Community Group Meeting

SUNDAY MARCH 1, 2020
Agenda

- **INTRO**
  Case Studies on Community Involvement

- **Presentation:**
  Data Sources and Data Analysis Tools
  - Speakers:
    - Gene Reindel HMMH
    - Don Jackson The MONA Project

- **Group Discussion**
  How to measure success, using risk management concepts as a framework
  - Moderator Jennifer Landesmann
Overview/Introduction of Data Sources

- Federal Aviation Administration
  - Flight track and aircraft identification data
    - National Offload Program (NOP) – no longer available in 2020
    - System Wide Information Management (SWIM)
  - Aircraft operations data
    - Historical: Air Traffic Activity System (ATADS)
    - Forecast: Terminal Area Forecast (TAF)

- Airport Noise and Operations Monitoring System
  - Flight tracks and aircraft identification data
  - Weather data
  - Complaint data
  - Noise measurement data
  - Public web portals
The Metroplex Overflight Noise Analysis Project (MONA)

- **Principals:**
  - Juan J. Alonso, Don Jackson, Tom Rindfleisch

- **Objectives/Goals:**
  - Provide objective data, reports, and analyses to stakeholders and policy makers to inform decision making
    - *Objective, factual, archival, real-time* measurements of SF Bay Area regional aircraft traffic and the resulting ground noise impact
    - *Public, web-accessible visualizations* and analyses of data to facilitate understanding of observations and to monitor changes and anomalies, utilizing our archived measurements and collected data.
Data Sources: What Do We Collect?

- Aircraft positions and flights, sources:
  - ADS-B receiver network (real-time), using FlightAware with MONA enhancements
  - FAA SWIM data feeds for flight metadata (work in progress)
  - FAA historical RADAR records (via FOIA filings)

- Sound level measurements, sources:
  - MONA Sound-Level Monitor (SLM) network (real-time)

- Other data sources:
  - FAA Coded Instrument Flight Procedures (CIFP): STAR/Approach/SID procedures, waypoints, airports, runways
  - FAA Registry:
    • Provides airframe, engine, and ownership

- All data/metrics are automatically transmitted to MONA servers, and ingested/archived into databases
Example ADS-B and SLM Deployment
Co-located SLM Deployments: SFO and MONA
MONA Analysis and Reporting Tools

- Web application to visualize historic and real-time flight traffic/patterns
- Combine SLM measurements with aircraft position data to assign noise peaks with aircraft
- Automatically generate AEDT noise studies from actual flight tracks, and compare to measured sound levels (work in progress)
Visualization of Historic Flight Traffic/Patterns
Real-Time Visualization of Aircraft Traffic
Aircraft Counts/Day Over Hexagonal Grid
Processed Noise Profile, 6/13/19
Example Analyses

Average Altitudes along BSR/SERFR

Average # Overflights/Hr along BSR/SERFR

DNL Increase on SERFR after BSR to SERFR

DNL Decrease on BSR after BSR to SERFR

Stanford University
Data and Analysis Tools

- Visualization of flight tracks
- Flight track gates
- Flight track manipulation
- AEDT
Visualization of Flight Tracks
Full Year of Departure Flight Tracks
Hollywood Burbank Airport

- 2007 on the left
- 2019 on the right
Flight Track Density Plots
SFO and OAK

- 2014 (Pre-Metroplex) on the left
- 2015 (Post-Metroplex) on the right
Flight Track Gates
Gate Analysis: Hollywood Burbank Airport
Runway 15 Jet Departures

<table>
<thead>
<tr>
<th>Gate</th>
<th>2007</th>
<th>2010</th>
<th>2015</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Tracks</td>
<td>Avg. Altitude (Ft. MSL)</td>
<td>Total Tracks</td>
<td>Avg. Altitude (Ft. MSL)</td>
</tr>
<tr>
<td>1</td>
<td>28,937</td>
<td>1,773</td>
<td>19,629</td>
<td>1,782</td>
</tr>
<tr>
<td>2</td>
<td>41,176</td>
<td>2,752</td>
<td>28,822</td>
<td>2,887</td>
</tr>
<tr>
<td>3</td>
<td>25,766</td>
<td>3,364</td>
<td>16,806</td>
<td>3,492</td>
</tr>
<tr>
<td>4</td>
<td>5,302</td>
<td>3,659</td>
<td>3,469</td>
<td>3,680</td>
</tr>
<tr>
<td>5</td>
<td>28,390</td>
<td>6,093</td>
<td>17,908</td>
<td>6,413</td>
</tr>
</tbody>
</table>

