

CEE 5614/CEE 4984

Aviation Databases and Web Information

Fall 2020

Aviation Databases

- Numerous resources available on the Internet
- Data is a key component in aviation studies and analysis
- The databases described here is just a sample of that available
- Your job is to become familiar with at least the more important datasets, extract data, make inferences and perhaps develop models
- Links to many databases:
- http://128.173.204.63/courses/cee5614/sites_ce_5614.html

CEE 4674 and CEE 5614
World Wide Web Links



Air Transportation Systems Lab (ATSL)
Virginia Tech

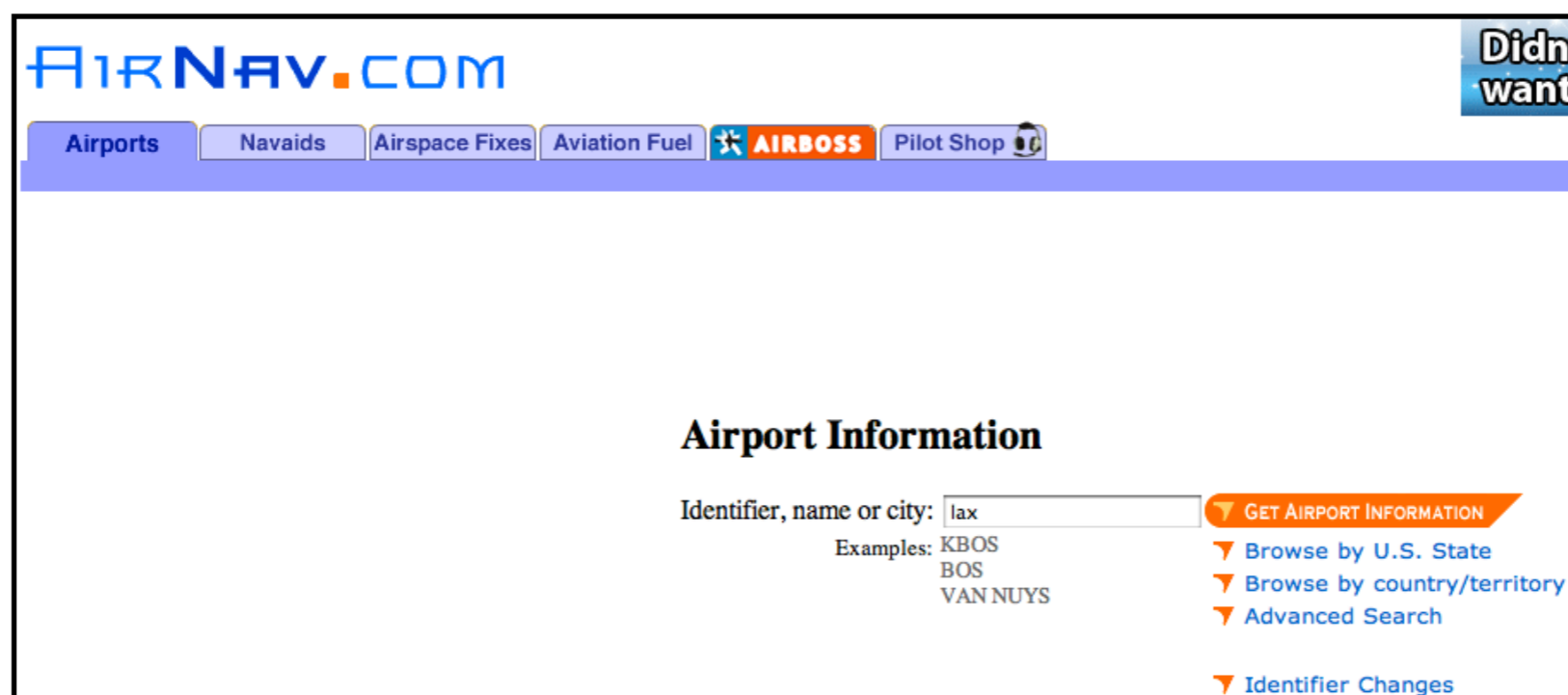
- [Airport Databases, Flight Planning and Aviation Statistics](#)
- [FAA and NASA Links](#)
- [Aircraft Manufacturer Data for Airport Design](#)
- [Computer Software](#)
- [Aviation Magazines](#)
- [FAA Airport Capacity Enhancement Plans](#)
- [Airport Contractors and Hardware](#)
- [Aviation Weather Information](#)
- [Airlines and aircraft production lists](#)
- [Aviation Capacity Plans \(FAA\)](#)

Relevant Databases

- Airport and navigation systems information
- Aviation demand (passengers) and flight operations (departures and arrivals)
- Flight tracking
- Airline statistics (schedules, passengers, etc.)
- Aircraft performance and general aircraft information
- Aviation calculators
- Aeronautical charts and maps

Airport and Navigation Systems Information

- Airnav.com (<http://www.airnav.com>)
 - Contains airport, navigation fix and fuel facilities data
 - Generally good for U.S. airports
 - Detailed information on runways, obstacles, etc.



Airport and Navigation Systems Information (Airnav.com)

- Sample query about Los Angeles International Airport
- Location, elevation, operations, runway information, airport frequencies

The screenshot shows the AirNav.com website interface. At the top, the logo 'AIRNAV.COM' is displayed in blue. Below the logo is a navigation bar with tabs for 'Airports', 'Nav aids', 'Airspace Fixes', 'Aviation Fuel', 'AIRBOSS', and 'Pilot Shop'. The main content area is titled 'KLAX Los Angeles International Airport' with the location 'Los Angeles, California, USA'. Below this, there is a section 'GOING TO LOS ANGELES?' with three buttons: 'Book a Flight', 'Reserve a Hotel Room', and 'Rent Car'. The main information section is titled 'FAA INFORMATION EFFECTIVE 29 JULY 2010' and includes the following details:

Location

FAA Identifier: LAX
 Lat/Long: 33-56-33.0800N / 118-24-25.7800W
 33-56.551333N / 118-24.429667W
 33.9425222 / -118.4071611
 (estimated)
 Elevation: 125 ft. / 38.1 m (surveyed)
 Variation: 14E (1980)
 From city: 9 miles SW of LOS ANGELES, CA
 Time zone: UTC -7 (UTC -8 during Standard Time)
 Zip code: 90009

Airport Operations

Airport use: Open to the public
 Activation date: 04/1940
 Sectional chart: [LOS ANGELES](#)
 Control tower: yes
 ARTCC: LOS ANGELES CENTER

Flight Tracking flightaware.com

Note: Approximate Position of Aircraft in the Atlantic Ocean

American Airlines 106
(Track inbound flight)
AAL106 - "American" (all flights) aa.com

John F Kennedy Intl (KJFK) Gate 8
London Heathrow (EGLL / LHR) Terminal 3

08:13PM EDT
Scheduled: 07:40PM EDT
7-day average: 08:07PM EDT

07:19AM BST (+1)
Scheduled: 07:13AM BST (+1)
7-day average: 07:27AM BST (+1)

Other flights between these airports

2 hr 30 min | 3 hr 35 min
Duration: 6 hours 6 minutes
Sunday, August 24, 2014

Status En Route / On Time (1,369 sm down; 2,176 sm to go)

Aircraft Boeing 777-300ER (twin-jet) (H/B77W/L - photos)

Speed 538 kts (planned: 488 kts) (graph)

Altitude 33,000 feet (planned: 35,000 feet) (graph)

Distance Direct: 3,446 sm Planned: 3,619 sm

Route BETTE ACK DOVEY NATW BEDRA NATW NERTU GAPLI UL620 GIBSO UM17 BILNI

John F Kennedy Intl (KJFK) is currently experiencing departure delays an average of 35 minutes.
How is everybody else affected? [View the MiseryMap](#)

Share this alert with a friend
friend@example.com

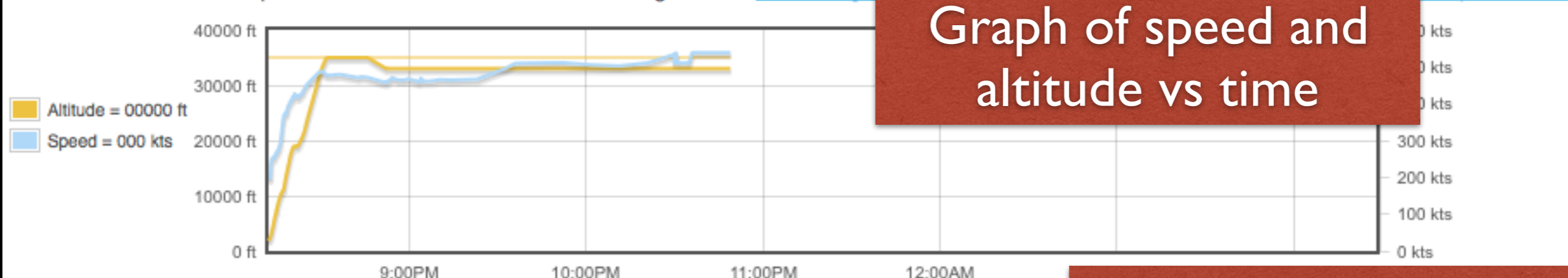
Tracking American Airlines
Flight 106

JFK-LHR
New York Kennedy to
London Heatrow airports

Flight Plan Information

Flight Tracking flightaware.com

All times are in EDT time to prevent confusion due to time zone crossing. See the [AAL106 flight status page for this flight to view time zone preferences](#)



Graph of speed and altitude vs time

Time EDT	Position		Orientation		Groundspeed		Altitude feet	Rate of Climb
	Latitude	Longitude	Course	Direction	KTS	MPH		
08:12PM	40.6039	-73.7472	145°	Southeast	197	227	1,800	
08:13PM	40.5796	-73.7148	145°	Southeast	197	227	2,500	
08:13PM	40.5749	-73.6917	100°	East	242	278	2,900	
08:13PM	40.5731	-73.6710	95°	East	249	287	3,500	2,400 ↑ FlightAware ADS-B
08:13PM	40.5718	-73.6498	93°	East	250	288	4,100	2,400 ↑ FlightAware ADS-B

Table with georeferenced speed and altitude vs time

Flight Tracking Information (flightaware.com)

- Example of departure procedure at LAX
 - Terminal area procedures are key to operate in and out of busy airspace
- ## LAX IFR Departure Procedure Imper One

FlightAware toni trani (vuela123) | Registered Member Since 2007 | Wednesday 12:05PM EDT

English (USA)

FlightAware > Pilot Resources > KLAX IMPER ONE (DP)

Overview | Flight Tracker | FBOs | Hotels | Weather | Map & Diagram | IFR Plates | VFR Sectional | Remarks

Browse By State or enter Airport Code:

Valid from 2010-Jul-29 02:01AM PDT to 2010-Aug-26 02:01AM PDT (times local to KLAX)

Always verify dates on each chart and consult appropriate NOTAMs. Ensure that all appropriate charts are included that are necessary for FAA/NACO and is not warranted by FlightAware.

[Download PDF](#)

(IMPER1,IMPER) 09229 LOS ANGELES INTL (LAX) LOS ANGELES, CALIFORNIA

IMPER ONE DEPARTURE S-237 (FAA)

TAKE-OFF MINIMUMS
Rwy 6L, 7L/R, 24L/R, 25L/R: Standard.
Rwy 6R: 300-1¼ or standard with minimum climb of 231' per NM to 400'.

ATIS DEP 125.65
CINC DEL 121.4 327.0
GND CON N 121.65 327.0
S 121.75 327.0
LOS ANGELES TOWER N 133.9 239.3
S 120.95 339.1
SOCAL DEP CON 124.3 363.2 (045°-224°)
125.2 263.025 (225°-044°)

NOTE: Rwy 6L, building 1780 from departure end of rwy, 922' left of centerline, 201' MSL.
NOTE: Rwy 6R, building 5551 from departure end of rwy, 1790' right of centerline, 306' MSL.

DEPARTURE ROUTE DESCRIPTION
TAKE-OFF RUNWAYS 6L/R, 7L/R: Climb via heading 070° for vector to SUJ VORTAC, then via SUJ R-120 and OCN R-301 to OCN VORTAC. Thence...
TAKE-OFF RUNWAYS 24L/R, 25L/R: Climb via heading 250° to cross SMO R-154 at or below 3000. Then via radar vectors to join LAX R-160 to GESME INT. Then via OCN R-270 to OCN VORTAC. Thence...
... via (assigned transition) or (assigned route). All aircraft expect further clearance to filed flight level three minutes after departure.
LOST COMMUNICATIONS: If not in contact with Departure Control within five minutes after departure, climb to FL230 or filed altitude whichever is lower. Aircraft filing FL240 or above climb to filed altitude ten minutes after departure.
IMPERIAL TRANSITION (IMPER1, IPI): From over OCN VORTAC via OCN R-083 and JUJ R-263 to JUJ VORTAC. Then via JUJ R-115 and IPI R-258 to IPI VORTAC.
JULIAN TRANSITION (IMPER1, JUJ): From over OCN VORTAC via OCN R-083 and JUJ R-263 to JUJ VORTAC.

