

Leveraging Simple API

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- 1. Define the base URL
- 2. Send a simple GET request
- 3. Get the content of the response
- 4. Get your access token
- 5. Limiting your query
- 6. Locations

```
library(httr)
library(jsonlite)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##   filter, lag
```

```
## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union
```

```
library(stringr)
library(data.table)
```

```
##
## Attaching package: 'data.table'
```

```
## The following objects are masked from 'package:dplyr':
##
##   between, first, last
```

1. Define the base URL

```
endpoint <- "https://data.lacity.org/resource/63jg-8b9z.csv"
```

2. Send a simple GET request

```
base <- GET(endpoint)
```

```
str(base, max.level = TRUE)
```

```
## List of 10
## $ url      : chr "https://data.lacity.org/resource/63jg-8b9z.csv"
## $ status_code: int 200
## $ headers   :List of 19
##   .. attr(*, "class")= chr [1:2] "insensitive" "list"
## $ all_headers:List of 1
## $ cookies    : 'data.frame': 0 obs. of  7 variables:
## $ content    : raw [1:299252] 22 64 72 5f ...
## $ date       : POSIXct[1:1], format: "2020-03-09 15:49:24"
## $ times      : Named num [1:6] 0 0.0372 0.0606 0.1243 0.3061 ...
##   .. attr(*, "names")= chr [1:6] "redirect" "namelookup" "connect" "pretransfer" ...
## $ request     :List of 7
##   .. attr(*, "class")= chr "request"
## $ handle      :Class 'curl_handle' <externalptr>
## - attr(*, "class")= chr "response"
```

3. Get the content of the response

Data Dimensions: 1000 rows by 28 columns

```
myContent <- content(base) #1000 rows by 28 columns
```

```
## Parsed with column specification:
## cols(
##   .default = col_character(),
##   date_rptd = col_datetime(format = ""),
##   date_occ = col_datetime(format = ""),
##   part_1_2 = col_double(),
##   crm_cd = col_double(),
##   vict_age = col_double(),
##   premis_cd = col_double(),
##   weapon_used_cd = col_double(),
##   crm_cd_1 = col_double(),
##   crm_cd_2 = col_double(),
##   crm_cd_3 = col_logical(),
##   crm_cd_4 = col_logical(),
##   lat = col_double(),
##   lon = col_double()
## )
```

```
## See spec(...) for full column specifications.
```

```
myContent
```

```
## # A tibble: 1,000 x 28
##   dr_no date_rptd      date_occ      time_occ area area_name
##   <chr> <dtm>      <dtm>      <chr>    <chr> <chr>
## 1 0013~ 2010-02-20 00:00:00 2010-02-20 00:00:00 1350    13 Newton
## 2 0114~ 2010-09-13 00:00:00 2010-09-12 00:00:00 0045    14 Pacific
## 3 0703~ 2010-08-09 00:00:00 2010-08-09 00:00:00 1515    13 Newton
## 4 0906~ 2010-01-05 00:00:00 2010-01-05 00:00:00 0150     6 Hollywood
## 5 1001~ 2010-01-03 00:00:00 2010-01-02 00:00:00 2100     1 Central
## 6 1001~ 2010-01-05 00:00:00 2010-01-04 00:00:00 1650     1 Central
## 7 1001~ 2010-01-08 00:00:00 2010-01-07 00:00:00 2005     1 Central
## 8 1001~ 2010-01-09 00:00:00 2010-01-08 00:00:00 2100     1 Central
## 9 1001~ 2010-01-09 00:00:00 2010-01-09 00:00:00 0230     1 Central
## 10 1001~ 2010-01-09 00:00:00 2010-01-06 00:00:00 2100     1 Central
## # ... with 990 more rows, and 22 more variables: rpt_dist_no <chr>,
## #   part_1_2 <dbl>, crm_cd <dbl>, crm_cd_desc <chr>, mocodes <chr>,
## #   vict_age <dbl>, vict_sex <chr>, vict_descent <chr>, premis_cd <dbl>,
## #   premis_desc <chr>, weapon_used_cd <dbl>, weapon_desc <chr>,
## #   status <chr>, status_desc <chr>, crm_cd_1 <dbl>, crm_cd_2 <dbl>,
## #   crm_cd_3 <lgl>, crm_cd_4 <lgl>, location <chr>, cross_street <chr>,
## #   lat <dbl>, lon <dbl>
```

