RNAV Study – 33L Departure Dispersion

Belmont Public Meeting

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October 1, 2019

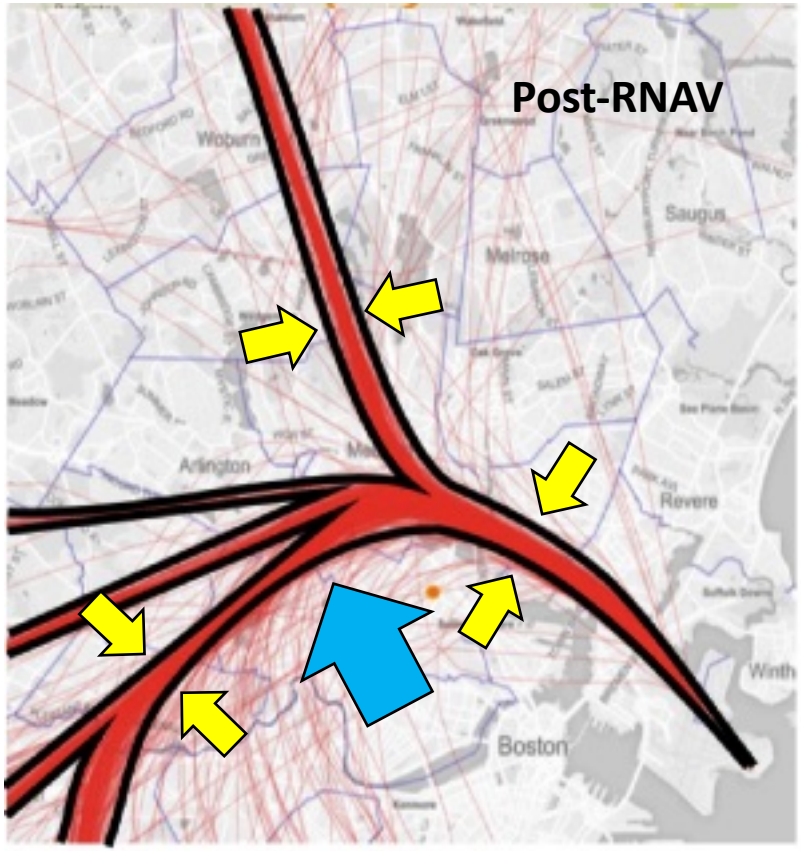
Reduced file size version for posting online. Some graphics have been compressed.

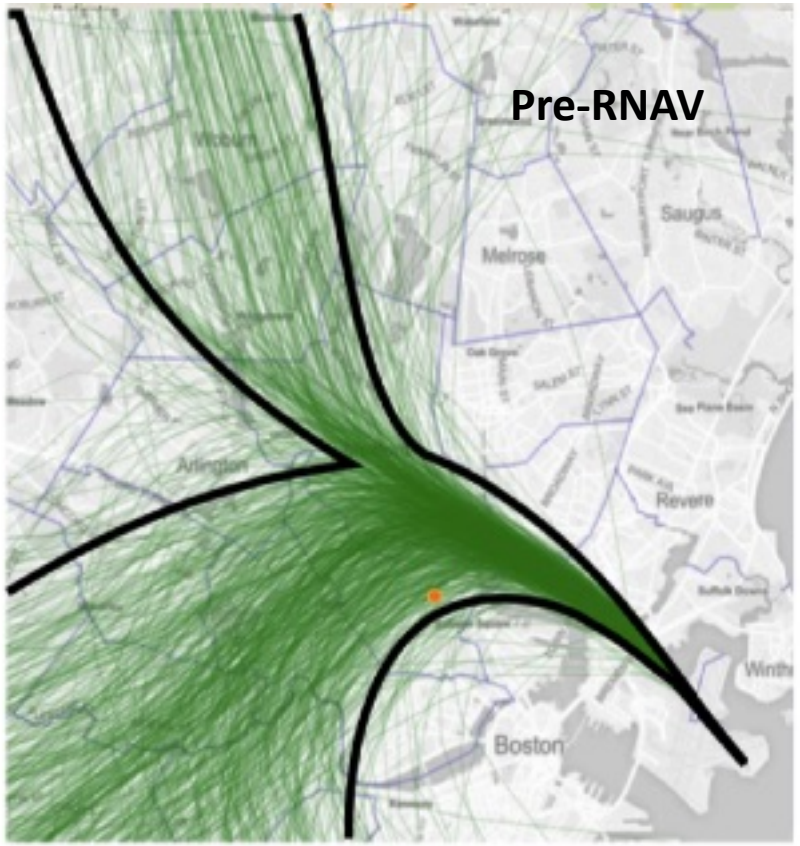
Timeline

- October 2016 – Massport/FAA/MIT announce RNAV Study
- November 2016 – 33L Municipal Working Group meeting with FAA Deputy Administrator in Burlington
- Feb & November 2017 – Massport RNAV Study Public Meetings (Boston, Mass DOT Transportation Building)
- April 2018 – MCAC Aviation Subcommittee meeting on initial Block 2 analysis.
- October 2018 – Block 2 update and presentation of Dispersion Concepts
- April 2019 – Last update on Block 2
- **June 2019 – MIT John Hansman Briefing to 33L Municipal Working Group**
- **July 1, 2019 – Letter requesting additional data and analysis**
- **July 8, 2019 – Update to Belmont Select Board**
- **Public meetings in 33L communities**
- **Receipt of additional data and analysis from Study Team**
- **33L Municipal Working Group reconvenes (TBD)**
- **Possible vote of the Massport CAC (next general meeting in January, 2020)**

