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 — ✓ purrr 0.3.4 ✓ ggplot2 3.3.5 ✓ tibble 3.1.5 ✓ dplyr 1.0.7 ✓ tidyr 1.1.4 ✓ stringr 1.4.0 ✓ readr 2.0.2 ✓ forcats 0.5.1 — Conflicts — - tidyverse_conflicts() — # dplyr::filter() masks stats::filter() purrr::flatten() masks jsonlite::flatten() masks stats::lag() # dplyr::lag() flights airports A tibble: 336776 × 19 dep_time sched_dep_time dep_delay arr_time sched_arr_time arr_delay carrier flight tailnum <dbl> <dbl> <int> <int> <int> <int> <int> <int> <int> <chr> <int> <chr> 2013 1 515 2 830 819 1545 N14228 1 517 11 UΑ 2013 1 1714 N24211 LGA IAH 533 529 4 850 830 20 UA 542 2013 1 923 33 1141 N619AA JFK MIA 160 2013 1 545 1022 1 544 -1 1004 -18 B6 725 N804JB JFK -6 2013 1 1 554 600 812 837 -25 DL 461 N668DN LGA 2013 1 554 558 740 728 12 UA 1696 N39463 -4 -5 2013 1 555 600 913 854 19 N516JB 1 B6 507 2013 1 -3 723 1 557 600 709 -14 EV 5708 N829AS -3 N593JB 2013 1 1 557 600 838 846 -8 B6 79 2013 1 -2 8 558 600 753 745 301 N3ALAA LGA 1 AΑ 2013 1 558 600 -2 849 851 -2 B6 49 N793JB JFK 2013 1 558 600 -2 853 -3 1 856 B6 71 N657JB -2 7 2013 1 1 558 600 924 917 UA 194 N29129 2013 1 -2 558 600 923 937 -14 UA 1124 N53441 2013 1 559 600 -1 941 910 31 N3DUAA LGA DFW 257 1 AA707 2013 1 1 559 559 0 702 706 -4 B6 1806 N708JB -8 2013 1 1 559 600 -1 854 902 UA 1187 N76515 2013 1 600 0 -7 1 600 851 858 B6 371 N595JB 2013 1 600 600 0 837 825 12 N542MQ LGA ATL 134 1 MQ 4650 601 2013 1 600 1 -6 1 844 850 B6 343 N644JB 2013 1 602 610 -8 812 820 -8 DL 1919 N971DL LGA 1 2013 1 602 605 -3 821 805 16 MQ N730MQ LGA 2013 1 606 610 858 910 -12 N633AA EWR MIA 152 1 -4 AA1895 2013 1 606 837 -8 1 610 -4 845 DL 1743 N3739P 607 0 2013 1 607 858 915 -17 UA 1077 N53442 2013 1 608 600 807 735 32 3768 N9EAMQ EWR ORD 139 2013 1 611 600 11 945 931 UA 303 N532UA JFK 613 3 925 921 4 2013 1 1 610 B6 135 N635JB 0 N794JB 2013 1 615 615 1039 1100 -21 B6 709 2013 1 615 0 833 -9 1 615 842 DL 575 N326NB EWR ATL 120 : 2013 9 30 2123 2125 -2 2223 2247 -24 EV 5489 N712EV LGA CHO 45 2013 9 30 2127 2129 -2 2314 2323 -9 EV 3833 N16546 2013 9 30 2128 2130 -2 2328 2359 -31 B6 N807JB 2013 9 30 2129 2059 30 2230 2232 -2 EV 5048 N751EV LGA 2013 9 30 2131 2140 -9 2225 2255 -30 MQ 3621 N807MQ JFK 2013 9 2140 0 10 40 -30 2140 AA 185 N335AA N12957 2013 9 2142 2129 13 2250 2239 11 ΕV 4509 2013 9 30 2145 2145 0 115 140 -25 В6 1103 N633JB 1371 2013 9 30 2147 2137 10 30 27 3 B6 N627JB 2013 9 30 2149 2156 -7 2245 2308 -23 UA 523 N813UA EWR BOS 37 2013 9 30 2150 2159 -9 2250 2306 -16 ΕV 3842 N10575 2013 9 30 2159 1845 194 2344 2030 194 9E 3320 N906XJ 2013 9 30 2203 2205 -2 2339 2331 8 ΕV 5311 N722EV LGA 2013 9 30 2207 27 2257 2250 7 2140 MQ N532MQ LGA 2013 9 2211 2059 72 2339 2242 57 ΕV N12145 2013 9 30 2231 2245 -14 2335 2356 -21 В6 108 N193JB JFK 2013 9 30 2233 2113 80 112 30 42 UΑ 