

NYC FLIGHTS 2013 Analysis

```
install.packages("nycflights13")

Updating HTML index of packages in '.Library'

Making 'packages.html' ...
done
```

```
library(tidyverse)
library(nycflights13)
```

```
Warning message in system("timedatectl", intern = TRUE):
"running command 'timedatectl' had status 1"
```

```
Warning message:
"Failed to locate timezone database"
```

```
Attaching packages
```

tidyverse 1.3.1

```
✓ ggplot2 3.3.5      ✓ purrr  0.3.4
✓ tibble  3.1.5      ✓ dplyr  2.0.7
✓ tidyr   1.1.4      ✓ string 1.4.0
✓ readr   2.0.2      ✓ forcats 0.5.1
```

```
— Conflicts —
```

tidyverse_conflicts()

```
✖ dplyr::filter() masks stats::filter()
✖ purrr::flatten() masks jsonlite::flatten()
✖ dplyr::lag() masks stats::lag()
```

flights
airports

A tibble: 356776 × 19

| year | month | day | dep_time | sched_dep_time | dep_delay | arr_time | sched_arr_time | arr_delay | carrier | flight | tailnum | origin | dest | air_time | distance | hour | minute | time_hour |
|-------|-------|-------|----------|----------------|-----------|----------|----------------|-----------|---------|--------|---------|--------|-------|----------|----------|-------|--------|---------------------|
| <int> | <int> | <int> | <chr> | <chr> | <dbl> | <chr> | <chr> | <dbl> | <chr> | <chr> | <chr> | <chr> | <chr> | <dbl> | <dbl> | <dbl> | <dbl> | <chr> |
| 2013 | 1 | 1 | 517 | 515 | 2 | 830 | 819 | 11 | UA | 1545 | N14228 | EWB | IAH | 227 | 1400 | 5 | 15 | 2013-01-01 10:00:00 |
| 2013 | 1 | 1 | 533 | 529 | 4 | 850 | 830 | 20 | UA | 1714 | N24211 | LGA | IAH | 227 | 1416 | 5 | 29 | 2013-01-01 10:00:00 |
| 2013 | 1 | 1 | 542 | 540 | 2 | 923 | 850 | 33 | AA | 1141 | N619AA | JFK | MIA | 160 | 1089 | 5 | 40 | 2013-01-01 10:00:00 |
| 2013 | 1 | 1 | 544 | 545 | -1 | 1004 | 1022 | -18 | B6 | 725 | N804JB | JFK | BQN | 183 | 1576 | 5 | 45 | 2013-01-01 10:00:00 |
| 2013 | 1 | 1 | 554 | 600 | -6 | 812 | 837 | -25 | DL | 461 | N668DN | LGA | ATL | 116 | 762 | 6 | 0 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 554 | 558 | -4 | 740 | 728 | 12 | UA | 1696 | N39463 | EBW | ORD | 150 | 719 | 5 | 58 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 555 | 600 | -5 | 913 | 854 | 19 | B6 | 507 | N516JB | EBW | FLI | 158 | 1065 | 6 | 0 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 557 | 600 | -3 | 709 | 723 | -14 | EV | 5708 | N828AS | LGA | IAD | 53 | 229 | 6 | 0 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 557 | 600 | -3 | 838 | 846 | -8 | B6 | 79 | N563JB | JFK | MCO | 140 | 944 | 6 | 0 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 558 | 600 | -2 | 753 | 745 | 8 | AA | 301 | N3ALAA | LGA | ORD | 138 | 733 | 6 | 0 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 558 | 600 | -2 | 849 | 851 | -2 | B6 | 49 | N793JB | JFK | PBI | 149 | 1028 | 6 | 0 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 558 | 600 | -2 | 853 | 856 | -3 | B6 | 71 | N657JB | JFK | TPA | 158 | 1005 | 6 | 0 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 558 | 600 | -2 | 924 | 917 | 7 | UA | 194 | N29129 | JFK | LAX | 345 | 2475 | 6 | 0 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 558 | 600 | -2 | 923 | 937 | -14 | UA | 1124 | N53441 | EBW | SFO | 361 | 2565 | 6 | 0 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 559 | 600 | -1 | 941 | 910 | 31 | AA | 707 | N30UAA | LGA | DFW | 257 | 1389 | 6 | 0 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 559 | 559 | 0 | 702 | 706 | -4 | B6 | 1806 | N708JB | JFK | BOS | 44 | 187 | 5 | 59 | 2013-01-01 10:00:00 |
| 2013 | 1 | 1 | 559 | 600 | -1 | 854 | 902 | -8 | UA | 1187 | N76515 | EBW | LAS | 337 | 2227 | 6 | 0 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 600 | 600 | 0 | 851 | 858 | -7 | B6 | 371 | N565JB | LGA | FLI | 152 | 1076 | 6 | 0 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 600 | 600 | 0 | 837 | 825 | 12 | MQ | 4650 | N542MQ | LGA | ATL | 134 | 762 | 6 | 0 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 601 | 600 | 1 | 844 | 850 | -6 | B6 | 343 | N644JB | EBW | PBI | 147 | 1023 | 6 | 0 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 602 | 610 | -8 | 812 | 820 | -8 | DL | 1919 | N971DL | LGA | MSP | 170 | 1020 | 6 | 10 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 602 | 605 | -3 | 821 | 805 | 16 | MQ | 4401 | N730MQ | LGA | DTW | 105 | 502 | 6 | 5 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 606 | 610 | -4 | 858 | 910 | -12 | AA | 1895 | N633AA | EBW | MIA | 152 | 1085 | 6 | 10 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 606 | 610 | -4 | 837 | 845 | -8 | DL | 1743 | N3739P | JFK | ATL | 128 | 760 | 6 | 10 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 607 | 607 | 0 | 858 | 915 | -17 | UA | 1077 | N53442 | EBW | MIA | 157 | 1085 | 6 | 7 | 2013-01-01 10:00:00 |
| 2013 | 1 | 1 | 608 | 600 | 8 | 807 | 735 | 32 | MQ | 3768 | N96AMQ | EBW | ORD | 139 | 719 | 6 | 0 | 2013-01-01 10:00:00 |
| 2013 | 1 | 1 | 611 | 600 | 11 | 945 | 931 | 14 | UA | 303 | N532UA | JFK | SFO | 366 | 2586 | 6 | 0 | 2013-01-01 10:00:00 |
| 2013 | 1 | 1 | 613 | 610 | 3 | 925 | 921 | 4 | B6 | 135 | N635JB | JFK | RSW | 175 | 1074 | 6 | 10 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 615 | 615 | 0 | 1039 | 1100 | -21 | B6 | 709 | N794JB | JFK | SJU | 182 | 1598 | 6 | 15 | 2013-01-01 11:00:00 |
| 2013 | 1 | 1 | 615 | 615 | 0 | 833 | 842 | -9 | DL | 575 | N326NR | EBW | ATL | 120 | 746 | 6 | 15 | 2013-01-01 11:00:00 |
| : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : | : |

| | | | | | | | | | | | | | | | | | | |
|------|---|----|------|------|-----|------|------|-----|----|------|--------|-----|-----|-----|------|----|----|---------------------|
| 2013 | 9 | 30 | 2123 | 2125 | -2 | 2223 | 2247 | -24 | EV | 5489 | N712EV | LGA | CHO | 45 | 305 | 21 | 25 | 2013-10-01 01:00:00 |
| 2013 | 9 | 30 | 2127 | 2129 | -2 | 2314 | 2323 | -9 | EV | 3833 | N16546 | EBW | CLT | 72 | 529 | 21 | 29 | 2013-10-01 01:00:00 |
| 2013 | 9 | 30 | 2128 | 2130 | -2 | 2328 | 2359 | -31 | B6 | 97 | N807JB | JFK | DEN | 213 | 1626 | 21 | 30 | 2013-10-01 01:00:00 |
| 2013 | 9 | 30 | 2129 | 2059 | 30 | 2230 | 2232 | -2 | EV | 5048 | N751EV | LGA | RIC | 45 | 292 | 20 | 59 | 2013-10-01 00:00:00 |
| 2013 | 9 | 30 | 2131 | 2140 | -9 | 2225 | 2255 | -30 | MQ | 3621 | N807MQ | JFK | DCA | 36 | 213 | 21 | 40 | 2013-10-01 01:00:00 |
| 2013 | 9 | 30 | 2140 | 2140 | 0 | 10 | 40 | -30 | AA | 185 | N335AA | JFK | LAX | 288 | 2475 | 21 | 40 | 2013-10-01 01:00:00 |
| 2013 | 9 | 30 | 2142 | 2129 | 13 | 2250 | 2239 | 11 | EV | 4509 | N12957 | EBW | PWM | 47 | 284 | 21 | 29 | 2013-10-01 02:00:00 |
| 2013 | 9 | 30 | 2145 | 2145 | 0 | 115 | 140 | -25 | B6 | 1103 | N633JB | JFK | SJU | 192 | 1598 | 21 | 45 | 2013-10-01 01:00:00 |
| 2013 | 9 | 30 | 2147 | 2137 | 10 | 30 | 27 | 3 | B6 | 1371 | N627JB | LGA | FLI | 139 | 1076 | 21 | 37 | 2013-10-01 01:00:00 |
| 2013 | 9 | 30 | 2149 | 2156 | -7 | 2245 | 2308 | -23 | UA | 523 | N813UA | EBW | BOS | 37 | 200 | 21 | 56 | 2013-10-01 01:00:00 |
| 2013 | 9 | 30 | 2150 | 2159 | -9 | 2250 | 2306 | -16 | EV | 3842 | N10575 | EBW | MHT | 39 | 209 | 21 | 59 | 2013-10-01 01:00:00 |
| 2013 | 9 | 30 | 2159 | 1845 | 194 | 2344 | 2030 | 194 | 9E | 3320 | N906XJ | JFK | BUF | 50 | 301 | 18 | 45 | 2013-09-30 22:00:00 |
| 2013 | 9 | 30 | 2203 | 2205 | -2 | 2339 | 2331 | 8 | EV | 5311 | N722EV | LGA | BGR | 61 | 378 | 22 | 5 | 2013-10-01 02:00:00 |
| 2013 | 9 | 30 | 2207 | 2140 | 27 | 2257 | 2250 | 7 | MQ | 3660 | N532MQ | LGA | BNA | 97 | 764 | 21 | 40 | 2013-10-01 01:00:00 |