IMPER ONE DEPARTURE LOS ANGELES, CALIFORNIA LOS ANGELES INTL (LAX)

Related Links

- [KLAX Airport Flight Tracker](#)
- [KLAX Airport Information and Procedures](#)
- [KLAX Weather](#)
- [Buy KLAX Excel flight history](#)
- [Statistics and KLAX graphs](#)
- [Reserve a hotel room in Los Angeles, CA](#)
- [Book a KLAX rental car](#)
- [National and regional weather maps](#)

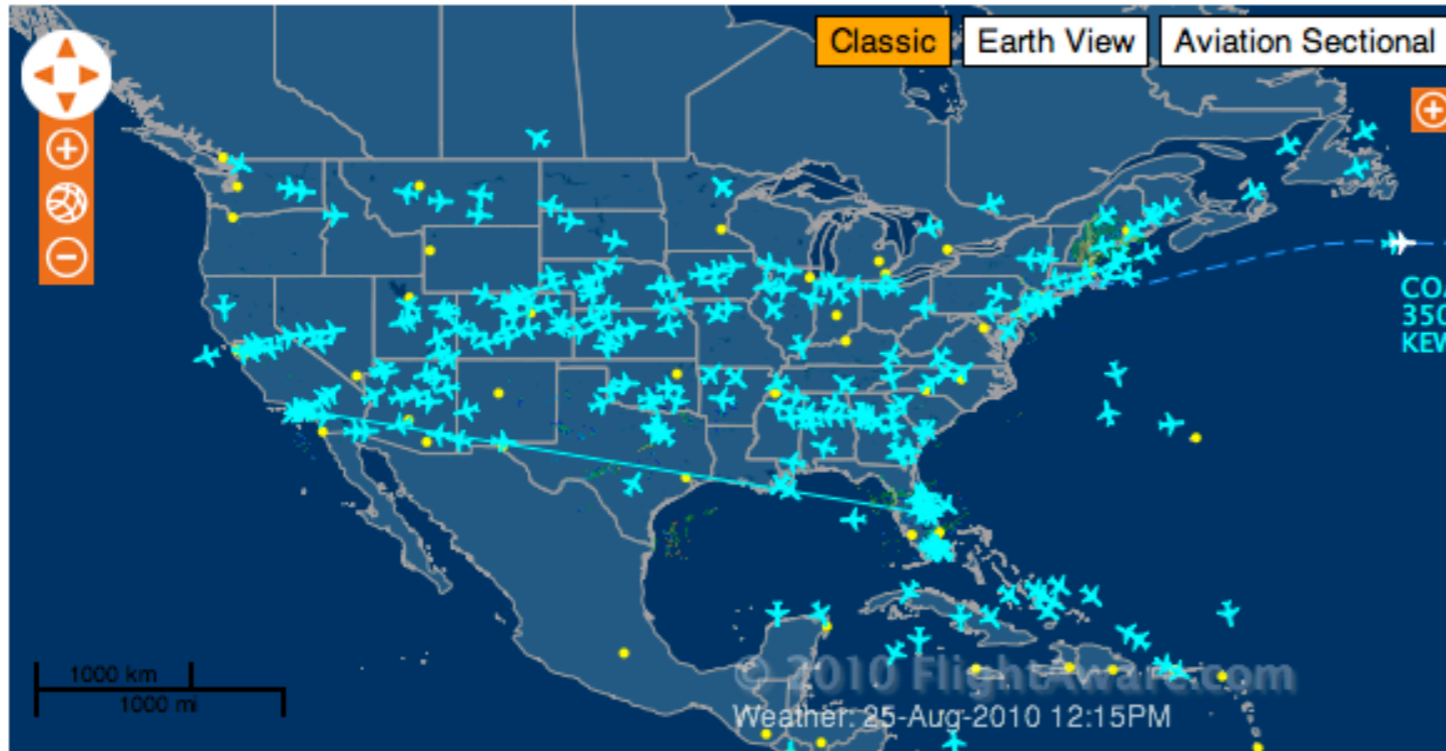
Bundled Procedure ("Plates") Download (right click to save)

- [All Departures \(DPs\)](#)
- [All Arrivals \(STARs\)](#)
- [All Approaches \(IAPs\)](#)
- [Special Minimums](#)
- [All KLAX Procedures \(with diagram\)](#)

Other KLAX Procedures

- APD : [AIRPORT DIAGRAM](#)
- DP : [CASTA TWO \(RNAV\)](#)
- DP : [CATALINA FIVE](#)
- DP : [CHATY TWO](#)
- DP : [GABRE SIX](#)
- DP : [GORMAN FOUR](#)
- DP : [HOLTZ NINE \(RNAV\)](#)
- DP : [IMPER ONE](#)
- DP : [JEDDD ONE \(RNAV\)](#)
- DP : [KARVR THREE \(RNAV\)](#)
- DP : [LAXX SIX](#)
- DP : [LOOP FIVE](#)
- DP : [OSHNN THREE \(RNAV\)](#)
- DP : [PERCH NINE](#)
- DP : [SAN DIEGO FIVE](#)
- DP : [SEAL BEACH FIVE](#)
- DP : [SFBRY FIVE](#)

Features of Flightaware.com



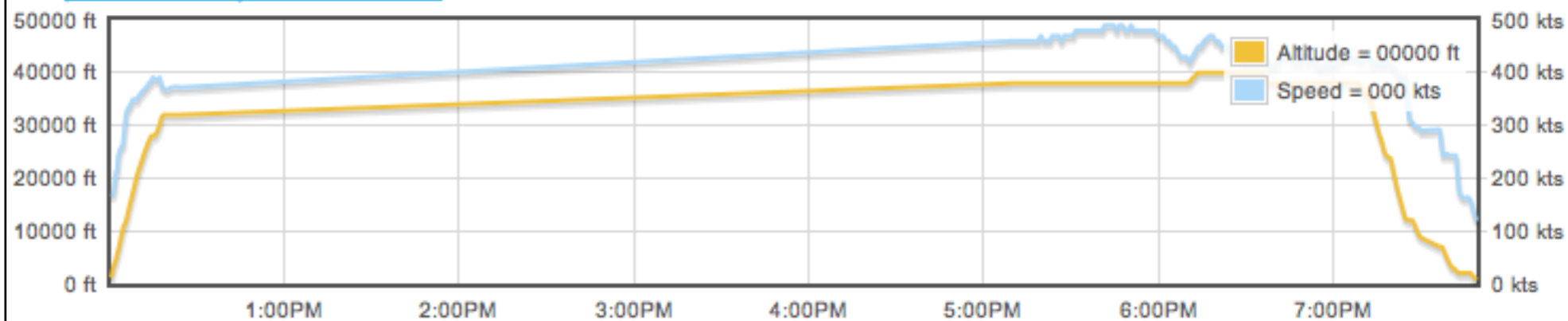
Tracking all Boeing 757 flights in the NAS

Live Flight Track Log (AAL121) - Related Links

- [Live > AAL121 Flight Status](#)
- [Flight > AAL121 > 24-Aug-2010 > LFPG-KJFK](#)

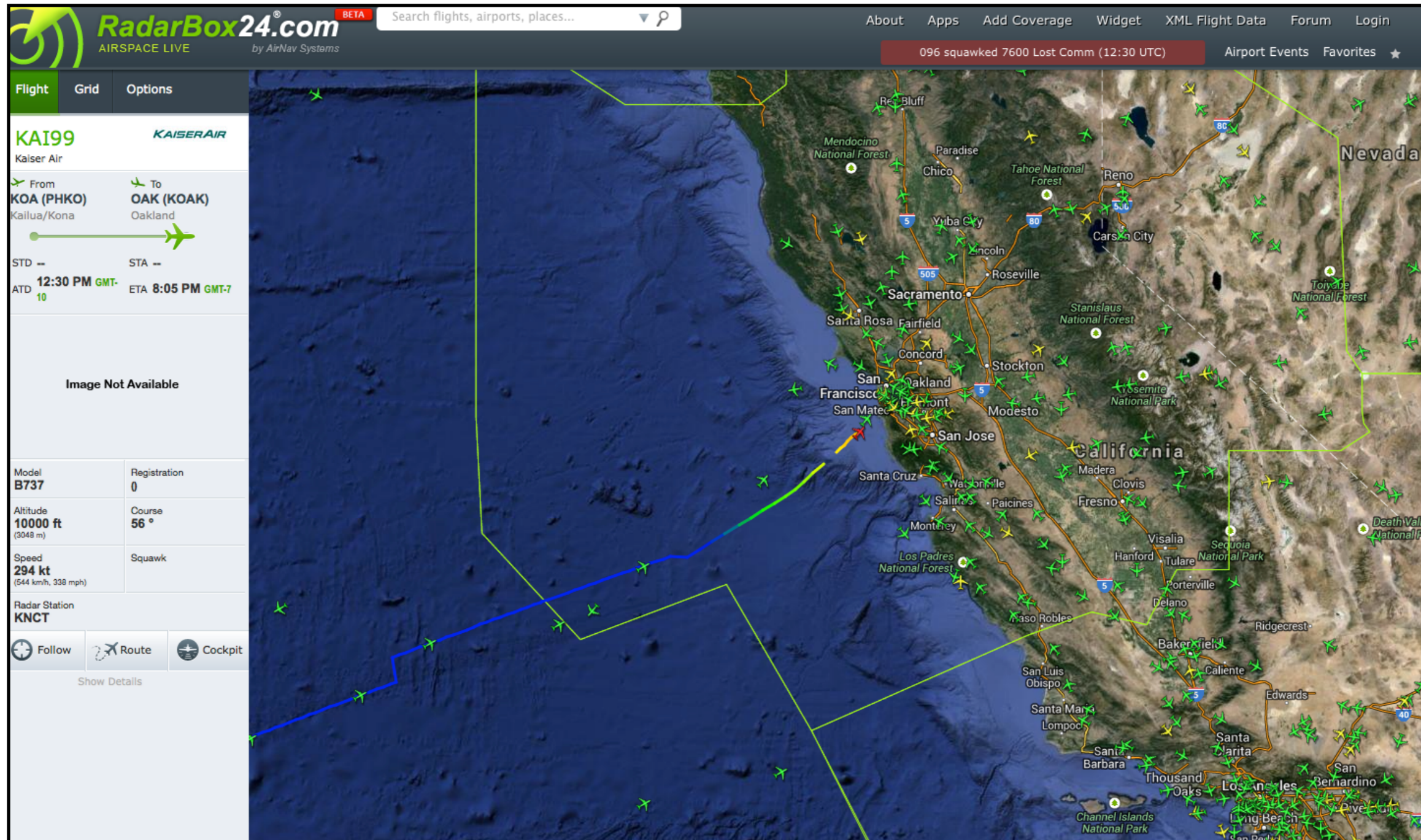
Times and Time Zones

All times are in USA: Eastern time to prevent confusion due to time zone crossing. See the [AAL121 flight status page for this flight](#) to view [preferences in your user account](#).



Flight track of American Airlines flight 121 (B757)

Flight Tracking Information (<http://www.radarbox24.com>)



Example of flights around the West Coast of the US

Flight Tracking Information

(<http://www.radarbox24.com>)

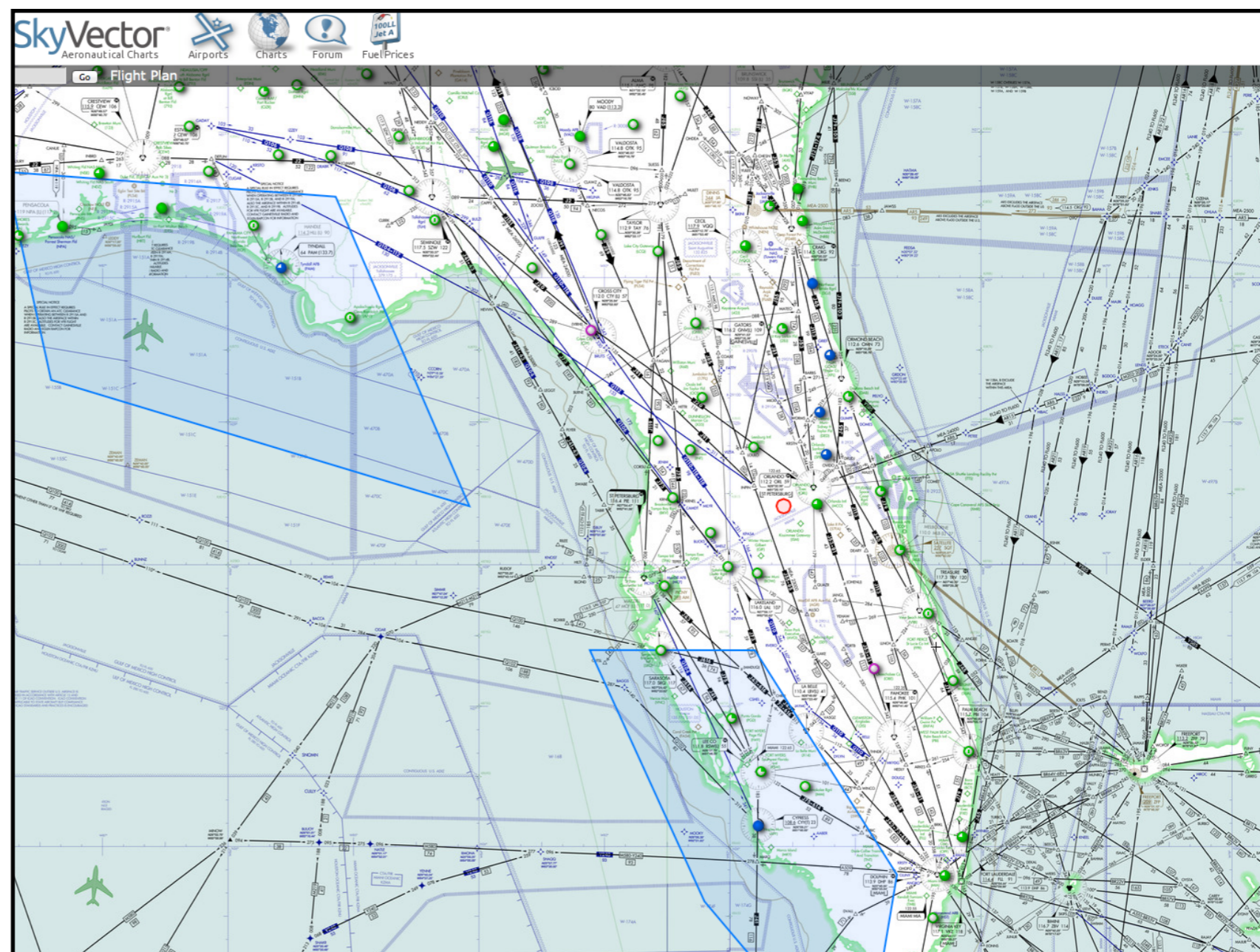
Aircraft data tags include cruise altitude, speed, flight id and origin-destination airports



Example of flights near the coast of Hawaii

Aeronautical Chart Information (<http://skyvector.com>)

- Skyvector.com
- Contains aeronautical chart information
- US and Worldwide



High Altitude
(Jet) Airways in Florida

Bureau of Transportation Statistics

- <https://www.bts.gov>
- Great source of air transport information
- Large public databases
- From airline ticket prices to passengers by airline

The screenshot shows the Bureau of Transportation Statistics website with the following content:

- United States Department of Transportation** (top left)
- Bureau of Transportation Statistics** (top center)
- Search bar: **Search BTS site** (top right)
- Navigation links: **Topics and Geography**, **Statistical Products and Data**, **National Transportation Library**, **Newsroom**, **About BTS**
- Latest Indicators** section:
 - International Airline Cargo (Preliminary)**: June 2020: 740T Tons, 5.3% change (Jun 2019 -> Jun 2020)
 - Scheduled Passenger Airline Employees**: June 2020: 410.6K FTE, 8.7% change (Jun 2019 -> Jun 2020)
 - New Release! Truck Freight between US & Mexico/Canada**: June 2020: \$56.5 Billion, 14% change (Jun 2019 -> Jun 2020)
- U.S. Transportation Statistics During the COVID-19 Public Health Emergency** (map of the US)
- NEWS** section:
 - AUGUST 25, 2020**: [June 2020 North American Transborder Freight Up 46% from May 2020](#)
 - AUGUST 21, 2020**: [Air Travel Consumer Report: May 2020 Numbers](#)
 - AUGUST 19, 2020**: [Mid-June 2020 U.S. Passenger Airline Employment Down Over 1,000 FTEs from Mid-May](#)
 - [Visit the Newsroom](#) button
- DID YOU KNOW** section:
 - Airports with the highest on-time arrival percent in 2019 – Atlanta, 85.1%; Salt Lake City, 84.8%; Portland, 84.3%
- ON-TIME FLIGHT STATISTICS BY FLIGHT NUMBER** section with [Search Data](#) button
- RECENT PRODUCTS** section with [County Transportation Profiles](#) link

Airline and Airport Statistics

(<https://www.bts.gov/topics/airlines-and-airports-0>)

United States Department of Transportation

Ask-A-Librarian | A-Z Index

Bureau of Transportation Statistics Search BTS site

Topics and Geography Statistical Products and Data National Transportation Library Newsroom About BTS

Home » Airlines and Airports

Airlines and Airports

- > [BTS MEDIA CONTACT](#)
- > [SCHEDULE OF STATISTICAL RELEASES](#)
- > [QUICK LINKS TO POPULAR AIR CARRIER STATISTICS](#)

Statistical Releases

On-Time

Performance

Financial

Traffic

Databases

Products

Related Resources

Forms and Regulations

United States Department of Transportation

Ask-A-Librarian | A-Z Index

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Statistical Releases

- [Airline Financial](#)
- [Airline On-Time](#)
- [Airline Traffic](#)
- [Air Fares](#)
- [Passenger Airline Employment](#)

On-Time

Performance

- [Fares](#)
- [Mishandled Baggage Reports](#)
- [Passengers Denied Confirmed Space Report](#)
- [Airline Origin and Destination Survey \(DB1B\)](#)
- [Overbookings](#)
- [Airport Snapshots](#)
- [Carrier Snapshots](#)

Aviation Demand and Flight Operations

- **Bureau of Transportation Statistics**
(<http://www.transtats.bts.gov/>)
- Contains airport passenger information

The screenshot shows the RITA Bureau of Transportation Statistics website. The header includes the RITA logo and navigation links. The main content area is divided into several sections:

- Quick Answers:** Links to Carrier Snapshots, Airline Fuel Cost and Consumption, Air Freight Summary, Employment, Airport Snapshots, Holiday Flight Delays, Inter-Airport Distances, and Tarmac Times.
- Airline Activity : National Summary (U.S. Flights):** A table comparing 2013 and 2014 data.
- At a Glance:** A section for Flight Delays with a bar chart showing the Percent of U.S. Flights On Time (2013-2014).
- Average Air Fares:** A section for Average Domestic Airline Fares.