4. Get your access token

```
usethis::edit_r_environ()
```

```
## <U+25CF> Edit 'C:/Users/Mark/Documents/.Renviron'
## <U+25CF> Restart R for changes to take effect
```

```
R.home(component = "home")
```

```
## [1] "C:/PROGRA~1/R/R-36~1.1"
```

```
base <- GET(endpoint, query = list("$limit" = "10000", "$app_token" = Sys.getenv("LACRIM
E_APP_TOKEN")))
base$status_code
```

```
## [1] 200
```

```
base$request
```

```
## <request>
## GET https://data.lacity.org/resource/63jg-8b9z.csv?%24limit=10000&%24%24app_token=
## Output: write_memory
## Options:
## * useragent: libcurl/7.64.1 r-curl/4.3 http/1.4.1
## * httpget: TRUE
## Headers:
## * Accept: application/json, text/xml, application/xml, */*
```

5.Limiting your query

This query gets data for those victims who are female, 23 years old, and in the Hollywood area.

```
base <- GET(endpoint, query = list("$limit" = "10000",
                                   "$app_token" = Sys.getenv("LACRIME_APP_TOKEN"),
                                   "vict_age" = 23, "vict_sex"
                                   = "F", "area_name" = "Hollywood"))
```

```
status_code(base)
```

```
## [1] 200
```

```
data.table(content(base))
```

```
## Parsed with column specification:
## cols(
##   .default = col_character(),
##   dr_no = col_double(),
##   date_rptd = col_datetime(format = ""),
##   date_occ = col_datetime(format = ""),
##   part_1_2 = col_double(),
##   crm_cd = col_double(),
##   vict_age = col_double(),
##   vict_sex = col_logical(),
##   premis_cd = col_double(),
##   weapon_used_cd = col_double(),
##   crm_cd_1 = col_double(),
##   crm_cd_2 = col_double(),
##   crm_cd_3 = col_double(),
##   crm_cd_4 = col_logical(),
##   lat = col_double(),
##   lon = col_double()
## )
```

```
## See spec(...) for full column specifications.
```

```

##          dr_no  date_rptd  date_occ  time_occ  area  area_name  rpt_dist_no
##  1: 100600738 2010-03-27 2010-03-26    1600    06 Hollywood    0639
##  2: 100601008 2010-07-31 2010-07-31    0135    06 Hollywood    0644
##  3: 100601084 2010-08-29 2010-08-29    1020    06 Hollywood    0677
##  4: 100601256 2010-11-03 2010-11-03    2010    06 Hollywood    0669
##  5: 100601385 2010-12-30 2010-12-30    0600    06 Hollywood    0669
##  ---
## 1447: 190608160 2019-03-14 2019-03-12    1200    06 Hollywood    0678
## 1448: 190607152 2019-02-24 2019-02-24    2000    06 Hollywood    0625
## 1449: 190605590 2019-01-29 2019-01-23    0130    06 Hollywood    0646
## 1450: 190604089 2019-01-01 2019-01-01    0030    06 Hollywood    0636
## 1451: 190622794 2019-11-24 2019-11-24    1500    06 Hollywood    0646
##      part_1_2  crm_cd
##  1:          2    626
##  2:          2    624
##  3:          1    230
##  4:          2    745
##  5:          2    626
##  ---
## 1447:          2    740
## 1448:          2    740
## 1449:          2    624
## 1450:          1    310
## 1451:          1    220
##
##                                     crm_cd_desc
##  1:                                     INTIMATE PARTNER - SIMPLE ASSAULT
##  2:                                     BATTERY - SIMPLE ASSAULT
##  3:          ASSAULT WITH DEADLY WEAPON, AGGRAVATED ASSAULT
##  4:          VANDALISM - MISDEAMEANOR ($399 OR UNDER)
##  5:                                     INTIMATE PARTNER - SIMPLE ASSAULT
##  ---
## 1447: VANDALISM - FELONY ($400 & OVER, ALL CHURCH VANDALISMS)
## 1448: VANDALISM - FELONY ($400 & OVER, ALL CHURCH VANDALISMS)
## 1449:                                     BATTERY - SIMPLE ASSAULT
## 1450:                                     BURGLARY
## 1451:          ATTEMPTED ROBBERY
##
##                                     mocodes vict_age vict_sex vict_descent
##  1:          0400 0416 1814 2000          23    FALSE          O
##  2:          0342 0400 0408 0416 0417          23    FALSE          H
##  3:          0400 0416 0419 0554          23    FALSE          H
##  4:          0319 0329 1822 2002          23    FALSE          W
##  5:          0400 2000          23    FALSE          H
##  ---
## 1447:          0329          23    FALSE          B
## 1448: 0329 1300 1307 1813 1814 0913          23    FALSE          H
## 1449:          0400 0419 1300 1251          23    FALSE          W
## 1450:          0344 0314          23    FALSE          W
## 1451:          0400 0448 2004          23    FALSE          W