RNAV Changes to 33L Departures

With the implementation of the new 33L RNAV SID procedure in June of 2013, the flight paths and noise burden were **shifted** and **narrowed** as a result of GPS routing





[from Massport KML track data, before=2013 and after=2015, by Kent Johnson]

Impact on Belmont

- Before RNAV, 22K residents got some overflights

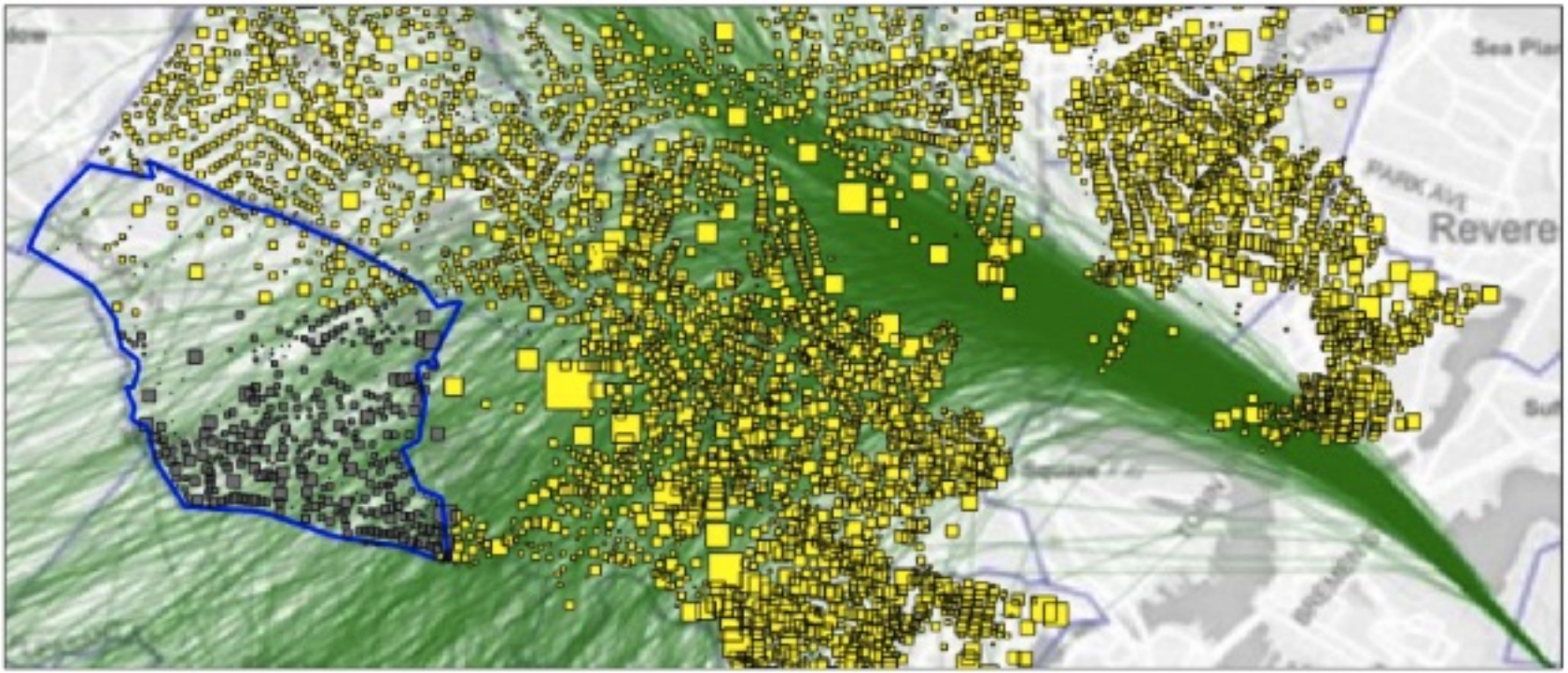


Image and analysis courtesy of ©Luke Preisner. [from BLANS DNL by census block data 2008-2014 and ://docs.digital.mass.gov/dataset/massgis-data-datalayers-2010-us-census]