	2013 *	2014 *	Change
Enplaned Passengers (million)	643	649	0.9%
Departures (000)	8,784	8,592	-2.2%
Freight/Mail (million lbs)	19,673	20,128	2.3%
Load Factor (%)	83.6	84.1	0.5 points
Airlines with scheduled service	99	95	-4.0%

* 12 months ending May of each year

Percent of U.S. Flights On Time (2013-2014)

BTS Site Airline Snapshot

(<https://www.transtats.bts.gov/carriers.asp?pn=1>)

- Obtain a quick snapshot of the statistics for that airline

Bureau of Transportation Statistics
Delta Airlines

Topics and Geography
Statistical Products and Data
National Transportation Library
Newsroom

Select a month: Select a carrier:

(The month selection does not apply to Revenue and Costs and On-Time Summary)

Carriers with annual operating revenue over \$20M
[Passenger](#) [Cargo](#)

Delta Air Lines (DL) Scheduled Services Only BTS Data as of 8/31/2020

Summary Data (U.S. Airports, 12 Months Ending August)					Top Domestic Markets* (September 2018 - August 2019)		
	2018	2019	%Chg	Rank ¹	Market	Passengers	Share**
Passengers	124,117k	132,945k	7.11%	2	Atlanta, GA	34.14m	72.89%
Departures	936k	975k	4.23%	2	Minneapolis, MN	9.17m	53.22%
RPM 2	119,266m	128,323m	7.59%	2	New York, NY	7.89m	27.87%
ASM 3	137,615m	146,549m	6.49%	3	Detroit, MI	7.77m	48.71%
Loadfactor	86.7%	87.6%	0.90 pts	1	Salt Lake City, UT	6.31m	52.08%
Air Cargo 4	463m	425m	-8.14%	2	Other	67.66m	9.97%
Markets Served	163	161	-1.23%				
Share 5	16.82%	17.31%	0.49 pts	2			

■ Atlanta, GA ■ Minneapolis, MN
■ New York, NY ■ Detroit, MI
■ Salt Lake City, UT ■ Other

* Based on total enplaned passengers at all airports in a city.
 ** The table shows the carrier's share in each of the markets.
 The pie chart shows each market's share in the carrier's total air passengers.

1 Among 0 passenger carriers for 2019

2 Revenue Passenger Miles

3 Available Seat Miles

4 Air Cargo is the sum of Freight and Mail in pounds.

Analysis of Air Transportation Systems (A.A. Trani) - Fall 2020

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BTS Airport Snapshot

(<https://www.transtats.bts.gov/airports.asp?pn=1>)

- Obtain a quick snapshot of the statistics for an airport

Bureau of Transportation Statistics

Atlanta Airport

Topics and Geography
Statistical Products and Data
National Transportation Library
Newsroom

Select a month:

(The month selection does not apply to on-time data.)

Select an airport:

[Show all airports \(by state\)](#)

Atlanta, GA: Hartsfield-Jackson Atlanta International (ATL)

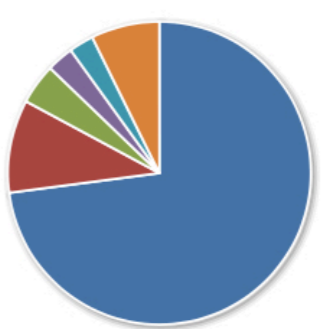
Scheduled Services except Freight/Mail

BTS Data as of 8/31/2020

Summary Data (U.S. Flights Only)				
Passengers*	2018**	2019**	%Chg	Rank***
Arrival	45,137k	46,899k	3.90%	1
Departure	45,102k	46,835k	3.84%	1
Scheduled Flights				
Departures	389,761	396,792	1.80%	1
Freight/Mail (lb.) (Scheduled and Non-Scheduled)				
Total	668m	704m	5.37%	16
Carriers				
Scheduled	24	22	-8.33%	

* Scheduled enplaned revenue passengers.
 ** 12 months ending August of each year.
 *** Among 783 U.S. airports, 12 months ending August 2019

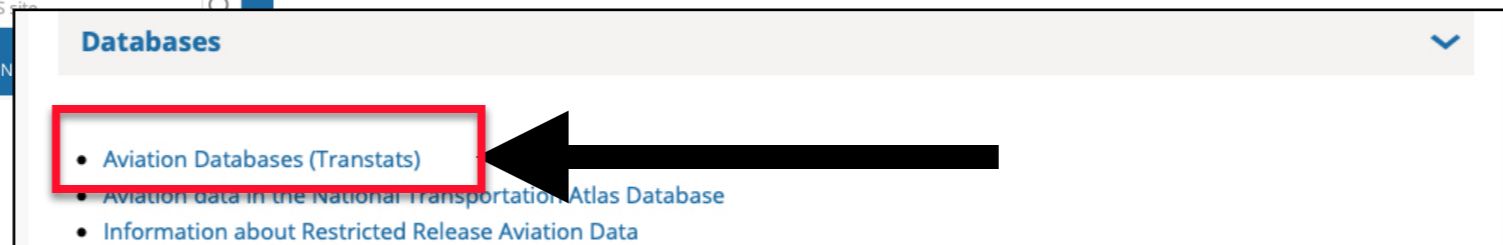
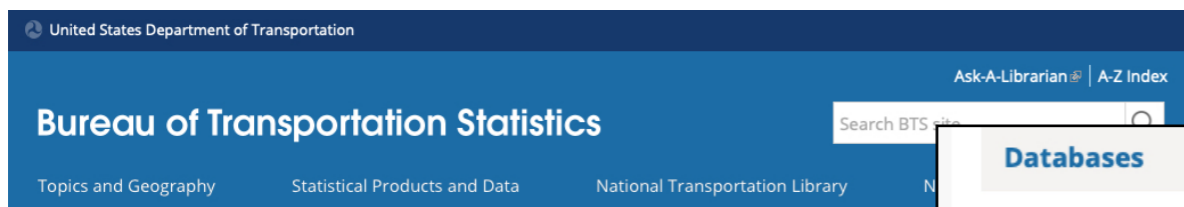
Carrier Shares for September 2018 - August 2019		
Carrier	Passengers	Share
Delta	68,357	72.93%
Southwest	9,297	9.92%
Endeavor	4,059	4.33%
American	2,687	2.87%
Spirit	2,475	2.64%
Other	6,859	7.32%



■ Delta ■ Southwest ■ Endeavor
■ American ■ Spirit ■ Other

Based on enplaned passengers(000) both arriving and departing.

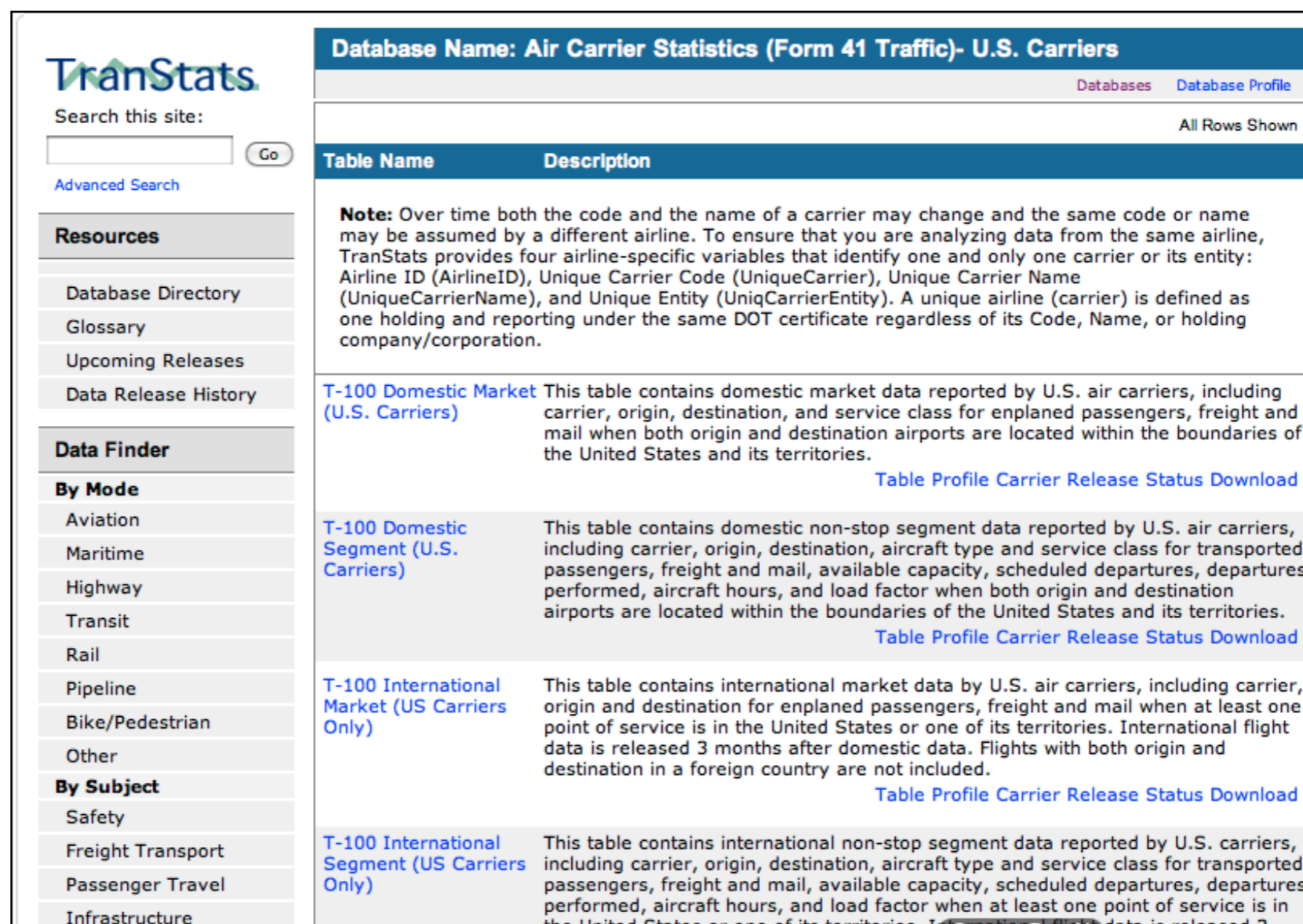
Bureau of Transportation Statistics (BTS)



- Dedicated section of the database to aviation
- Air carrier statistics (form 41) (T100)
- Airline on-time performance
- Airline origin-destination survey (10% sample of tickets sold) called DB1B database

Database Name	Description	Profile
Air Carrier Financial Reports (Form 41 Financial Data)	Form 41 Financial Schedule consists of financial information on large U.S. certified air carriers--includes balance sheet, income statement, cash flow, aircraft inventory, aircraft operating expenses and operating expenses. Note: Numbers presented on B1, B11 Balance Sheet and P11, P12 Statement of Operations now follow the format of common public financial documents. This format reverses signs from the accounting format in which numbers appeared prior to 10/18/2006 (Examples).	Profile
Air Carrier Statistics (Form 41 Traffic)- U.S. Carriers	Monthly data reported by certificated U.S. air carriers on passengers, freight and mail transported. Also includes aircraft type, service class, available capacity and seats, and aircraft hours ramp-to-ramp and airborne.	Profile
Air Carrier Statistics (Form 41 Traffic)- All Carriers	Monthly data reported by certificated U.S. and foreign air carriers on passengers, freight and mail transported. Also includes aircraft type, service class, available capacity and seats, and aircraft hours ramp-to-ramp and airborne.	Profile
Air Carrier Summary Data (Form 41 and 298C Summary Data)	Summary data of the non-stop segment and on-flight market data reported by air carriers on Form 41 and Form 298C	Profile
Airline On-Time Performance Data	Monthly data reported by US certified air carriers that account for at least one percent of domestic scheduled passenger revenues--includes scheduled and actual arrival and departure times for flights.	Profile
Airline Origin and Destination Survey (DB1B)	Origin and Destination Survey (DB1B) is a 10% sample of airline tickets from reporting carriers. Data includes origin, destination and other itinerary details of passengers transported.	Profile
American Travel Survey (ATS) 1995	National data on the nature and characteristics of long-distance personal travel, from a household survey conducted by BTS about every five years.	Profile

- Bureau of Transportation Statistics (BTS)
- T100 air carrier data (form 41 in BTS web site)
- Contains **passenger enplanement** data at the airport and route levels
- Three key tables: a) market, b) coupon, and c) segment (international passengers only available for U.S. passengers only)



TranStats
 Search this site:
[Advanced Search](#)

Resources

- Database Directory
- Glossary
- Upcoming Releases
- Data Release History

Data Finder

By Mode

- Aviation
- Maritime
- Highway
- Transit
- Rail
- Pipeline
- Bike/Pedestrian
- Other

By Subject

- Safety
- Freight Transport
- Passenger Travel
- Infrastructure

Database Name: Air Carrier Statistics (Form 41 Traffic)- U.S. Carriers

[Databases](#) [Database Profile](#)

