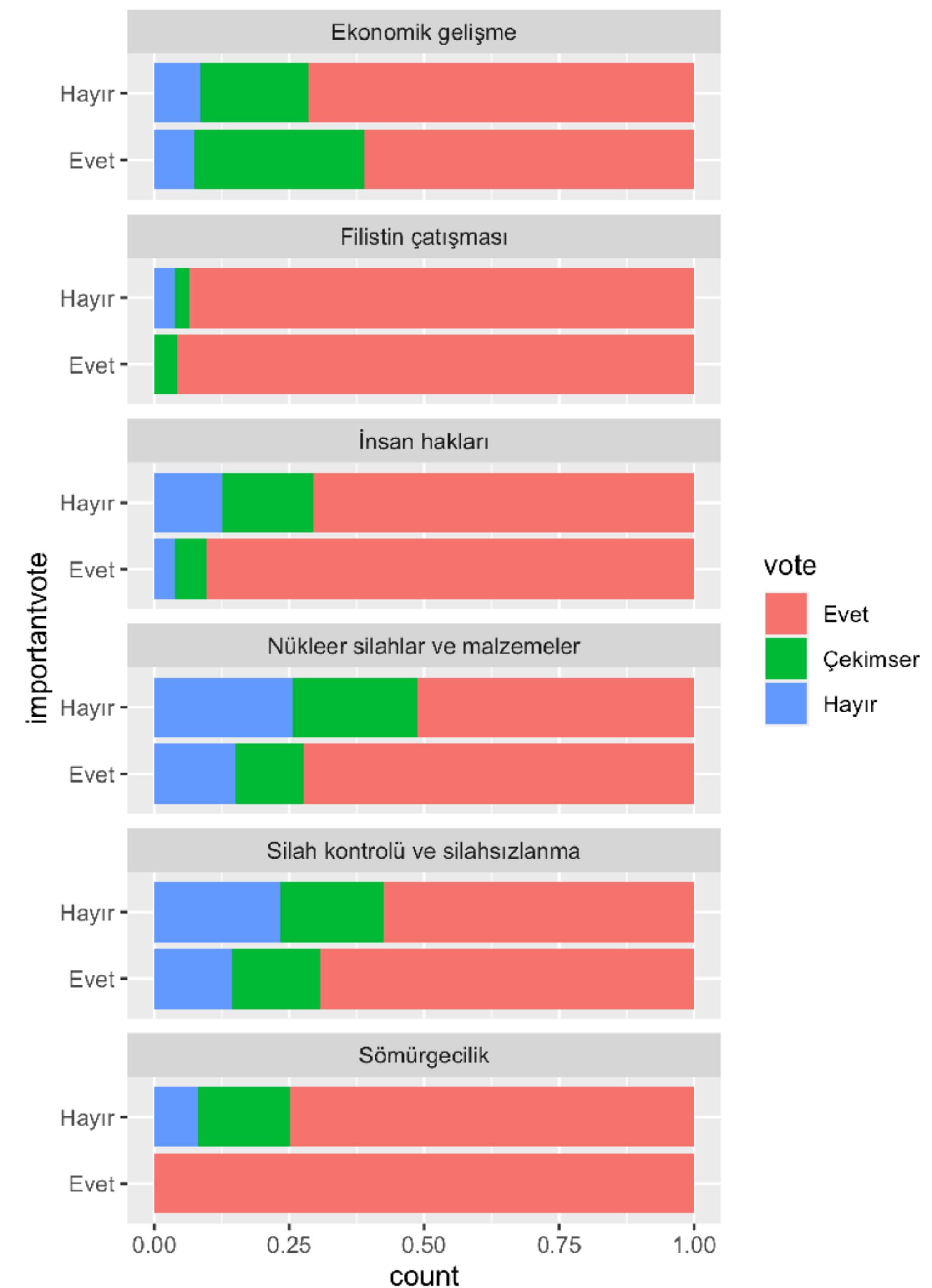
```
ggplot(turkey_votes,  
       aes(y = importantvote, fill = vote))
```



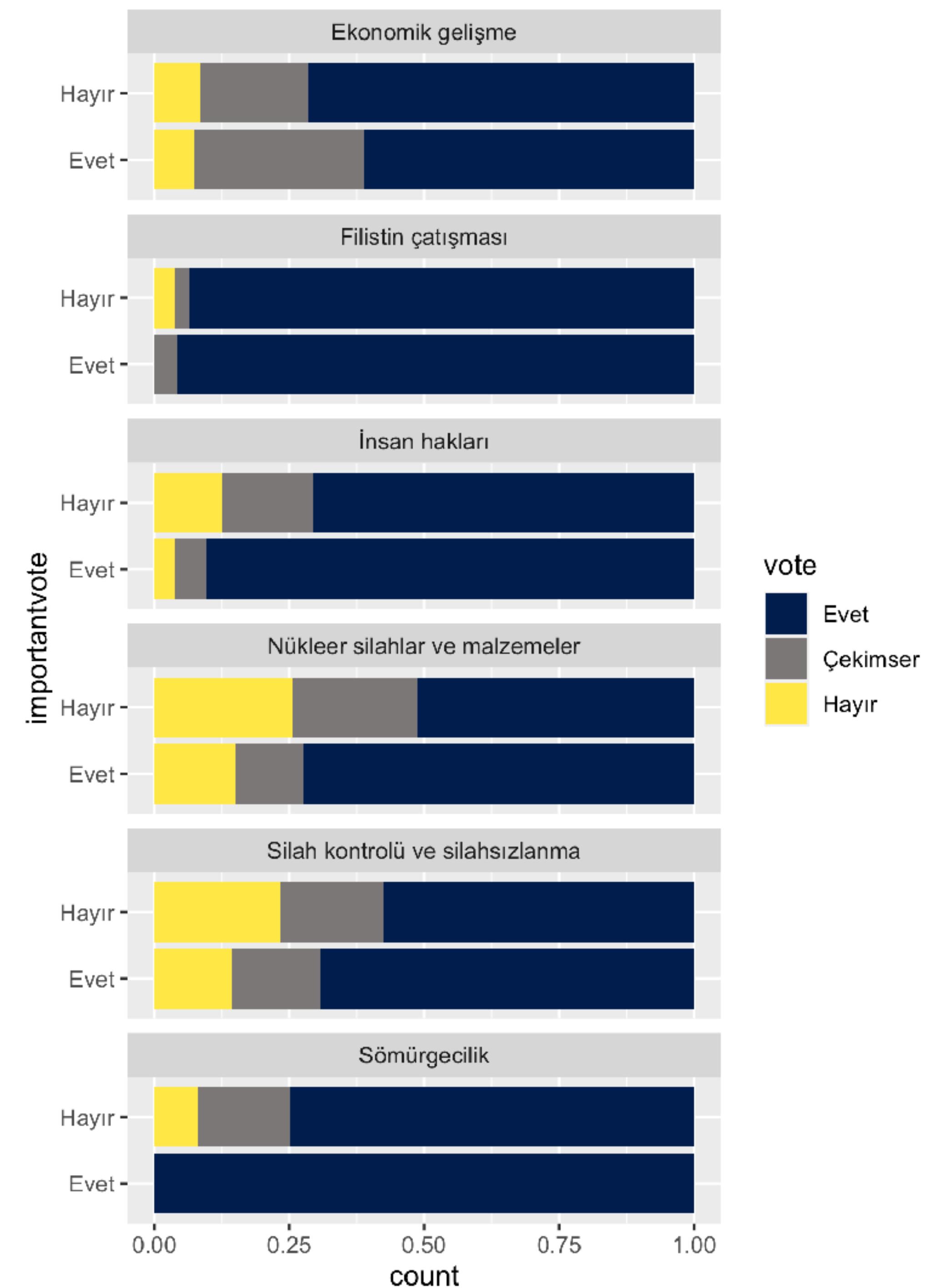
```
ggplot(turkey_votes,  
       aes(y = importantvote, fill = vote)) +  
  geom_bar(position = "fill")
```



