

# HOW DID PEOPLE REACT TO ISTANBUL CONVENTION?

A Sentiment Analysis of Tweets Regarding Istanbul Convention and How Topics Change Among Tweets with Positive Sentiment and with Negative Sentiment

Berra Karayel



← → Q Introduction

# What Istanbul Convention Is

- The first European convention that targets particularly violence and domestic violence against women and young girls
- Aiming to protect women from all forms of violence, including domestic violence
- Preventing
- Prosecuting
- Eliminate violence against women
- Provide fundamental equality among men and women through women's empowerment
- Helping to develop a comprehensive framework, policies, and measures to protect and assist victims of violence





Title Page

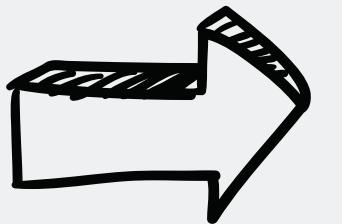
Istanbul  
Convention

Withdrawal



← → Q Withdrawal from the Convention

Turkey



first country to  
sign the  
Istanbul  
Convention

- Signed: May 11, 2011
- Ratified in parliament: November 24, 2011.
- Presidential decision published in the Official Gazette on March 20, 2021 on the official withdrawal of Turkey from the agreement on July 1, 2021
- Debate as a result of withdrawal from the convention has turned into a political one.



Recep Tayyip Erdogan

@RTErdogan

Türkiye devlet görevlisi

...

Kadına Şiddet Artık "İnsan Hakkı İhlali." Sözleşme, Türkiye'nin öncülüğünde hazırlandı.  
<http://goo.gl/HCPoc>

ÖS 4:43 · 3 Haz 2011 · Twitter Web Client

805 Retweet 701 Alıntı Tweetler 887 Beğeni



20 Mart 2021 CUMARTESİ

Resmî Gazete

Sayı : 31429

CUMHURBAŞKANI KARARI



Karar Sayısı: 3718

Türkiye Cumhuriyeti adına 11/5/2011 tarihinde imzalanan ve 10/2/2012 tarihli ve 2012/2816 sayılı Bakanlar Kurulu Kararı ile onaylanan "Kadınlara Yönelik Şiddet ve Aile İçi Şiddetin Önlenmesi ve Bunlarla Mücadeleye İlişkin Avrupa Konseyi Sözleşmesi"nin Türkiye Cumhuriyeti bakımdan feshedilmesine, 9 sayılı Cumhurbaşkanlığı Kararnamesinin 3 üncü maddesi gereğince karar verilmiştir.

19 Mart 2021

03

Recep Tayyip ERDOĞAN  
CUMHURBAŞKANI

← → Q Statistics

04

## Femicide in Turkey with Statistics

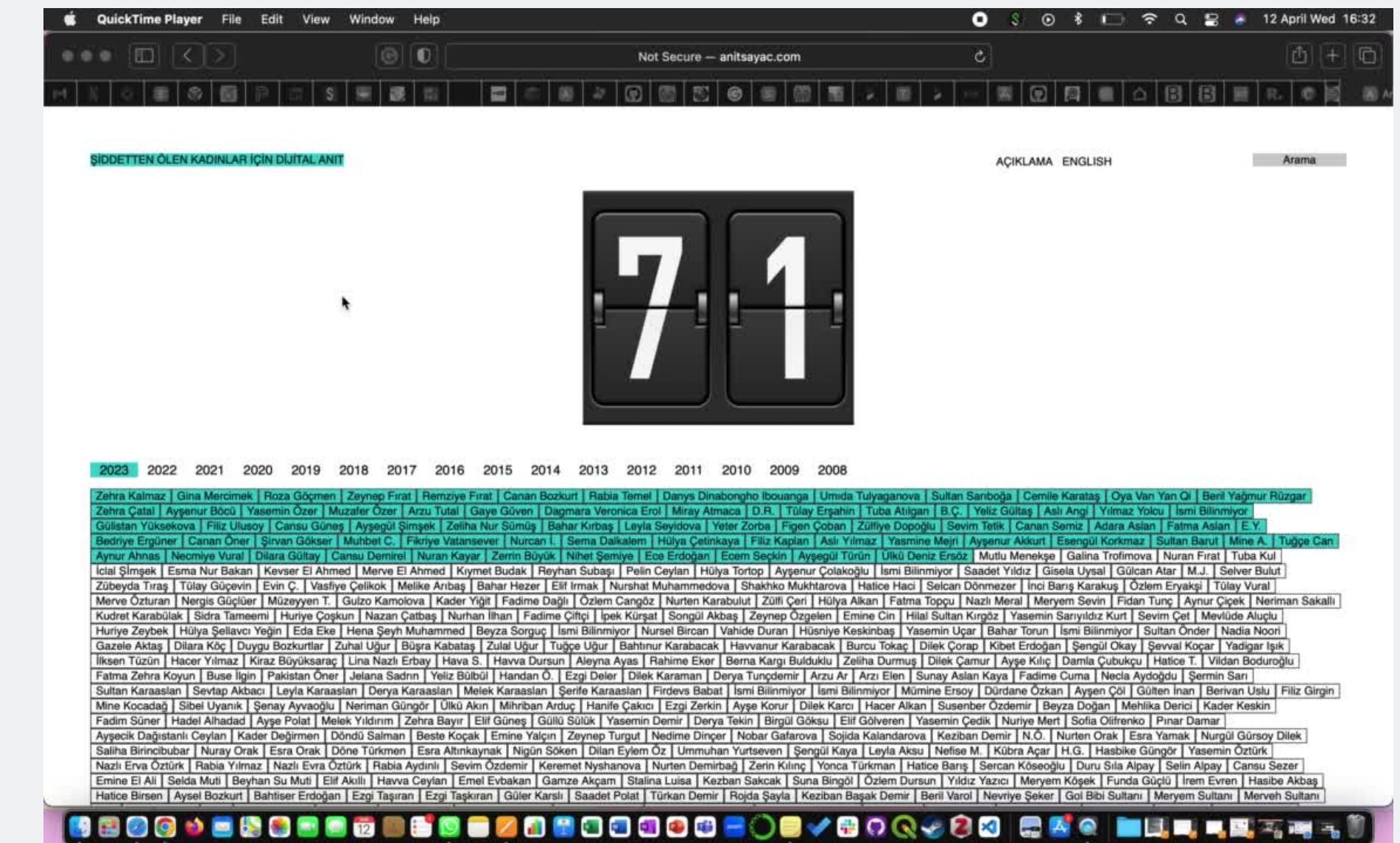
- OECD Violence Against Women Statistics
- "Kadın Cinayetlerini Durduracağız" platform 2022 Annual Data Report
- The Monument Counter