All Rows Shown

Table Name	Description
	<p>Note: Over time both the code and the name of a carrier may change and the same code or name may be assumed by a different airline. To ensure that you are analyzing data from the same airline, TranStats provides four airline-specific variables that identify one and only one carrier or its entity: Airline ID (AirlineID), Unique Carrier Code (UniqueCarrier), Unique Carrier Name (UniqueCarrierName), and Unique Entity (UniqCarrierEntity). A unique airline (carrier) is defined as one holding and reporting under the same DOT certificate regardless of its Code, Name, or holding company/corporation.</p>
T-100 Domestic Market (U.S. Carriers)	<p>This table contains domestic market data reported by U.S. air carriers, including carrier, origin, destination, and service class for enplaned passengers, freight and mail when both origin and destination airports are located within the boundaries of the United States and its territories.</p> <p>Table Profile Carrier Release Status Download</p>
T-100 Domestic Segment (U.S. Carriers)	<p>This table contains domestic non-stop segment data reported by U.S. air carriers, including carrier, origin, destination, aircraft type and service class for transported passengers, freight and mail, available capacity, scheduled departures, departures performed, aircraft hours, and load factor when both origin and destination airports are located within the boundaries of the United States and its territories.</p> <p>Table Profile Carrier Release Status Download</p>
T-100 International Market (US Carriers Only)	<p>This table contains international market data by U.S. air carriers, including carrier, origin and destination for enplaned passengers, freight and mail when at least one point of service is in the United States or one of its territories. International flight data is released 3 months after domestic data. Flights with both origin and destination in a foreign country are not included.</p> <p>Table Profile Carrier Release Status Download</p>
T-100 International Segment (US Carriers Only)	<p>This table contains international non-stop segment data reported by U.S. carriers, including carrier, origin, destination, aircraft type and service class for transported passengers, freight and mail, available capacity, scheduled departures, departures performed, aircraft hours, and load factor when at least one point of service is in the United States or one of its territories. International flight data is released 3 months after domestic data. Flights with both origin and destination in a foreign country are not included.</p>

Bureau of Transportation Statistics (Schedule B-43 US Aircraft Inventory)

Schedule B-43 Aircraft Inventory (2009) | Bureau of Transportation Statistics

www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/subject_areas/airline_information/schedule_b43/2009/html/summary.html

ps Apple Wikipedia skyvector.com

United States Department of Transportation About DOT | Briefing Room | Our Activities

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Home

Schedule B-43 Aircraft Inventory (2009)


By Aircraft Manufacturer and Aircraft Type

Excel | CSV

Carriers	Total Aircraft	Average Aircraft Age (2009)
Cargo		
ABX Air, Inc. (ABX)	60	32.5
Air Transport International (8C)	18	39.9
Aloha Air Cargo (AQ)	1	36.0
Amerijet International (M6)	8	33.0
Ameristar Air Cargo (AMQ)	4	39.3
Arrow Air Inc. (JW)	7	27.7
Asia Pacific (PFQ)	3	31.3
Astar USA, LLC (ER)	40	32.1

Bureau of Transportation Statistics

(Available Seat-Miles by Airport)



Search this site:

[Advanced Search](#)

Resources

- Database Directory
- Glossary
- Upcoming Releases
- Data Release History

Data Finder

By Mode

- Aviation
- Maritime
- Highway
- Transit
- Rail
- Pipeline
- Bike/Pedestrian
- Other

By Subject

- Safety
- Freight Transport
- Passenger Travel
- Infrastructure
- Economic/Financial
- Social/Demographic
- Energy
- Environment
- National Security

Available Seat-miles (the number of seats and the distance flown in thousands (000))

Delta Air Lines - All Airports

Select a carrier from the dropdown (major carriers) or from a link below: Select an airport:

[U.S. Carriers \(\\$20M revenue/yr\)](#) [Foreign Carriers, 10,000 pax/mo to and from U.S.](#)

Origin: Destination:

* All numbers are for scheduled services.

* Most recent three months of international data by airport and by carrier withheld because of confidentiality agreements for individual routes. Summary totals are shown for all airports and all carriers. Foreign point-to-point totals not included. For U.S. carrier summary system and international numbers including foreign point-to-point and the foreign point-to-point totals, see [BTS monthly air traffic press releases](#)

* Domestic and international data based on World Area Codes, a numerical code for each country and each U.S. state (T-100 database), rather than Domestic, Atlantic, Latin and Pacific regional geographic entities (T-1 database).

* Jan. 2012: Atlantic Southeast (EV) and ExpressJet (XE) started to report jointly as ExpressJet (EV). Data for the airlines may be found by clicking on U.S. Carriers (\$20M revenue/yr). Clicking on ExpressJet Airlines Inc. (EV) will retrieve Atlantic Southeast (EV) data through December 2011 and the combined ExpressJet (EV) data beginning January 2012. Selecting ExpressJet Airlines Inc. (1) (XE) will retrieve ExpressJet (XE) data through December 2011.

* Beginning in October 2002, monthly data reports were expanded to include data for carriers that fly aircraft with 60 seats or less or having a payload capacity of 18,000 lbs. or less, as well as domestic all-cargo carriers. For previous months, see [T-100](#) for U.S. carrier, foreign carrier and individual airport passenger and flight data.

[Passengers](#) [Flights](#) [Revenue](#) [Passenger-Miles](#) [Available Seat-Miles](#) [Load Factor](#) [Net Income](#) [Operating Revenue](#)

Year	Month	DOMESTIC	INTERNATIONAL	TOTAL
2002	10	8,332,093	2,766,881	11,098,974
2002	11	7,919,522	2,505,819	10,425,340
2002	12	8,127,073	2,405,204	10,532,277
2002	TOTAL	99,461,315	31,221,978	130,683,293
2003	1	8,152,502	2,363,170	10,515,672
2003	2	7,127,819	1,886,963	9,014,783
2003	3	8,052,021	2,202,747	10,254,768
2003	4	7,380,656	1,954,703	9,335,359
2003	5	7,302,481	2,022,747	9,325,228
2003	6	7,415,623	2,280,425	9,696,048

BTS Geospatial Data Sets

United States Department of Transportation

Bureau of Transportation Statistics

Topics and Geography | Statistical Products and Data | National Transportation Library

Databases

- Aviation Databases (Transtats)
- Aviation data in the National Transportation Atlas Database**
- Information about Restricted Release Aviation Data


1-10 of 12 results Most Recent ▾

139 attributes | 14912 locations | ⬇️ ⭐



Runway Ends *(from Open Data)*
 USDOT_BTS
 The Runway Ends is as of July 16, 2020, and is part of the U.S. Department of Transportation (USDOT)/Bureau of Transportation Statistics (BTS) National Transportation Atlas Database (NTAD). The geospatial Runway Ends dataset is associated with and contains runway ends from the runway database, where two geospatial elements were reported for a runway. The dataset contains runwa...

107 attributes | 19850 locations | ⬇️ ⭐



Airports *(from Open Data)*
 USDOT_BTS
 The Airports dataset includes all official and operational aerodromes as of July 16, 2020 and is part of the U.S. Department of Transportation (USDOT)/Bureau of Transportation Statistics (BTS) National Transportation Atlas Database (NTAD). The Airports database is a geographic point database of official operational aerodromes in the United States and U.S. Territories. Attribute data is provided...

6 attributes | 404 locations | ⬇️ ⭐



Intermodal Freight Facilities – Air to Truck *(from Open Data)*
 USDOT_BTS
 The Air-Truck Intermodal Freight Facilities dataset as of January 15, 2019 includes air to truck intermodal freight facilities for the top 60 airports by total freight moved in 2017. This dataset is one of several layers in the Bureau of Transportation Statistics (BTS) Intermodal Freight Facility Database.

140 attributes | 7308 locations | ⬇️ ⭐



Runway Lines *(from Open Data – Transportation Infrastructure)*
 USDOT_BTS
 The Runway lines dataset is as of June 20, 2019 and is part of the U.S. Department of Transportation (USDOT)/Bureau of Transportation Statistics (BTS) National Transportation Atlas Database (NTAD). The geospatial Runways database contains runways in the United States and US territories containing information on the physical characteristics of the runways. This data layer c...

138 attributes | 11931 locations | ⬇️ ⭐



Runway Nonspatial *(from Open Data – Transportation Infrastructure)*
 USDOT_BTS
 The Runways table is as of June 20, 2019 and is part of the U.S. Department of Transportation (USDOT)/Bureau of Transportation Statistics (BTS) National Transportation Atlas Database (NTAD). The geospatial Runways database contains runways in the United States and US territories and contain information on the physical characteristics of the runways. This data layer contains runwa...

139 attributes | 4398 locations | ⬇️ ⭐



Runway Points *(from Open Data)*

Airports Open In ArcGIS | Comments (0) | Share | Download Dataset ▾ | APIs ▾

Details | Table | Charts

Description more ▾
 The Airports dataset includes all official and operational aerodromes as of July 16, 2020 and is part of the U.S. Department of Transportation (USDOT)/Bureau of Transportation Statistics (BTS) National Transportation Atlas Database (NTAD). The Airports database is a geographic point database of official operational aerodromes in the United States and U.S. Territories. Attribute data is provided on the physical and operational characteristics of the aerodrome, current usage

About
 Open Data
 By USDOT_BTS
 Updated: 18 days ago
 Data available to the open data portal.
 Source <https://geo.dot.gov/server/rest/services/NTA/Metadata/Airports>
 License No license specified

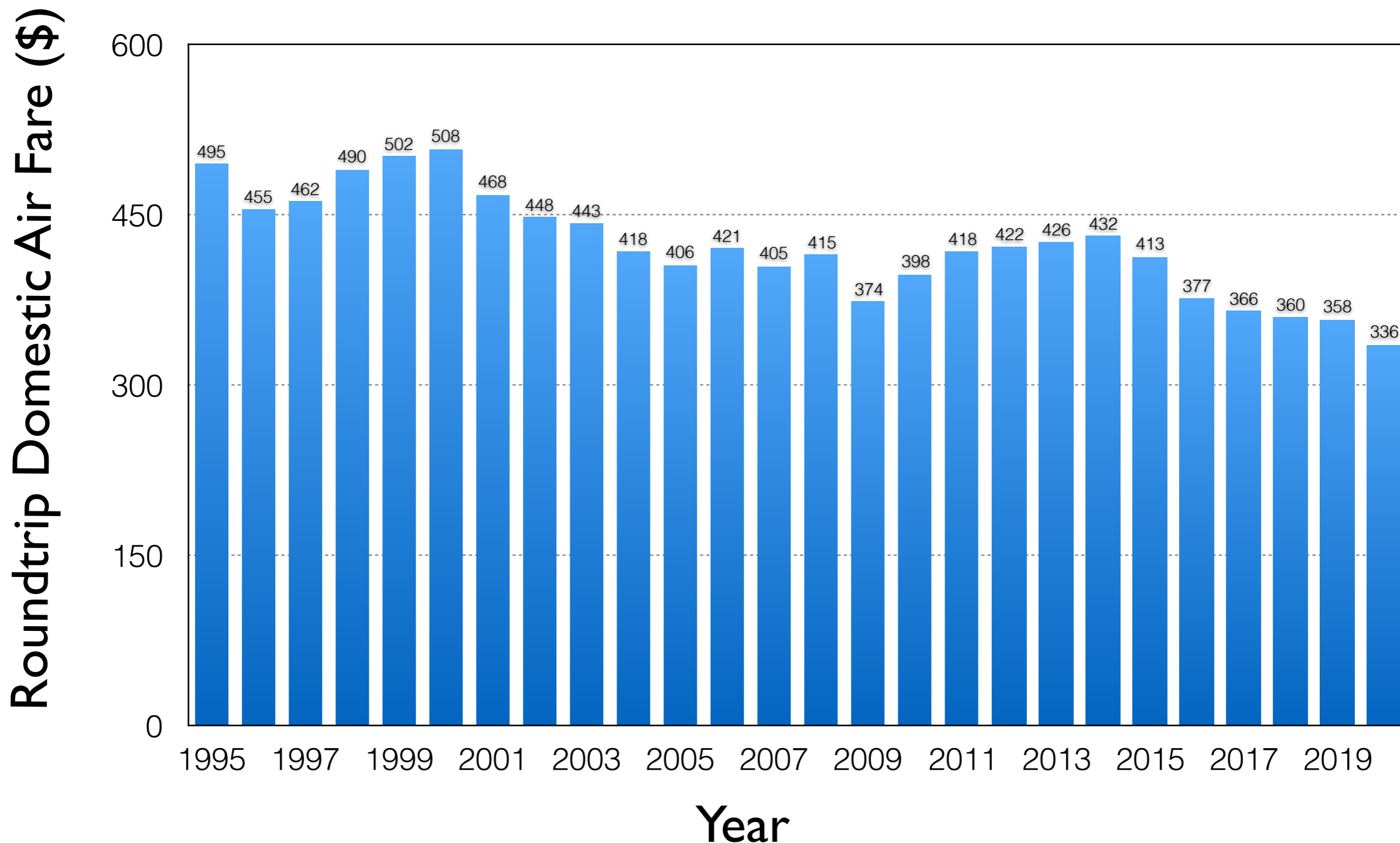
Dataset Attributes

Rec_Type Text	APT (19850)
Site_Num Text	04104.*A (1), 03738.5*A (1), 03394.45*A (1), 11914.02*H (1), 04727.2*H (1), 00952.*A (1), 25725.2*H (1)... (993 more)
Fac_Type Text	AIRPORT (13235), HELIPORT (5935), SEAPLANE BASE (517), ULTRALIGHT (114), GLIDERPORT (36), BALLOONPORT (13)
Loc_Id	1QK (1), SN22 (1), 49MN (1), 48G (1), C43 (1), MI48 (1), ME27 (1), 08B

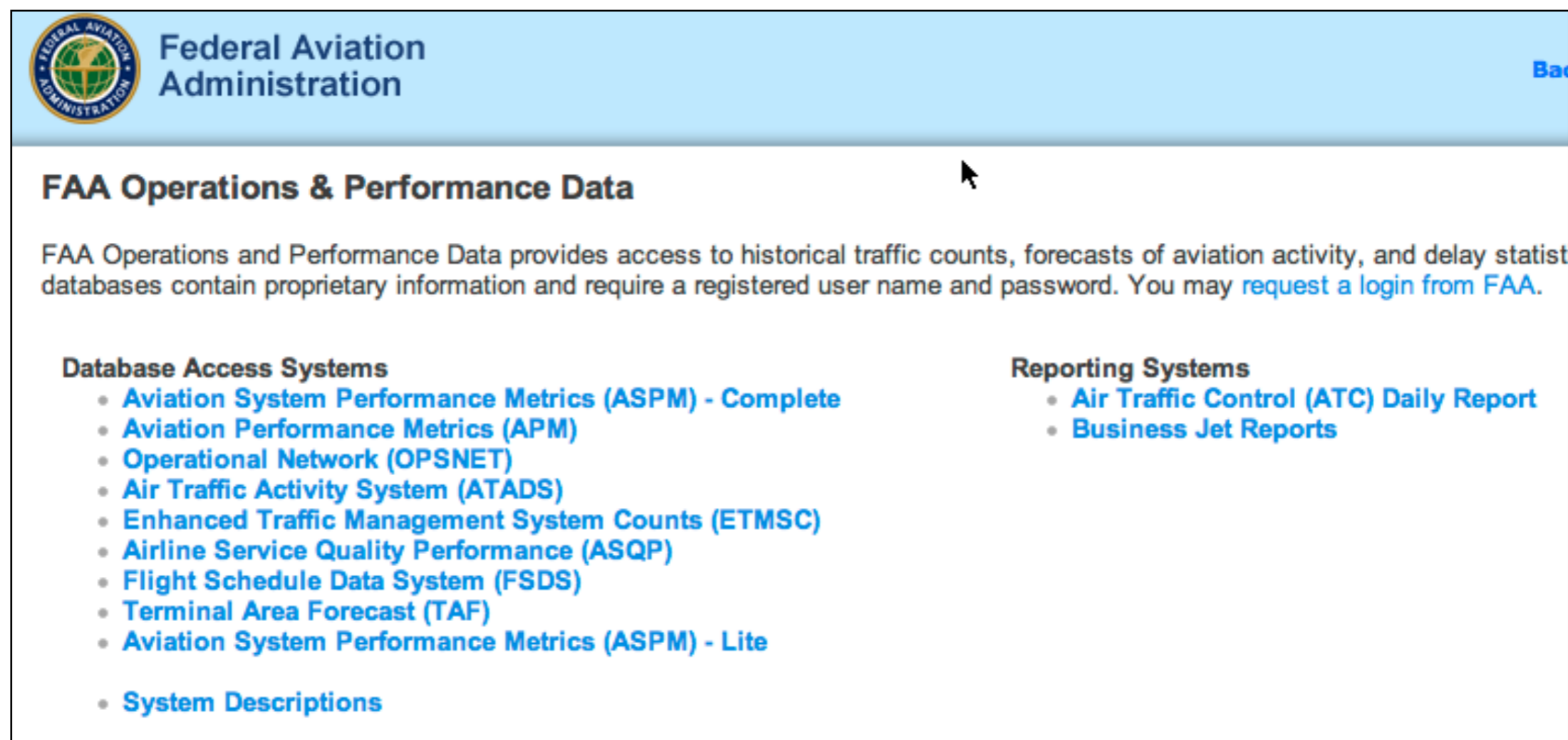
Tags
 Aviation | NTAD | National Transportation Atlas Database | National | Transportation | Atlas | Database | United States | United | States | National | Aviation | Airports | US | United | State | NTAD | National | Transportation | Atlas | Structures | Airport | Balloonport | Gliderport | Heliport | Seaplane Base | Ultralight