Impact on Belmont

- After RNAV, 11K residents get all the overflights

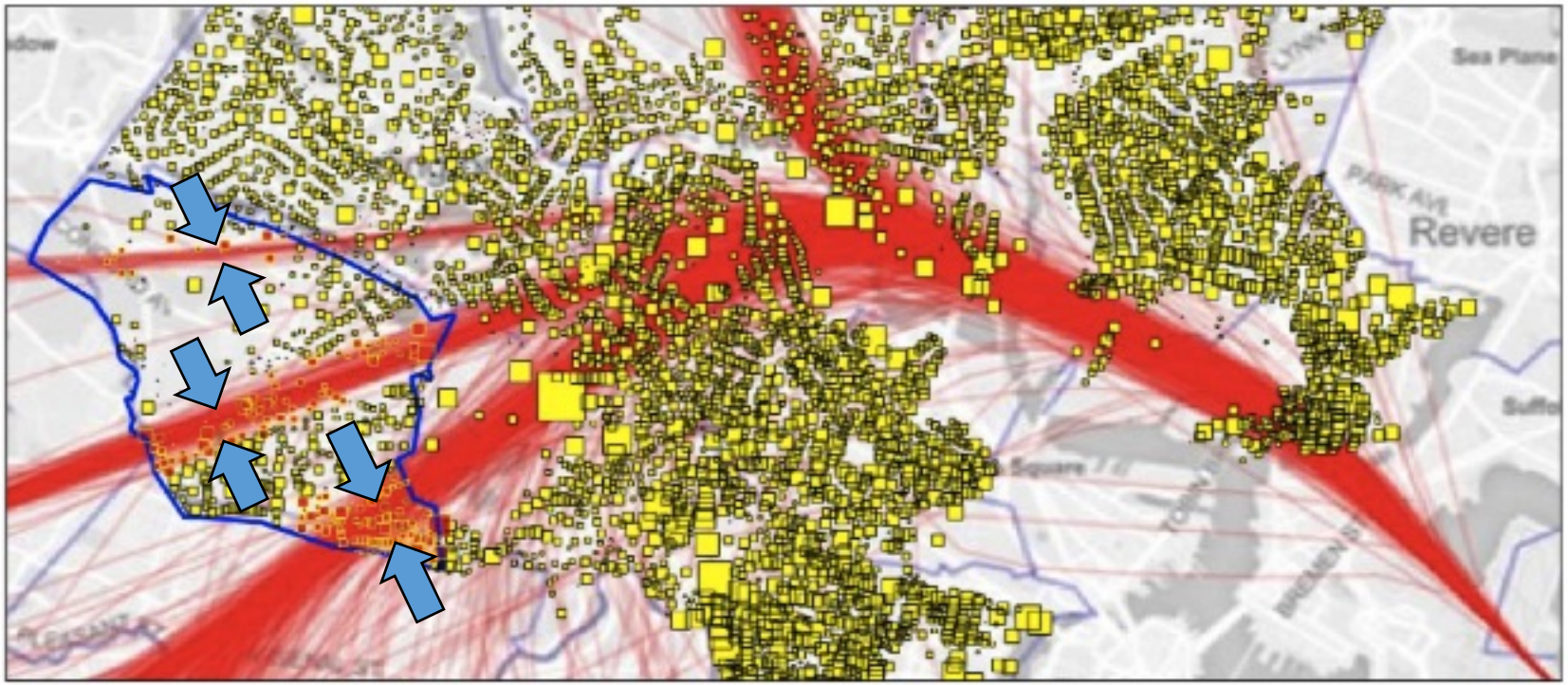


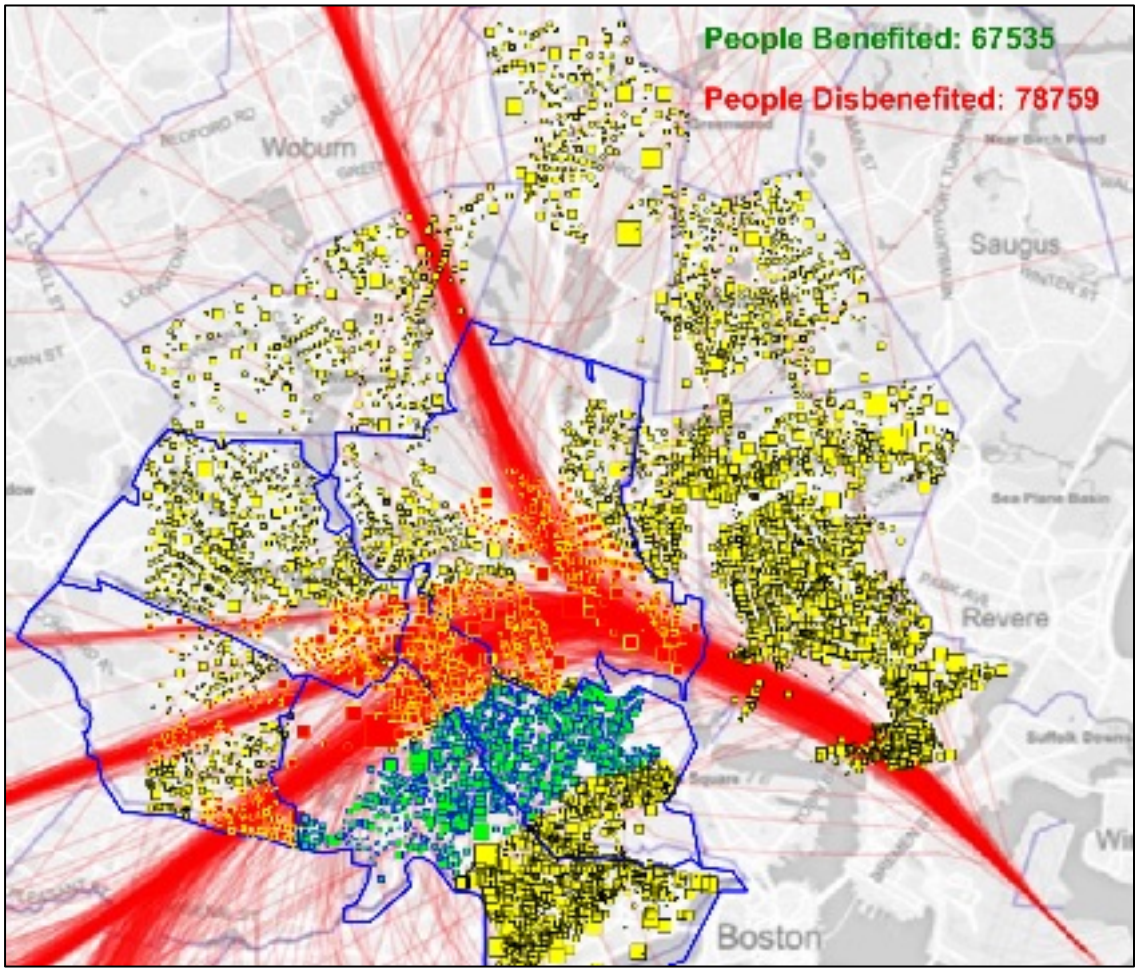
Image and analysis courtesy of ©Luke Preisner. [from BLANS DNL by census block data 2008-2014 and ://docs.digital.mass.gov/dataset/massgis-data-datalayers-2010-us-census]