In 2023 (so far): 103 women

In 2022: 397 women

In 2021: 421 women

In 2020: 417 women

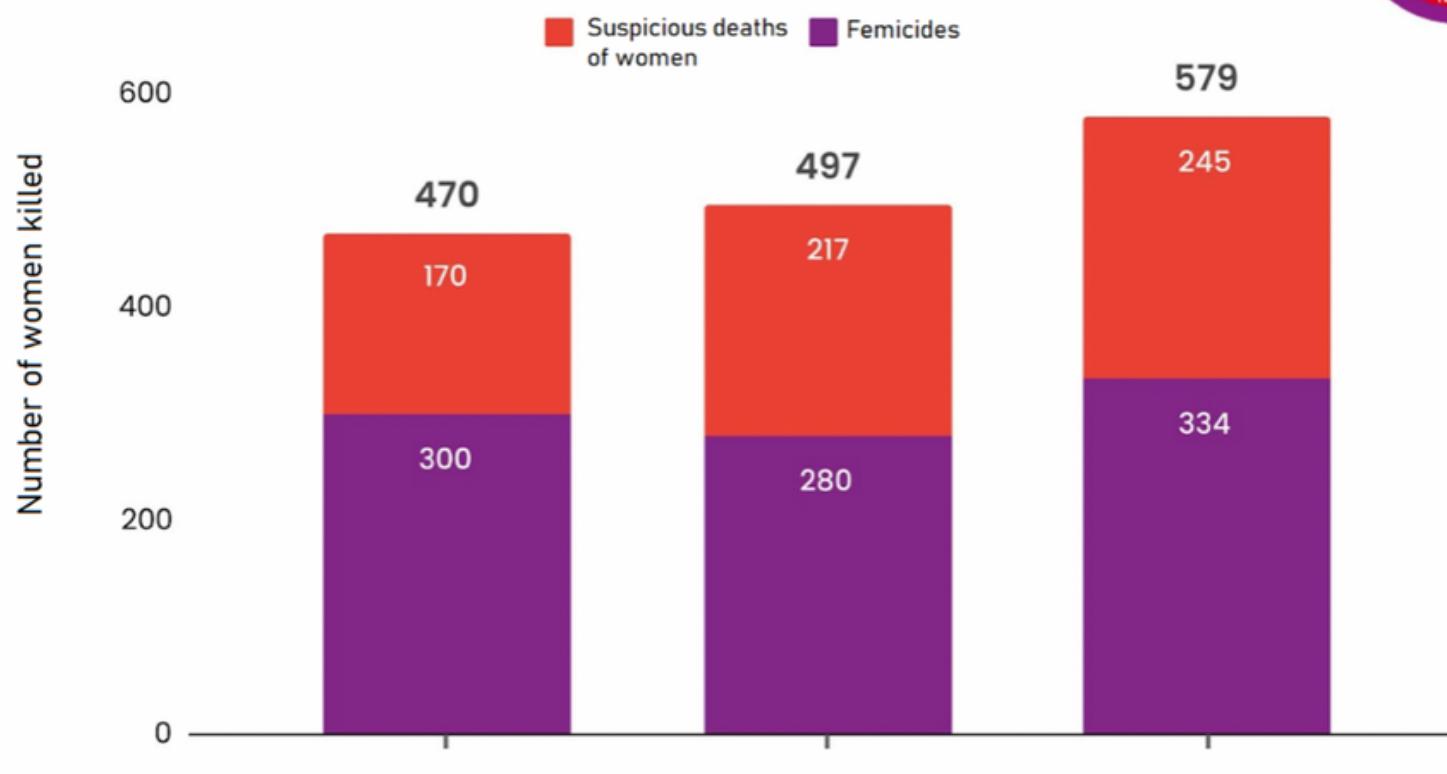


**Reference:** Anıt Sayaç : şiddetten ölen Kadınlar için Dijital Anıt. Anıt Sayaç : Şiddetten Ölen Kadınlar İçin Dijital Anıt. (n.d.). Retrieved April 10, 2023, from <http://anitsayac.com/>

← → Q Statistics - "We will stop Femicide"

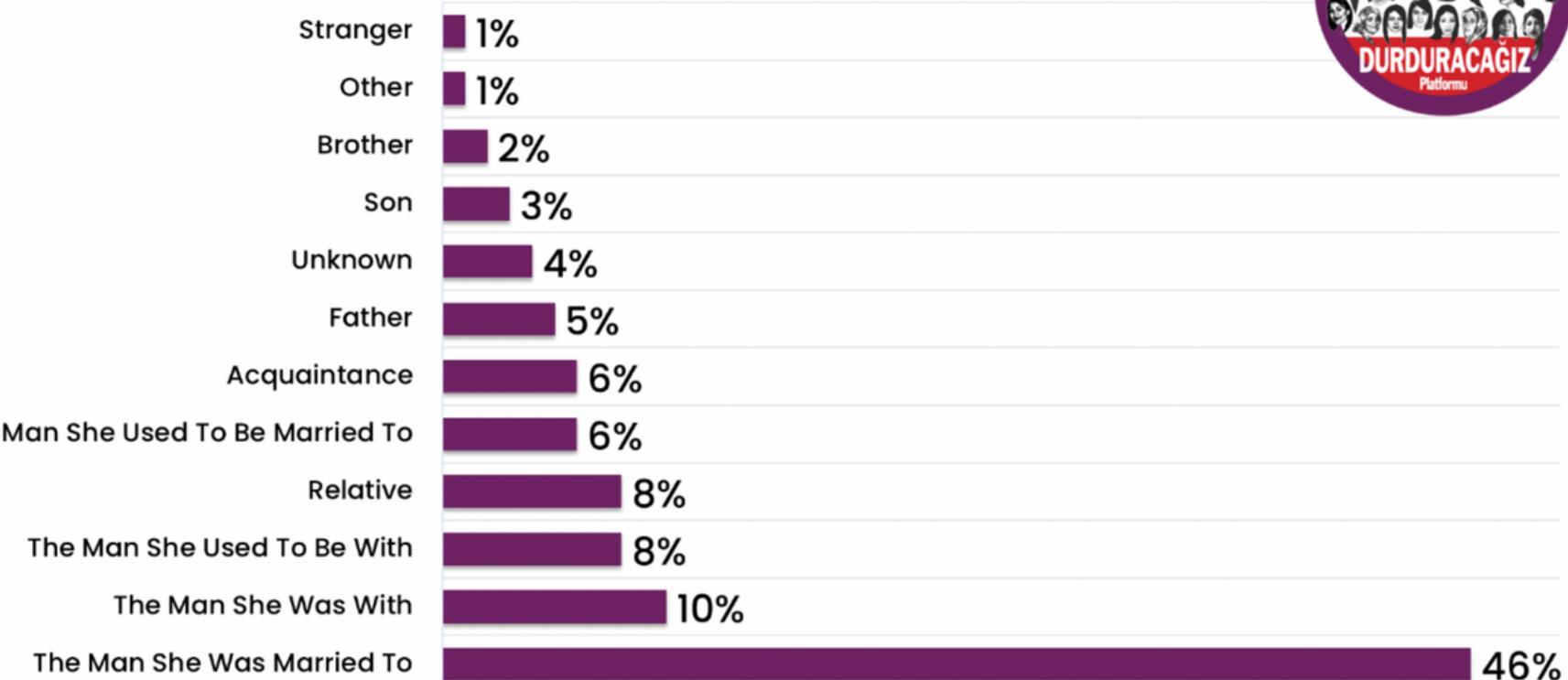
## Kadın Cinayetlerini Durduracağız Platform 2022 Annual Data Report

Between 2020-2022, 914 women were killed by men,  
632 women were found suspiciously dead.