Bureau of Transportation Statistics

(Air Fares over Time - Inflation Adjusted \$2020)



- Operations and Performance Database
- FAA Operations and Performance Data (<http://aspm.faa.gov/>)
- Contains airline and FAA traffic statistics
- Terminal Area Forecast contains past and future airport demand
- Secured web site (public access only to the Terminal Area Forecast)



The screenshot shows the FAA Operations & Performance Data website. At the top left is the Federal Aviation Administration logo. The main heading is "FAA Operations & Performance Data". Below this, a paragraph states: "FAA Operations and Performance Data provides access to historical traffic counts, forecasts of aviation activity, and delay statistics. Some databases contain proprietary information and require a registered user name and password. You may [request a login from FAA](#)." The page is divided into two columns of links. The left column is titled "Database Access Systems" and lists: Aviation System Performance Metrics (ASPM) - Complete, Aviation Performance Metrics (APM), Operational Network (OPSNET), Air Traffic Activity System (ATADS), Enhanced Traffic Management System Counts (ETMSC), Airline Service Quality Performance (ASQP), Flight Schedule Data System (FSDS), Terminal Area Forecast (TAF), Aviation System Performance Metrics (ASPM) - Lite, and System Descriptions. The right column is titled "Reporting Systems" and lists: Air Traffic Control (ATC) Daily Report and Business Jet Reports.

- FAA Operations and Performance Database
- Sample Java Applet to enter Terminal Area Forecast (TAF) queries
- 3368 airport facilities (all across the U.S.)

Federal Aviation Administration

Back to FAA Operations

Terminal Area Forecast (TAF)

Select a Different Operations

- Query Data
- Download Report
- Detailed 2009 Model
- Download 2009 Data
- 2008 TAF Changes
- Detailed 2008 Model
- Detailed 2007 Model
- Detailed 2006 Model
- Detailed Models prior to 2006
- What's New

Facility
 State
 Region
 All

Detail Report
 Summary Report

From: 1...
To: 2...

Find:

MGM - MONTGOMERY RGNL
MGN - HARBOR SPRINGS
MGR - MOULTRIE MUNI
MGW - MORGANTOWN MUNI-
MGY - DAYTON-WRIGHT
MHE - MITCHELL MUNI
MHK - MANHATTAN RGNL
MHL - MARSHALL MEMORIAL
MUM - MINCHUMINA

Clear Selected Facilities

Create File

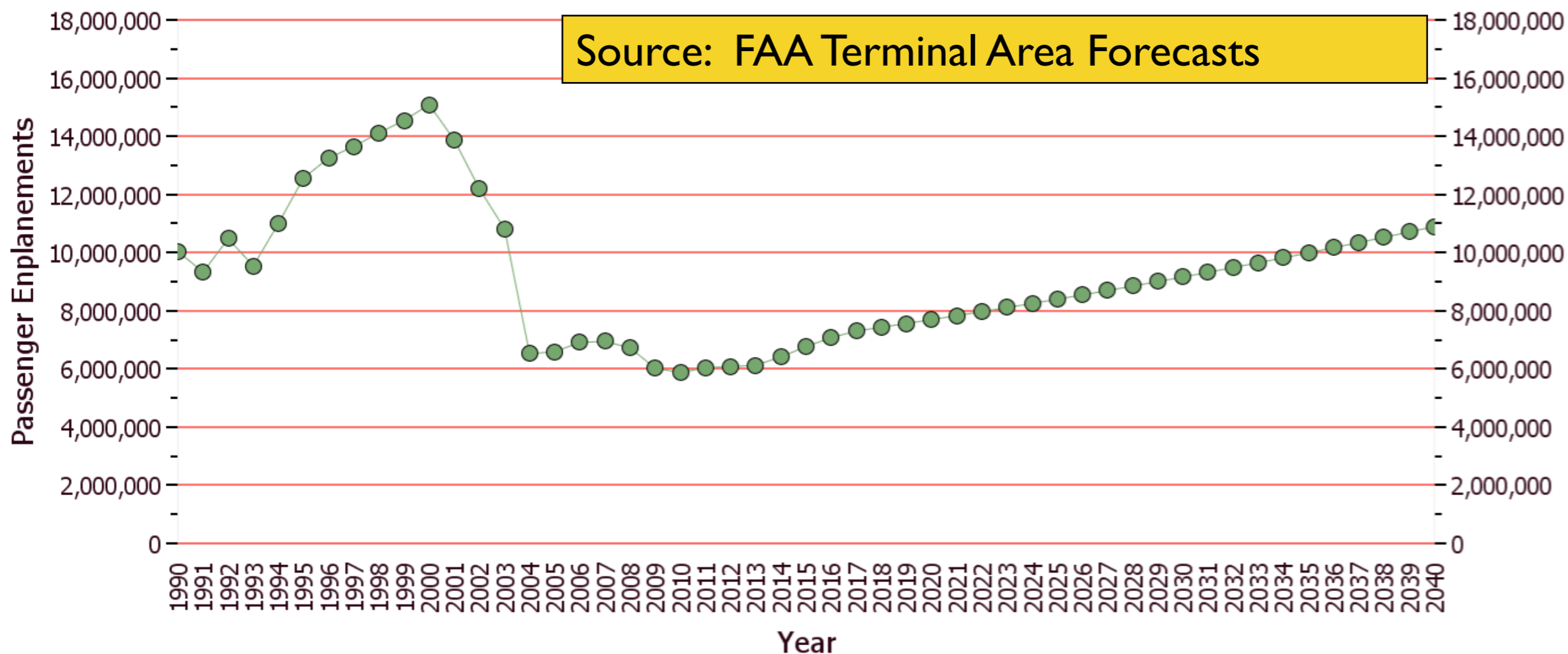
Change Filters

Ready.

If you do not see the query menu, then please go to Java.com to download the free Java software.

FAA Terminal Area Forecast Data

- I exported the data to a database manager (Filemaker or Microsoft Access) and made a plot to make the data more intuitive
- St. Louis International passenger demand forecasts over time



- **FAA Operations and Performance Database**
- ASPM - Aviation System Performance Metric
- 77 airport facilities (large and medium hub airports)
- Provides information on actual flight operations, delays, airline performance, taxi times, etc.

Aviation Performance Metrics : Airport Analysis : All Flights Report

From 8/11/2010 To 8/11/2010 | Airport=LAX : Use Flight Plan

Facility	Hour	Scheduled Departures	Scheduled Arrivals	Departures For Metric Computation	Arrivals For Metric Computation	% On-Time Gate Departures	% On-Time Airport Departures	% On-Time Gate Arrivals	Average Gate Departure Delay	Average Taxi Out Time	Average Taxi Out Delay	Average Airport Departure Delay	Average Airborne Delay
LAX	0	12	10	7	9	100.00	100.00	88.89	1.86	15.71	2.60	3.57	0.44
LAX	1	14	0	7	0	71.43	57.14	0.00	10.71	13.29	1.89	12.57	0
LAX	2	4	1	4	2	75.00	75.00	100.00	10	11	0.80	10.75	8
LAX	3	4	1	3	3	100.00	100.00	100.00	2.67	12.67	2.13	4.67	0
LAX	4	2	5	4	10	100.00	100.00	100.00	1.50	10.25	0.38	1.75	0
LAX	5	1	12	5	15	80.00	80.00	86.67	5.40	13.20	3.06	8.20	0.67
LAX	6	41	16	45	14	91.11	91.11	78.57	4.96	13.67	2.92	7.22	2.79
LAX	7	53	33	54	27	92.59	85.19	100.00	5.93	15.56	4.36	9.57	3.37
LAX	8	62	33	59	31	89.83	86.44	93.55	5.56	13.19	2.07	7.25	1.97
LAX	9	36	54	33	51	78.79	66.67	92.16	13.18	15.64	4.76	17.64	1.80
LAX	10	52	43	50	40	92.00	70.00	92.50	8.54	16.96	5.39	13.42	2.53
LAX	11	50	50	49	49	83.67	81.63	71.43	12.39	14.20	3.44	15.55	2.61

Sample Database Created at the Virginia Tech Air Transportation Lab

Aircraft Landing Events Database





<https://www.atsl.cee.vt.edu>

Landing Event Database Tool Version 1.2.2

Landing Events Database - [Landing Events Database]

- ATL
- BDL
- BOS
- BWI
- CLE
- CLT
- DCA
- DEN
- DFW
- DTW
- EWR
- FLL
- HNL
- HOU
- IAD
- IAH
- JFK
- LAS
- LAX
- LGA
- MCO
- MDW
- MEM
- MIA
- MKE
- MSP
- ORD
- PHL
- PHX
- PVD
- SAN
- SDF
- SEA
- SFO
- SLC
- SNA
- STL

Landing Events Database

Version 1.2.2

Virginia Tech - Air Transportation Systems Lab

Dr. Antonio Trani (Team Leader) Mani Bhargava Reddy Bollempalli
 Nicolas Hinze (Team Co-Leader) Mihir Rimjha
 Navid Mirmohammadsadeghi Arman Izadi

FAA - Project Sponsors

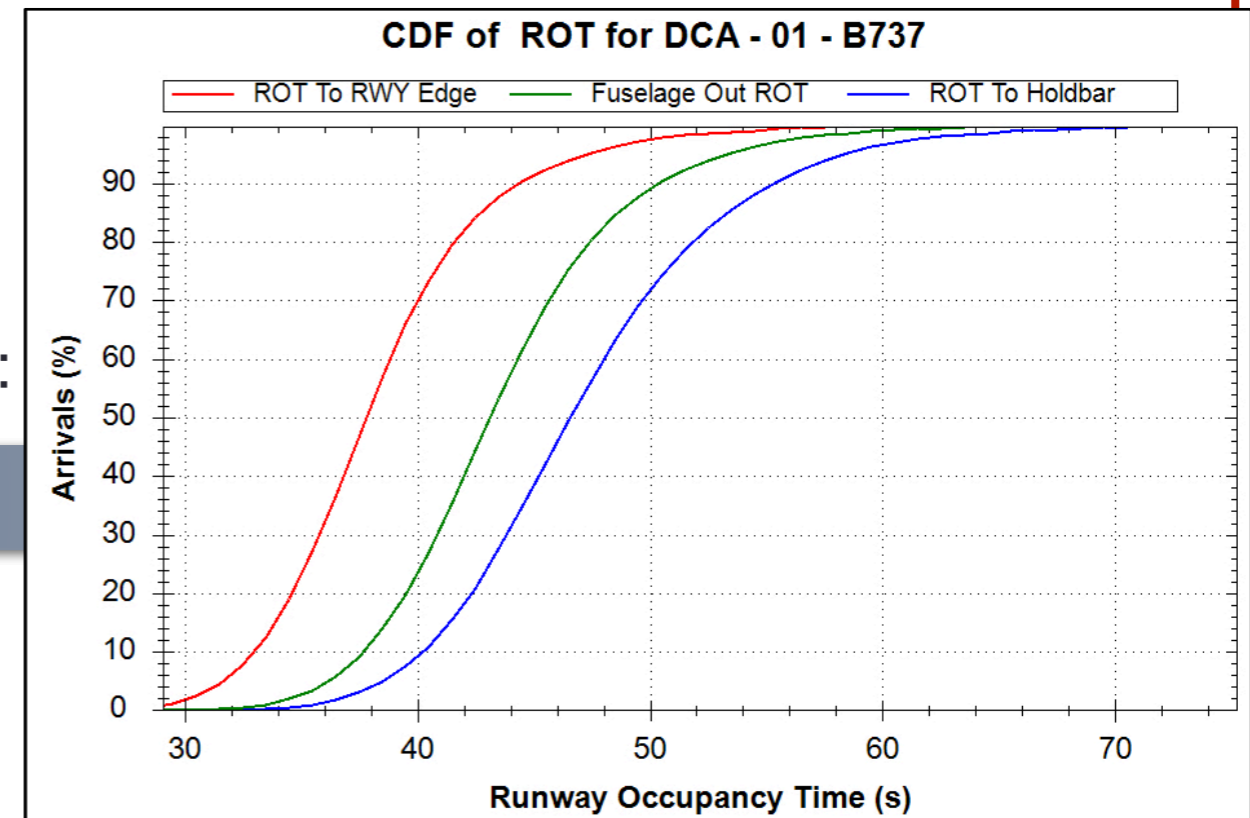
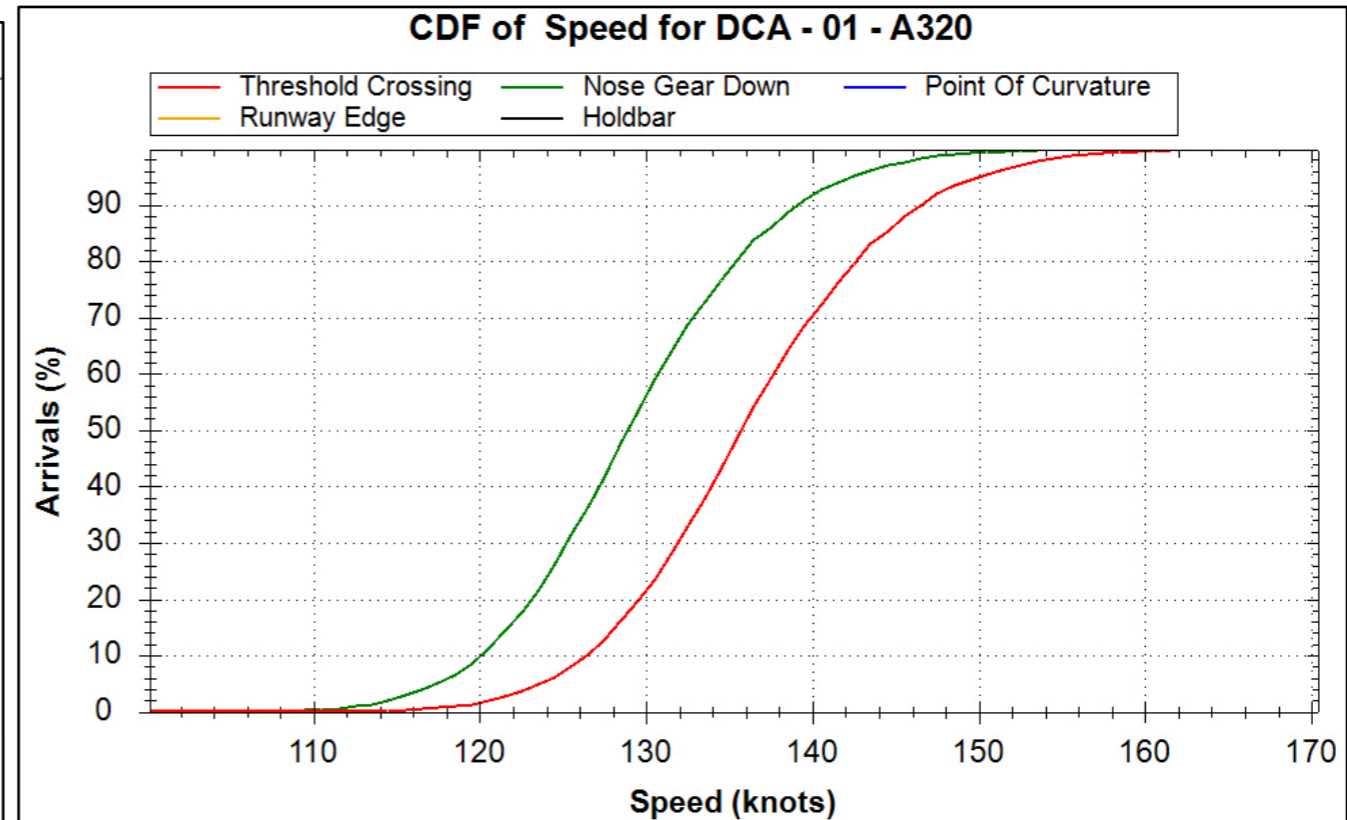
Kent Duffy FAA Airports Planning and Environmental Division (APP-400)
 Lauren Vitagliano FAA William J. Hughes Technical Center