471 N578UA EWR SFO 2013 9 2235 2001 154 2249 130 N804JB 59 2013 9 2237 2245 2345 2353 B6 234 N318JB 2013 9 30 2240 2245 -5 2334 2351 -17 B6 1816 N354JB 2013 9 30 2240 2250 -10 2347 7 -20 B6 2002 N281JB 2345 2013 9 30 2241 2246 -5 486 N346JB 1 -16 B6 2013 9 30 2307 2255 12 2359 2358 1 В6 718 N565JB 2013 9 30 2349 2359 -10 325 350 -25 B6 745 N516JB 2013 9 30 NA 1842 NA NA 2019 NA EV 5274 N740EV 2013 9 30 NA 1455 NA 1634 NA 3393 NA 9E NA 2013 9 30 NA 2200 NA NA 2312 NA 9E 3525 NA 2013 9 30 NA 1210 NA NA 1330 NA MQ 3461 N535MQ LGA 2013 9 30 NA 1159 NA 1344 NA NA MQ 3572 N511MQ LGA 2013 9 30 NA 840 NA NA 1020 NA MQ 3531 N839MQ LGA A tibble: 1458 × 8 lat alt dst tzone faa name lon tz <dbl> <dbl> <dbl> <dbl> <chr> <chr> <chr> <chr> -80.61958 04G Lansdowne Airport 41.13047 1044 -5 America/New_York 06A Moton Field Municipal Airport 32.46057 -85.68003 264 -6 Α America/Chicago 06C 41.98934 -88.10124 Schaumburg Regional 801 -6 Α America/Chicago 06N Randall Airport 41.43191 -74.39156 523 -5 Α America/New_York Jekyll Island Airport 31.07447 -81.42778 09J 11 -5 Α America/New_York America/New_York 0A9 Elizabethton Municipal Airport 36.37122 -82.17342 1593 -5 Α 0G6 Williams County Airport 41.46731 -84.50678 -5 Α 730 America/New_York Finger Lakes Regional Airport 0G7 42.88356 -76.78123 492 -5 Α America/New_York 0P2 **Shoestring Aviation Airfield** 39.79482 -76.64719 1000 -5 U America/New_York 48.05381 -122.81064 0S9 Jefferson County Intl -8 Α America/Los_Angeles 0W3 39.56684 -76.20240 -5 **Harford County Airport** 409 Α America/New_York Galt Field Airport 10C 42.40289 -88.37511 -6 U America/Chicago 17G Port Bucyrus-Crawford County Airport | 40.78156 | -82.97481 1003 -5 Α America/New_York 19A Jackson County Airport 34.17586 -83.56160 951 -5 U America/New_York -5 1A3 Martin Campbell Field Airport 35.01581 -84.34683 1789 Α America/New_York 1B9 Mansfield Municipal 42.00013 -71.19677 122 -5 Α America/New_York Frazier Lake Airpark 1C9 54.01333 -124.76833 152 -8 Α America/Vancouver U 1CS Clow International Airport 41.69597 -88.12923 -6 America/Chicago 1G3 Kent State Airport 41.15139 -81.41511 1134 -5 Α America/New_York Grand Canyon West Airport 1G4 35.89990 -113.81567 4813 -7 Α America/Phoenix Effingham Memorial Airport 1H2 39.07000 -88.53400 585 -6 Α America/Chicago 10H Fortman Airport 40.55533 -84.38662 -5 U America/New_York Point Roberts Airpark 48.97972 -123.07889 1RL -8 Α America/Los_Angeles 10 23M Clarke CO 32.05170 -88.44340 America/Chicago Suwannee County Airport 24J 30.30013 -83.02469 104 -5 Α America/New_York 25D Forest Lake Airport 45.24775 -92.99439 America/Chicago 925 -6 **Grove City Airport** 29D 41.14603 -80.16775 1371 -5 Α America/New_York 2A0 Mark Anton Airport 35.48625 -84.93108 718 -5 Α America/New_York 2B2 Plum Island Airport 42.79536 -70.83944 11 -5 Α America/New_York