### BY WHOM WERE THE WOMEN KILLED?

IN 2022

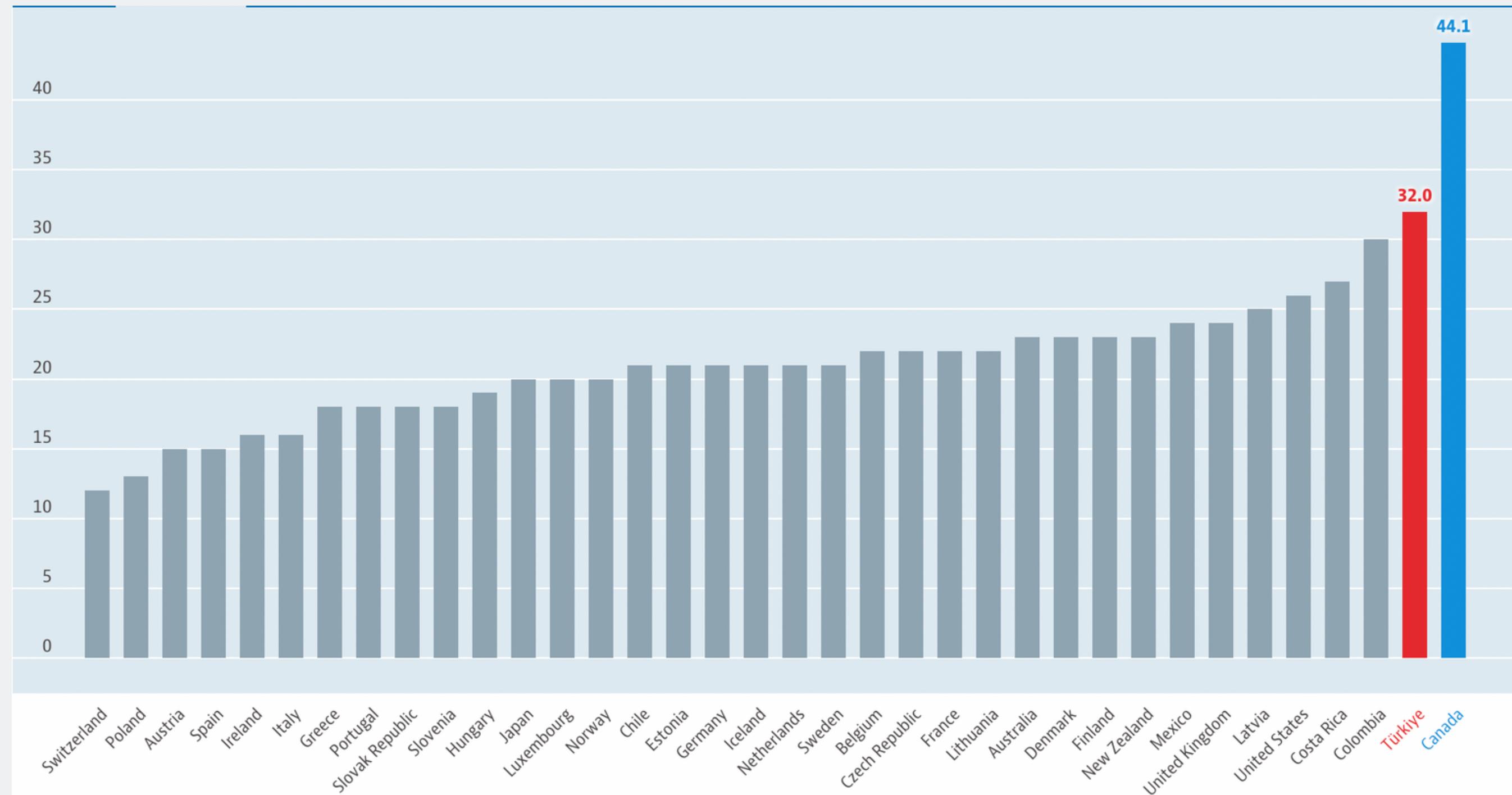


**Reference:** Anıt Sayaç : şiddetten ölen Kadınlar için Dijital Anıt. Anıt Sayaç : Şiddetten Ölen Kadınlar İçin Dijital Anıt. (n.d.). Retrieved April 10, 2023, from <http://anitsayac.com/>

[Title Page](#)[Istanbul  
Convention](#)[Statistics](#)[X](#)[+](#)[← → Q Statistics - OECD](#)

# OECD Violence Against Women Statistics - Prevalence in Lifetime

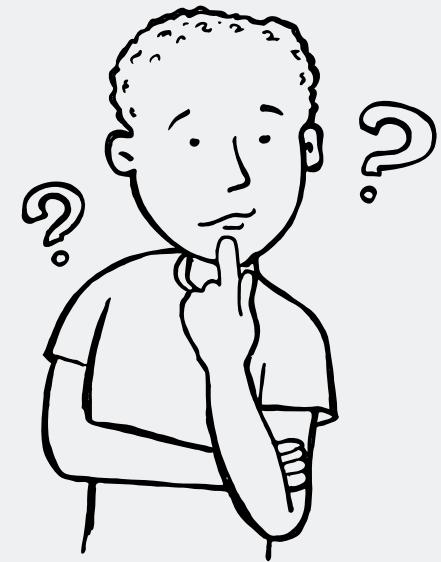
o6



← → Q Research Questions

# Research Questions

1. Sentiment towards the Istanbul Convention? Reflection on social media, particularly on Twitter?
2. People's reaction to the debate
3. Topics discussed on the abolishment of the Istanbul Convention on Twitter?  
Change in topics between positive and negative sentiment tweets
4. Topics for positive sentiment tweets in line with Kemalist populism, whereas topics in negative sentiment compatible with Islamist populism?



← → Q Islamist Populism vs. Kemalist Populism

# What I expected from the results

Kemalist Populism vs. Islamist Populism



## Islamist Populism and Women

- Embody women as the support for demographic growth (Scotti, 2021)
- Compatibility of the Istanbul Convention with the general concept of the family in Turkey (Scotti, 2021), corruption of the family values of Turkey, normalizing other forms of sexuality unsuitable for Turkish culture; Islam is the only way to protect women
- normalizes homosexuality, which is incompatible with Turkish culture's family values and social values (Çali, 2021)
- The LGBTQIA+ community imposes its ideas on gender on the entire society (Çali, 2021)



## Kemalist Populism and Women

- Traditionally supportive of women's rights and gender equality (Scotti, 2021)
- Many Kemalist politicians and activists have championed the Istanbul Convention as an important tool for combating violence against women and promoting gender equality
- Supports the real emancipation of Turkish women



← → Q Data Collection



# Data Collection

**Time Period:** 2021/03/20 - 2022/03/20  
1 year period

**Source:** SNS Scraping Tool

**Queries:** "istanbul sözleşmesi" , "istanbulsözleşmesi"

**Reference:** <https://github.com/MartinBeckUT/TwitterScraper/blob/master/sns scrape/cli-with-python/sns scrape-python-cli.ipynb>

[Title Page](#)[Istanbul  
Convention](#)[Statistics](#)[Research Question](#)[Dataset](#)

← → Q Dataset descriptive statistics



# Dataset

Total Tweet Count:

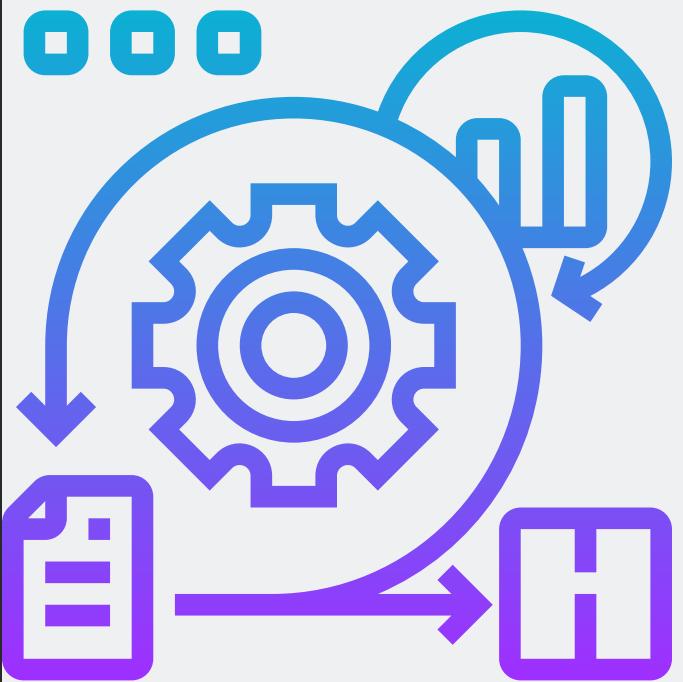
48,693

Query:

"istanbul sözleşmesi"

## Mostly Occurred Hashtags:

#istanbulsoezlesmesi:	17372
#istanbulsozlesmesiyasatir:	5990
#KadinaSiddeHayir:	657
#istanbulsoezlesmesiYASATIR:	468
#GueleGueleMorHalka:	294



# Methodology

- Python-based data analysis pipeline
- Natural Language Processing (NLP) techniques:
  - Sentiment Analysis
    - Annotation
    - Preprocessing
    - Evaluation of supervised machine learning (SML) models
    - Application of the best fitted model
  - Topic Modeling

← → Q Annotation



# Sentiment Analysis Annotation

- single annotator
- labeling 3,000 tweets regarding Istanbul Convention
  - positive (#istanbulsözleşmesiyasatır, #aklınızdanbilegeçirmeyin, #kararıgeriçek)
  - negative (#gülegülemorhalka, #islamsözleşmesi, #lgbt, #cb)
  - neutral

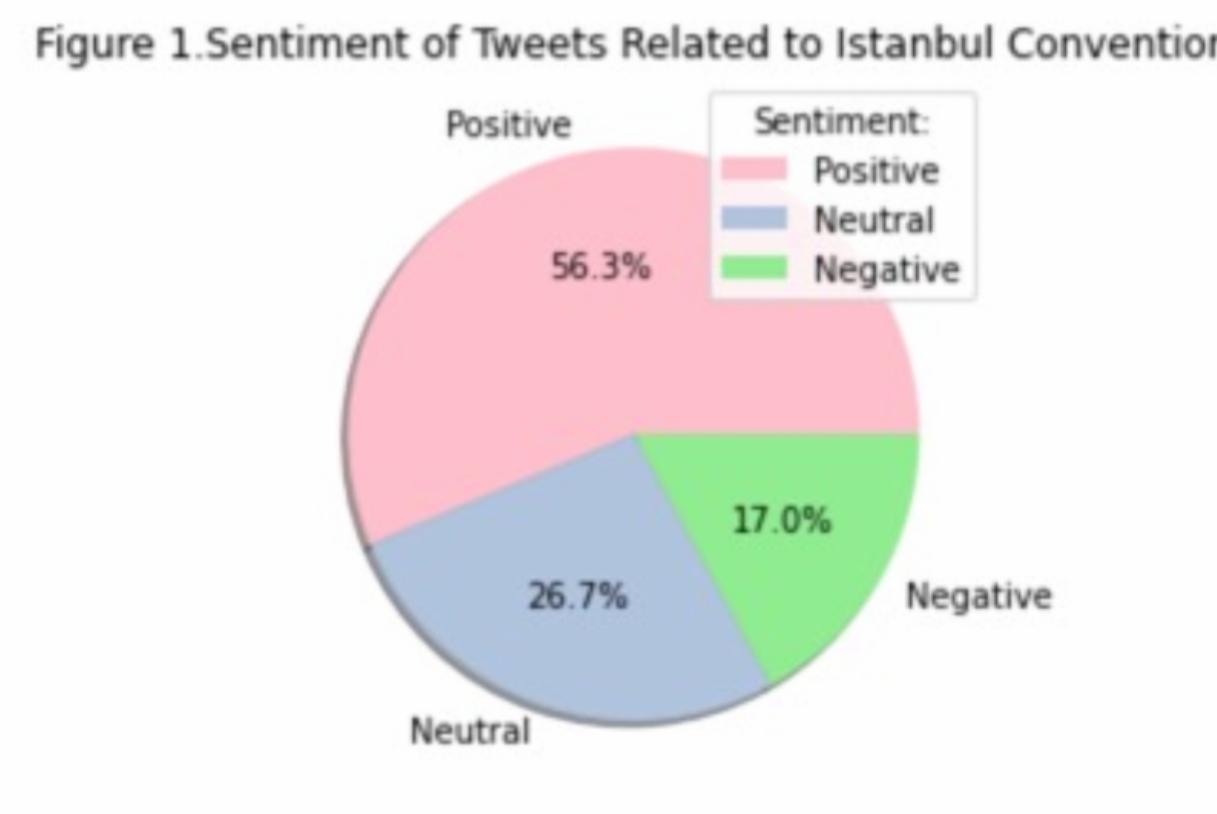
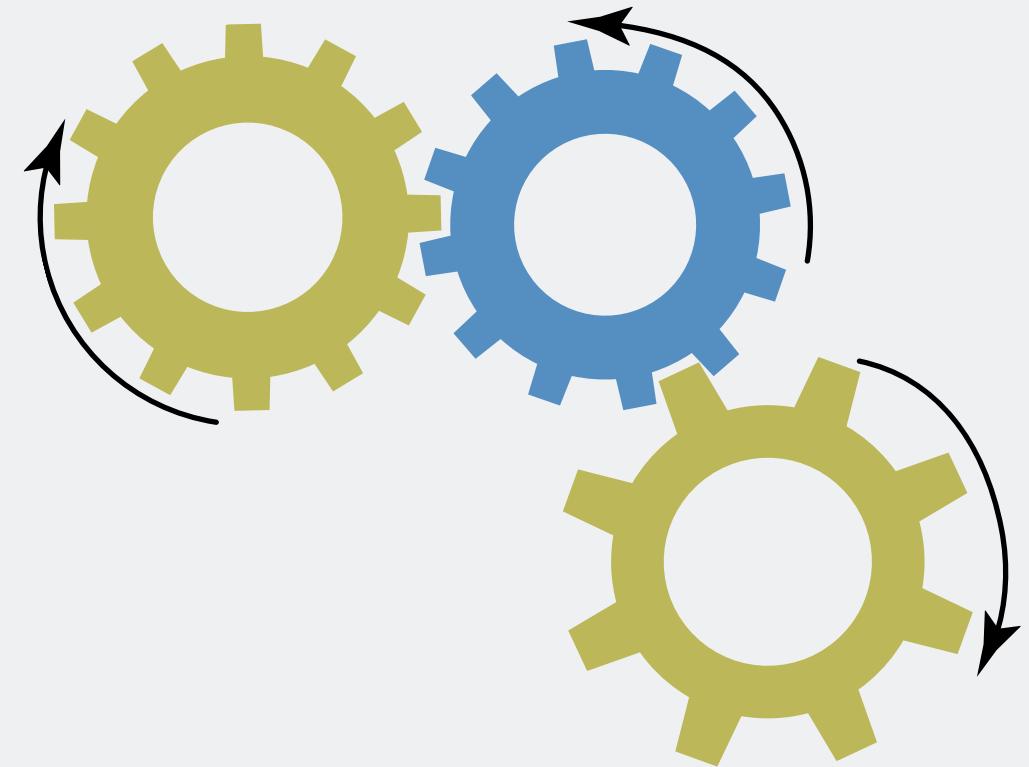