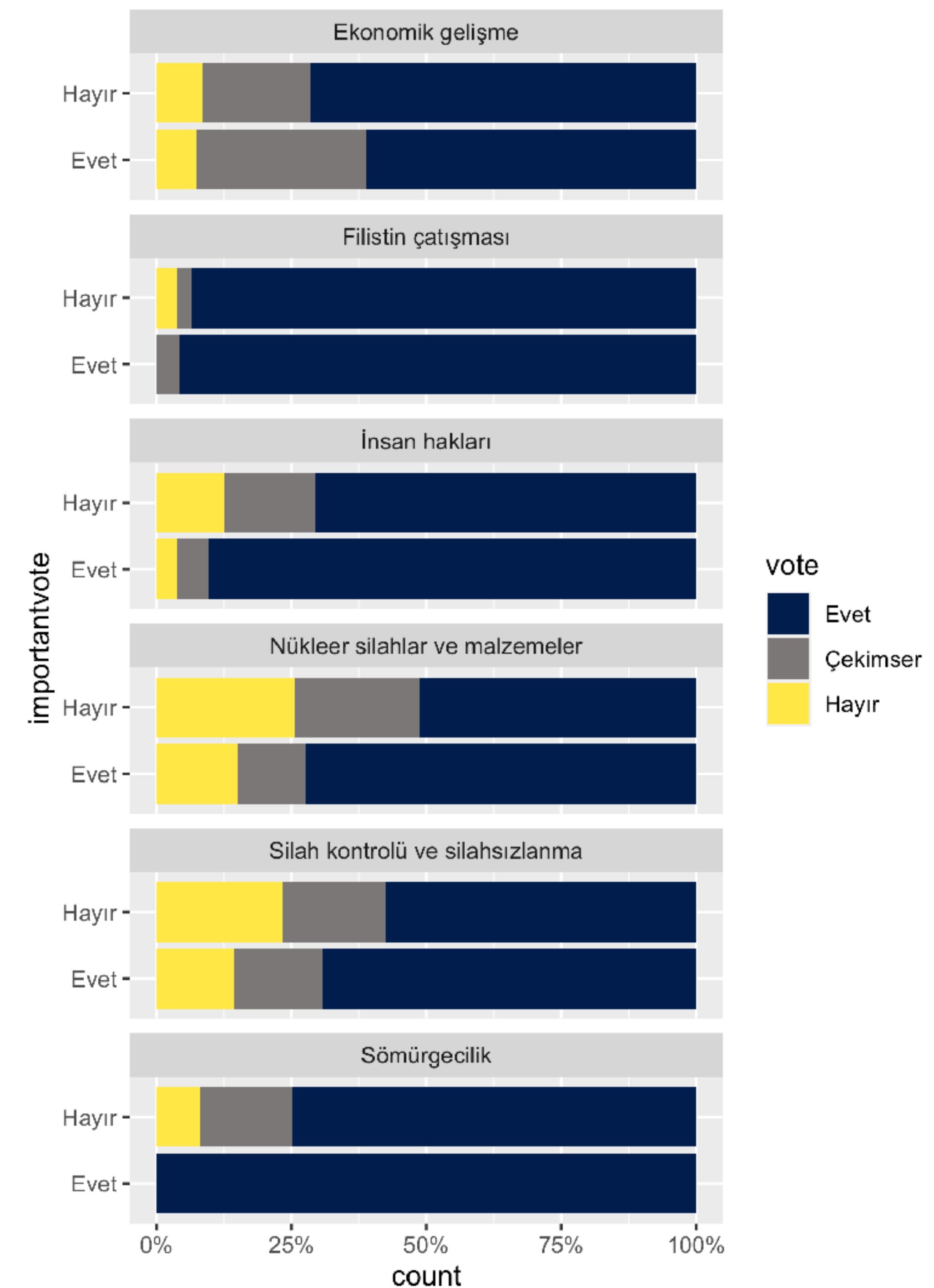
```
ggplot(turkey_votes,
       aes(y = importantvote, fill = vote)) +
  geom_bar(position = "fill") +
  facet_wrap(~ issue, ncol = 1)
```



```
ggplot(turkey_votes,
       aes(y = importantvote, fill = vote)) +
  geom_bar(position = "fill") +
  facet_wrap(~ issue, ncol = 1) +
  scale_fill_viridis_d(option = "E")
```



```
ggplot(turkey_votes,
       aes(y = importantvote, fill = vote)) +
  geom_bar(position = "fill") +
  facet_wrap(~ issue, ncol = 1) +
  scale_fill_viridis_d(option = "E") +
  scale_x_continuous(labels = label_percent())
```



