

# **A Twitter Tribute to Mr Lee Kuan Yew: Tweeting Our Goodbyes**

Final Project Group 11:  
Andrew Andrade  
Lim Jia Hui Hazel  
Koh Yi Ning



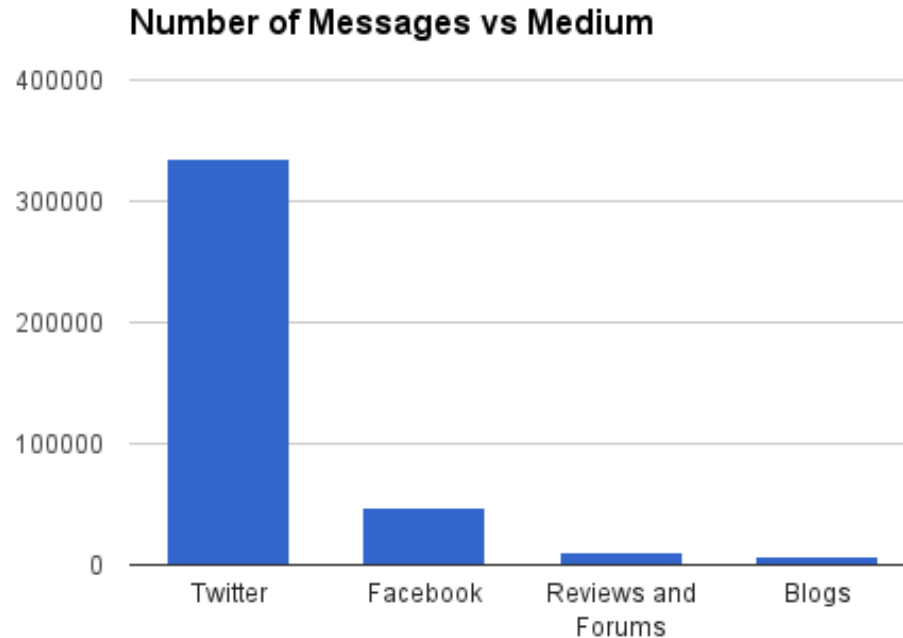
# Short description

This project aims to create a static visualization on the trends of Twitter usage during the one- week national mourning of our founding father, Mr Lee Kuan Yew. (23 March- 29 March 2015).

- (i) the distribution of tweets over the span of 7 days
- (ii) Top 70 keywords used in each day
- (iii) Top 10 retweets over the span of 7 days

# Data Source: Twitter

Greatest source of open global communication



# Scraping Twitter

## 1) Access to the twitter API

<https://dev.twitter.com/rest/public>

## 2) Python code to scrape twitter

[https://github.com/mrandrewandrade/Remembering-Lee-Kuan-Yew-using-Twitter-Analytics/blob/master/tweet\\_scraper.py](https://github.com/mrandrewandrade/Remembering-Lee-Kuan-Yew-using-Twitter-Analytics/blob/master/tweet_scraper.py)

## 3) Cleaning Scraped Data using [R]

<https://github.com/mrandrewandrade/Remembering-Lee-Kuan-Yew-using-Twitter-Analytics/>

# Python to Scrape Twitter

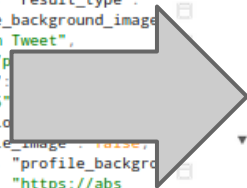
- 1) Authenticate (personal account)
- 2) Search twitter -> get the response in JSON
- 3) Deal with errors
- 4) Save tweet JSON to file
- 5) Clean JSON to CSV