Table 1. Some Examples from Annotated Tweet Data Set (TUR-ENG)	
Tweets	Labels
Kadına şiddete tabiki karşıyorum. Lakin istanbul sözleşmesi içine LGBT gizlenmiş sözleşmedir. LGBT kurana aykırıdır. Kesinlikle taviz verilemez. #İstanbulSözleşmesi	negative
"Of course, I am against violence against women. However, LGBT is a hidden contract within the Istanbul contract. LGBT is against the Quran. Absolutely no concessions can be made. #İstanbulContract" #İstanbulsoezlesmesi	negative
Veda hutbesinde tüm müslümanlara hitaben... Kadınlar size Allahın emanetidir sözü ile kanunlaştı, @RTErdogan Ömrün bereketli olsun İslam Halifesi	negative
#istanbulsoezlesmesi Addressing all Muslims in his farewell sermon... Women are entrusted to you by the word of God. @RTErdogan May your life be blessed, Caliph of Islam	neutral
Cumhurbaşkanı Erdoğan'ın gece yarısı bir karsnameyle geri çektiği İstanbul sözleşmesini Birleşmiş Milletler İnsan Hakları Ofisi, Türkiye'yi kadına yönelik şiddetle mücadele amaçlı uluslararası bir anlaşma olan İstanbul Sözleşmesi'nden çekilme kararını geri almaya çağrırdı. <a href="https://t.co/jRzIWPathV">https://t.co/jRzIWPathV</a>	neutral
The United Nations Human Rights Office called on Turkey to draw its decision back to withdraw from the Istanbul Convention at midnight, an international agreement aimed at combating violence against women. <a href="https://t.co/jRzIWPathV">https://t.co/jRzIWPathV</a> Bu ülkede her gün daha mutsuz uyuyoruz. Her gün haklarını kaybederek ,susarak,susturularak.. Sözleşmenin kabulünün kimleri koruduğu değil kimlere zarar verdiği düşünülüyor. Katilleri koruma. Kadınları koru. #istanbulsözleşmesi	positive
We wake up more unhappy every day in this country. Losing our rights every day, being silent, being silenced. Protecting killers. Protect women. #istanbulcontract Artık ne benim güvenliğim, ne de bir başka kadının güvenliği yok. #istanbulsoezlesmesi	positive
There is neither my security nor any other woman's security anymore. #istanbulsoezlesmesi	positive

← → Q Preprocessing

## Preprocessing for Analysis

- Lowercasing
- Removing mentions and hyperlinks
- Removing punctuations, emojis and numbers
- Tokenization
- Removing stopwords
- Lemmatization
- Removing the most frequent words



### References:

1. <https://www.nltk.org/api/nltk.corpus.html>
2. <https://github.com/ahmetaa/zemberek-nlp>

← → Q Best Fit Algorithm

# Finding the Best Fit Model

- Multinomial Naive Bayes
- K-nearest Neighbors
- Random Forest
- Logistic Regression
- Support Vector Machine

## Feature Extraction Techniques:

- Bag of Words
- Tf-idf

## Evaluation Metric :

f1 Score (harmonic mean of precision and recall)

The F-score is the Harmonic mean of Precision and Recall.

$$F = \frac{2}{\frac{1}{\text{Recall}} + \frac{1}{\text{Precision}}}$$

Alternatively

$$F = 2 \times \frac{\text{Precision} \times \text{Recall}}{\text{Precision} + \text{Recall}}$$

← → Q Model Testing BOW

## Bag of Words (BOW)

**Table 2.** Evaluation Metrics for Different Supervised Machine Learning Models (BOW)

	Precision					Recall					f1- Score				
	MNB	KNN	RF	LogReg	SVC	MNB	KNN	RF	LogReg	SVC	MNB	KNN	RF	LogReg	SVC
Positive	0.69	0.83	0.71	0.76	0.63	0.91	0.36	0.83	0.84	0.94	0.79	0.50	0.76	0.79	0.76
Neutral	0.72	0.35	0.55	0.62	0.69	0.40	0.91	0.57	0.59	0.29	0.52	0.50	0.56	0.60	0.41
Negative	0.50	0.29	0.61	0.56	0.70	0.32	0.04	0.18	0.40	0.21	0.39	0.08	0.28	0.47	0.32
Accuracy											0.68	0.46	0.66	0.70	0.64

MNB: Multinomial Naive Bayes, KNN: k-nearest neighbours, RF: Random Forest, Log.Reg.: Logistic Regression, SVC: Support Vector Machine

**Table 3.** Evaluation Metrics for Different Supervised Machine Learning Models after Optimization with GridSearchCV (BOW)

	Precision					Recall					f1- Score				
	MNB	KNN	RF	LogReg	SVC	MNB	KNN	RF	LogReg	SVC	MNB	KNN	RF	LogReg	SVC
Positive	0.69	0.62	0.61	0.76	0.70	0.91	0.75	0.97	0.84	0.85	0.79	0.68	0.75	0.79	0.77
Neutral	0.72	0.43	0.73	0.62	0.62	0.40	0.46	0.25	0.59	0.54	0.52	0.44	0.37	0.60	0.58
Negative	0.50	0.62	1.00	0.56	0.55	0.32	0.05	0.07	0.40	0.24	0.39	0.10	0.12	0.47	0.33
Accuracy											0.68	0.56	0.63	0.70	0.67

MNB: Multinomial Naive Bayes, KNN: k-nearest neighbours, RF: Random Forest, Log.Reg.: Logistic Regression, SVC: Support Vector Machine

← → Q Model Testing Tf-idf

## Term Frequency - Inverse Document Frequency (Tf-idf Vectorizer)

**Table 4.** Evaluation Metrics For Different Supervised Machine Learning Models (TF-IDF)

	Precision					Recall					f1- Score				
	MNB	KNN	RF	LogReg	SVC	MNB	KNN	RF	LogReg	SVC	MNB	KNN	RF	LogReg	SVC
Positive	0.61	0.79	0.64	0.69	0.65	0.98	0.74	0.93	0.91	0.96	0.75	0.76	0.76	0.78	0.78
Neutral	0.77	0.53	0.71	0.69	0.78	0.25	0.59	0.36	0.46	0.37	0.37	0.56	0.48	0.55	0.50
Negative	0.00	0.35	0.70	0.59	0.70	0.00	0.37	0.15	0.24	0.15	0.00	0.36	0.25	0.34	0.25
Accuracy											0.62	0.64	0.65	0.68	0.67

MNB: Multinomial Naive Bayes, KNN: k-nearest neighbours, RF: Random Forest, Log.Reg.: Logistic Regression, SVC: Support Vector Machine

**Table 5.** Evaluation Metrics For Different Supervised Machine Learning Models after Optimization with GridSearchCV (TF-IDF)