Impact on Belmont

- Change in noise for those 11K residents

Image and analysis courtesy of ©Luke Preisner. [from BLANS DNL by census block data 2008-2014 and ://docs.digital.mass.gov/dataset/massgis-data-datalayers-2010-us-census]

Overall shift in burden from RNAV



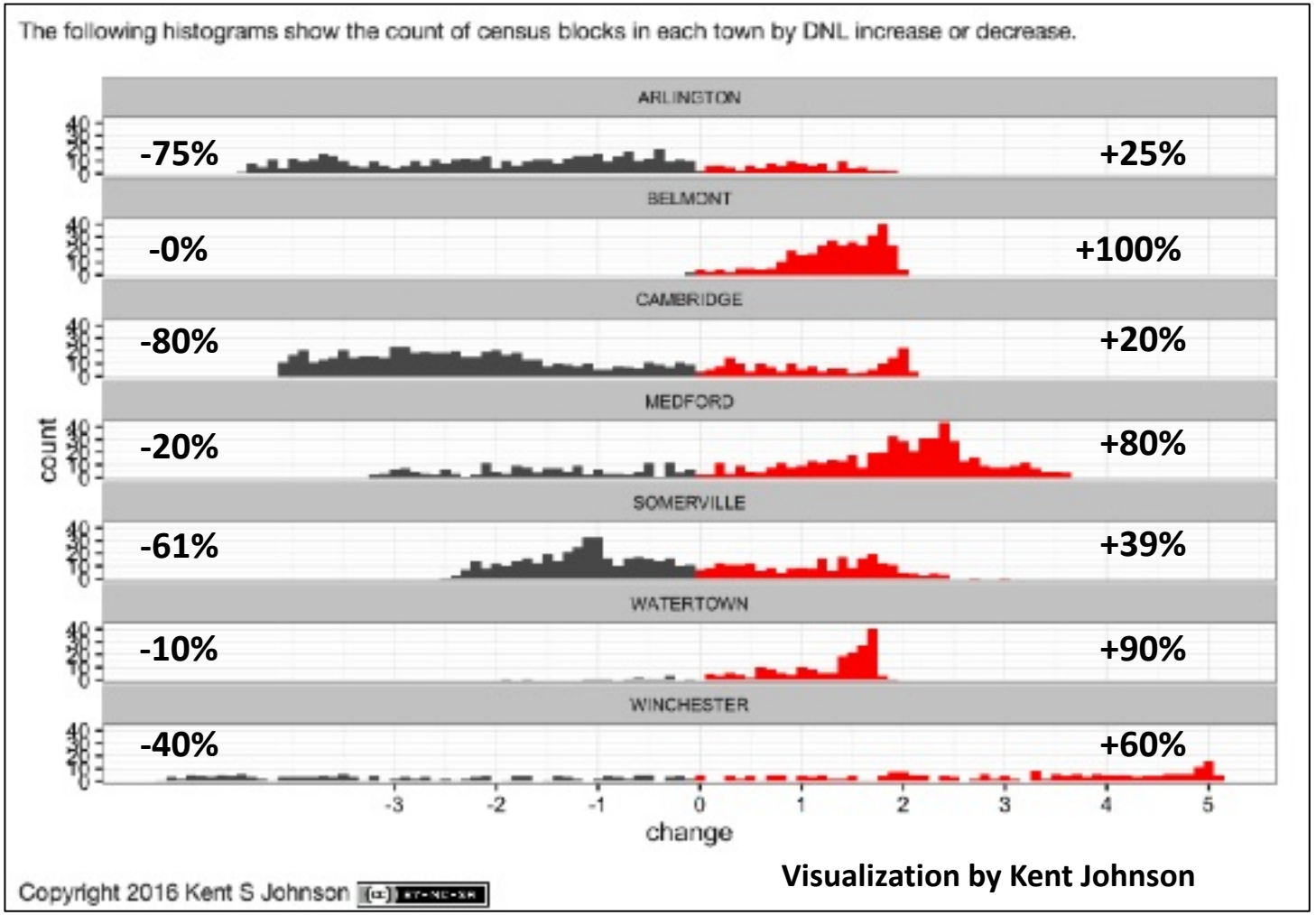
Population impacted compating pre-RNAV to post-RNAV:

Benefited: 67,535*
Disbenefited: 78,759

**** Used by FAA in their environmental impact assessment to show net noise reduction. Achieved this by shifting and concentrating noise to subset of population.***

Image and analysis courtesy of ©Luke Preisner. [from BLANS DNL by census block data 2008-2014 and ://docs.digital.mass.gov/dataset/massgis-data-datalayers-2010-us-census]