# JSON

```
{
  "contributors": null,
  "truncated": false,
  "text": "http://t.co/2UBglteBMv Vietnam's top leaders express condolences on Mr Lee Kuan Yew's passing http://t.co/mK1lze6vqU",
  "in_reply_to_status_id": null,
  "in_reply_to_user_id": null,
  "id": 583669010731962368,
  "favorite_count": 0,
  "entities": {
    "symbols": [],
    "user_mentions": [],
    "hashtags": [],
    "urls": [
      {
        "indices": [0, 22],
        "url": "http://t.co/2UBglteBMv",
        "expanded_url": "http://vietnamTweet.com",
        "display_url": "vietnamTweet.com"
      },
      {
        "indices": [94, 116],
        "url": "http://t.co/mK1lze6vqU",
        "expanded_url": "http://bit.ly/cBbbEZ",
        "display_url": "bit.ly/cBbbEZ"
      }
    ]
  },
  "retweeted": false,
  "coordinates": null,
  "source": "<a href='\"http://d1vr.it\"' rel='\"nofollow\"'>d1vr.it</a>",
  "in_reply_to_screen_name": null,
  "id_str": "583669010731962368",
  "retweet_count": 0,
  "metadata": {
    "iso_language_code": "en",
    "result_type": "recent"
  },
  "favorited": false,
  "user": {
    "follow_request_sent": null,
    "profile_use_background_image": true,
    "profile_text_color": "333333",
    "id": 181910783,
    "description": "vietnam Tweet",
    "verified": false,
    "profile_location": null,
    "profile_image_url_https": "https://pbs.twimg.com/profile_images/1109206833/Vietnam_flag_normal.png",
    "profile_sidebar_fill_color": "DDEEF6",
    "entities": {
      "url": {
        "urls": [
          {
            "indices": [0, 22],
            "url": "http://t.co/GtuSPMRCH5",
            "expanded_url": "http://www.vietnamTweet.com",
            "display_url": "vietnamTweet.com"
          }
        ]
      },
      "description": {
        "urls": []
      }
    },
    "followers_count": 544,
    "protected": false,
    "location": "",
    "default_profile_image": false,
    "id_str": "181910783",
    "lang": "en",
    "utc_offset": null,
    "statuses_count": 16874,
    "profile_background_color": "CODEED",
    "friends_count": 722,
    "profile_background_image_url_https": "https://abs.twimg.com/images/themes/theme1/bg.png",
    "profile_link_color": "0084B4",
    "profile_image_url": "http://pbs.twimg.com/profile_images/1109206833/Vietnam_flag_normal.png",
    "following": null,
    "geo_enabled": false,
    "profile_background_image_url": "http://abs.twimg.com/images/themes/theme1/bg.png",
    "screen_name": "vietnamTweets",
    "is_translation_enabled": false,
    "profile_background_tile": false,
    "favourites_count": 0,
    "name": "vietnamTweet.com",
    "notifications": null,
    "url": "http://t.co/GtuSPMRCH5",
    "created_at": "Mon Aug 23 10:32:09 +0000 2010",
    "contributors_enabled": false,
    "time_zone": null,
    "profile_sidebar_border_color": "CODEED",
    "default_profile": true,
    "is_translator": false,
    "listed_count": 7
  },
  "geo": null,
  "in_reply_to_user_id_str": null,
  "possibly_sensitive": false,
  "lang": "en",
  "created_at": "Thu Apr 02 16:35:10 +0000 2015",
  "in_reply_to_status_id_str": null,
  "place": null
}
```