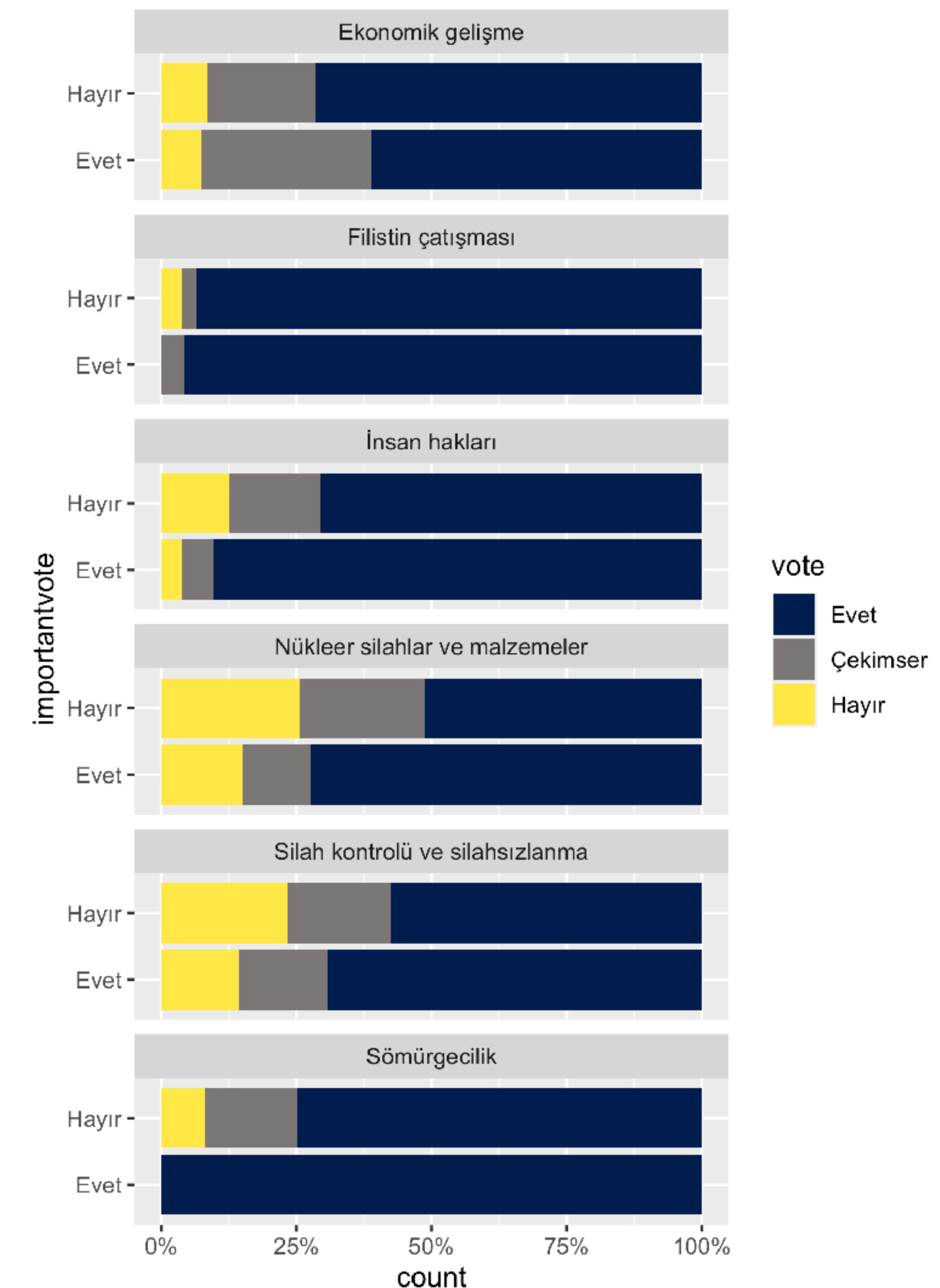
```

ggplot(turkey_votes,
       aes(y = importantvote, fill = vote)) +
  geom_bar(position = "fill") +
  facet_wrap(~ issue, ncol = 1) +
  scale_fill_viridis_d(option = "E") +
  scale_x_continuous(labels = label_percent()) +
  labs(
    title = "Türkiye BM'de nasıl oy kullandı?",  

    subtitle = "Oyun konusu ve önemi ile",  

    y = "Önemli oy", x = NULL, fill = "Oy"
)

```



bebek adımlarını

atla

geri dön

Airbnb listings in
Edinburgh

Introduction

Data

Data visualisation

Wrap up

Start Over

Data visualisation

Building a histogram

Create a histogram of the distribution of Airbnb listing prices (nightly rates) in Edinburgh. Sample code is provided below, but you will need to fill in the blanks.

R code Start Over Hints

```
1 ggplot(data = ___, mapping = aes(x = ___)) +  
2   geom_histogram() +  
3   labs(  
4     x = "Airbnb listing price, in £",  
5     y = "Frequency",  
6     title = "Distribution of Airbnb nightly rates in Edinburgh"  
7   )
```

Run Code Submit Answer

Continue

Which of the following is false?

- There are no listings with a nightly rate above £1,250.
- More than 50% of listings have a nightly rate below £250.
- More than 25% of listings have a nightly rate above £500.
- It is possible that some of the listings have a nightly rate of £0.