```

```

##      premis_cd      premis_desc
##  1:      502 MULTI-UNIT DWELLING (APARTMENT, DUPLEX, ETC)
##  2:      203      OTHER BUSINESS
##  3:      502 MULTI-UNIT DWELLING (APARTMENT, DUPLEX, ETC)
##  4:      222      LAUNDROMAT
##  5:      502 MULTI-UNIT DWELLING (APARTMENT, DUPLEX, ETC)
##  ---
## 1447:      501      SINGLE FAMILY DWELLING
## 1448:      101      STREET
## 1449:      203      OTHER BUSINESS
## 1450:      502 MULTI-UNIT DWELLING (APARTMENT, DUPLEX, ETC)
## 1451:      210      RESTAURANT/FAST FOOD
##      weapon_used_cd      weapon_desc      status
##  1:      400 STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)      AA
##  2:      400 STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)      IC
##  3:      400 STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)      AO
##  4:      NA      <NA>      IC
##  5:      400 STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)      IC
##  ---
## 1447:      NA      <NA>      IC
## 1448:      400 STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)      AO
## 1449:      400 STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)      IC
## 1450:      NA      <NA>      IC
## 1451:      400 STRONG-ARM (HANDS, FIST, FEET OR BODILY FORCE)      IC
##      status_desc      crm_cd_1      crm_cd_2      crm_cd_3      crm_cd_4
##  1: Adult Arrest      626      NA      NA      NA
##  2: Invest Cont      624      NA      NA      NA
##  3: Adult Other      230      NA      NA      NA
##  4: Invest Cont      745      NA      NA      NA
##  5: Invest Cont      626      NA      NA      NA
##  ---
## 1447: Invest Cont      740      NA      NA      NA
## 1448: Adult Other      740      NA      NA      NA
## 1449: Invest Cont      624      NA      NA      NA
## 1450: Invest Cont      310      NA      NA      NA
## 1451: Invest Cont      220      NA      NA      NA
##      location      cross_street      lat
##  1: 1700 N WESTERN      AV      <NA> 34.1017
##  2: 1400 N LA BREA      AV      <NA> 34.0962
##  3: 5100 MARATHON      ST      <NA> 34.0849
##  4:      KINGSLEY SANTA MONICA 34.0908
##  5: 5200 LEXINGTON      AV      <NA> 34.0933
##  ---
## 1447: 900 N SERRANO      AV      <NA> 34.0863
## 1448:      FRANKLIN LAS PALMAS 34.1052
## 1449: 1600 N LAS PALMAS      AV      <NA> 34.0997
## 1450: 6500 HOLLYWOOD      BL      <NA> 34.1034
## 1451: 1500 N CAHUENGA      BL      <NA> 34.0980
##      lon

```

```
##      1: -118.3093
##      2: -118.3441
##      3: -118.3091
##      4: -118.3025
##      5: -118.3025
##    ---
## 1447: -118.3064
## 1448: -118.3361
## 1449: -118.3361
## 1450: -118.3325
## 1451: -118.3295
```