# JSON -> Data object

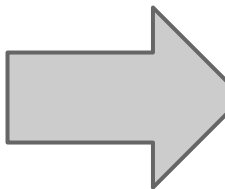
```
{
  "contributors": null,
  "truncated": false,
  "text": "http://t.co/2UBglteBMv Vietnam's top leaders express condolences on Mr Lee Kuan Yew's passing http://t.co/mK1lze6vqU",
  "in_reply_to_status_id": null,
  "in_reply_to_user_id": null,
  "id": 583669010731962368,
  "favorite_count": 0,
  "entities": {
    "symbols": [],
    "user_mentions": [],
    "hashtags": [],
    "urls": [
      {
        "indices": [0, 22],
        "url": "http://t.co/2UBglteBMv",
        "expanded_url": "http://vietnamTweet.com",
        "display_url": "vietnamTweet.com"
      },
      {
        "indices": [94, 116],
        "url": "http://t.co/mK1lze6vqU",
        "expanded_url": "http://bit.ly/cBbbEZ",
        "display_url": "bit.ly/cBbbEZ"
      }
    ],
    "retweeted": false,
    "coordinates": null,
    "source": "<a href='\"http://dlvr.it/\"' rel='\"nofollow\"'>dlvr.it</a>",
    "in_reply_to_screen_name": null,
    "id_str": "583669010731962368",
    "retweet_count": 0,
    "metadata": {
      "iso_language_code": "en",
      "result_type": "recent"
    },
    "favorited": false,
    "user": {
      "follow_request_sent": null,
      "profile_use_background_image": true,
      "profile_text_color": "333333",
      "id": 181910783,
      "description": "Vietnam Tweet",
      "verified": false,
      "profile_location": null,
      "profile_image_url_https": "https://pbs.twimg.com/profile_images/1109206833/Vietnam_flag_normal.png",
      "profile_sidebar_fill_color": "#f0f0f0",
      "entities": {
        "url": {
          "urls": [
            {
              "indices": [0, 22],
              "url": "http://t.co/GtuSPMRCH5",
              "expanded_url": "http://www.vietnamTweet.com",
              "display_url": "vietnamTweet.com"
            }
          ]
        },
        "followers_count": 544,
        "protected": false,
        "location": "",
        "default_profile_image": false,
        "id_str": "181910783",
        "lang": "en",
        "utc_offset": null,
        "statuses_count": 16874,
        "profile_background_color": "CODEED",
        "friends_count": 722,
        "profile_background_image_url_https": "https://abs.twimg.com/images/themes/theme1/bg.png",
        "profile_link_color": "0084B4",
        "profile_image_url": "http://pbs.twimg.com/profile_images/1109206833/Vietnam_flag_normal.png",
        "following": null,
        "geo_enabled": false,
        "profile_background_image_url": "http://abs.twimg.com/images/themes/theme1/bg.png",
        "screen_name": "vietnamTweets",
        "is_translation_enabled": false,
        "profile_background_tile": false,
        "favourites_count": 0,
        "name": "vietnamTweet.com",
        "notifications": null,
        "url": "http://t.co/GtuSPMRCH5",
        "created_at": "Mon Aug 23 10:32:09 +0000 2010",
        "contributors_enabled": false,
        "time_zone": null,
        "profile_sidebar_border_color": "CODEED",
        "default_profile": true,
        "is_translator": false,
        "listed_count": 7,
        "geo": null,
        "in_reply_to_user_id_str": null,
        "possibly_sensitive": false,
        "lang": "en",
        "created_at": "Thu Apr 02 16:35:10 +0000 2015",
        "in_reply_to_status_id_str": null,
        "place": null
      }
    }
  }
}
```



```
▼ object {24}
  contributors : null
  truncated : false
  text : http://t.co/2UBglteBMv Vietnam's top leaders express condolences on Mr Lee Kuan Yew's passing http://t.co/mK1lze6vqU
  in_reply_to_status_id : null
  in_reply_to_user_id : null
  id : 583669010731962400
  favorite_count : 0
  ► entities {4}
    retweeted : false
    coordinates : null
    source : <a href='\"http://dlvr.it/\"' rel='\"nofollow\"'>dlvr.it</a>
    in_reply_to_screen_name : null
    id_str : 583669010731962368
    retweet_count : 0
  ▼ metadata {2}
    iso_language_code : en
    result_type : recent
    favorited : false
  ► user {40}
    geo : null
    in_reply_to_user_id_str : null
    possibly_sensitive : false
    lang : en
    created_at : Thu Apr 02 16:35:10 +0000 2015
    in_reply_to_status_id_str : null
    place : null
```