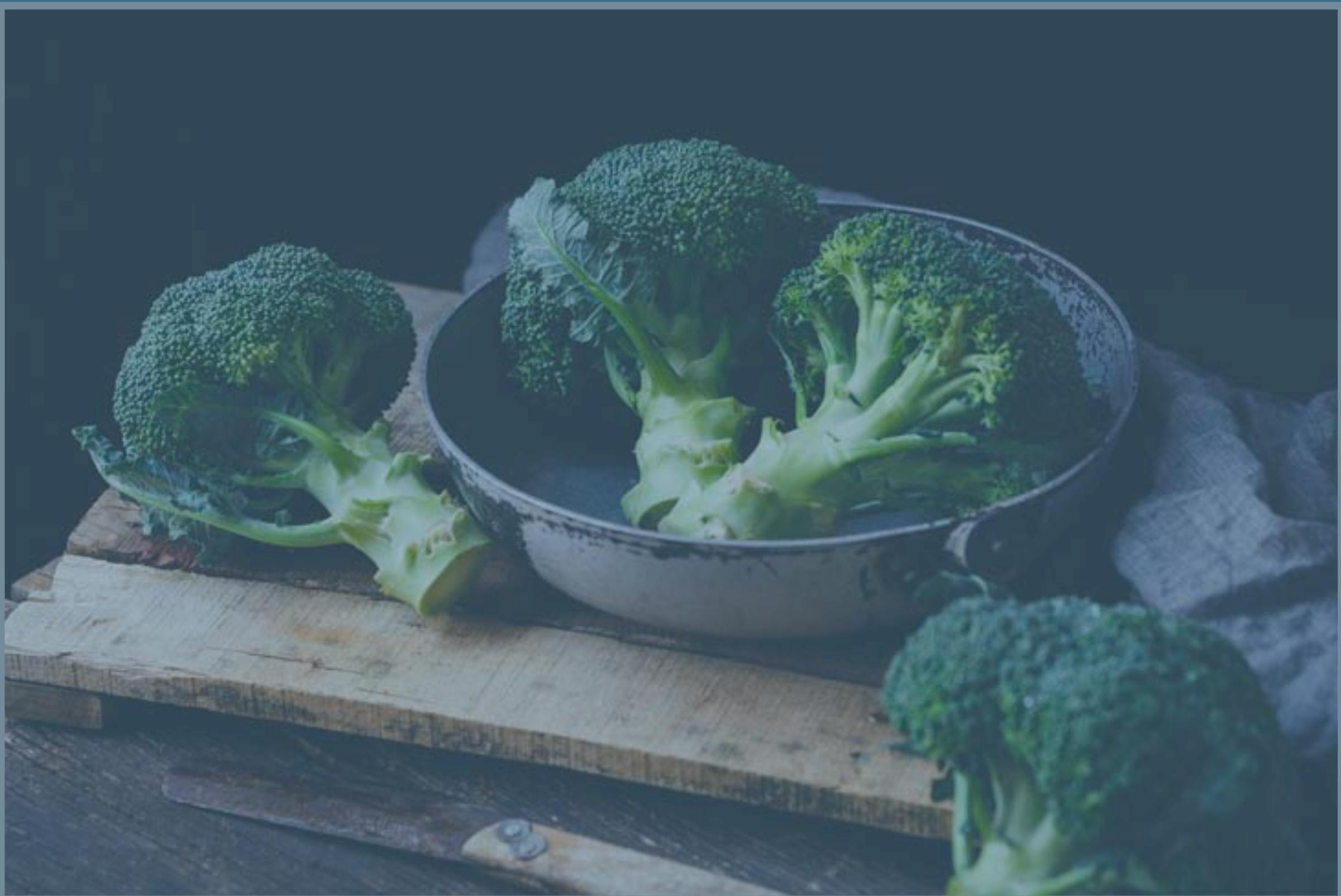
Submit Answer

Continue

Hangisinin brokoliyi hiç denememiş birine hitap etme olasılığı daha yüksektir?



Hangisinin brokoliyi hiç denememiş birine hitap etme olasılığı daha yüksektir?



sebzeleri

sakla





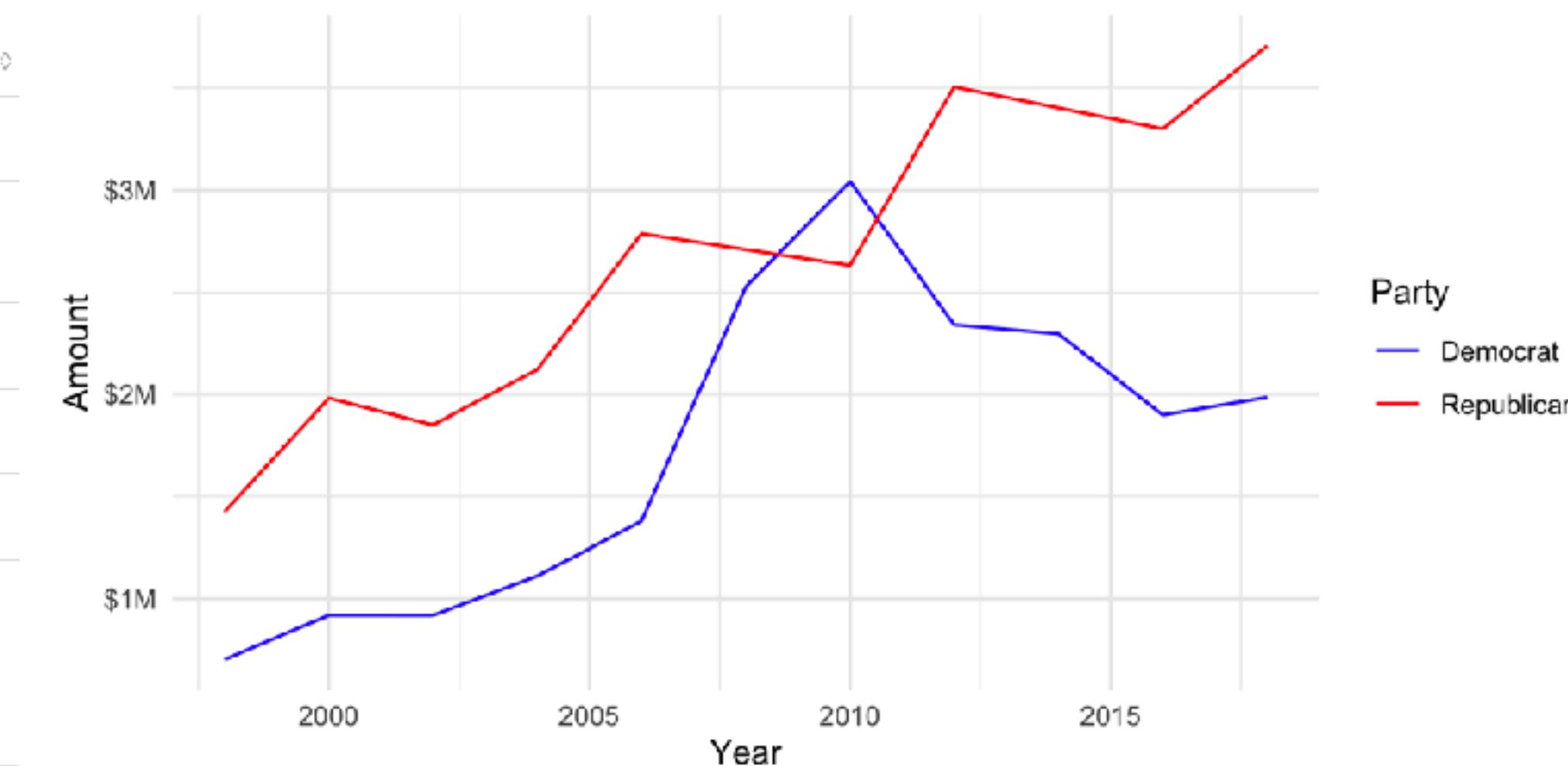
- Konu: Web kazıma
- Araçlar:
 - rvest
 - Kurallı ifadeler

