



MIT
International Center for
Air Transportation



The States of Small Community Air Service

Growth and Vulnerability in a New Business Cycle

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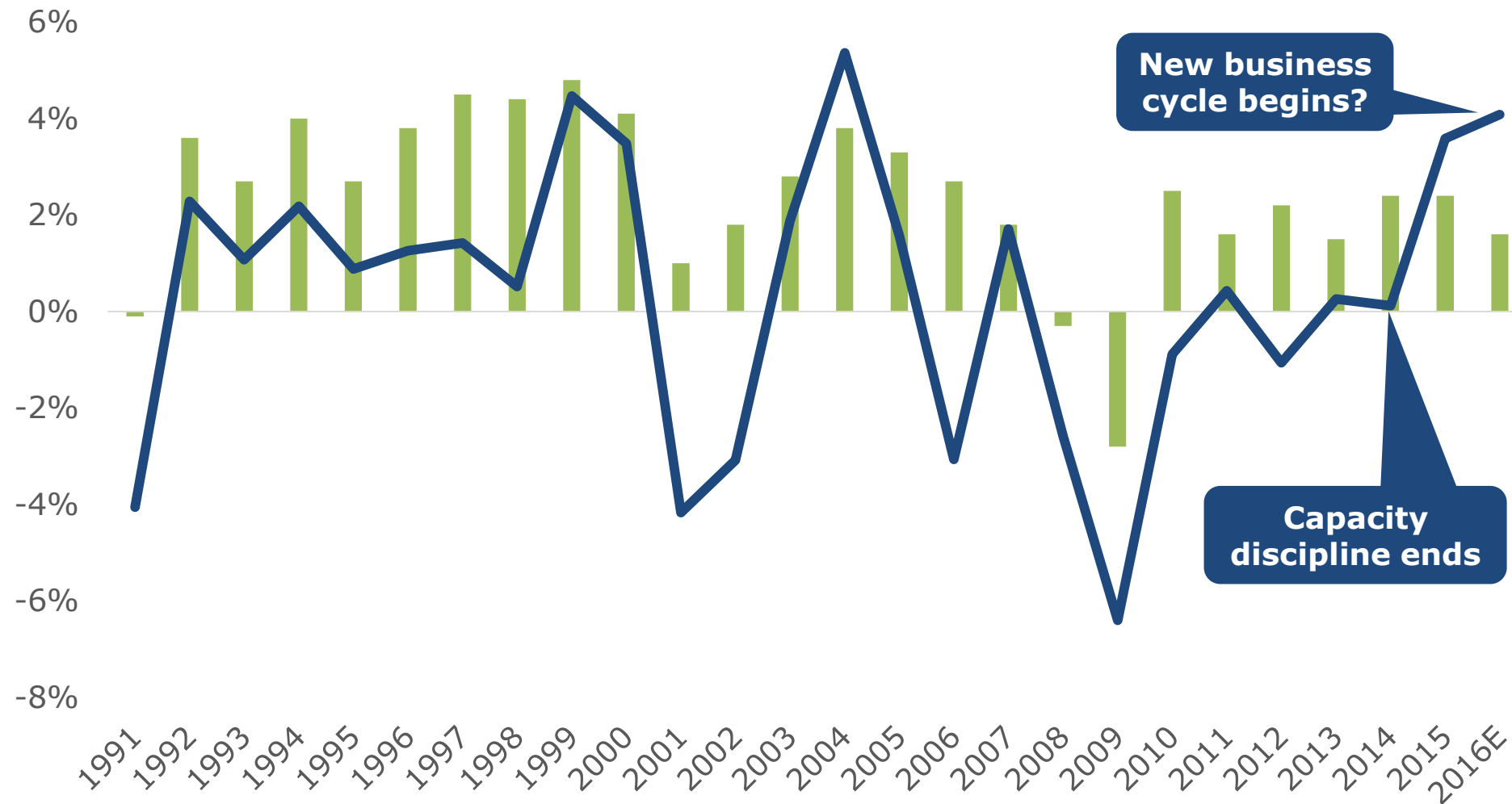
Minneapolis, MN



After Five Years of Capacity Discipline, Seat Growth Expected to Outpace GDP for the 2nd Straight Year