6. Locations

```
url <- ("https://maps.googleapis.com/maps/api/geocode/json?")
query_params <- list("latlng" = ("40.714224,-73.961452"), key = Sys.getenv("GOOGLE_MAPS_API_KEY"))

raw.result <- GET(url = url, query = query_params)

raw.result$status_code
```

```
## [1] 200
```

```
## NULL
```

```
##      lat      lng
## 1  40.71423 -73.96137
## 2  40.71422 -73.96129
## 3  40.71420 -73.96131
## 4  40.71425 -73.96145
## 5  40.71420 -73.96148
## 6  40.70934 -73.95656
## 7  40.70812 -73.95707
## 8  40.67818 -73.94416
## 9  40.65288 -73.95949
## 10 40.71278 -74.00597
## 11 40.78914 -73.13496
## 12 43.29943 -74.21793
## 13 37.09024 -95.71289
```



```
y <- data.table()

for(i in 1:50){

  latlng <- list("latlng" = paste(myContent$lat[i],myContent$lon[i],sep = " " ),key = Sys.getenv("GOOGLE_MAPS_API_KEY"))
  response <- GET(url, query = latlng)

  Sys.sleep(0.1)

  if(response$status_code == 200){
    apiResponse <- fromJSON(content(response, "text"))
  }
  else{
    print("Error with Request")
  }

  y <- rbind(y, apiResponse$results$formatted_address[1])
}

data <- cbind(y, myContent$location[1:50], myContent$lat[1:50], myContent$lon[1:50])

data <- setNames(data, c("Revgeo Location", "Original Location", "Latitude", "Longitude"))

data.table(data)
```