□ Bugün bununla başlıyoruz:

SELECT A CYCLE					
PAC Name (Affiliate)	Country of Origin/Parent Company	Total	Dems	Repubs	
7-Eleven	Japan/Seven & I Holdings	\$1,000	\$0	\$1,000	
ABB Group (ABB Group)	Switzerland/Asea Brown Boveri	\$1,000	\$1,000	\$0	
Accenture (Accenture)	Ireland/Accenture plc	\$80,000	\$48,000	\$32,000	
Air Liquide America	France/L'Air Liquide SA	\$16,500	\$10,000	\$6,500	
Airbus Group	Netherlands/Airbus Group	\$108,500	\$43,500	\$65,000	
Alkermes Inc	Ireland/Alkermes Plc	\$62,750	\$23,250	\$39,500	
Allergan PLC (Allergan PLC)	Ireland/Allergan PLC	\$111,000	\$6,000	\$105,000	
Allianz of America (Allianz)	Germany/Allianz AG Holding	\$42,750	\$18,100	\$24,650	
Anheuser-Busch (Anheuser-Busch InBev)	Belgium/Anheuser-Busch InBev	\$239,000	\$119,500	\$119,500	

□ ve bununla bitiyoruz:

Contribution to US politics from UK-Connected PACs
By party, over time



öğrenciler yol boyunca birçok yeni
zorlukla karşılaşacaktır —
bunun olmasına izin verin
ve sonra bir çözüm sağlayın

- **Ders:** Yapılandırılmış bir tabloyu R'de bir veri çerçevesine dönüştürmek için web kazıma temelleri.

- **Ders:** Yapılandırılmış bir tabloyu R'de bir veri çerçevesine dönüştürmek için web kazıma temelleri.

- **Alıştırma 1:** Tabloyu web'den kazıın ve veri çerçevesi olarak kaydedin.

PAC Name (Affiliate)	Country of Origin/Parent Company	Total	Dems	Repubs
7-Eleven	Japan/Seven & I Holdings	\$1,000	\$0	\$1,000
ABB Group (ABB Group)	Switzerland/Asea Brown Boveri	\$1,000	\$1,000	\$0