	Precision					Recall					f1- Score				
	MNB	KNN	RF	LogReg	SVC	MNB	KNN	RF	LogReg	SVC	MNB	KNN	RF	LogReg	SVC
Positive	0.70	0.73	0.62	0.75	0.76	0.91	0.80	0.96	0.85	0.85	0.79	0.76	0.76	0.80	0.80
Neutral	0.68	0.55	0.78	0.64	0.66	0.42	0.59	0.32	0.57	0.57	0.52	0.57	0.45	0.61	0.62
Negative	0.58	0.45	1.00	0.56	0.58	0.33	0.25	0.03	0.40	0.48	0.42	0.32	0.06	0.47	0.52
Accuracy											0.68	0.66	0.64	0.70	0.71

MNB: Multinomial Naive Bayes, KNN: k-nearest neighbours, RF: Random Forest, Log.Reg.: Logistic Regression, SVC: Support Vector Machine

← → Q Predicting Sentiment

# Application of the Best Fitted Model

- Support Vector Machine (with tf-idf vectorizer and fine tuning) as the best-performing model
- Annotated data set as a training set
- Prediction of the sentiment of the whole data set using annotated data

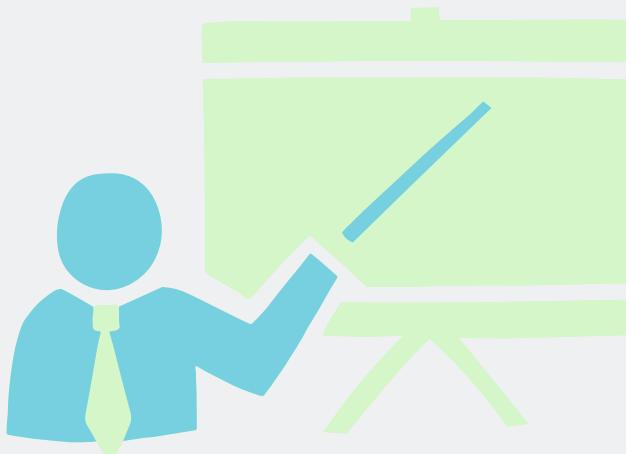
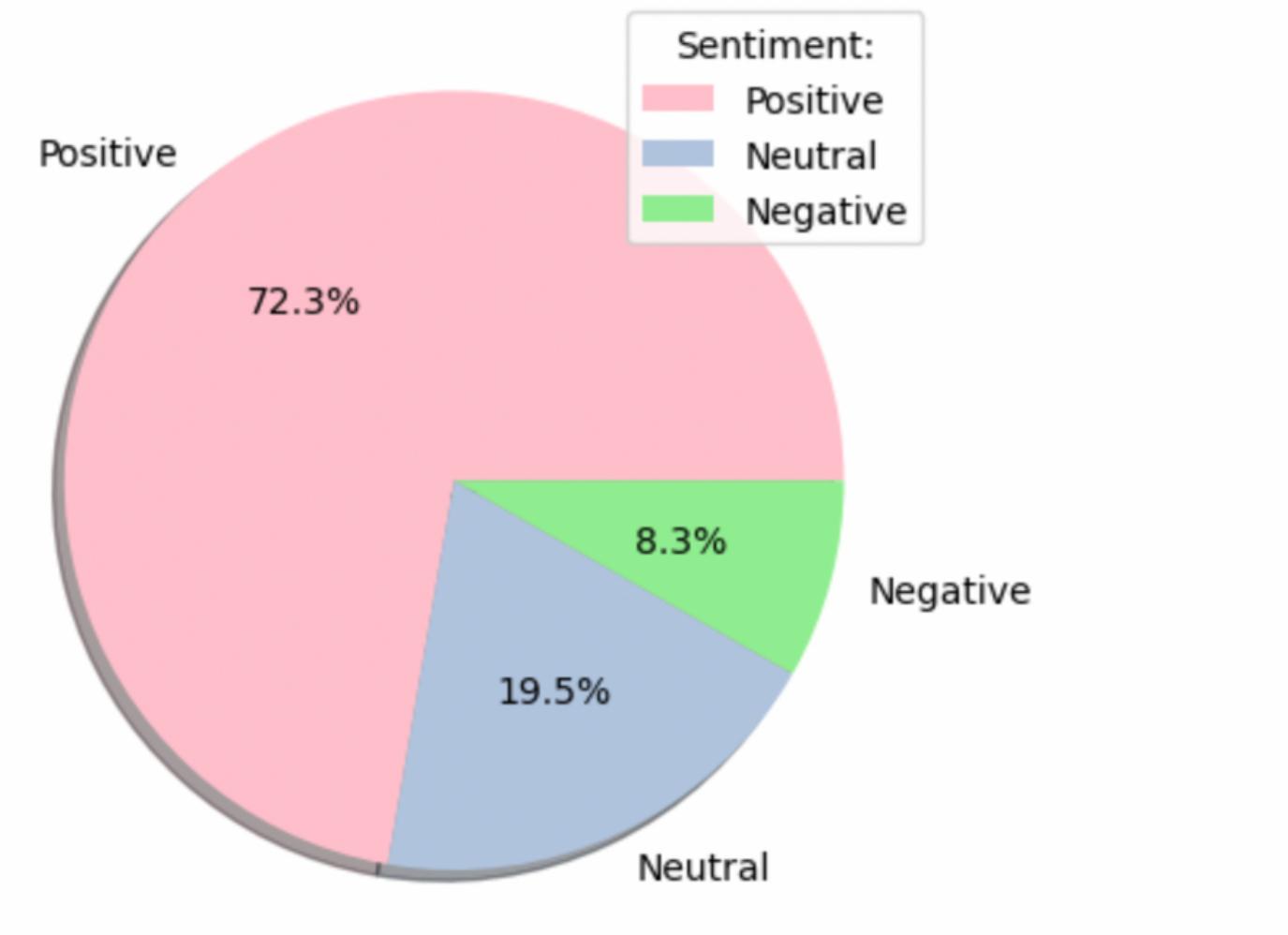