##	Revgeo Location
## 1:	Gage / San Pedro, Los Angeles, CA 90003, USA
## 2:	W Manchester Ave & Sepulveda Blvd, Los Angeles, CA 90045, USA
## 3:	2102 S Central Ave, Los Angeles, CA 90011, USA
## 4:	6389 Hollywood Blvd, Los Angeles, CA 90028, USA
## 5:	778 San Pedro St, Los Angeles, CA 90014, USA
## 6:	617a 7th St, Los Angeles, CA 90017, USA
## 7:	Grand / Pico, Los Angeles, CA 90015, USA
## 8:	599 E 5th St, Los Angeles, CA 90013, USA
## 9:	Olympic / Figueroa, Los Angeles, CA 90015, USA
## 10:	S Olive St, W 2nd St, Los Angeles, CA 90012, USA
## 11:	Broadway & College St (Northbound), Los Angeles, CA 90012, USA
## 12:	7th / Alameda, Los Angeles, CA 90021, USA
## 13:	304 W 11th St, Los Angeles, CA 90015, USA
## 14:	505 S Grand Ave, Los Angeles, CA 90071, USA
## 15:	202 E 1st St, Los Angeles, CA 90012, USA
## 16:	957 Santee St, Los Angeles, CA 90015, USA
## 17:	1240 Flower St, Los Angeles, CA 90015, USA
## 18:	401 E 6th St, Los Angeles, CA 90014, USA
## 19:	S Grand Ave &, W 2nd St, Los Angeles, CA 90012, USA
## 20:	800 N Alameda St, Los Angeles, CA 90012, USA
## 21:	505 S Grand Ave, Los Angeles, CA 90071, USA
## 22:	Traction Ave & Hewitt St, Los Angeles, CA 90013, USA
## 23:	551 E 2nd St, Los Angeles, CA 90012, USA
## 24:	1401 S Grand Ave, Los Angeles, CA 90015, USA
## 25:	487 E 6th St, Los Angeles, CA 90014, USA
## 26:	Spring / 6th, Los Angeles, CA, USA
## 27:	199-115 E 5th St, Los Angeles, CA 90013, USA
## 28:	South Figueroa Street &, W 11th St, Los Angeles, CA 90015, USA
## 29:	1155 Maple Ave, Los Angeles, CA 90015, USA
## 30:	921 E 6th St, Los Angeles, CA 90021, USA
## 31:	500 San Julian St, Los Angeles, CA 90013, USA
## 32:	Olympic / Figueroa, Los Angeles, CA 90015, USA
## 33:	54 E 7th St, Los Angeles, CA 90014, USA
## 34:	1158 Flower St, Los Angeles, CA 90015, USA
## 35:	617a 7th St, Los Angeles, CA 90017, USA
## 36:	550 Flower St, Los Angeles, CA 90071, USA
## 37:	617a 7th St, Los Angeles, CA 90017, USA
## 38:	Grand / Pico, Los Angeles, CA 90015, USA
## 39:	Olympic / Figueroa, Los Angeles, CA 90015, USA
## 40:	700 East Cesar E Chavez Avenue, Los Angeles, CA 90012, USA
## 41:	721 E 5th St, Los Angeles, CA 90013, USA
## 42:	400 W 1st St, Los Angeles, CA 90012, USA
## 43:	501 East 4th St, Los Angeles, CA 90013, USA
## 44:	490 S Broadway, Los Angeles, CA 90013, USA
## 45:	617a 7th St, Los Angeles, CA 90017, USA
## 46:	617a 7th St, Los Angeles, CA 90017, USA
## 47:	54 E 7th St, Los Angeles, CA 90014, USA

```

## 48:          592 S Main St, Los Angeles, CA 90013, USA
## 49:          760 S Spring St, Los Angeles, CA 90014, USA
## 50:          500 N Figueroa St, Los Angeles, CA 90012, USA
##
##                                Revgeo Location
##                                Original Location Latitude Longitude
## 1:  300 E  GAGE                AV  33.9825 -118.2695
## 2:          SEPULVEDA          BL  33.9599 -118.3962
## 3: 1300 E  21ST                ST  34.0224 -118.2524
## 4:          CAHUENGA          BL  34.1016 -118.3295
## 5:          8TH                ST  34.0387 -118.2488
## 6:  700 W  7TH                ST  34.0480 -118.2577
## 7:          PICO              BL  34.0389 -118.2643
## 8:  500    CROCKER            ST  34.0435 -118.2427
## 9:  800 W  OLYMPIC           BL  34.0450 -118.2640
## 10: 200 S  OLIVE             ST  34.0538 -118.2488
## 11:          900 N  BROADWAY  34.0640 -118.2375
## 12:          ALAMEDA          ST  34.0350 -118.2386
## 13: 1100 S  OLIVE            ST  34.0409 -118.2609
## 14:  600 W  5TH              ST  34.0502 -118.2540
## 15:          1ST              34.0515 -118.2424
## 16:  300 E  OLYMPIC          BL  34.0389 -118.2550
## 17: 1300 S  FLOWER           ST  34.0401 -118.2668
## 18:  600    SAN JULIAN       ST  34.0428 -118.2461
## 19:  200 S  GRAND            AV  34.0545 -118.2499
## 20:  800 N  ALAMEDA          ST  34.0563 -118.2374
## 21:  500 S  GRAND            AV  34.0502 -118.2540
## 22:  800    TRACTION         AV  34.0454 -118.2360
## 23:  600 E  2ND              ST  34.0472 -118.2371
## 24: 1400 S  HOPE             ST  34.0382 -118.2665
## 25:  600 S  SAN PEDRO        ST  34.0423 -118.2452
## 26:  200 W  6TH              ST  34.0460 -118.2509
## 27:          5TH              34.0461 -118.2476
## 28: 1100 S  FIGUEROA         ST  34.0437 -118.2652
## 29: 1200    MAPLE            AV  34.0357 -118.2563
## 30:          6TH              34.0394 -118.2405
## 31:          SAN JULIAN       ST  34.0446 -118.2450
## 32:  800 W  OLYMPIC          BL  34.0450 -118.2640
## 33:  700 S  MAIN             ST  34.0439 -118.2514
## 34: 1200 S  FLOWER           ST  34.0415 -118.2654
## 35:  700 W  7TH              ST  34.0480 -118.2577
## 36:          6TH              ST  34.0502 -118.2574
## 37:  700 W  7TH              ST  34.0480 -118.2577
## 38:          PICO             34.0389 -118.2643
## 39:  800 W  OLYMPIC          BL  34.0450 -118.2640
## 40:  700 E  CESAR E CHAVEZ    AV  34.0559 -118.2296
## 41:  500    STANFORD          AV  34.0426 -118.2412
## 42:          1ST              ST  34.0544 -118.2466
## 43:  500 E  4TH              ST  34.0449 -118.2415
## 44:          500 S  BROADWAY  34.0481 -118.2507

```

## 45:	700 S	HOPE	ST	34.0480	-118.2577
## 46:	700 S	HOPE	ST	34.0480	-118.2577
## 47:	100 W	7TH	ST	34.0439	-118.2514
## 48:	600 S	MAIN	ST	34.0453	-118.2499
## 49:	800 S	SPRING	ST	34.0431	-118.2536
## 50:	500 N	FIGUEROA	ST	34.0617	-118.2469
##			Original Location	Latitude	Longitude