- **Gate Placement:**
  - Gate 1: Jeffries Ave/Luther Burbank Middle School (east/west)
  - Gate 2: W. Magnolia Blvd (east/west)
  - Gate 3: Highway 101 (east/west)
  - Gate 4: Ventura Blvd (east/west)
  - Gate 5: Van Nuys Blvd to Stone Canyon Reservoir (north/south)
Flight Track Manipulation
Flight Track Manipulation (Proposed RNAV) Hollywood Burbank Airport

- Existing jet departure tracks from Runway 15 along with the FAA-proposed procedure from the October 2018 CatEx
- Showing approximation of aircraft flight tracks (purple) on the FAA’s proposed procedure
AEDT
Federal Aviation Administration Aviation Environmental Design Tool (AEDT)
AEDT: Contours (DNL) and Grids (N70)

- Day-Night Average Sound Level (DNL) contours: 55, 60 and 65 dB
- Number of noise events above 70 dB
- Using a full year of flight track and aircraft identification data at Westchester County Airport (HPN)
Number of Noise Events Above 70 dB (N70) Analysis: 2018 Operations with Change in Initial Heading on South Flow Departures Compared to Baseline
Number of Noise Events Above 70 dB (N70) Analysis: Difference – 2018 Operations with Change in Initial Heading on South Flow Departures Compared to Baseline

<table>
<thead>
<tr>
<th>N70 Difference Interval (Events)</th>
<th>Count of Grid Points / % Change</th>
<th>Count of Population / % Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than -75</td>
<td>0 / 0.0%</td>
<td>0 / 0.0%</td>
</tr>
<tr>
<td>-75 to -25</td>
<td>95 / 1.5%</td>
<td>2,659 / 0.4%</td>
</tr>
<tr>
<td>-25 to -10</td>
<td>194 / 3.1%</td>
<td>5,238 / 0.7%</td>
</tr>
<tr>
<td>-10 to -1</td>
<td>890 / 14.1%</td>
<td>104,091 / 14.1%</td>
</tr>
<tr>
<td>-1 to 1</td>
<td>4,285 / 68.0%</td>
<td>528,917 / 71.8%</td>
</tr>
<tr>
<td>1 to 10</td>
<td>531 / 8.4%</td>
<td>80,386 / 10.9%</td>
</tr>
<tr>
<td>10 to 25</td>
<td>176 / 2.8%</td>
<td>9,835 / 1.3%</td>
</tr>
<tr>
<td>25 to 75</td>
<td>130 / 2.1%</td>
<td>5,659 / 0.8%</td>
</tr>
<tr>
<td>Greater than 75</td>
<td>0 / 0.0%</td>
<td>0 / 0.0%</td>
</tr>
<tr>
<td>Total</td>
<td>6,301 / 100.0%</td>
<td>736,785 / 100.0%</td>
</tr>
</tbody>
</table>

- 1,179 Grid points (18.7%) / 111,988 people (15.2%) would experience fewer events above 70 dB Lmax with change in initial heading
- 837 Grid points (13.3%) / 95,880 people (13.0%) would experience more events above 70 dB Lmax with change in initial heading
STUDY OF TNNIS FLIGHT PATH, QUEENS NY
A mathematical model conducted by a team from Columbia University Mailman School of Public Health compared the costs and quality-adjusted life years (QALYs) gained associated with reverting to pre-2012 flight patterns seen prior to the year-round use of TNNIS.

"The Trade-Off between Optimizing Flight Patterns and Human Health: A Case Study of Aircraft Noise in Queens, NY, USA.
Zafari Z1,2, Jiao B3, Will B4, Li S5, Muennig PA6.
Discussion - How to measure success, A Risk Management Framework “TRAITS”

- TRACK
- REPORT
- ANTICIPATE
- INTERVENE
- TEST
- SHARE