# Data object -> CSV

```
▼ object {24}
  contributors : null
  truncated : false
  text : http://t.co/2UBgIteBMv Vietnam's top leaders express condolences on Mr Lee Kuan Yew's passing http://t.co/mK1Ize6vqU
  in_reply_to_status_id : null
  in_reply_to_user_id : null
  id : 583669010731962400
  favorite_count : 0
  ► entities {4}
    retweeted : false
    coordinates : null
    source : <a href=\"http://dlvr.it/\" rel=\"nofollow\">dlvr.it</a>
    in_reply_to_screen_name : null
    id_str : 583669010731962368
    retweet_count : 0
  ▼ metadata {2}
    iso_language_code : en
    result_type : recent
  favorited : false
  ► user {40}
    geo : null
    in_reply_to_user_id_str : null
    possibly_sensitive : false
    lang : en
    created_at : Thu Apr 02 16:35:10 +0000 2015
    in_reply_to_status_id_str : null
    place : null
```



	Posted_URL	Posted_Content	Posted_On	Date	Time
135824	<a href="http://twitter.com/...">http://twitter.com/...</a>	Lee Kuan Yew #news Singapore Former Prime Minis	22/3/2015 23:59	2015-03-22	23:59:59
135825	<a href="http://twitter.com/...">http://twitter.com/...</a>	R.I.P Lee kuan yew, such an amazing leader. You wi	22/3/2015 23:59	2015-03-22	23:59:58
135826	<a href="http://twitter.com/...">http://twitter.com/...</a>	BBCWorld: RT BBCNewsAsia: "He was a great lead	22/3/2015 23:59	2015-03-22	23:59:58
135827	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @JohnKerry: I join those around the world in hon	22/3/2015 23:59	2015-03-22	23:59:57
135828	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @BBCNewsAsia: Lee Kuan Yew died peacefully »	22/3/2015 23:59	2015-03-22	23:59:57
135829	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @STcom: Mr Lee Kuan Yew, Singapore?s foundi	22/3/2015 23:59	2015-03-22	23:59:56
135830	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @SingaporeAir: We're saddened by the passing »	22/3/2015 23:59	2015-03-22	23:59:56
135831	<a href="http://twitter.com/...">http://twitter.com/...</a>	Lee Kuan Yew, Who Guided Singapore?s Transform	22/3/2015 23:59	2015-03-22	23:59:55
135832	<a href="http://twitter.com/...">http://twitter.com/...</a>	#Headlines #Latestnews #News #Topstories - Lee K	22/3/2015 23:59	2015-03-22	23:59:54
135833	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @AP: Singaporeans mourn death of founding fat	22/3/2015 23:59	2015-03-22	23:59:54
135834	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @toshrock: RIP Lee Kuan Yew. I'm at loss for w	22/3/2015 23:59	2015-03-22	23:59:54
135835	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @TODAYonline: Those who wish to pay their last	22/3/2015 23:59	2015-03-22	23:59:53
135836	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @staronline: Lee Kuan Yew, Singapore's first prim	22/3/2015 23:59	2015-03-22	23:59:53