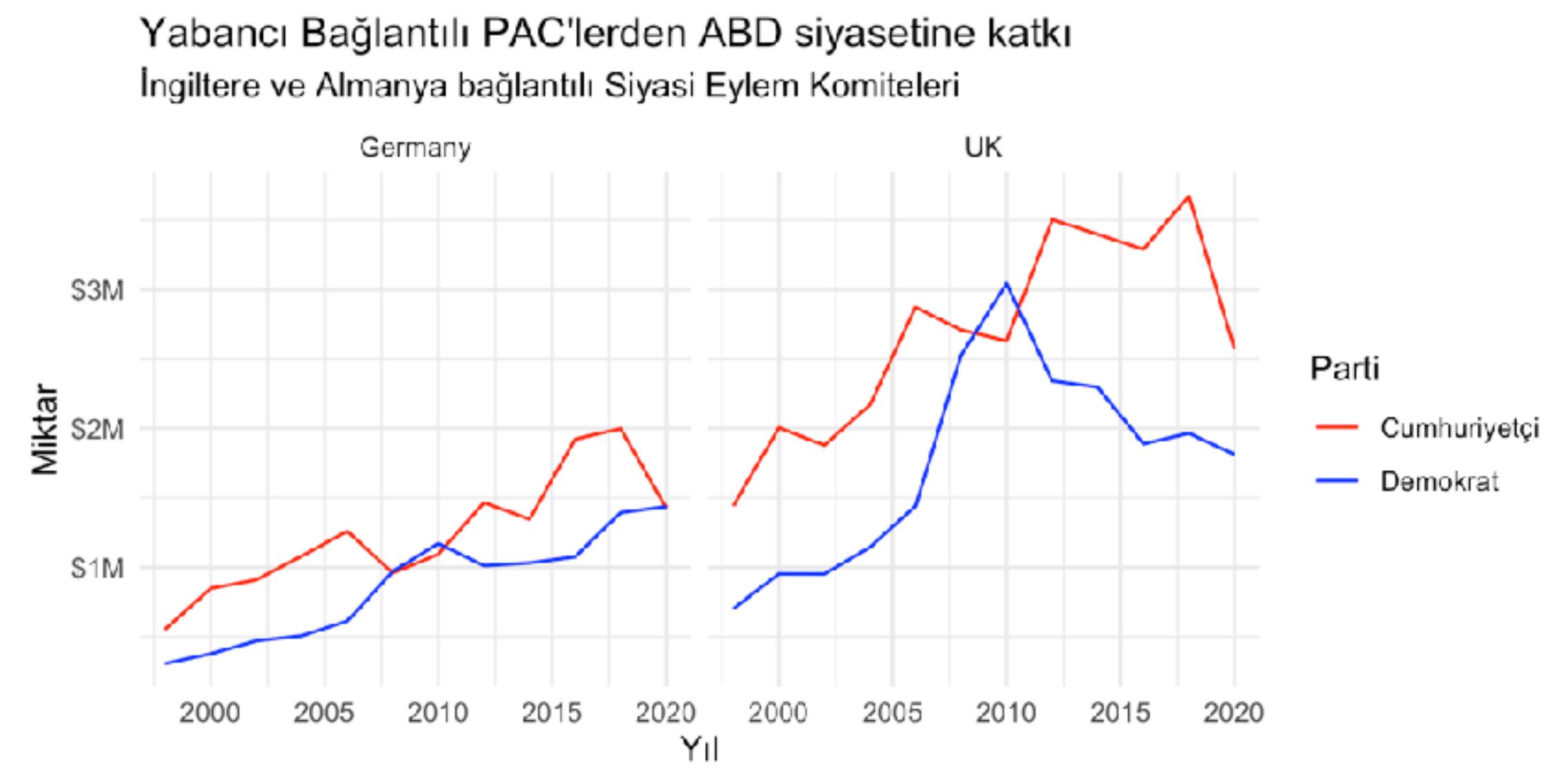
PAC Name (Affiliate)	Country of Origin/Parent Company	Total	Dems	Repubs
1 7-Eleven	Japan/Seven & I Holdings	\$1,000	\$0	\$1,000
2 ABB Group (ABB Group)	Switzerland/Asea Brown Boveri	\$1,000	\$1,000	\$0

- **Ders:** Yapılandırılmış bir tabloyu R'de bir veri çerçevesine dönüştürmek için web kazıma temelleri.

- **Alıştırma 1:** Tabloyu web'den kazının ve veri çerçevesi olarak kaydedin.

PAC Name (Affiliate)	Country of Origin/Parent Company	Total	Dems	Repubs
7-Eleven	Japan/Seven & I Holdings	\$1,000	\$0	\$1,000
ABB Group (ABB Group)	Switzerland/Asea Brown Boveri	\$1,000	\$1,000	\$0
↓				
PAC Name (Affiliate)	Country of Origin/Parent Company	Total	Dems	Repubs
1 7-Eleven	Japan/Seven & I Holdings	\$1,000	\$0	\$1,000
2 ABB Group (ABB Group)	Switzerland/Asea Brown Boveri	\$1,000	\$1,000	\$0

- **Alıştırma 2:** Aşağıdaki görselleştirmeyi oluşturmak için başka hangi bilgileri değişken olarak temsil etmemiz gereklidir?



- **Ders:** Yapılandırılmış bir tabloyu R'de bir veri çerçevesine dönüştürmek için web kazıma temelleri.

PAC Name (Affiliate)	Country of Origin/Parent Company	Total	Dems	Repubs
7-Eleven	Japan/Seven & I Holdings	\$1,000	\$0	\$1,000
ABB Group (ABB Group)	Switzerland/Asea Brown Boveri	\$1,000	\$1,000	\$0



- **Lesson:** "Sadece yeteri kadar" kurallı ifadeler

PAC Name (Affiliate)	Country of Origin/Parent Company
1 7-Eleven	Japan/Seven & I Holdings
2 ABB Group (ABB Group)	Switzerland/Asea Brown Boveri
3 Accenture (Accenture)	Ireland/Accenture plc
4 Air Liquide America	France/L'Air Liquide SA