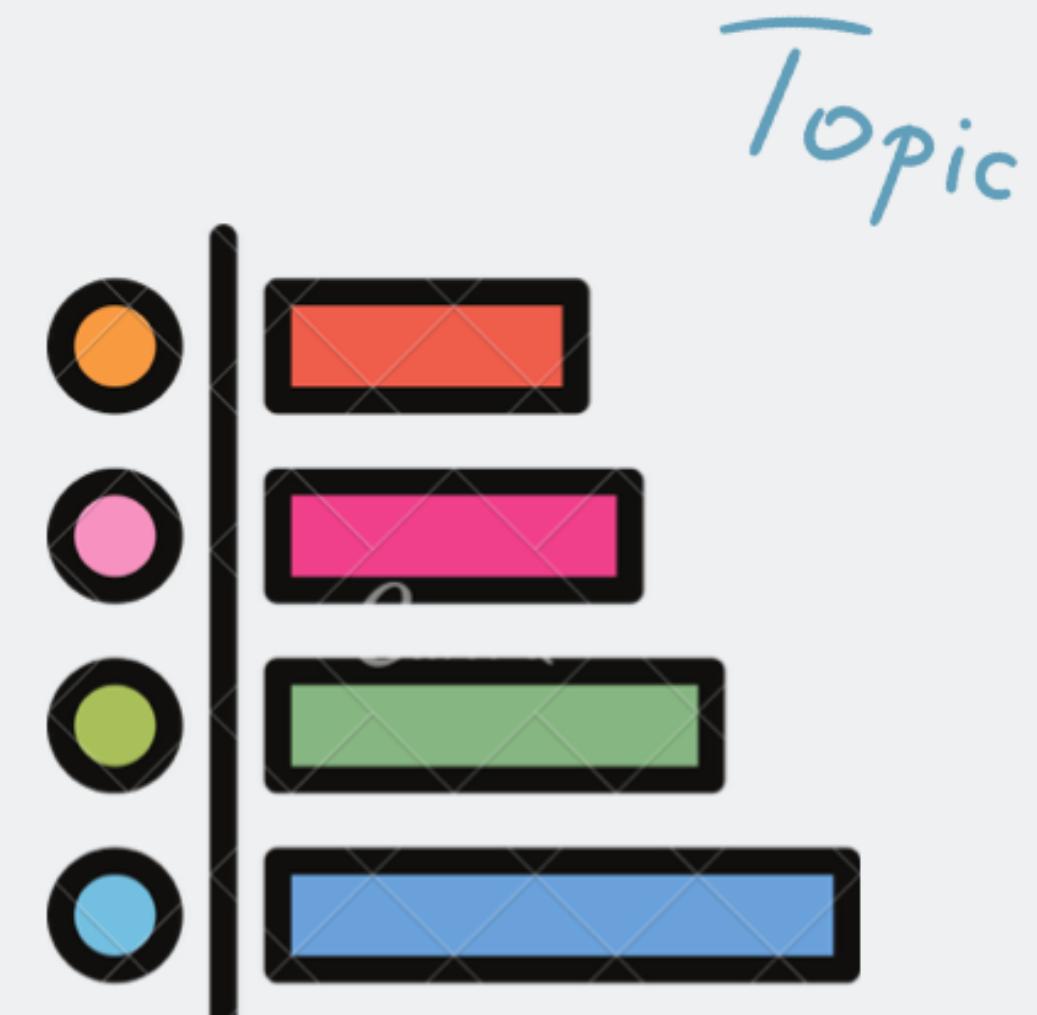
Figure 2. Sentiment of Tweets Related to Istanbul Convention After Training



← → Q Topic Modeling

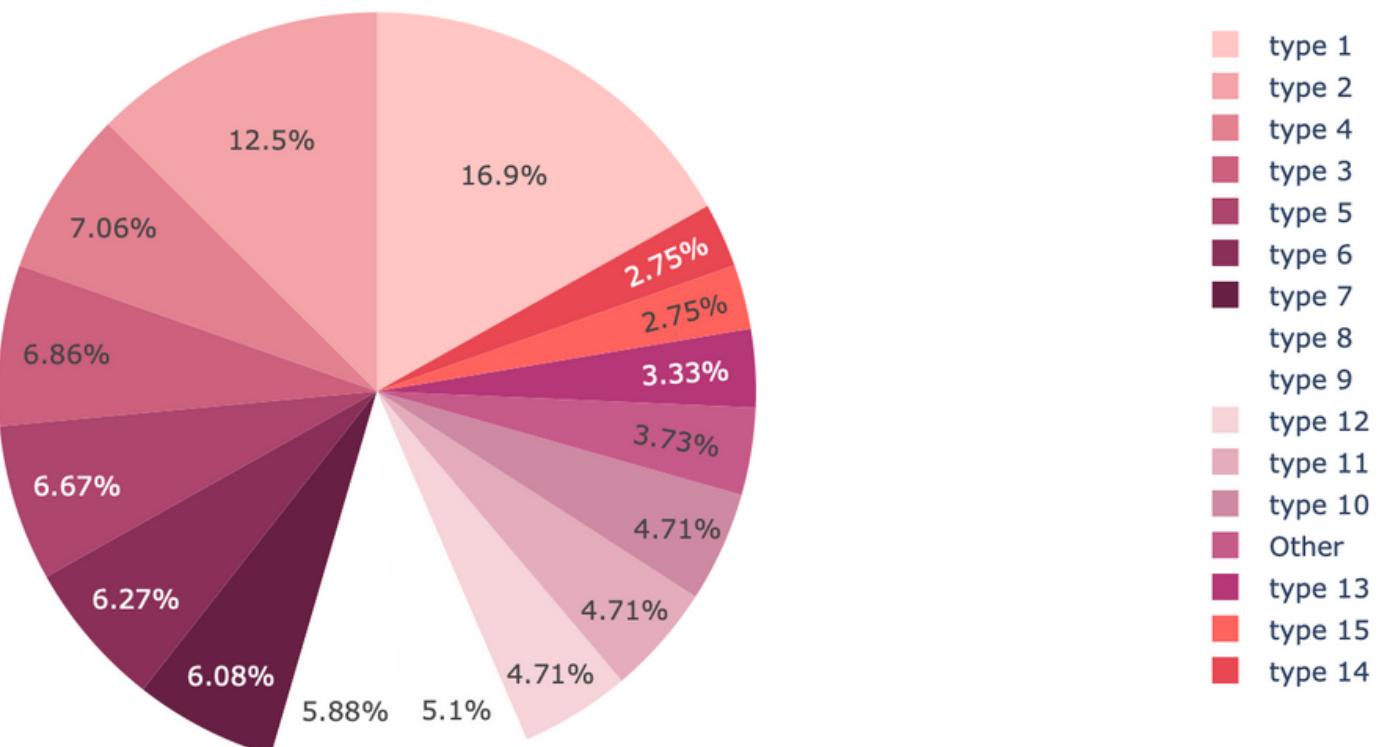
## Topic Modeling For Tweets with Negative and Positive Sentiment

- LDA (Latent Dirichlet Allocation)  
better for larger texts, fails in short texts
- GSDMM (Gibbs Sampling Dirichlet Multinomial Mixture)  
aims to detect topics in smaller documents



← → Q Topic Modeling - Negative Sentiment

Figure 3. GSDMM for Tweets with Negative Sentiment



## Cluster No &amp; Topic Name

Cluster 10: Istanbul Contract

## Words &amp; Frequencies

```
[('sözleşme', 80), ('istanbul', 58), ('bir', 33), ('olmak', 33), ('kadın', 29), ('hal', 12), ('demek', 12), ('biz', 11), ('desen', 11), ('var', 10), ('vermek', 10), ('iyi', 9), ('slâm', 9), ('kalmak', 9), ('avrupa', 8), ('devlet', 8), ('mi', 8), ('iş', 8), ('yok', 8), ('cinayet', 8)]
```

Cluster 11: Women and Rights

```
[('sözleşme', 61), ('kadın', 59), ('istanbul', 52), ('bir', 24), ('olmak', 24), ('var', 20), ('korumak', 19), ('tecavüz', 14), ('mi', 14), ('bu', 13), ('şiddet', 13), ('ülke', 12), ('demek', 12), ('cinayet', 11), ('taciz', 11), ('yok', 9), ('değmek', 9), ('desen', 9), ('kadar', 9), ('hak', 8)]
```

Cluster 13: Political and Cultural Aspects of Istanbul Convention

```
Cluster 13 : [('sözleşme', 19), ('istanbul', 13), ('olmak', 11), ('bir', 10), ('aile', 10), ('yapı', 8), ('çöp', 7), ('fatih', 7), ('ahlak', 7), ('millet', 6), ('var', 6), ('erbakan', 6), ('TÜRK', 6), ('artık', 6), ('şükür', 6), ('önce', 5), ('lider', 5), ('atmak', 4), ('ayasofya', 4), ('şimdi', 4)]
```