135837	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @rapplerdotcom: Singapore's founding leader Lee	22/3/2015 23:59	2015-03-22	23:59:52
135838	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @STcom: #Singapore flag flying at half-mast on	22/3/2015 23:59	2015-03-22	23:59:52
135839	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @sonnyangara: RIP Lee Kuan Yew, founder of m	22/3/2015 23:59	2015-03-22	23:59:52
135840	<a href="http://twitter.com/...">http://twitter.com/...</a>	#News #RT Lee Kuan Yew, father on modern Singap	22/3/2015 23:59	2015-03-22	23:59:51
135841	<a href="http://twitter.com/...">http://twitter.com/...</a>	We mourn the passing of Singapore's founding fath	22/3/2015 23:59	2015-03-22	23:59:51
135842	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @leehsienloong: PM Lee is deeply grieved to an	22/3/2015 23:59	2015-03-22	23:59:51
135843	<a href="http://twitter.com/...">http://twitter.com/...</a>	#News Lee Kuan Yew, father on modern Singapore,	22/3/2015 23:59	2015-03-22	23:59:50
135844	<a href="http://twitter.com/...">http://twitter.com/...</a>	Tributes stream in as Singaporeans mourn death of	22/3/2015 23:59	2015-03-22	23:59:50
135845	<a href="http://twitter.com/...">http://twitter.com/...</a>	Singapore's founding father Lee Kuan Yew dies aged	22/3/2015 23:59	2015-03-22	23:59:49
135846	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @EnochArsenal: Woahhhh this guy is damn good	22/3/2015 23:59	2015-03-22	23:59:49
135847	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @JohnKerry: I join those around the world in hon	22/3/2015 23:59	2015-03-22	23:59:49
135848	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @toshrock: RIP Lee Kuan Yew. I'm at loss for w	22/3/2015 23:59	2015-03-22	23:59:48
135849	<a href="http://twitter.com/...">http://twitter.com/...</a>	Lee Kuan Yew at the MRT station. <a href="http://t.co/20GqT7">http://t.co/20GqT7</a>	22/3/2015 23:59	2015-03-22	23:59:48
135850	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @STcom: Mr Lee Kuan Yew, Singapore?s foundi	22/3/2015 23:59	2015-03-22	23:59:47
135851	<a href="http://twitter.com/...">http://twitter.com/...</a>	Singapore says founding father Lee Kuan Yew has	22/3/2015 23:59	2015-03-22	23:59:47
135852	<a href="http://twitter.com/...">http://twitter.com/...</a>	RT @leehsienloong: PM Lee is deeply grieved to an	22/3/2015 23:59	2015-03-22	23:59:47
135853	<a href="http://twitter.com/...">http://twitter.com/...</a>	Passing of Mr Lee Kuan Yew, founding Prime Minis	22/3/2015 23:59	2015-03-22	23:59:47
135854	<a href="http://twitter.com/...">http://twitter.com/...</a>	RIP "Bapa" Lee Kuan Yew, Singapore's founding leader	22/3/2015 23:59	2015-03-22	23:59:46