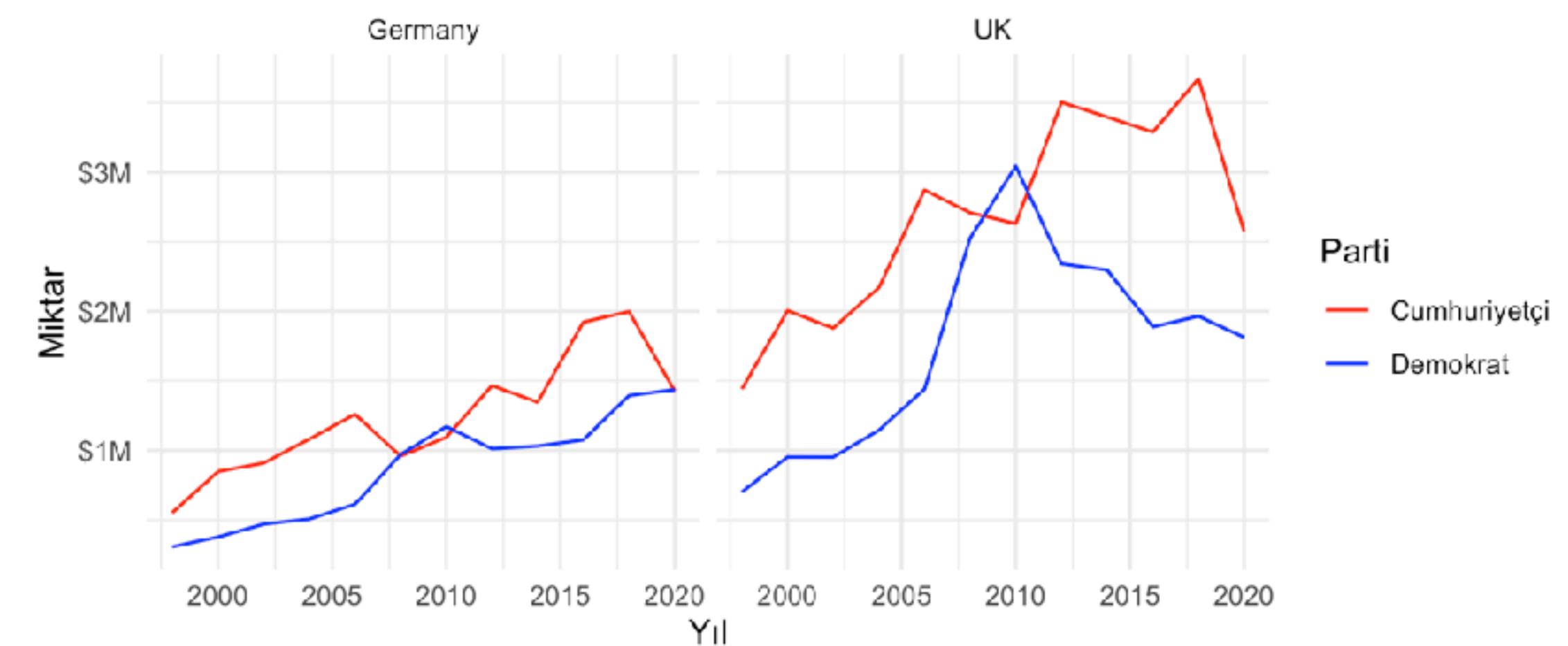


name	country	parent
1 ABB Daimler-Benz Transportation	Germany	Daimler-Benz AG
2 ABB Group	Switzerland	Asea Brown Boveri
3 AE Staley Manufacturing (Tate & Lyle)	UK	Tate & Lyle
4 AEGON USA (AEGON USA)	Netherlands	Aegon NV

- **Alıştırma 1:** Tabloyu web'den kazıyan ve veri çerçevesi olarak kaydedin.

- **Alıştırma 2:** Aşağıdaki görselleştirmeyi oluşturmak için başka hangi bilgileri değişken olarak temsil etmemiz gereklidir?

Yabancı Bağlantılı PAC'lerden ABD siyasetine katkı
İngiltere ve Almanya bağlantılı Siyasi Eylem Komiteleri



Pasta yapmayı öğrendikten
sonra, hangisini yapmak
daha kolay olur?



Pasta yapmayı öğrendikten
sonra, hangisini yapmak
daha kolay olur?