YoY % Change in U.S. Domestic GDP and Domestic Seats, 1991-2016

■ % Change in GDP — % Change in Domestic Seats



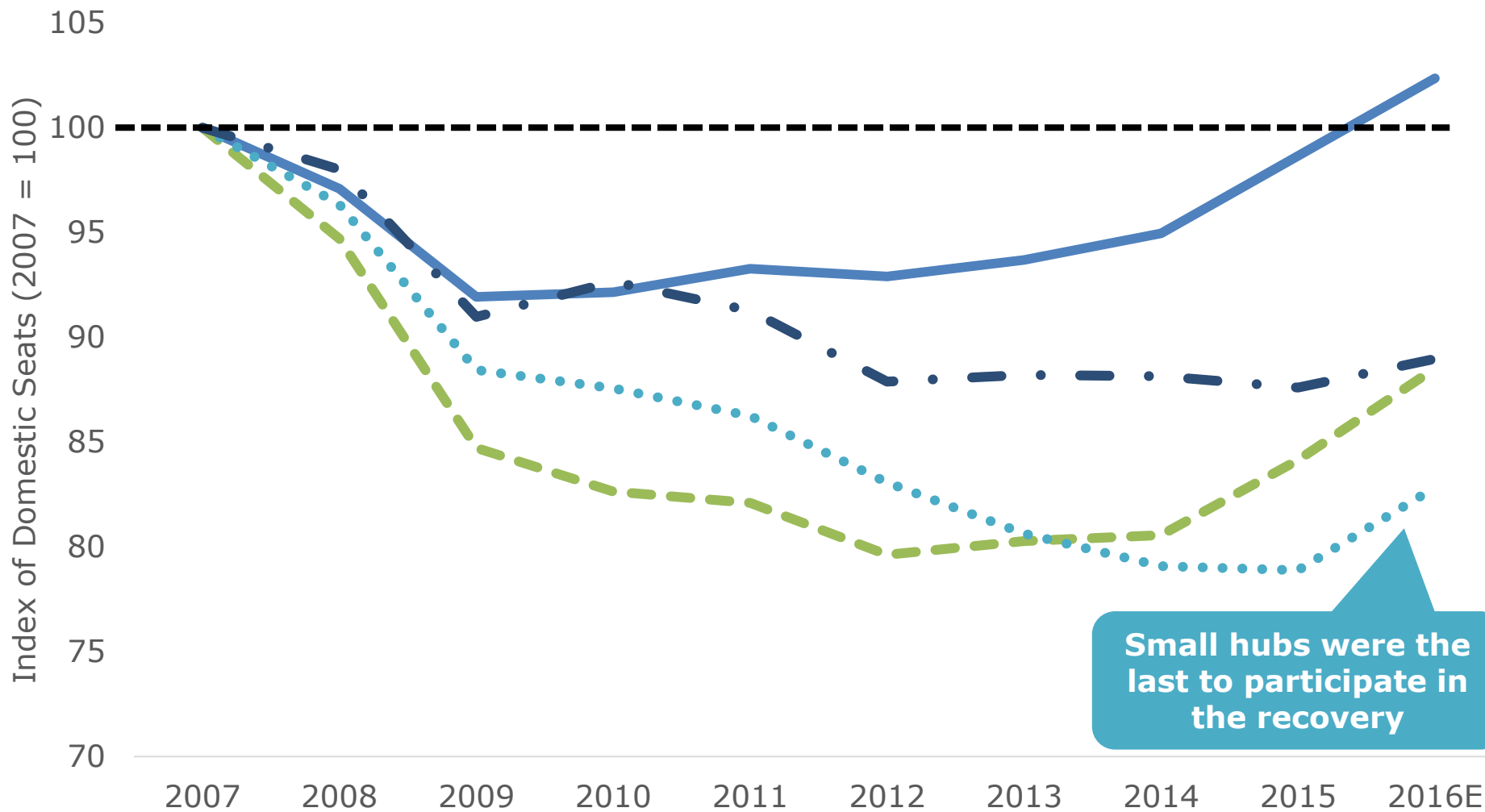
Sources: U.S. DOT T-100 (1991-2015), Innovata SRS (2016 estimate), IMF



Large Hubs Have Recovered to Pre-Recession Levels, but Smaller Airports Struggled to Catch Up

Index of Domestic Seats by Origin Hub Type (2007 = 100)