For technical questions about this software please contact Nicolas Hinze (nhinze@vt.edu) directly.

Data contained in this dataset is being released for interim evaluation by industry stakeholders and is subject to change as the REDIM update is finalized.

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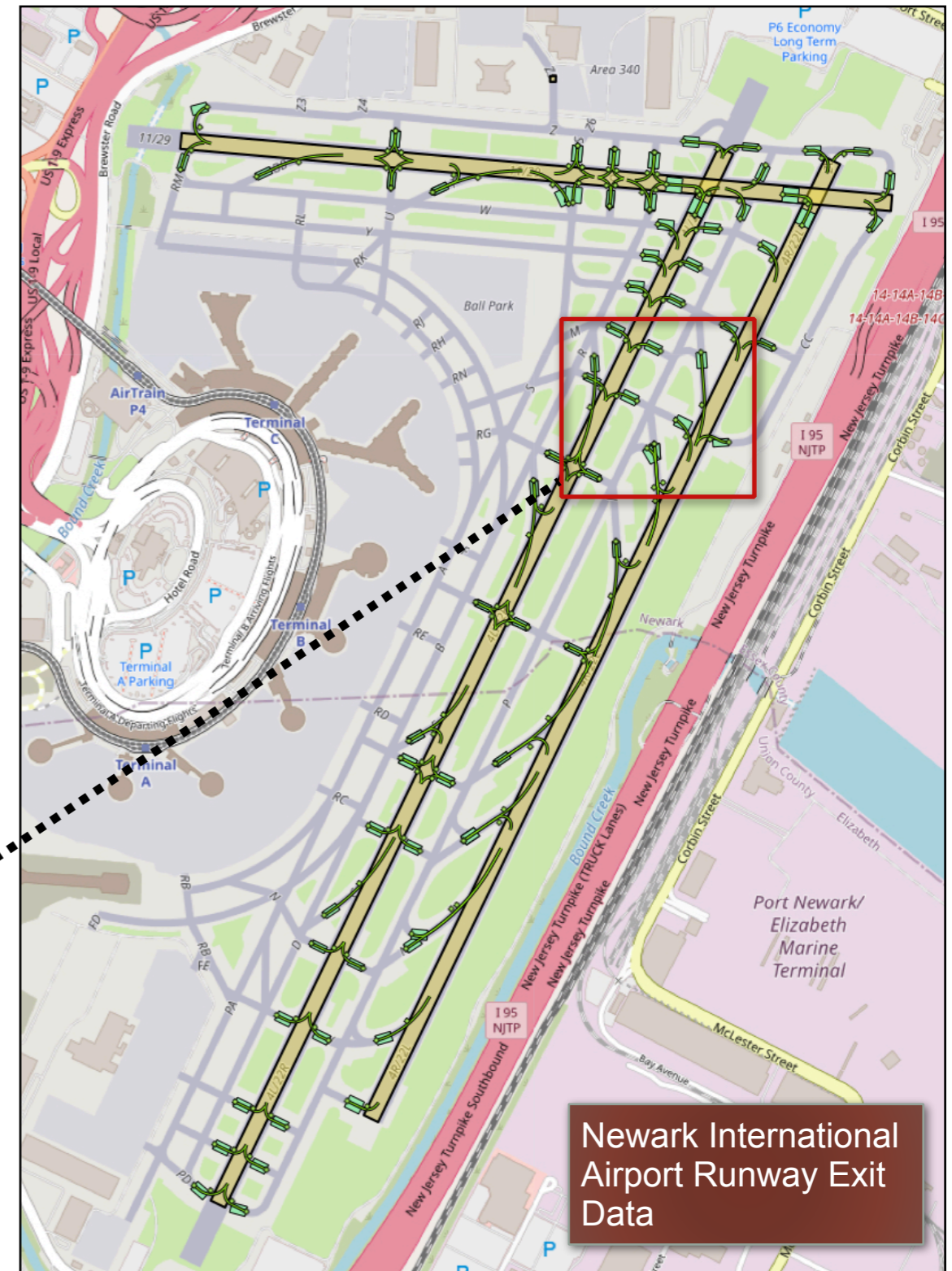


Landing database client can be downloaded at:

<https://www.atsl.cee.vt.edu/products/redim.html>

Landing Events Database : Data Collection

- ASDE-X data
 - 11.8 million landings (12 TB data)
 - Years 2015 and 2016
- Runway exit geometry information for 3,385 runway exits at 292 runways (top 37 airports)
- One and 5-minute weather data for all 37 airports
- Video data to validate the aircraft touchdown location algorithms



Runway exit polygons at EWR airport



Newark International Airport Runway Exit Data

Landing Event Database Tool (I)

Analysis	Purpose	Metrics and Ready-Made Query Options
Aircraft Mix	Provides an overview of aircraft fleet mix in the form of a pie chart with the top 10 aircraft in the fleet mix presented.	By runway By runway exit
Runway Occupancy Time	Provides three values of runway occupancy time measured at three locations: 1.Runway edge 2.Fuselage out 3.At hold bar	1.Average ROT (in seconds) by runway, runway exit and aircraft 2.Median ROT (in seconds) by runway, runway exit and aircraft 3.Probability Density Function (PDF) of ROT (dim) by runway, runway exit and aircraft 4.Cumulative density function of ROT by runway, runway exit and aircraft 5.Runway exit utilization (percentage) by runway exit and aircraft
Speed	Provides information about five aircraft ground speeds at different locations of the landing profile: 1.Threshold 2.Nose gear down 3.Point of curvature 4.Runway edge 5.Hold bar	1.Average ROT (in seconds) by runway, runway exit and aircraft 2.Median ROT (in seconds) by runway, runway exit and aircraft 3.Probability Density Function (PDF) of ROT (dim) by runway, runway exit and aircraft 4.Cumulative density function of ROT by runway, runway exit and aircraft 5.Detailed speed profiles as a function of distance by aircraft, runway and runway exit 6.Detailed speed profiles as a function of time by aircraft, runway and runway exit
Nose Gear Location	Provides estimates of nose gear distance. The nose gear distance is estimated in the landing algorithm to initiate the nominal deceleration.	1.Nose gear distance from runway landing threshold by runway, aircraft and runway exit 2.Probability Density Function (PDF) of nose gear distance (feet or meters) by runway, runway exit and aircraft 3.Cumulative density function of nose gear distance (feet or meters) by runway, runway exit and aircraft



Landing Event Database Tool (2)

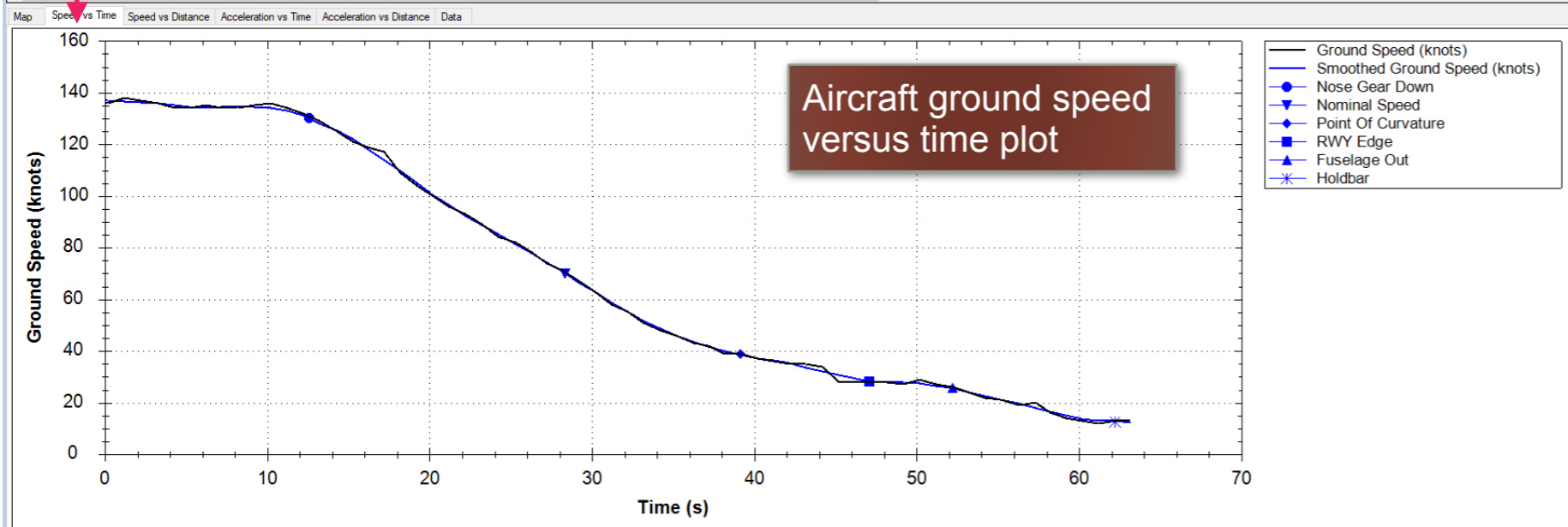
Analysis	Purpose	Metrics and Ready-Made Query Options
Deceleration	<p>Provides two values of aircraft deceleration on the runway:</p> <p>Nominal</p> <p>Nominal location to point of curvature (Nominal to PC)</p>	<p>Average deceleration (in m/s²) by runway, runway exit and aircraft</p> <p>Median deceleration (in m/s²) by runway, runway exit and aircraft</p> <p>Probability Density Function (PDF) of deceleration (in m/s²) by runway, runway exit and aircraft (both average and median values can be plotted)</p> <p>Cumulative density function of aircraft deceleration (in m/s²) by runway, runway exit and aircraft (both average and median values can be plotted)</p>
Raw Data	<p>Provides detailed information (in a table) on 30 key parameters for every landing contained in the Landing Events Database.</p> <p>Provides graphical information of every landing in the database.</p> <p>Provides a graphical depiction of individual landings in a Microsoft NAVTEQ map layer (bottom viewport)</p>	<p>30 key parameters defining the landing profile of each landing operation. Parameters include: flight ID, aircraft type, runway, runway exit use, time of operation, nose gear touchdown distance and time, nominal deceleration, deceleration from nominal point to PC, exit speed, and airport wind conditions.</p> <p>Speed-distance profile of each landing event</p> <p>Speed-time profile of each landing event</p> <p>Acceleration-time profile of each landing event</p> <p>Acceleration-distance profile of each landing event</p> <p>Processed numerical data with speed, acceleration, distance and time for individual landings.</p>
Statistics	<p>Summarizes the landing statistics processed by airport by month.</p>	<p>Total landing records</p> <p>Valid records</p> <p>Number of records with missing parameters</p> <p>Number of records with unreasonable parameters</p> <p>Records with no associated runway</p> <p>Go-around records</p>

Landing Database Raw Data Viewer

Flight ID	Aircraft	Runway	Exit	Enter Time	Exit Time	Nose Gear Down (s)	Nose Gear Down (ft)	Nominal Speed Time (s)	Nominal Speed Distance (ft)	Point Of Curvature Time (s)	Point Of Curvature Distance (ft)	ROT Edge (s)	ROT Fuselage (s)	ROT Holdbar (s)	Threshold Crossing Speed (kts)	Nose Gear Down Speed (kts)	Nominal Speed (kts)	Exiting Speed (kts)	ROT Edge Speed (kts)	ROT Fuselage Speed (kts)
DAL1639	A320	26R	B3	1/1/2015 9:3...	1/1/2015 9:...	13.7	3,040	30.2	5,603	37.2	6,280	42.9	47.3	52.1	132.0	125.4	70.0	48.6	41.1	34.8
DAL2133	A320	26R	B3	1/1/2015 9:4...	1/1/2015 9:...	12.4	2,741	28.2	5,110	42.3	6,280	49.8	55.3	63.2	131.3	124.7	70.0	37.0	29.0	25.2
NKS165	A320	26R	B3	1/1/2015 9:4...	1/1/2015 9:...	12.6	2,844	28.3	5,381	39.1	6,280	47.1	52.2	62.2	136.9	130.0	70.0	38.7	28.1	25.6
DAL390	A320	26R	B3	1/1/2015 11:...	1/1/2015 1:...	11.2	2,629	28.9	5,522	37.3	6,280	45.3	52.3	62.3	142.0	134.9	70.0	42.5	23.6	22.2
DAL1799	A320	26R	B3	1/2/2015 1:3...	1/2/2015 1:...	10.7	2,400	28.5	5,328	41.1	6,280	49.9	56.4	66.1	135.7	128.9	70.0	32.5	26.0	19.6
DAL1702	A320	26R	B3	1/2/2015 9:5...	1/2/2015 9:...	11.4	2,657	27.0	5,288	40.0	6,280	47.8	51.3	58.9	141.6	134.6	70.0	35.2	31.9	30.8