Noise impact to neighborhoods is uneven

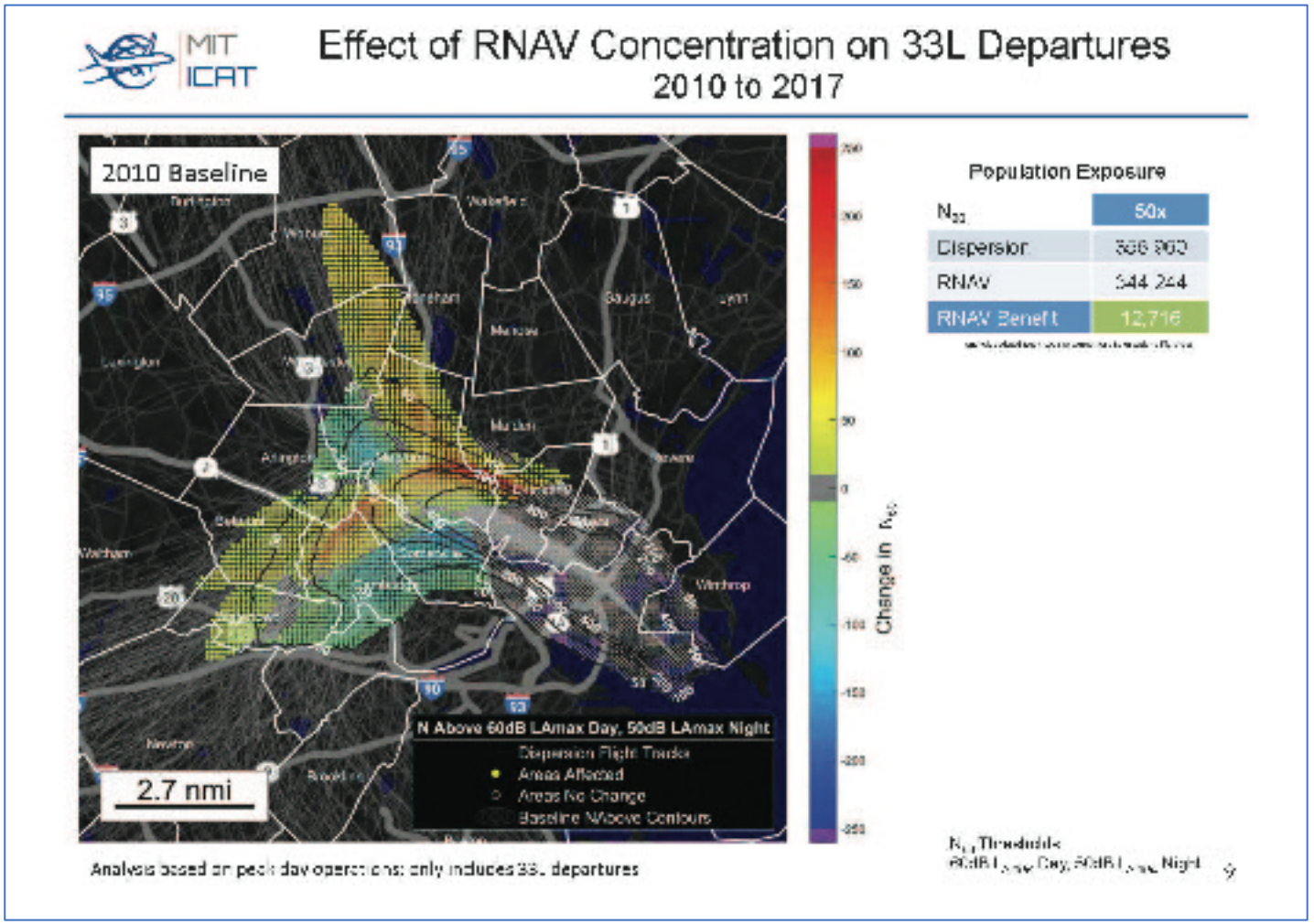


RNAV STUDY

Methodology and Concepts

RNAV Study Analysis Methodology

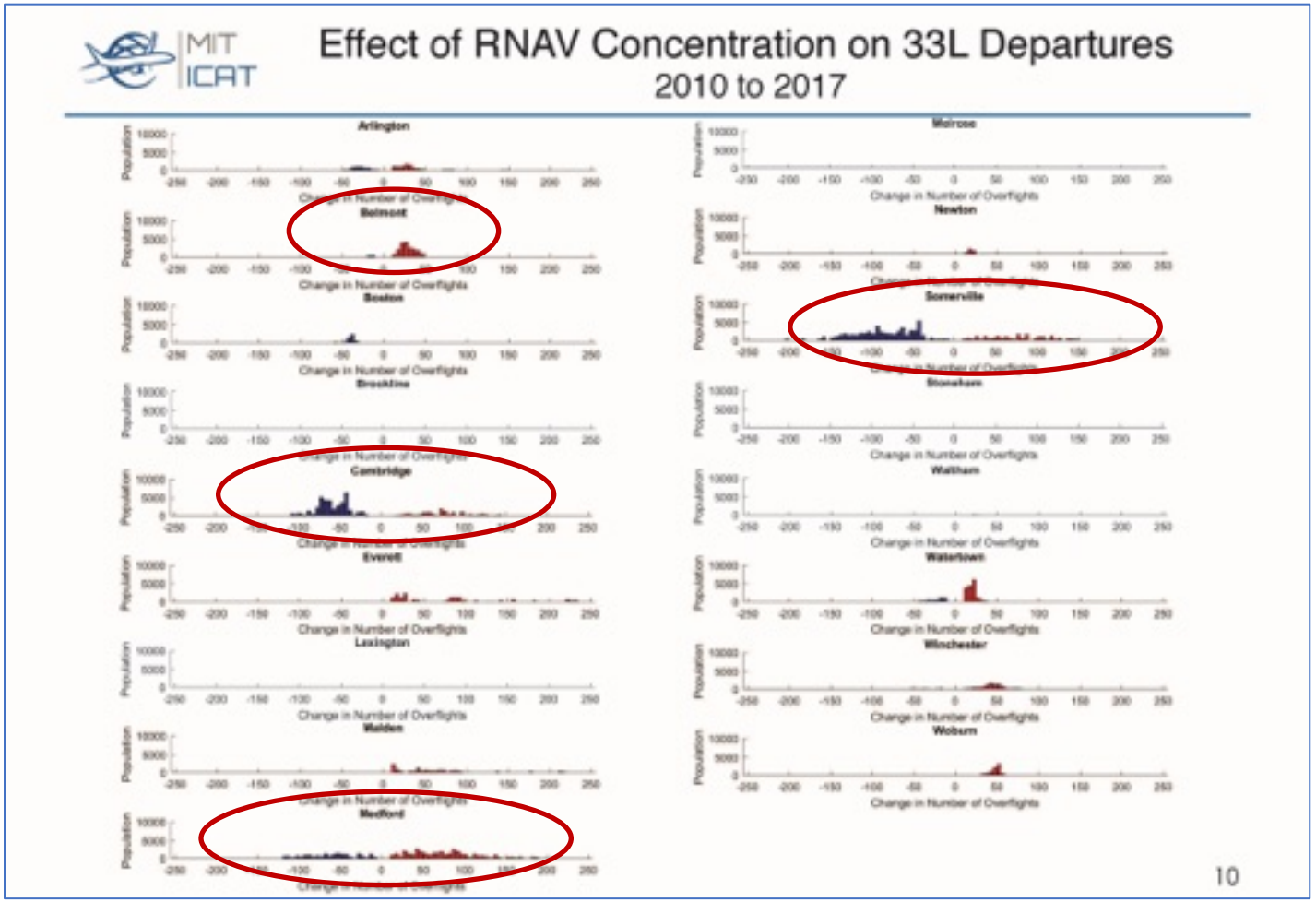
- N_{above} on peak day