— Large Hub - - Medium Hub ••• Small Hub - - Non-Hub



Small hubs were the last to participate in the recovery



After Years of Reductions, Small Hubs are Finally Starting to Participate in the Recovery

% Change in Domestic Seats by Origin-Destination Type, 2015-2016

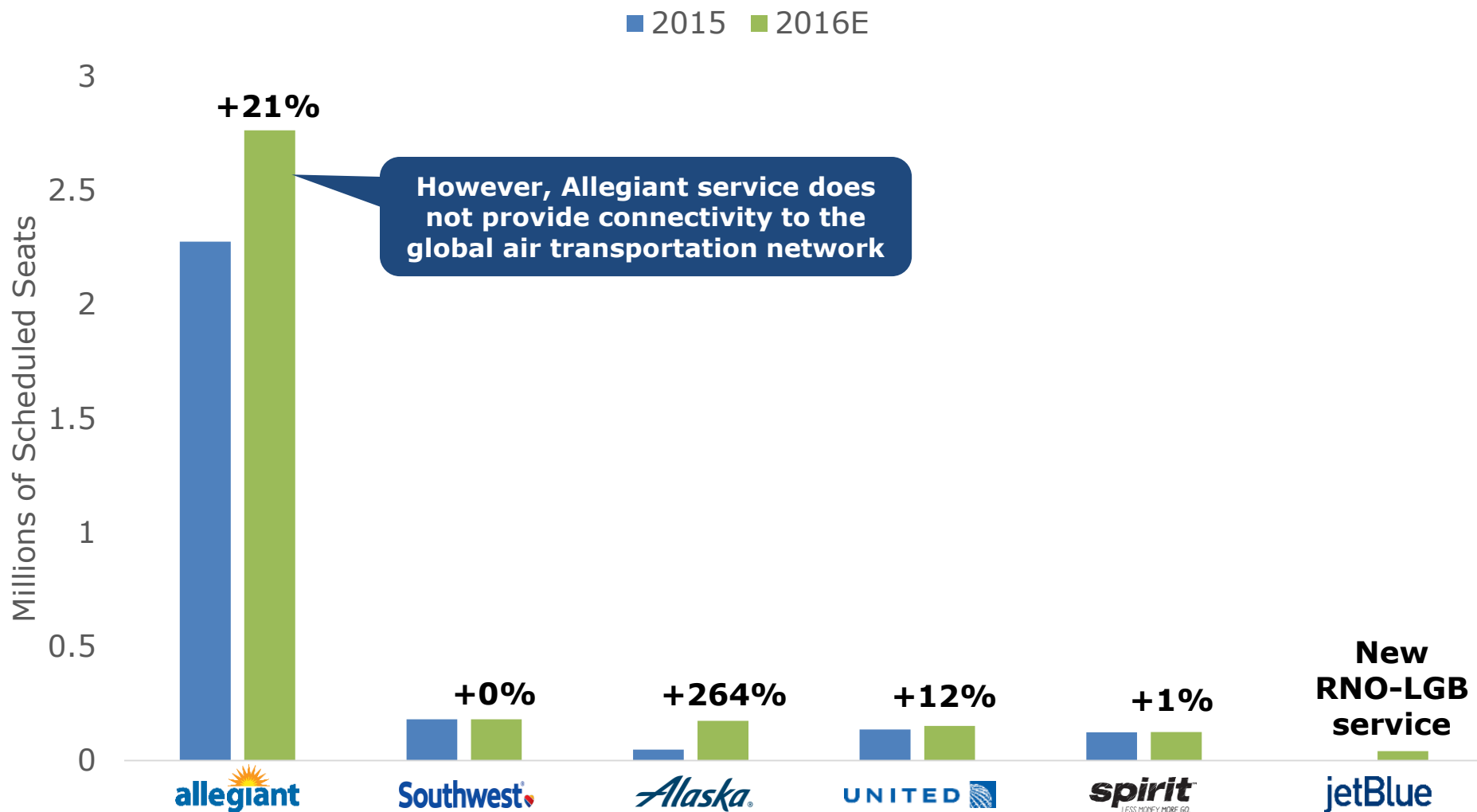
		Destination Type			
		Large Hub	Medium Hub	Small Hub	Non-Hub
Origin	Large Hub	3.7%			
	Medium Hub	4.8%	5.2%		
	Small Hub	3.5%	12.0%	24.6%	
	Non-Hub	1.2%	8.9%	5.8%	-15.3%