# Getting Information from CSV

1. Tweets every day
  - Filter by date
2. Tweet content every day
  - Tokenize tweets and count repeated words
3. Most retweeted tweets
  - Use meta data to determine number of retweets

## A tribute to Mr Lee Kwan Yew: Tweeting Our Goodbyes

Find out how the frequency of hashtags used during the National Mourning period changes throughout the 'National Mourning in Pictures' timeline of the mourning period. Discover through 'Twitter Fingerprint' the social media users who identify with via 'Top 10 Retweets'.

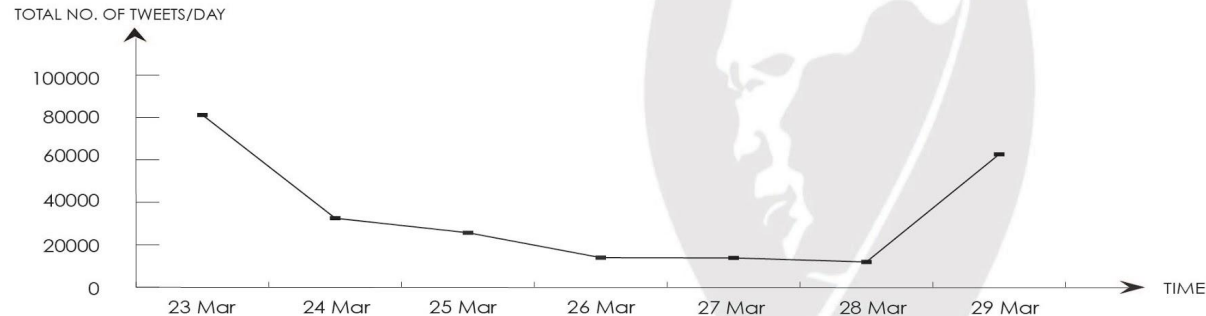
### OVERALL TWITTER TREND DURING THE NATIONAL STATE MOURNING PERIOD

TOTAL NO. OF TWEETS/DAY

Day	Total No. of Tweets/Day
1	80,000
2	32,000
3	25,000
4	20,000
5	18,000
6	15,000
7	15,000
8	15,000
9	15,000
10	50,000

Find out how the frequency of hashtags used during the National Mourning period changes throughout the 7 days and see how the dynamics on twitter changes accordingly to the 'National Mourning in Pictures' timeline of the mourning period. Discover through 'Twitter Fingerprint' the set of keywords tweets of each day contained and the accounts most twitter users identify with via 'Top 10 Retweets'.

## OVERALL TWITTER TREND DURING THE NATIONAL STATE MOURNING PERIOD



## NATIONAL MOURNING IN PICTURES



23 Mar	23 Mar	23 Mar - 24 Mar	24 Mar	25 Mar - 28 Mar	25 Mar - 28 Mar	29 Mar	29 Mar
Mr Lee passed away at the Singapore General Hospital	Hearse Convoy arriving at the Istana.	Private family wake at Sri Temasek, Istana	Hearse Convoy arriving at the Parliament House	Lying in state at the Parliament House	Members of the public queue to pay respects to Mr Lee.	Hearse Convoy leaving Parliament House for State Funeral Service	State Funeral Service at National University of Singapore, Centre Cultural Centre











## TWITTER FINGERPRINT



Tweets collected are based on the following hashtags:

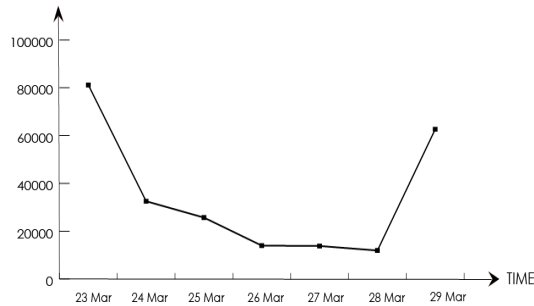
- #thankyouLKY
- #RIPLKY
- #tributetoLKY
- #noyewnous
- #LeeKuanYew
- #Ikyfuneral
- #Singapore'sfoundingfather
- #LeeHsienLoong