| 2013 | 9 | 30 | 2211 | 2059 | 72 | 2339 | 2242 | 57 | EV | 4672 | N12145 | EBW | STL | 120 | 872 | 20 | 59 | 2013-10-01 01:00:00 |
| 2013 | 9 | 30 | 2231 | 2245 | -14 | 2335 | 2356 | -21 | B6 | 108 | N193JB | JFK | PWM | 48 | 273 | 22 | 45 | 2013-10-01 01:00:00 |
| 2013 | 9 | 30 | 2233 | 2113 | 80 | 112 | 30 | 42 | UA | 471 | N578UA | EBW | SFO | 318 | 2565 | 21 | 13 | 2013-10-01 00:00:00 |
| 2013 | 9 | 30 | 2235 | 2001 | 154 | 59 | 2249 | 130 | B6 | 1083 | N804JB | JFK | MCO | 123 | 944 | 20 | 1 | 2013-10-01 00:00:00 |
| 2013 | 9 | 30 | 2237 | 2245 | -8 | 2345 | 2353 | -8 | B6 | 234 | N313JB | JFK | BTX | 43 | 266 | 22 | 45 | 2013-10-01 02:00:00 |
| 2013 | 9 | 30 | 2240 | 2245 | -5 | 2334 | 2351 | -17 | B6 | 1816 | N354JB | JFK | SYR | 41 | 209 | 22 | 45 | 2013-10-01 02:00:00 |
| 2013 | 9 | 30 | 2240 | 2250 | -10 | 2347 | 7 | -20 | B6 | 2002 | N281JB | JFK | BUF | 52 | 301 | 22 | 50 | 2013-10-01 02:00:00 |
| 2013 | 9 | 30 | 2241 | 2246 | -5 | 2345 | 1 | -16 | B6 | 486 | N346JB | JFK | ROC | 47 | 264 | 22 | 46 | 2013-10-01 02:00:00 |
| 2013 | 9 | 30 | 2307 | 2255 | 12 | 2359 | 2358 | 1 | B6 | 718 | N655JB | JFK | BOS | 33 | 187 | 22 | 55 | 2013-10-01 02:00:00 |
| 2013 | 9 | 30 | 2349 | 2359 | -10 | 325 | 350 | -25 | B6 | 745 | N516JB | JFK | PSE | 196 | 1617 | 23 | 59 | 2013-10-01 03:00:00 |
| 2013 | 9 | 30 | NA | 1842 | NA | NA | 2019 | NA | EV | 5274 | N740EV | LGA | BNA | NA | 764 | 18 | 42 | 2013-09-30 02:00:00 |
| 2013 | 9 | 30 | NA | 1455 | NA | NA | 1634 | NA | 9E | 3393 | NA | JFK | DCA | NA | 213 | 14 | 55 | 2013-09-30 02:00:00 |
| 2013 | 9 | 30 | NA | 2200 | NA | NA | 2312 | NA | 9E | 3525 | NA | LGA | SYR | NA | 198 | 22 | 0 | 2013-10-01 02:00:00 |
| 2013 | 9 | 30 | NA | 1210 | NA | NA | 1330 | NA | MQ | 3461 | N535MQ | LGA | BNA | NA | 764 | 12 | 10 | 2013-09-30 16:00:00 |
| 2013 | 9 | 30 | NA | 1159 | NA | NA | 1344 | NA | MQ | 3572 | N511MQ | LGA | CLE | NA | 419 | 11 | 59 | 2013-09-30 15:00:00 |
| 2013 | 9 | 30 | NA | 840 | NA | NA | 1020 | NA | MQ | 3531 | N839MQ | LGA | ROU | NA | 431 | 8 | 40 | 2013-09-30 12:00:00 |