After significant cuts in service during the capacity discipline era, routes between small hubs saw the largest YoY % increase in service in both 2015 and 2016



Allegiant Still Controls Majority of intra-Small Hub Market, but Other Carriers are Starting to Play

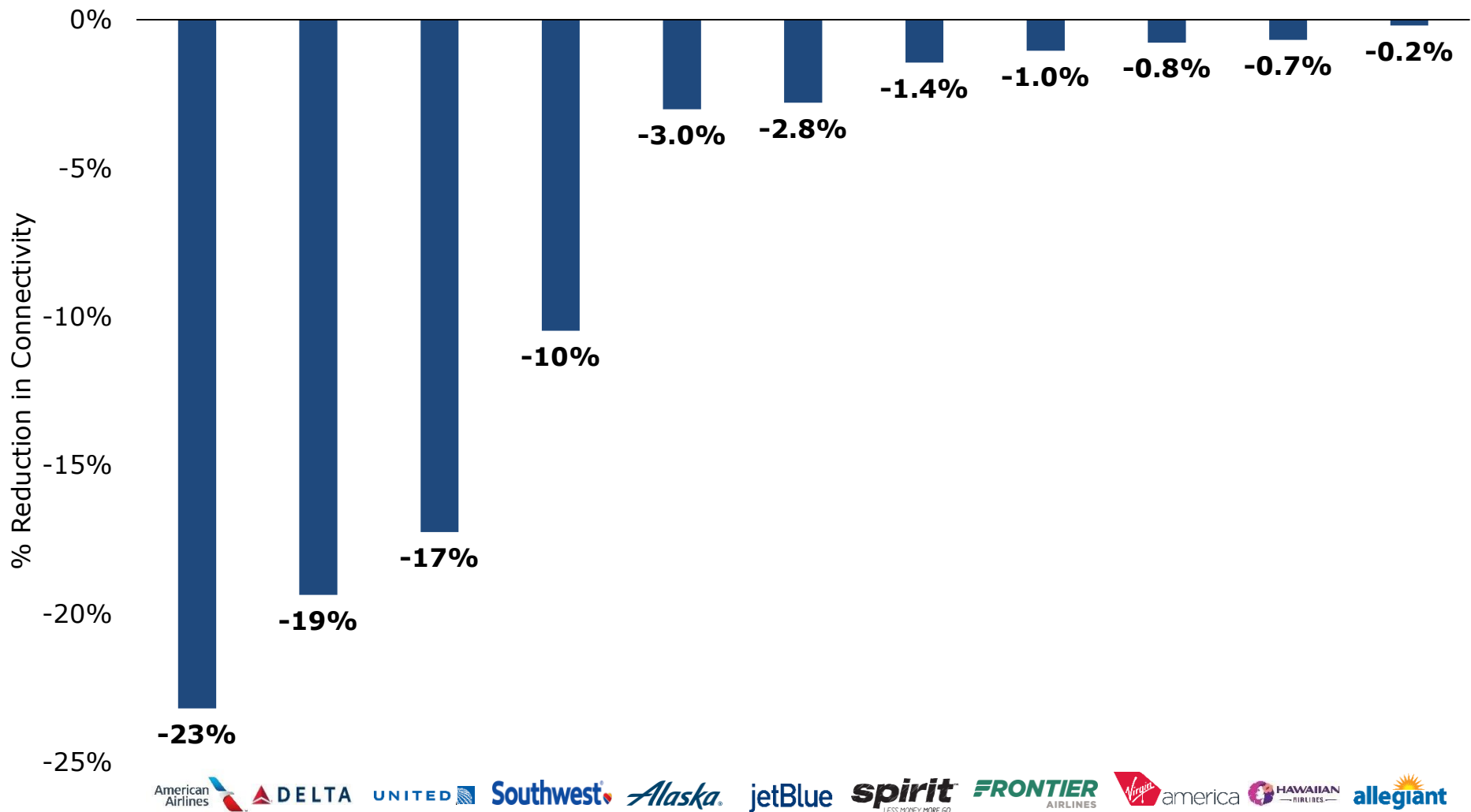
Scheduled Domestic Seats in Small Hub to Small Hub Markets by Carrier, 2015-2016





Although it Serves Many Smaller Airports, Allegiant Provides Only 0.2% of Total U.S. Connectivity