#### TOP 10 RETWEETS

- 1  **Lee Hsien Loong** @leehsienloong · Mar 23  
PM Lee is deeply moved to announce the passing of Mr Lee Kuan Yew, founding Prime Minister of Singapore.  
[pic.twitter.com/vRG6d8KwK](https://pic.twitter.com/vRG6d8KwK)
- 2  **TODAY** @TODAYonline · Mar 25  
JUST IN: MRTTeesos to run for 24 hours today so public can pay tribute to Mr [Mr \[LeekuanYew\]\(https://pic.twitter.com/LeekuanYew\)](https://pic.twitter.com/LeekuanYew) [pic.twitter.com/LeekuanYew](https://pic.twitter.com/LeekuanYew) [pic.twitter.com/LeekuanYew](https://pic.twitter.com/LeekuanYew)
- 3  **Be Singaporeans** @BeSingaporeans · Mar 25  
Probably the most meaningful thing we Singaporeans are queuing for [BeSingaporeans](https://pic.twitter.com/BeSingaporeans) [pic.twitter.com/BeSingaporeans](https://pic.twitter.com/BeSingaporeans) [pic.twitter.com/BeSingaporeans](https://pic.twitter.com/BeSingaporeans)
- 4  **The Straits Times** @STcom · Mar 25  
BREAKING: MRTTeesos to run for 24 hours on Wednesday (March 25) so public can pay their tribute to Mr [LeekuanYew](https://pic.twitter.com/LeekuanYew) [pic.twitter.com/LeekuanYew](https://pic.twitter.com/LeekuanYew) [pic.twitter.com/LeekuanYew](https://pic.twitter.com/LeekuanYew)
- 5  **Channel NewsAsia** @ChannelNewsAsia · Mar 23  
Singapore's first MRTTeesos to run for 24 hours today ended 91ed [LeekuanYew](https://pic.twitter.com/LeekuanYew) [pic.twitter.com/LeekuanYew](https://pic.twitter.com/LeekuanYew) [pic.twitter.com/LeekuanYew](https://pic.twitter.com/LeekuanYew)
- 6  **MultimediaNewsMorning** @multimedia · Mar 23  
Sir, may you rest in peace. You've made a Singapore we are so proud to call home. Thank you. [pic.twitter.com/LeekuanYew](https://pic.twitter.com/LeekuanYew) [pic.twitter.com/LeekuanYew](https://pic.twitter.com/LeekuanYew)
- 7  **The Straits Times** @STcom · Mar 23  
Mr Lee Kuan Yew, Singapore's founding father, died aged 91 at Singapore General Hospital
- 8  **Global Bearings** @Global\_Bearings · Mar 23  
When Lee Kuan Yew became Singapore's PM in 1959 I looked like this; by end of tenure in 1990 like this, and today...  
[pic.twitter.com/yZdH4Qd8](https://pic.twitter.com/yZdH4Qd8)
- 9  **The Economist** @TheEconomist · Mar 23  
Lee Kuan Yew's Singapore: An astonishing record econ.st/1EGYQZc [pic.twitter.com/yZdH4Qd8](https://pic.twitter.com/yZdH4Qd8) [pic.twitter.com/yZdH4Qd8](https://pic.twitter.com/yZdH4Qd8)
- 10  **BBC Breaking News** @BBCBreaking · Mar 23  
Singapore's @leehsienloong declares national mourning for Lee Kuan Yew from 23 - 29 March [pic.twitter.com/yZdH4Qd8](https://pic.twitter.com/yZdH4Qd8) [pic.twitter.com/yZdH4Qd8](https://pic.twitter.com/yZdH4Qd8)

# Visualization elements

TOTAL NO. OF TWEETS/DAY



Tweets collected are based on hashtags: #thankyouky, #iplky, #tribute4ky, #nyewnaus, #leekuaneyew, #kyfuneral, #singapore'sfoundingfather, #leehsienloong

## TWITTER FINGERPRINT



23 Mar



24 Mar



Lee Hsien Loong @leehsienloong · Mar 23

PM Lee is deeply grieved to announce the passing of Mr Lee Kuan Yew, founding Prime Minister of Singapore. [pic.twitter.com/wr0te0xMvK](https://pic.twitter.com/wr0te0xMvK)



TODAY @TODAYonline · Mar 25

JUST IN: MRT services to run for 24 hours today so public can pay respects to Mr #LeeKuanYew [tdy.sg/19/fojq](https://tdy.sg/19/fojq)  
[pic.twitter.com/mZm6nloFzI](https://pic.twitter.com/mZm6nloFzI)

## NATIONAL MOURNING IN PICTURES



23 Mar  
Mr lee passed away at the Singapore General Hospital



23 Mar  
Hearse Convoy arriving at the Istana.

# Insights

1. Number of tweets coincided with the more significant events of the national mourning
2. Commonly used words
3. Top 10 retweets were mainly from public figures and reputable news channels

# Conclusion

## Limitations:

- No Sentiment Analysis -> difficult for deaths
- Data limited to twitter API

## Summary:

This project illuminates how Twitter was used as a channel by social media users to pay tribute to Mr Lee Kuan Yew.