air_time distance hour minute time_hou

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2227

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1076

200

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301

378

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<dttm>

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01 02:00:00 2013-10

01 02:00:00 2013-10

01 03:00:00 2013-09

30 22:00:00 2013-09

30 18:00:00 2013-10

01 02:00:00 2013-09

30 16:00:00 2013-09

30 12:00:00

15:00:00 2013-09

01 01:00:00 2013-10

01 00:00:00 2013-10

01 02:00:00 2013-10

01 01:00:00 2013-09

01 01:00:00 2013-10

01 01:00:00 2013-10

01 01:00:00 2013-10

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origin dest

EWR IAH

<chr> <chr> <dbl>

227

227

BQN 183

ATL 116

EWR ORD 150

EWR FLL 158

IAD

53

MCO 140

ORD 138

149

158

345

PBI

TPA

LAX

BOS 44

337

152

147

170

128

157

SFO 366

RSW 175

182

SJU

EWR CLT 72

RIC

LAX

EWR PWM 47

SJU

FLL

EWR MHT 39

BUF

BGR 61

BNA 97

PWM 48

MCO 123

BTV

SYR

BUF

BOS

PSE

BNA

DCA

SYR

BNA

CLE

RDU NA

ROC 47

41

52

33

196

NA

NA

NA

NA

JFK

JFK

JFK

JFK

JFK

JFK

JFK

LGA

JFK

LGA

EWR STL 120

50

192

139

JFK

LGA

JFK

DEN 213

DCA 36

45

JFK

EWR SFO

LGA

JFK

JFK

JFK

JFK

EWR LAS

LGA FLL

EWR PBI

JFK

JFK

JFK

EWR MIA

MSP

ATL

DTW 105

1005 **Envoy Air** MQ DL 960 Delta Air Lines Inc. DL 911 Delta Air Lines Inc. DL 899 Delta Air Lines Inc. DL 898 Delta Air Lines Inc. 896 AA American Airlines Inc. 878 Envoy Air MQ MQ 853 **Envoy Air** 853 Frontier Airlines Inc. 853 American Airlines Inc. AA DL 849 Delta Air Lines Inc.

Valkaria Municipal

Municipal Airport

Bloyer Field

Willow Run

Chan Gurney

Penn Station

Train Station

Municipal Airport

Youngstown Warren Rgnl

Philadelphia 30th St Station

Atlantic City Rail Terminal

Newark Penn Station

Hartford Union Station

Scottsdale Airport

Black Rock

Penn Station

flights %>%

filter(month == 4,

count(dest) %>% arrange(desc(n)) %>%

dest count_flights name

head(10) %>%

<chr> <int>

SFO 566

ORD 513

MCO 311 DEN 291

BOS 273

TPA 199

flights %>%

arrange(desc(dep_delay)) %>% select (carrier , dep_delay) %>% left_join(airlines, "carrier")

#Answer : Hawaiian Airlines

carrier dep_delay name

1301

1137

1126

1014

<chr> <dbl>

HA

MQ

MQ

AA

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AA

DL

DL

AA

DL

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DL

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MQ

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MQ MQ

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US

WN

AA

US

MQ

UA

EV

AA US

ΕV

MQ

UA

EV

9E

9E

845

825

812

803

800

798

797

790

788

787

786

761 753

747

702

NA

NA NA

NA

NA

NA

NA

NA

NA

NA

flights %>%

head(10)

carrier_name

United Air Lines Inc.

A tibble: 1 × 2

31149334 1062.138

flights %>%

UA

UA

head(6)

15

arrange(desc(distance))%>%

A tibble: 6×5 carrier flight origin dest distance

<chr> <int> <chr> <chr> <chr> <chr> <chr> <dbl>

VX 11 JFK SFO 2586

filter(grepl("^U", name))

United Air Lines Inc. US Airways Inc.

A tibble: 2 × 2

carrier name

<chr> <chr>

flights %>%

head(20)

<chr> UA

B6 ΕV

DL

AA

MQ

US

WN

VX

FL

F9

AS ΥV

НА

A tibble: 15 × 2 Airline_name Flights

count(carrier) %>% arrange(desc(n)) %>%

rename(Flights = n) %>%

<int>

4931 4741

4307

4093

2705 2139

1633

1605

1099

476

213

61

50

28

UA

51 JFK HNL 4983

887 EWR ANC 3370 303 JFK SFO 2586 1865 JFK SFO 2586

EWR HNL 4963

avg

total

<dbl>

JetBlue Airways

<chr>

count(carrier) %>% arrange(desc(n)) %>%

#Answer : United Airlines

A tibble: 10×2

A tibble: 336776 × 3

Envoy Air

Envoy Air

Hawaiian Airlines Inc.

American Airlines Inc.

American Airlines Inc.

Delta Air Lines Inc.

Delta Air Lines Inc. American Airlines Inc.

Delta Air Lines Inc. American Airlines Inc.

Delta Air Lines Inc. Endeavor Air Inc.

Delta Air Lines Inc.

ExpressJet Airlines Inc.

Southwest Airlines Co.

American Airlines Inc.

United Air Lines Inc. ExpressJet Airlines Inc.

American Airlines Inc.