A tibble: 1458 × 8

| | | | | | | | |
|-----|--------------------------------------|----------|------------|------|-----|-----|---------------------|
| OS9 | Shoestring Aviation Airfield | 39.79482 | -76.64719 | 1000 | -5 | U | America/New_York |
| OS9 | Jefferson County Intl | 48.05381 | -122.81064 | 108 | -8 | A | America/Los_Angeles |
| OW3 | Hanford County Airport | 39.56684 | -76.20240 | 409 | -5 | A | America/New_York |
| IOC | Carl Field Airport | 42.40289 | -88.37511 | 875 | -6 | U | America/Chicago |
| 170 | Port Bicusus-Crawford County Airport | 40.78156 | -82.97481 | 1003 | -5 | A | America/New_York |
| 19A | Jackson County Airport | 34.17586 | -83.56160 | 951 | -5 | U | America/New_York |
| 1A3 | Martin Campbell Field Airport | 35.01581 | -84.34683 | 1789 | -5 | A | America/New_York |
| 1B9 | Mansfield Municipal | 42.00013 | -71.19677 | 122 | -5 | A | America/New_York |
| 1C9 | Frazier Lake Airpark | 54.01333 | -124.76833 | 152 | -8 | A | America/Vancouver |
| 1G5 | Clow International Airport | 41.69597 | -88.12923 | 670 | -6 | U | America/Chicago |
| 1C3 | Kent State Airport | 41.15139 | -81.41511 | 1134 | -5 | | America/New_York |
| 1CH | Grand Caymen West Airport | 35.89990 | -111.56103 | 4813 | -7 | A | America/Phoenix |
| 104 | Effingham Memorial Airport | 39.87050 | -85.52400 | 185 | -6 | A | America/Chicago |
| 104 | Effingham Memorial Airport | 35.05553 | -84.36652 | 672 | -5 | A | America/New_York |
| 1RL | Port Roberts Airport | 48.97972 | -123.07899 | 10 | -8 | A | America/Los_Angeles |
| 23A | Clarke CO | 32.05107 | -88.44320 | 320 | -6 | A | America/Chicago |
| 24C | Lowell City Airport | 40.95032 | -85.34391 | 681 | -5 | A | America/New_York |
| 24J | Sauwamnee County Airport | 32.39039 | -83.0469 | 104 | -5 | A | America/New_York |
| 25D | Frost Lake Airport | 55.24775 | -92.99439 | 925 | -6 | A | America/Chicago |
| 290 | Greve City Airport | 41.14603 | -80.13775 | 1371 | -5 | A | America/Chicago |
| 242 | Mark Airport | 25.86025 | -84.03309 | 718 | -5 | A | America/New_York |
| 282 | Plum Island Airport | 42.79639 | -70.9344 | 11 | -5 | A | America/New_York |
| ... | ... | ... | ... | ... | ... | ... | ... |
| X59 | Valkaria Municipal | 77.90086 | -80.58832 | 26 | -5 | A | America/New_York |
| XFL | Flieger County Airport | 29.28210 | -81.12120 | 33 | -5 | A | America/New_York |
| XNA | Near Arkansas Regional | 36.28187 | -92.36108 | 1287 | -6 | A | America/Chicago |
| XNA | Arkansas Airpark Station AMM | 42.37500 | -72.55139 | 258 | -5 | A | America/New_York |
| Y01 | Yonkers County Airport | 41.79549 | -88.59667 | 747 | -5 | A | America/New_York |
| Y07 | Weyer Field | 43.97322 | -90.4805 | 966 | -5 | A | America/Chicago |
| YAK | Yakutat | 59.30120 | -139.39370 | 33 | -8 | NA | |
| Y19 | Willow Run | 42.27393 | -83.50041 | 716 | -5 | A | America/New_York |
| YMK | Yakima Air Terminal McAllister Field | 46.56620 | -120.5400 | 1095 | -8 | A | America/Los_Angeles |
| YNG | Chaney | 42.87110 | -97.36900 | 1200 | -6 | A | America/Chicago |
| YON | Yonkers Warren Rgnl | 41.26074 | -87.96190 | 1198 | -5 | A | America/New_York |
| YUM | Yuma Mesa Yuma Intl | 32.65658 | -114.05616 | 216 | -7 | N | America/Phoenix |
| YUM | Yuma Mesa Yuma Intl | 32.65658 | -114.05616 | 216 | -7 | N | America/Phoenix |
| YPP | Penn State | 39.30772 | -76.61596 | 66 | -5 | A | America/New_York |
| Z17 | Philadelphia 30th St Station | 39.95570 | -75.18200 | 0 | -5 | A | America/New_York |
| Z2H | Philadelphia | 28.23206 | -82.15583 | 90 | -5 | A | America/New_York |
| ZRA | Arlantic City Rail Terminal | 39.36650 | -74.42208 | 8 | -5 | A | America/New_York |
| ZRD | Train Station | 37.53430 | -77.42945 | 26 | -5 | A | America/New_York |
| ZRP | Newark Penn Station | 40.73472 | -74.16417 | 0 | -5 | A | America/New_York |
| ZRP | Hartford Union Station | 41.76049 | -72.68510 | 0 | -5 | A | America/New_York |
| ZRP | New York Penn Station | 39.94400 | -76.87190 | 39 | -5 | A | America/New_York |
| ZSF | Springfield Airpark Station | 42.10600 | -72.93005 | 65 | -5 | A | America/New_York |
| ZSF | Scottsdale Airport | 33.62289 | -111.91053 | 1519 | -7 | A | America/Phoenix |
| ZTF | Boston Back Bay Station | 42.04694 | -73.54149 | 0 | -5 | A | America/New_York |
| ZTF | Stamford Back Bay Station | 42.32780 | -71.07500 | 20 | -5 | A | America/New_York |
| ZUN | Black Rock | 35.06303 | -103.78179 | 6454 | -7 | A | America/Denver |
| ZVL | New Haven East Station | 41.29867 | -72.85979 | -7 | -5 | A | America/New_York |
| ZVL | Westchester County Station | 41.29867 | -72.85979 | -7 | -5 | A | America/New_York |
| ZW0 | Washington Union Station | 38.89744 | -77.00454 | 76 | -5 | A | America/New_York |
| ZYP | Penn Station | 40.75050 | -73.99350 | 35 | -5 | A | America/New_York |