Flight ID	Aircraft	Runway	Exit	Enter Time	Exit Time	Nose Gear Down (s)	Nose Gear Down (ft)	Nominal Speed Time (s)	Nominal Speed Distance (ft)	Point Of Curvature Time (s)	Point Of Curvature Distance (ft)	ROT Edge (s)	ROT Fuselage (s)	ROT Holdbar (s)	Threshold Crossing Speed (kts)	Nose Gear Down Speed (kts)
DAL95	A320	26R	B3	1/1/2015 12:...	1/1/2015 1:...	13.2	2,894	28.7	5,347	40.7	6,280	49.6	55.9	69.1	131.3	124.7
DAL1931	A320	26R	B3	1/1/2015 2:2...	1/1/2015 2:...	12.7	2,902	29.3	5,576	38.4	6,280	46.1	52.4	58.9	137.8	130.9
DAL1939	A320	26R	B3	1/1/2015 2:4...	1/1/2015 2:...	10.2	2,777	29.2	5,404	40.2	6,280	47.2	52.3	61.4	136.9	130.1



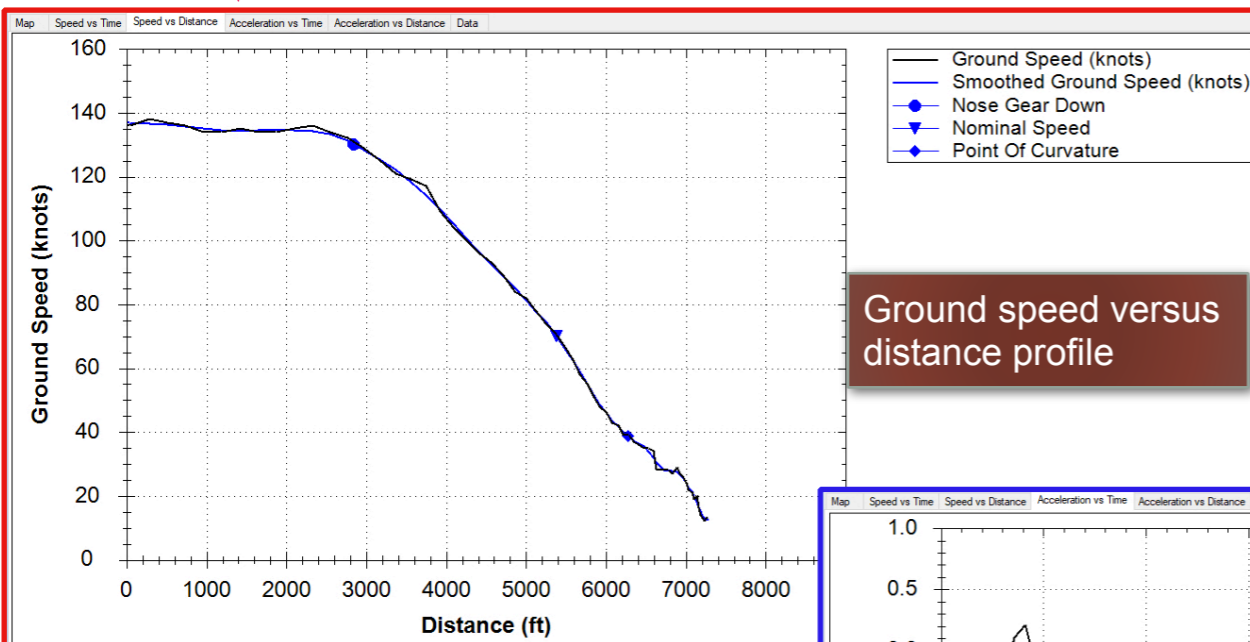
Spirit Airlines Airbus A320

Landing Database Raw Data Viewer (2)

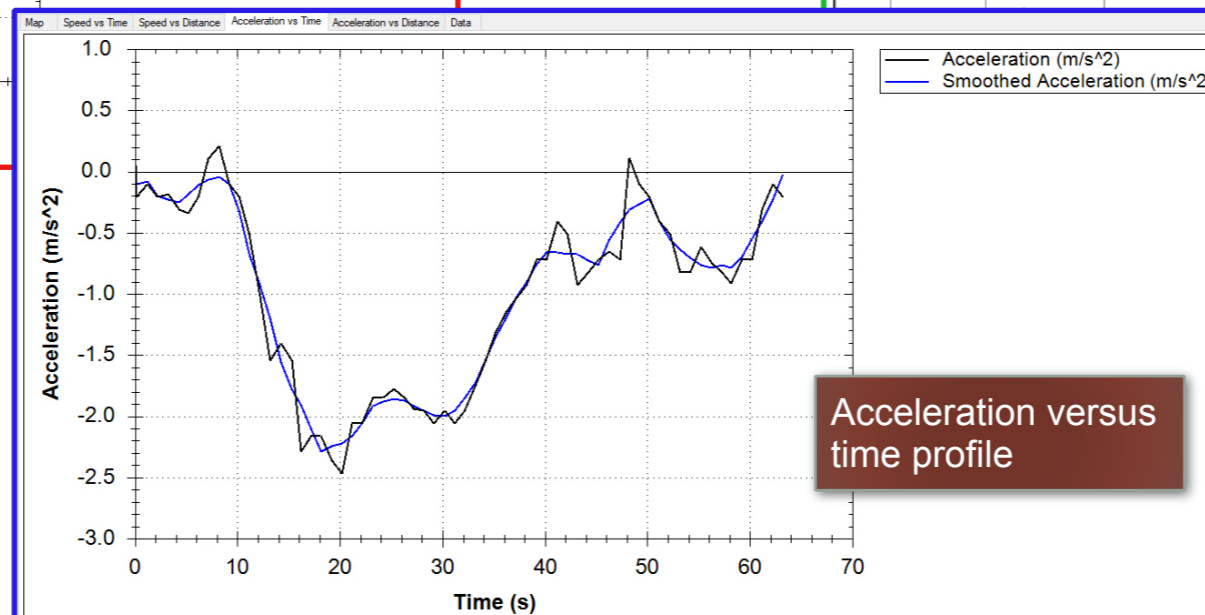
Flight ID	Aircraft	Runway	Exit	Enter Time	Exit Time	Nose Gear Down (s)	Nose Gear Down (ft)	Nominal Speed Time (s)	Nominal Speed Distance (ft)	Point Of Curvature Time (s)	Point Of Curvature Distance (ft)
DAL95	A320	26R	B3	1/1/2015 12:...	1/1/2015 1...	13.2	2,894	28.7	5,347	40.7	6,280
DAL1591	A320	26R	B3	1/1/2015 2:2...	1/1/2015 2:...	12.7	2,902	29.3	5,576	38.4	6,280
DAL 2539	A320	26R	B3	1/1/2015 2:4...	1/1/2015 2:...	10.2	2,277	29.2	5,404	40.2	6,280



Spirit Airlines Airbus A320



Every landing can be examined in detail (Airbus A320 example)

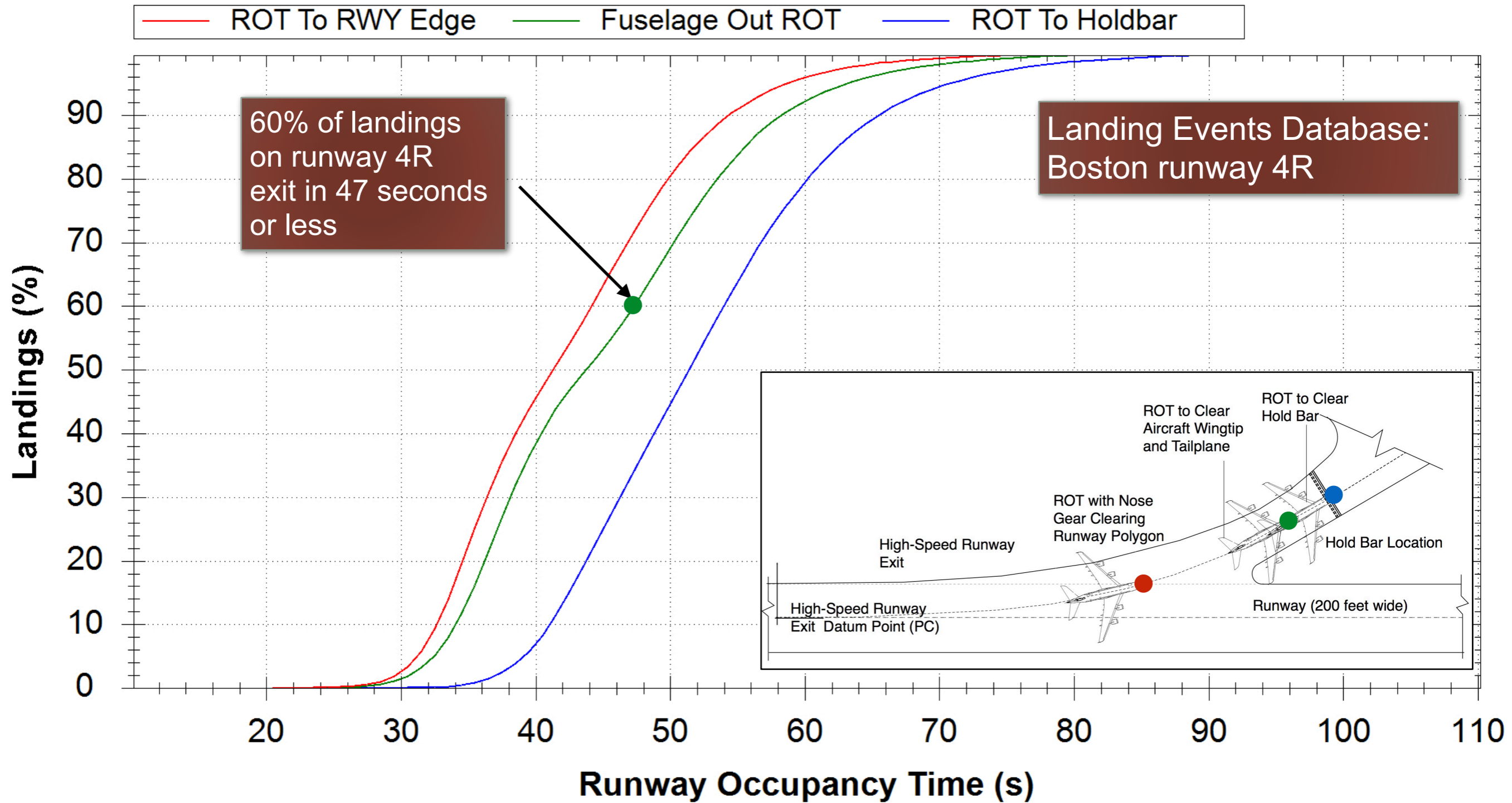


Time (s)	Speed (kts)	Smoothed Speed (kts)	Distance (ft)	Acceleration (m/s ²)	Smoothed Acceleration (m/s ²)
0.0	136.0	136.9	0	0.3	-0.1
0.2	136.0	136.8	46	-0.2	-0.1
1.2	138.0	136.6	286	-0.1	-0.1
2.2	137.0	136.2	516	-0.2	-0.2
3.3	136.0	135.8	741	-0.2	-0.2
4.3	134.0	135.2	965	-0.3	-0.3
5.2	134.0	134.6	1,190	-0.3	-0.2
6.2	135.0	134.2	1,419	-0.2	-0.1
7.2	134.0	134.4	1,645	0.1	-0.1
8.2	134.0	134.8	1,870	0.2	0.0
9.2	135.0	134.6	2,100	-0.1	-0.1
10.2	136.0	134.2	2,331	-0.2	-0.3
11.2	134.0	133.2	2,550	-0.5	-0.7
12.2	132.0	131.2	2,765	-1.0	-0.9
2.973			2,973	-1.5	-1.2
3.171			3,171	-1.4	-1.6
3.367			3,367	-1.5	-1.8
3.561			3,561	-2.3	-1.9
3.752			3,752	-2.2	-2.1
3.922			3,922	-2.2	-2.3
4.090			4,090	-2.4	-2.2
4.253			4,253	-2.5	-2.2



Three Definitions of Runway Occupancy Time

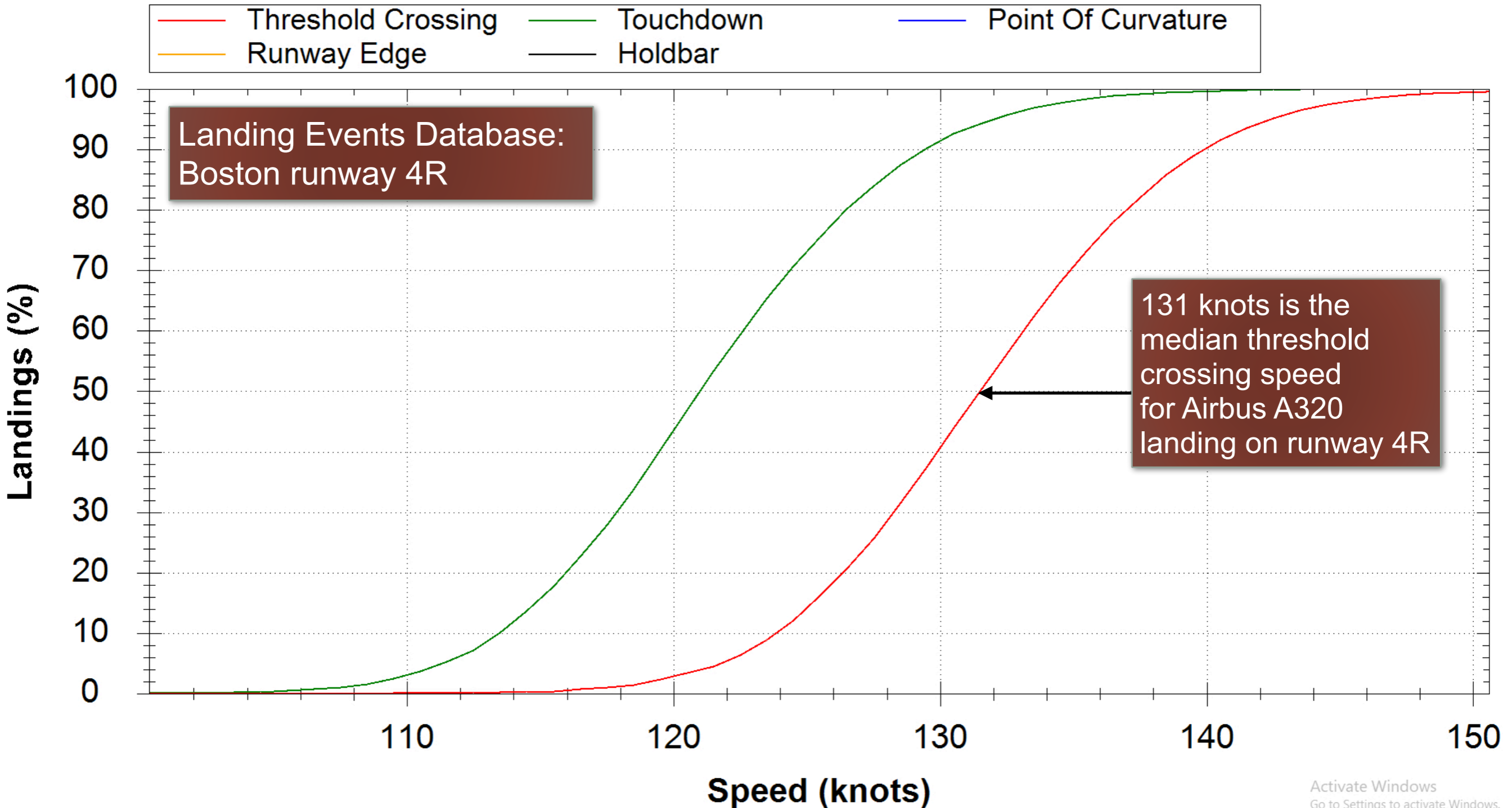
CDF of ROT for BOS - 04R





Ground Speed Distribution Over Runway Threshold

CDF of Speed for BOS - 04R - A320



Activate Windows
Go to Settings to activate Windows.