Source: Runway 33L Impacted Communities Focus Briefing 6.24.19, Dr. J. Hansman

Shift in burden by community

- Change from 2010 (pre-RNAV) to 2017



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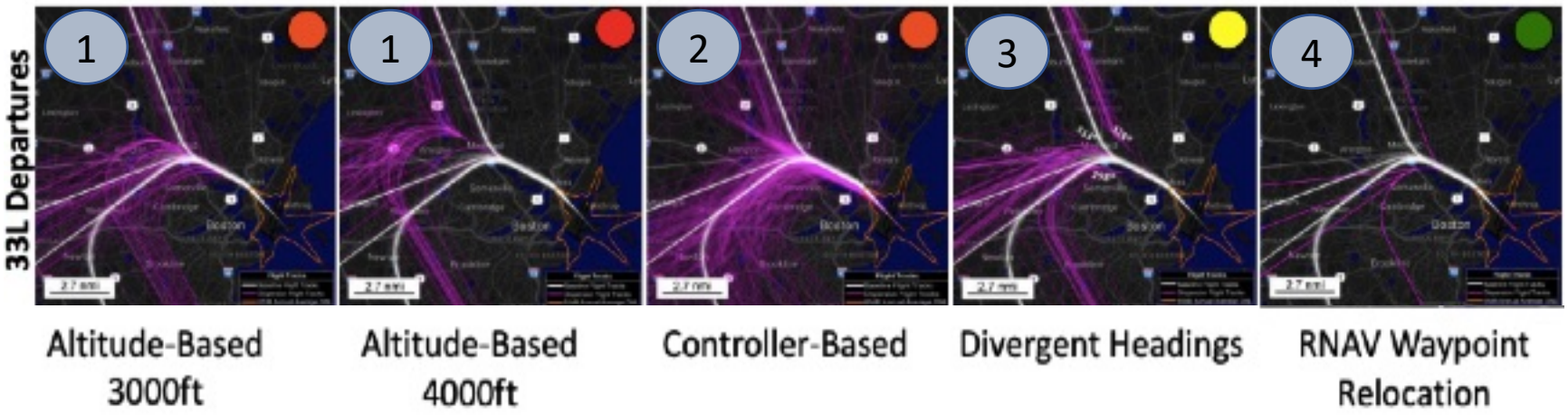
Dispersion concepts (Block 2)