Cluster 9: Islam and Turkish Family Structure

```
Cluster 9 : [('bir', 16), ('sözleşme', 12), ('aile', 11), ('olmak', 10), ('istanbul', 8), ('erkek', 8), ('elhamdülillah', 8), ('kadın', 5), ('ede', 5), ('müslüman', 5), ('feshetmek', 5), ('nesil', 4), ('ifade', 4), ('bitmek', 4), ('ge', 4), ('kadar', 3), ('yıkanmak', 3), ('söz', 3), ('TÜRK', 3), ('belâ', 3)]
```



# Title Page

# Istanbul Convention

## Statistics

# Data Set

# Topic Modeling



← → Q Topic Modeling - Negative Sentiment

## Most used words in negative sentiment tweets



## **Political and Cultural Aspects of Istanbul Convention (Type 6)**

# **Islam and Turkish Family Structure (Type 8)**

## Most used words in negative sentiment tweets



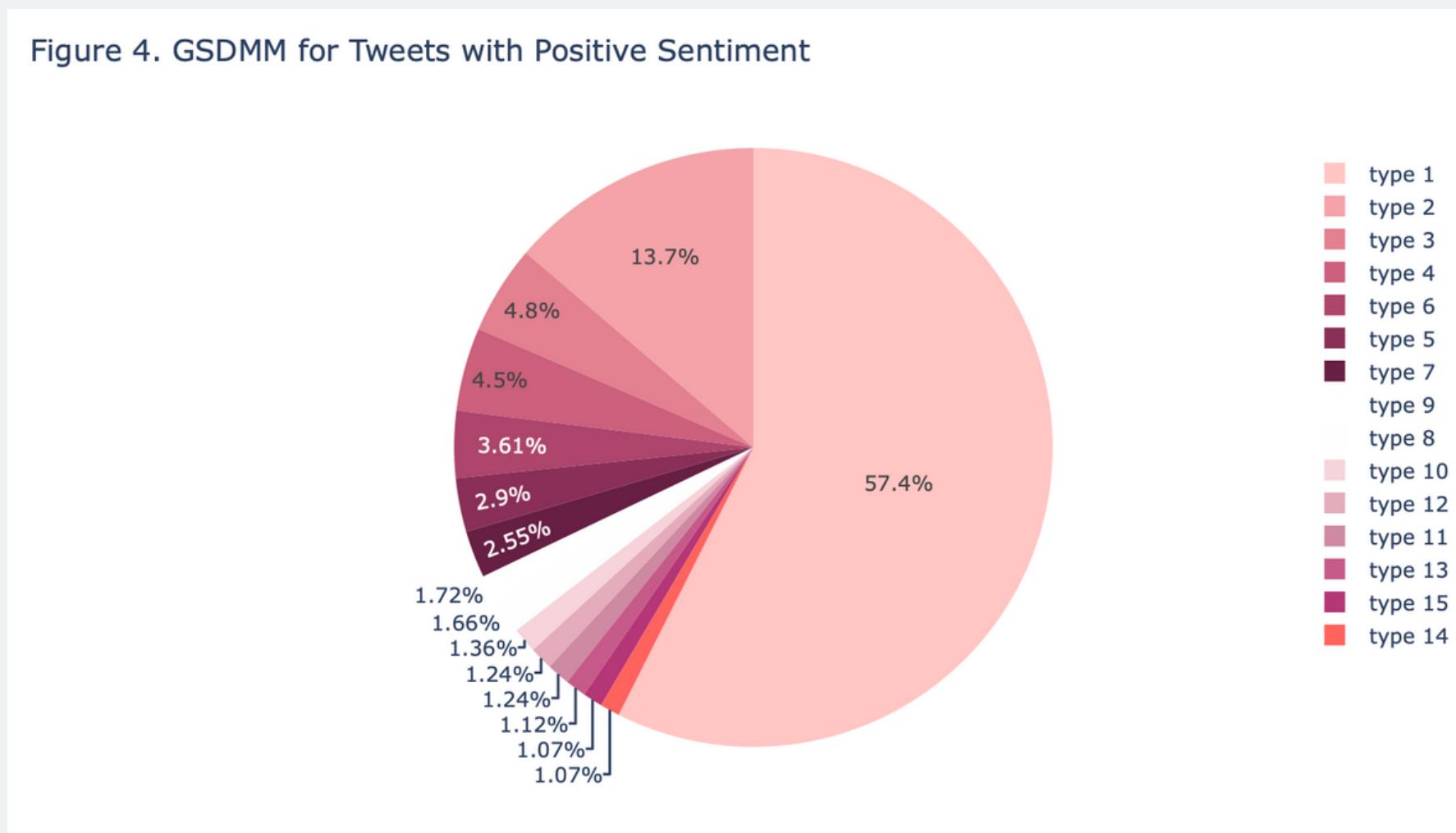
## **Gratitude and Thanks (Type 14)**

## Most used words in negative sentiment tweets



← → Q Topic Modeling - Positive Sentiment

Figure 4. GSDMM for Tweets with Positive Sentiment



## Cluster No &amp; Topic Name

Cluster 4: Being a Woman in Turkey

## Words &amp; Frequencies

```
[('sözleşme', 22), ('istanbul', 19), ('bir', 12), ('zulüm', 8),
('demek', 6), ('kadın', 6), ('kanu', 6), ('olmak', 6), ('kalmak', 6),
('söylemek', 6), ('insan', 5), ('çekmek', 5), ('yaşamak', 5),
('kendi', 5), ('akp', 4), ('bu', 4), ('önce', 4), ('zaten', 4),
('utanmak', 4), ('biz', 4)]
```

Cluster 11: Saying of M. Kemal Atatürk

```
[('kadın', 51), ('geri', 36), ('sözleşme', 20), ('bırakmak', 18),
('kalmak', 18), ('istanbul', 16), ('toplum', 15), ('kemal', 15),
('cinayet', 14), ('yaşamak', 13), ('politik', 11), ('ataturk', 10), ('iş',
9), ('şiddet', 8), ('karşı', 8), ('mahkum', 7), ('mustafa', 7), ('not',
7), ('safe', 7), ('for', 7)]
```

Cluster 2: Oppression of Women

```
[('sözleşme', 22), ('istanbul', 19), ('bir', 12), ('zulüm', 8),
('demek', 6), ('kadın', 6), ('kanu', 6), ('olmak', 6), ('kalmak', 6),
('söylemek', 6), ('insan', 5), ('çekmek', 5), ('yaşamak', 5),
('kendi', 5), ('akp', 4), ('bu', 4), ('önce', 4), ('zaten', 4),
('utanmak', 4), ('biz', 4)]
```

← → Q Q Topic Modeling - Positive Sentiment

## Most used words in positive sentiment tweets



## **Oppression of Women (Type 10)**

## Most used words in positive sentiment tweets



most used words in positive sentiment tweets



## **Being a Woman in Turkey (Type 1)**

← → Q Limitations& Pitfalls

- Twitter Data
  - noisy data
  - difficulty in meaning extraction
- Annotation Part
  - missing background information of users
  - Single annotator (errors and biases)
  - more extensive data set
- Preprocessing Part
  - Not enough well-developed preprocessing methods and libraries for the Turkish language
  - meaningless words (failure in normalization and lemmatization)
- Analysis
  - not usage of globally accepted packages (VADER, Textblob)
  - complex morphology of Turkish - Natural Language Processing (Oflazer & Saraclar, 2018)

# Limitations & Pitfalls



Title Page

Istanbul  
Convention

Statistics

Dataset

Methodology

Bye!

X +

← → Q Q

# Thank You



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*<https://github.com/bkarayel>*