Runway Occupancy Time Tables

Landing Events Database

- ATL
 - Aircraft Mix
 - Runway Occupancy Time**
 - Speed
 - Nose Gear Down Location
 - Deceleration
 - Raw Data
 - Statistics
- BDL
- BOS
- BWI
- CLE
- CLT
- DCA
- DEN
- DFW
- DTW
- EWR
- FLL
- HNL
- HOU
- MKE
- MSP
- ORD
- PHL
- PHX
- PVD
- SAN
- SDF
- SEA
- SFO
- SLC
- SNA
- STL

ATL - Runway Occupancy Time (ROT) Analysis

Runway: 08L | ROT Type: Fuselage Out | Query

By Aircraft | Distribution | Table

Fuselage Out ROT for ATL - 08L

Aircraft	A	A4	A6-1	A6-2	B11	B13	B15	B5	B7	C-L	C-R	D-L	D-R	Average
A124						114.2s 100.0%								114.2s
A306	90.0s 3.0%		62.2s 33.3%	61.8s 53.3%	44.5s 0.3%					47.6s 2.0%		52.7s 8.1%		61.7s
A310			62.5s 45.5%	60.6s 34.1%						49.2s 2.3%				
A319	75.6s 0.0%			59.8s 0.2%	50.5s 77.3%	71.2s 1.2%	78.7s 0.0%	36.2s 0.0%	41.3s 14.9%	47.6s 0.0%				
A320	81.9s 0.0%			54.4s 0.1%	48.7s 89.4%	70.3s 3.1%	69.3s 0.1%		40.6s 5.0%					
A321	83.0s 0.1%		57.3s 0.1%	53.8s 0.3%	47.8s 81.3%	69.4s 14.2%	75.7s 0.4%		39.8s 3.0%					
A332					56.2s 77.8%	78.3s 20.4%	72.1s 1.9%							
A333					54.0s 81.1%	75.0s 16.3%	80.8s 1.1%		48.4s 0.8%					
A343					56.3s 67.1%	79.1s 30.4%	82.1s 1.3%		49.8s 1.3%					
A346					54.5s 71.6%	80.0s 28.4%								
AC50										55.0s 10.0%				
AC90										46.0s 10.0%				
AC95										59.0s 10.0%				
AEST				68.3s 16.7%						70.3s 33.3%		69.8s 50.0%		69.7s
ASTR				53.1s 31.3%						43.4s 18.8%		45.8s 50.0%		47.6s
AT43		34.1s 16.7%								47.1s 16.7%		51.8s 66.7%		48.1s
AT72										44.1s 50.0%		49.0s 50.0%		46.5s
B190				61.1s 0.4%						47.2s 53.6%		50.2s 45.9%		48.7s
B350		38.0s 8.8%								50.5s 59.3%		53.5s 31.9%		50.3s
B712	72.0s 0.0%			48.1s 0.1%	46.3s 94.6%	66.6s 0.8%	65.9s 0.0%		38.8s 3.7%		40.6s 0.2%		42.8s 0.6%	46.2s
B732				51.1s 100.0%										51.1s
B733				53.9s 0.1%	47.7s 68.9%	67.7s 0.4%		39.5s 20.7%		41.6s 3.1%	45.8s 0.1%	43.0s 6.8%		45.6s
B734	70.6s 5.1%			52.2s 79.5%	51.5s 1.7%	71.7s 0.9%	78.3s 0.9%			43.2s 3.4%		45.8s 8.5%		52.7s
B735				55.6s 33.3%	48.6s 33.3%								43.1s 33.3%	49.1s

Step 1
Runway
Occupancy Time

Step 2
Select runway

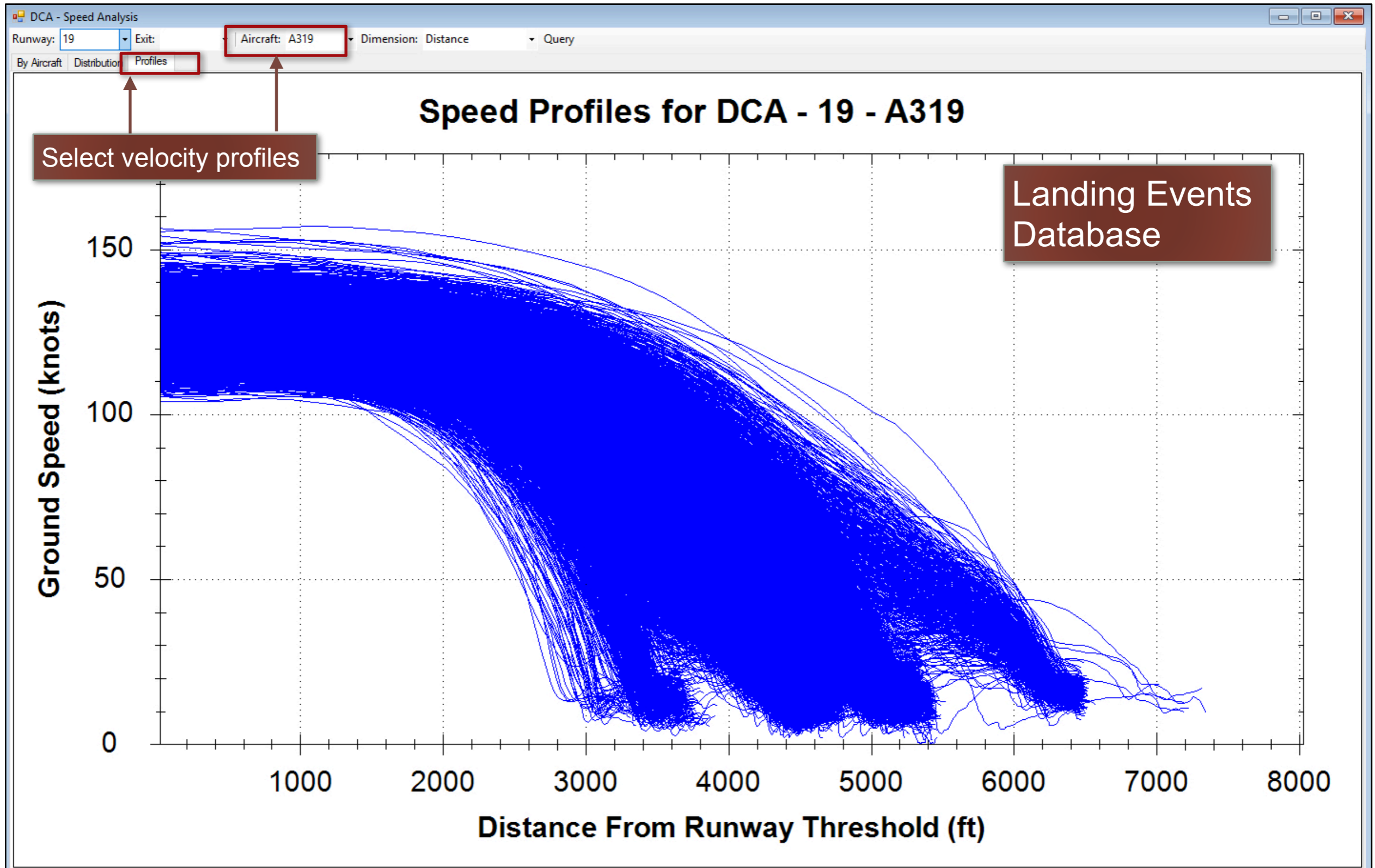
Step 3
Select ROT Table
1) ROT to runway edge
2) ROT to clear runway
3) ROT to hold bar

Step 4
Plot (query)

Cells in table show:
1) Average runway
occupancy time
by runway exit at
the selected
runway
2) Percent of aircraft
using each
runway exit



Aircraft Velocity Profiles : Airbus A319 at DCA Runway 19



Landing Event Database Quick User Guide

Runway Use and Landing Events Database (version 1.2.2): Quick User Guide

N. Hinze, N. Mirmohammadsadeghi, M. Bollempalli, A. Izadi, M. Rimjha, and A. Trani

Air Transportation Systems Laboratory

Virginia Tech

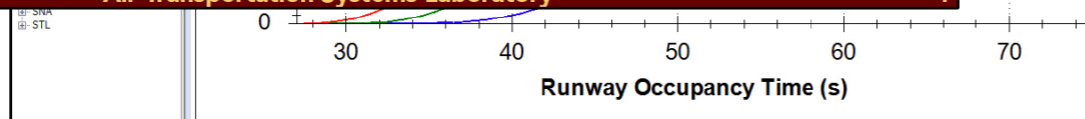
January 15, 2020



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	<ol style="list-style-type: none"> Nose gear down Point of curvature Runway edge Hold bar 	<ol style="list-style-type: none"> Cumulative density function of ROT by runway, runway exit and aircraft Detailed speed profiles as a function of distance by aircraft, runway and runway exit Detailed speed profiles as a function of time by aircraft, runway and runway exit
Nose Gear Location	Provides estimates of nose gear distance. The nose gear distance is estimated in the landing algorithm to initiate the nominal deceleration.	<ol style="list-style-type: none"> Nose gear distance from runway landing threshold by runway, aircraft and runway exit Probability Density Function (PDF) of nose gear distance (feet or meters) by runway, runway exit and aircraft Cumulative density function of nose gear distance (feet or meters) by runway, runway exit and aircraft

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Landing Database Quick User Guide document available at:
<https://www.atsl.cee.vt.edu/products/redim.html>

Probability Density

Step 4
(query)

Range	Runway Edge	Fuselage Out
<28	6	0
28 - 29	26	0
29 - 30	60	1
30 - 31	198	4
31 - 32	389	17
32 - 33	637	54
33 - 34	897	156
	1177	275
	1405	475
	1632	706
	1880	939
	2269	1213
39 - 40	2862	1417
41 - 42	3377	1866
43 - 44	3912	2361
45 - 46	4467	2911
46 - 47	5042	3516
47 - 48	5637	4176
48 - 49	6252	4891
49 - 50	6887	5661
50 - 51	7542	6486
51 - 52	8217	7366
52 - 53	8912	8306
53 - 54	9627	9306
54 - 55	10362	10366
55 - 56	11117	11486
56 - 57	11892	12666
57 - 58	12687	13906
58 - 59	13502	15206
59 - 60	14337	16566
60 - 61	15192	18086
61 - 62	16067	19766
62 - 63	16962	21606
63 - 64	17877	23606
64 - 65	18812	25766
65 - 66	19767	28086
66 - 67	20742	30566
67 - 68	21737	33206
68 - 69	22752	35906
69 - 70	23787	38766
70 - 71	24842	41786
71 - 72	25917	44966
72 - 73	27012	48306
73 - 74	28127	51806
74 - 75	29262	55466
75 - 76	30417	59286
76 - 77	31592	63366
77 - 78	32787	67706
78 - 79	34002	72306
79 - 80	35237	77166
80 - 81	36492	82286
81 - 82	37767	87666
82 - 83	39062	93306
83 - 84	40387	99166
84 - 85	41732	105266
85 - 86	43097	111606
86 - 87	44482	118186
87 - 88	45887	125006
88 - 89	47312	132066
89 - 90	48757	139366
90 - 91	50222	146906
91 - 92	51707	154686
92 - 93	53212	162706
93 - 94	54737	170966
94 - 95	56282	179466
95 - 96	57847	188206
96 - 97	59432	197186
97 - 98	61037	206406
98 - 99	62662	215866
99 - 100	64307	225566

Probability Density Function (PDF)
Cumulative Density Function (CDF)

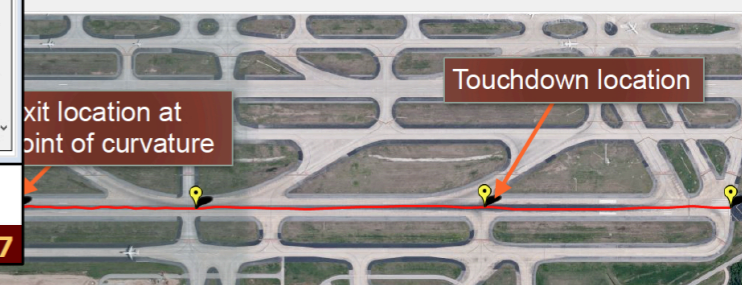
Table shows numerical values of each distribution

Landing Data Viewer

Step 3
Perform a Query

Roll Over #	Nominal Speed Time (s)	Nominal Speed Distance (ft)	Point Of Curvature Time (s)	Point Of Curvature Distance (ft)	ROT Edge (s)	ROT Fuselage (s)	ROT Holdbar (s)	Threshold Cross Speed (kts)
151	25.9	4.753	45.7	6.364	55.8	56.6	71.1	135.3
345	25.7	5.023	47.2	6.364	59.7	72.7	78.0	140.1
312	26.3	4.916	45.5	6.364	56.5	59.0	73.5	137.2
311	25.0	4.468	52.3	6.364	55.2	56.5	71.1	126.5
011	22.8	4.087	31.7	4.770	44.0	45.0	55.0	132.3
542	25.8	4.740	49.9	6.364	55.8	56.6	71.1	129.9
179	25.5	4.579	50.8	6.364	55.8	56.6	71.1	129.9
365	26.5	4.837	44.0	6.364	56.5	59.0	73.5	133.4
285	25.9	4.737	49.5	6.364	55.8	56.6	71.1	135.3
461	28.6	5.471	40.2	6.364	55.8	56.6	71.1	142.3
267	25.3	4.586	45.5	6.364	56.5	59.0	73.5	136.3
078	21.7	3.987	32.1	4.770	44.0	45.0	55.0	131.3
267	25.1	4.495	45.7	6.364	55.8	56.6	71.1	130.7
478	29.2	5.516	41.0	6.364	54.5	57.1	71.3	140.4
876	29.0	5.523	38.3	6.364	50.5	56.8	70.9	139.0
300	22.6	4.162	29.7	4.770	38.1	47.7	52.3	138.5

Table shows all the records found for the runway selected (can also filter by aircraft and by runway exit)



Exit location at point of curvature

Touchdown location

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