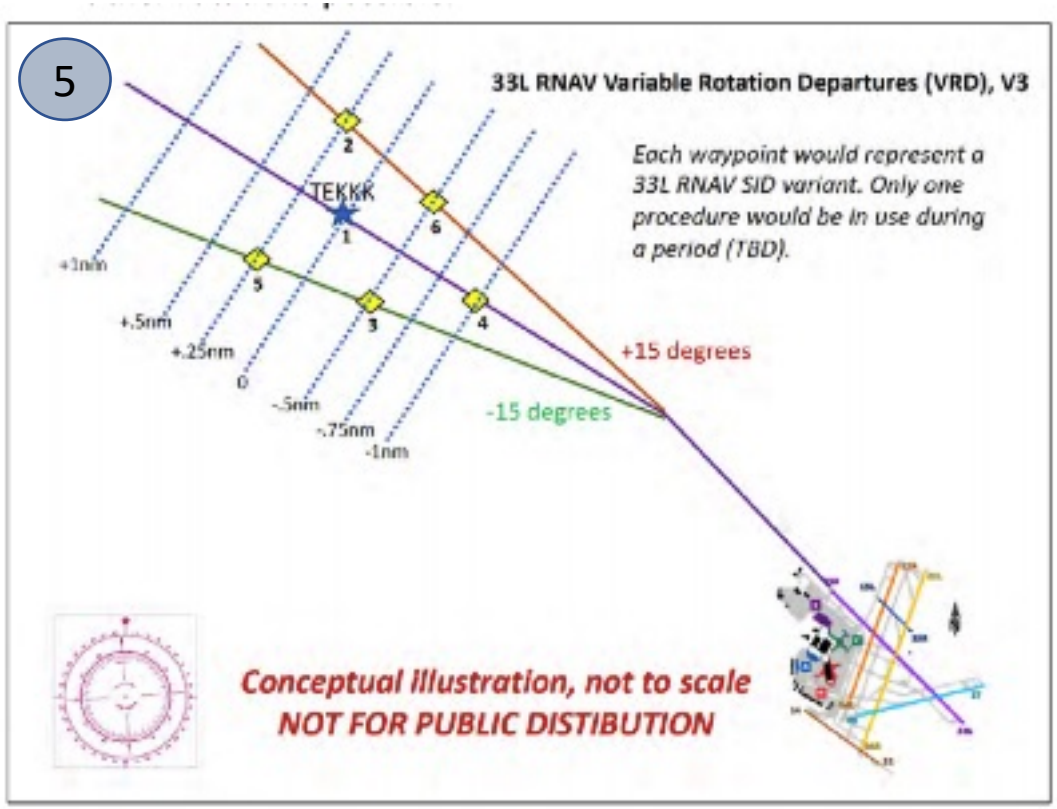


1. Altitude-based: Flights are free to vector to next waypoint @ 3k or 4k ft. Different planes reach 3k or 4k ft. at different times (aircraft type, weight, weather)
2. Controller-based (ATC vectoring)
3. Divergent-headings (create a new fork in trunk)
4. Waypoint relocation (4 variants, -.5, -1, +.5, +1nm)

Source: http://massportcac.org/wp-content/uploads/2019/05/April-2019-RNAV-MCAC-Presentation.pdf

Dispersion concepts (Block 2)

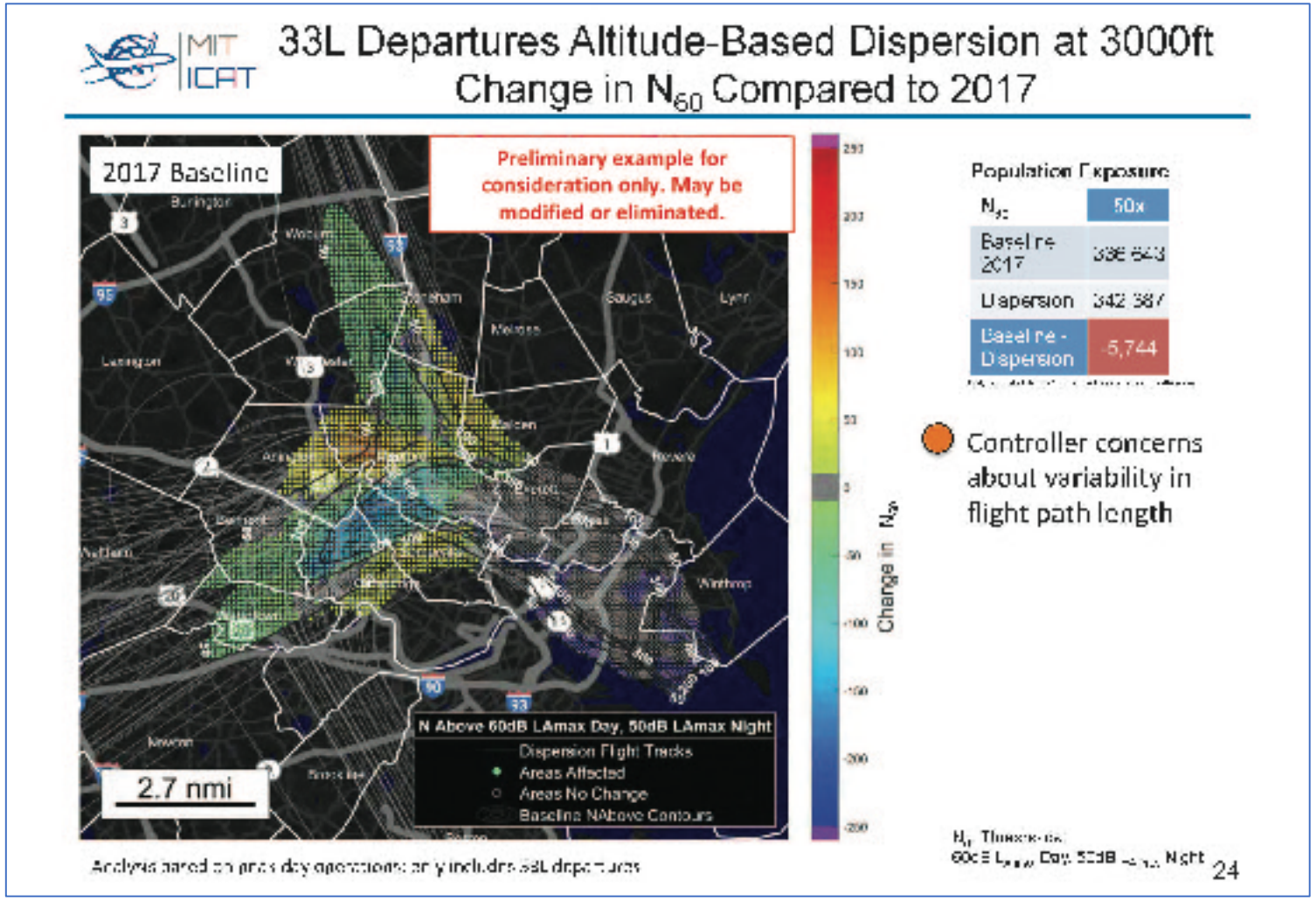
5 We asked if #3 and #4 could be combined?