ExpressJet Airlines Inc.

United Air Lines Inc.

Endeavor Air Inc.

Endeavor Air Inc.

ExpressJet Airlines Inc.

US Airways Inc.

Envoy Air

JetBlue Airways

US Airways Inc.

US Airways Inc.

US Airways Inc.

US Airways Inc.

Envoy Air

Envoy Air

Envoy Air

Envoy Air

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American Airlines Inc.

IAH

LAX

FLL

PBI

581

504

255

199

year == 2013,

select(carrier,dest,month,year) %>%

carrier == "UA") %>%

rename(count_flights = n) %>% select(dest, count_flights, name)

left_join(airports, by = c("dest" = "faa")) %>%

George Bush Intercontinental

General Edward Lawrence Logan Intl

2. Which carrier has most departure delayed flights?

Fort Lauderdale Hollywood Intl

A tibble: 10×3

San Francisco Intl

Chicago Ohare Intl

Los Angeles Intl Orlando Intl

Palm Beach Intl

Tampa Intl

Denver Intl

New Carrollton Rail Station

Springfield Amtrak Station

Stamford Amtrak Station

Boston Back Bay Station

New Haven Rail Station

Wilmington Amtrak Station

Washington Union Station

Yuma Mcas Yuma Intl

Yakutat

Clear

Flagler County Airport

NW Arkansas Regional

Amherst Amtrak Station AMM

Yakima Air Terminal McAllister Field

27.96086 -80.55833

29.28210 -81.12120

36.28187 -94.30681

42.37500 -72.51139

43.57936 -90.89647

43.97622 -90.48061

59.30120 -139.39370

42.23793 -83.53041

42.87110 -97.39690

41.26074 -80.67910

32.65658 -114.60598

64.30120 -149.12014

39.30722 -76.61556

39.95570 -75.18200

28.22806 -82.15583

39.36650 -74.44200 8

37.53430 -77.42945 26

40.73472 -74.16417 0

38.94800 -76.87190 39

33.62289 -111.91053 1519

35.08323 | -108.79178 | 6454

41.76888 -72.68150

42.10600 -72.59305

41.04694 -73.54149

42.34780 -71.07500

41.29867 -72.92599

39.73667 -75.55167

38.89746 -77.00643 76

40.75050 -73.99350 35

46.56820 -120.54400 1095

26

1287

258

1292

966

33

716

1200

1196

216

66

65

20

-5

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1. Which are the top 10 destinations that United Airlines have arrived on April 2013?

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America/New_York

America/New_York

America/New_York

America/Chicago

America/Chicago

America/Chicago

America/New_York

America/Chicago

America/Phoenix

America/New_York

America/Anchorage

America/New_York

America/Denver

America/Phoenix

America/Los_Angeles

X59

XFL

XNA

XZK

Y51

Y72

YAK

YIP

YKM

YKN

YNG

YUM

Z84

ZBP

ZFV

ZPH

ZRA

ZRD

ZRP

ZRT

ZRZ

ZSF

ZSY

ZTF

ZTY

ZUN

ZVE

ZWI

NA Envoy Air MQ MQ NA Envoy Air MQ NA Envoy Air 3. Which airline had the most flights on New Year 2013?

filter(month == 1 , day == 1) %>%

left_join(airlines, "carrier") %>%

select(carrier_name = name, n_flights = n) %>%

n_flights

<int>

163

ExpressJet Airlines Inc. 116 Delta Air Lines Inc. American Airlines Inc. 94 Envoy Air 78 US Airways Inc. Endeavor Air Inc. 28 Southwest Airlines Co. 27 Virgin America 12 4. What was the total distance for all flights in August? flights %>% filter(month == 8) %>% summarize(total=sum(distance), avg=mean(distance)) #Answer : 31149334

5. How many flights arrived at Los Angeles, Chicago Ohare and San Francisco airports on New Year 2013? flights %>%

filter(dest %in% c("SFO", "LAX", "ORD"), month == 1, day == 1) %>% count(dest) %>% left_join(airports, by = c("dest" = "faa")) %>% select(dest,n,name) A tibble: 3×3

name Los Angeles Intl Chicago Ohare Intl SFO 31 San Francisco Intl

6. Which are top 6 flights that have the longest distance?

Which are top 6 flights that have the longest distance?

distinct(carrier,flight, origin , dest, distance)%>%

7. Which airline name starts with the letter "U"?

8. Which are the top 20 carriers had the most flights in December 2013?

##Which airline name starts with the letter "U"?

filter(month == 12, year == 2013) %>%

rename(Airline_name = carrier) %>%

dest n <chr> <int> <chr> LAX 39