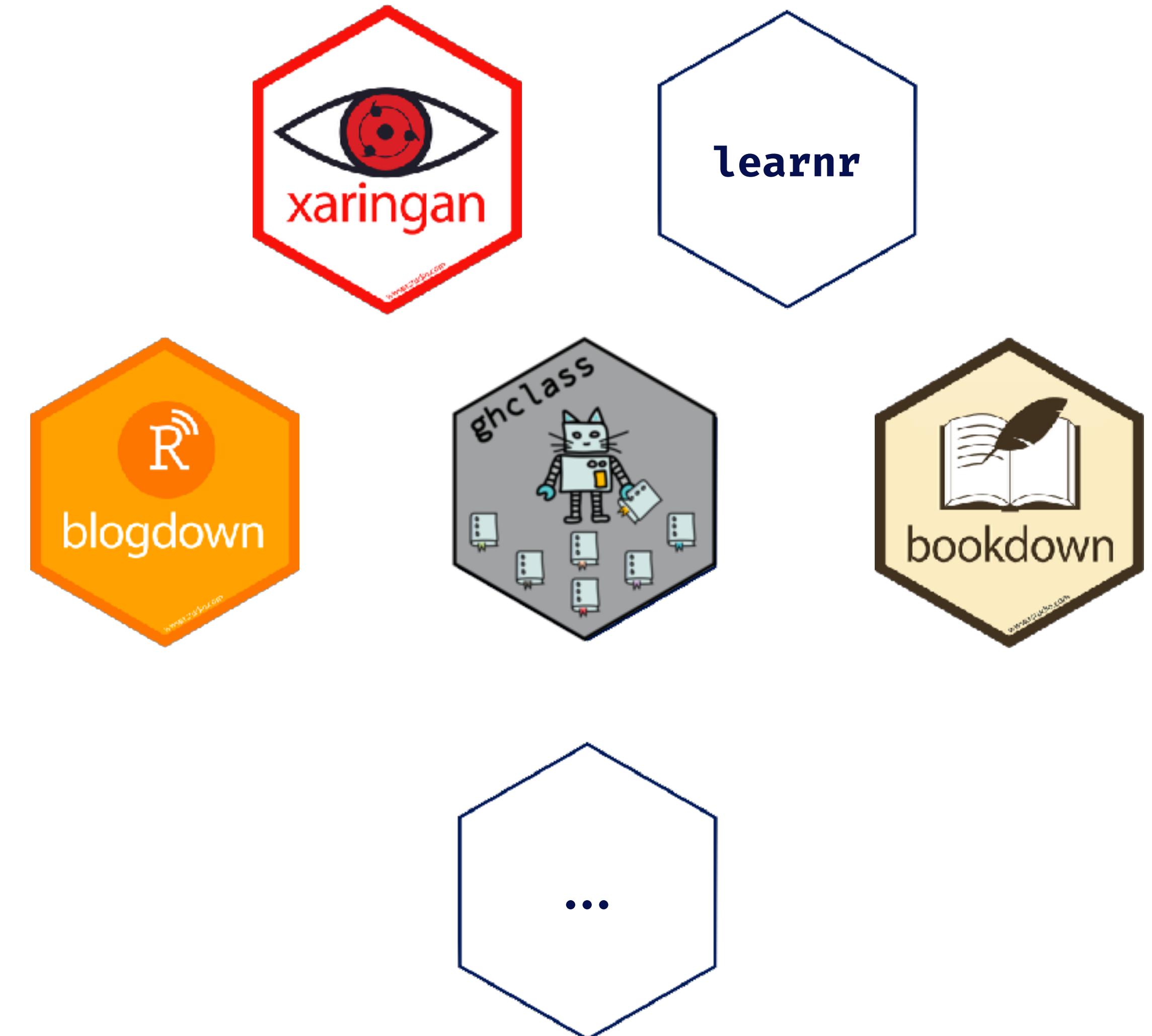


ekosistemi 
kullan

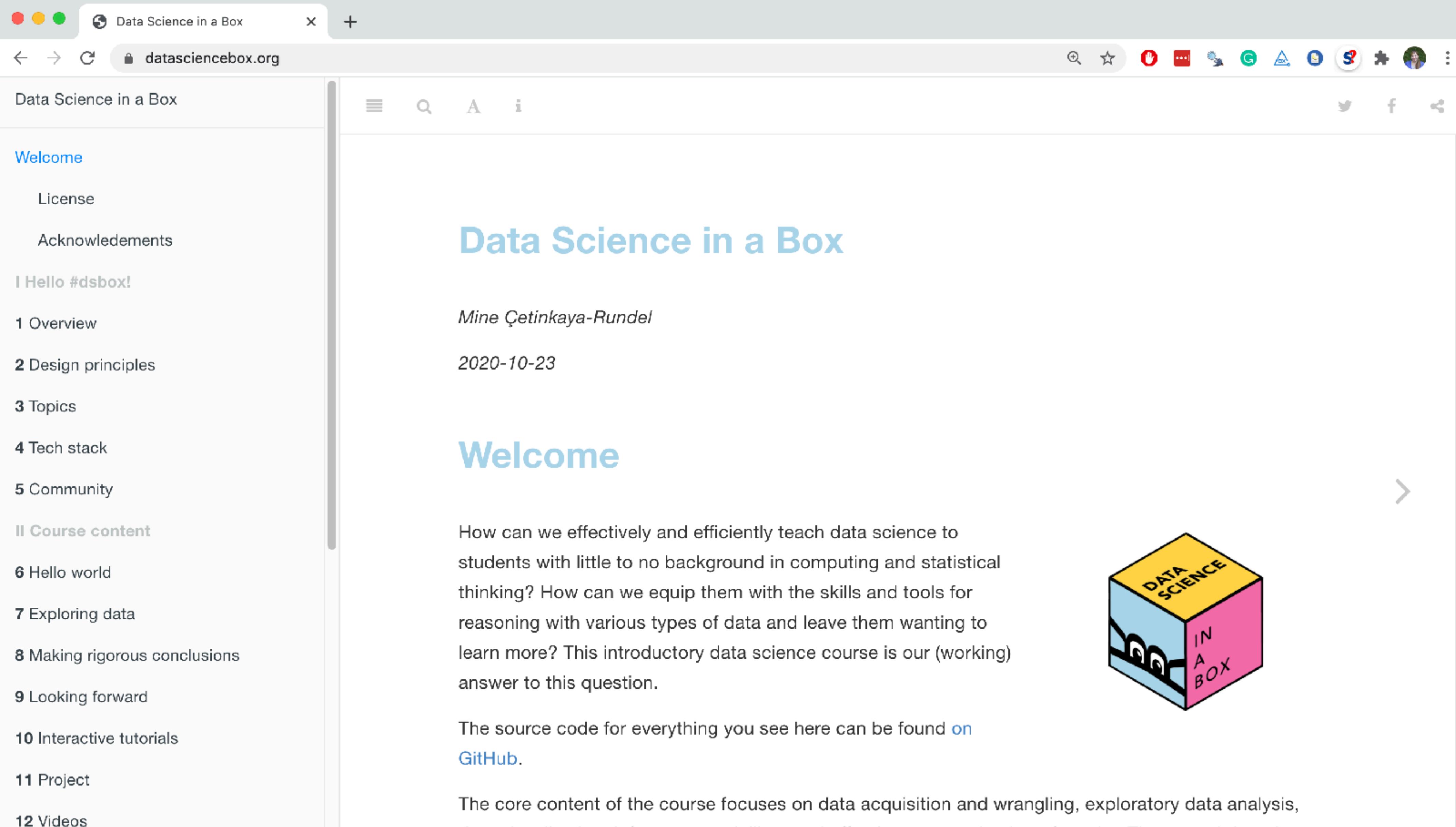
öğrenci + eğitmen



eğitmen



This screenshot shows a web browser window for the website datasciencebox.org. The title bar reads "Data Science in a Box". The left sidebar contains a navigation menu with numbered sections from 1 to 12, each with a corresponding icon. The main content area features a large title "Data Science in a Box" and author information "Mine Çetinkaya-Rundel" and the date "2020-10-23". Below this is a "Welcome" section with a text about teaching data science and a logo of a yellow, blue, and pink box labeled "DATA SCIENCE IN A BOX".



The Data Science in a Box website features a sidebar with a navigation menu:

- 1 Overview
- 2 Design principles
- 3 Topics
- 4 Tech stack
- 5 Community
- II Course content
 - 6 Hello world
 - 7 Exploring data
 - 8 Making rigorous conclusions
 - 9 Looking forward
 - 10 Interactive tutorials
 - 11 Project
 - 12 Videos

The main content area displays the following text:

Data Science in a Box

Mine Çetinkaya-Rundel
2020-10-23

Welcome

How can we effectively and efficiently teach data science to students with little to no background in computing and statistical thinking? How can we equip them with the skills and tools for reasoning with various types of data and leave them wanting to learn more? This introductory data science course is our (working) answer to this question.

The source code for everything you see here can be found [on GitHub](#).

The core content of the course focuses on data acquisition and wrangling, exploratory data analysis, data visualization, inference, modelling, and effective communication of results. Time permitting, the

**DATA SCIENCE
IN A BOX**



Önce pasta yesinler!*

↳ bit.ly/pasta-yesinler

</> bit.ly/repo-eat-cake

* Malzemeleri daha sonra
ekleyebilirsiniz!



@minebocek



mine-cetinkaya-rundel



cetinkaya.mine@gmail.com