- Complex procedures for ATC and Pilots
- Requires numerous procedures in the Flight Management System
- Rotating between waypoints from day to day does not take advantage of the separation requirements satisfied by divergent headings

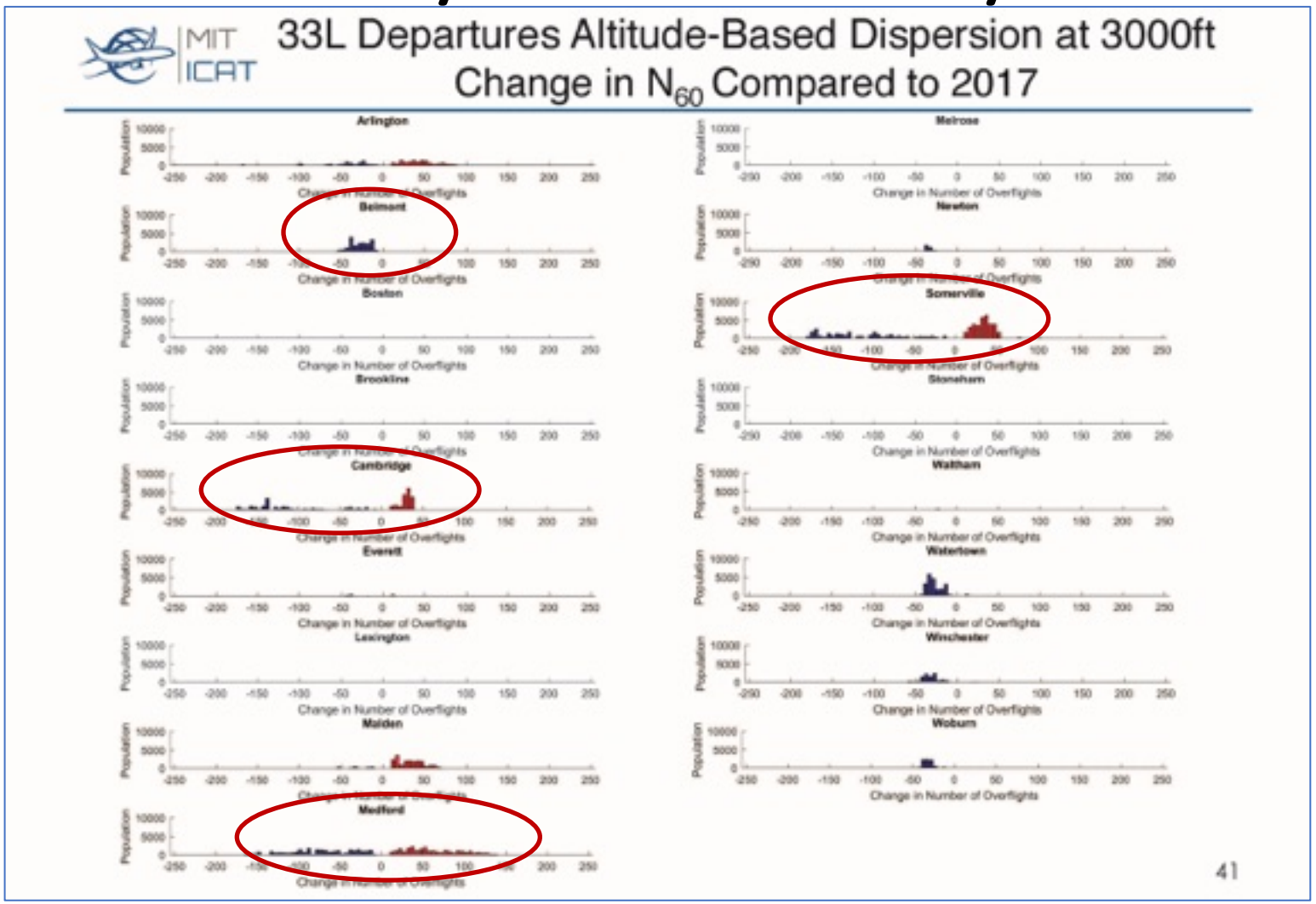
Source: http://massportcac.org/wp-content/uploads/2019/05/April-2019-RNAV-MCAC-Presentation.pdf

Each Concept is Modeled



Source: Runway 33L Impacted Communities Focus Briefing 6.24.19, Dr. J. Hansman

Community burden analysis



Source: Runway 33L Impacted Communities Focus Briefing 6.24.19, Dr. J. Hansman

RNAV STUDY

Review Dr. Hansman Presentation

https://www.belmont-ma.gov/sites/belmontma/files/uploads/runway_33l_impacted_communities_focus_briefing_6.24.19_2.pdf

Some questions to consider:

- For those who were most impacted by the RNAV shift and concentration – does a dispersion concept provide relief?
- What is the nature of the relief? Fewer volume of flights directly overhead or possibly fewer days with flights?
- For this who got the greatest benefit – how do the dispersion concepts impact them?
- Are people who were not previously impacted by 33L departures now impacted by a dispersion concept?
- How do we know that the modeled concepts are an accurate reflection of what will be when they are implemented?
- Will there be any metrics or tracking of the performance of an implemented modification to 33L departures against established criteria?

Process from here (10/1/19)

- Additional information and analysis requested from RNAV Study Team including comparison of concepts to pre-RNAV (see letter from Rep. Hecht).
- Community meetings continue (Arlington, Belmont* Cambridge Medford*, Somerville*, Watertown, *already held).
- Additional meetings may be required depending on analysis and feedback from MIT Study team.
- Reconvene 33L Municipal Working Group to discuss taking a position on recommendations for dispersion alternative(s).
- Ask for a vote of the Massport CAC for submission of a formal request to the FAA (Next General MCAC Meeting in January).