% Reduction in U.S. Airport Connectivity when Individual U.S. Airlines are Excluded from Schedule Data (2015)

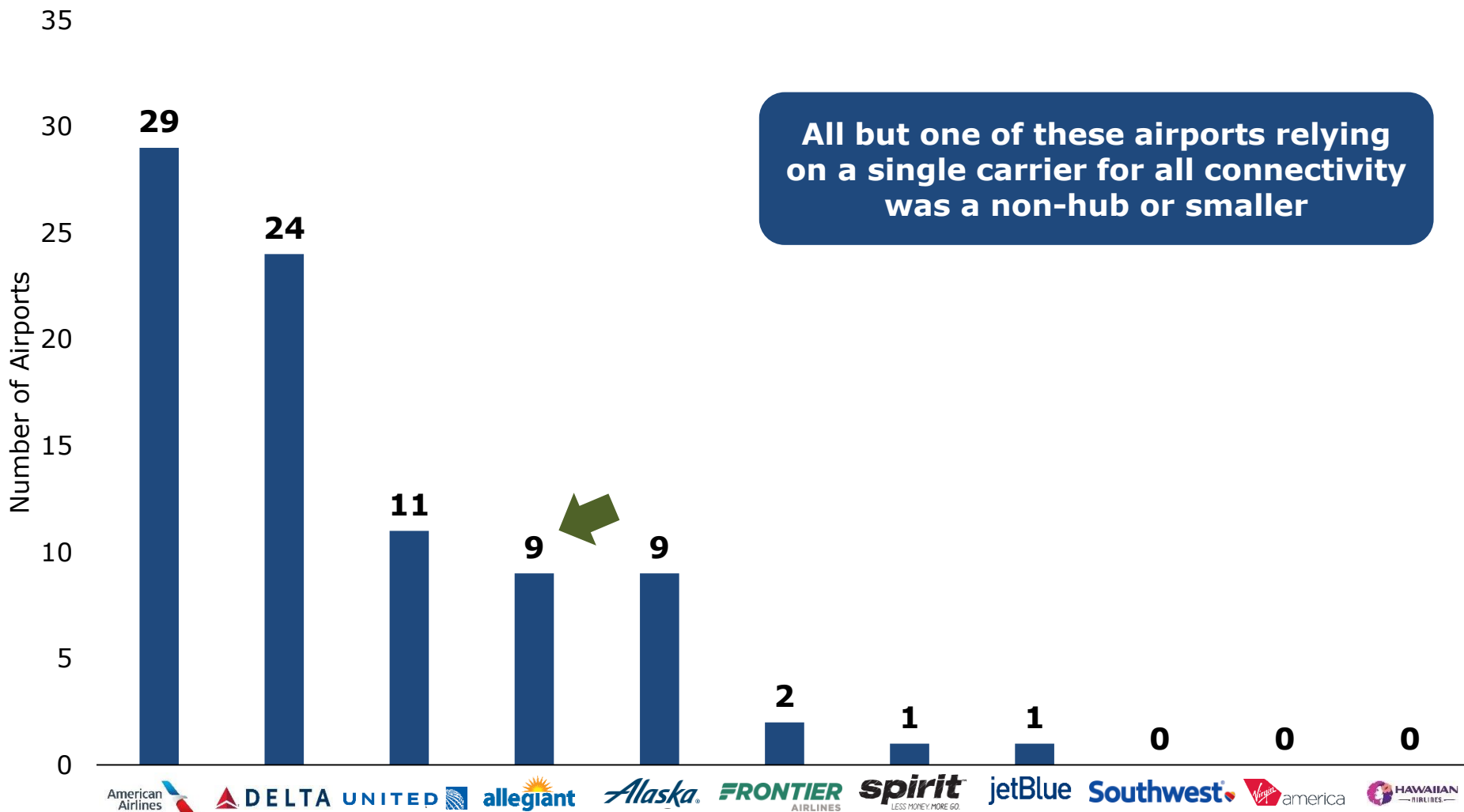


Source: MIT Airport Connectivity Quality Index (ACQI); Note: AA data includes US



Yet Many Airports Rely Exclusively on a Single Carrier like Allegiant for 100% of their Connectivity

of U.S. Airports that Rely Exclusively on a U.S. Carrier for 100% of Connectivity (2015)

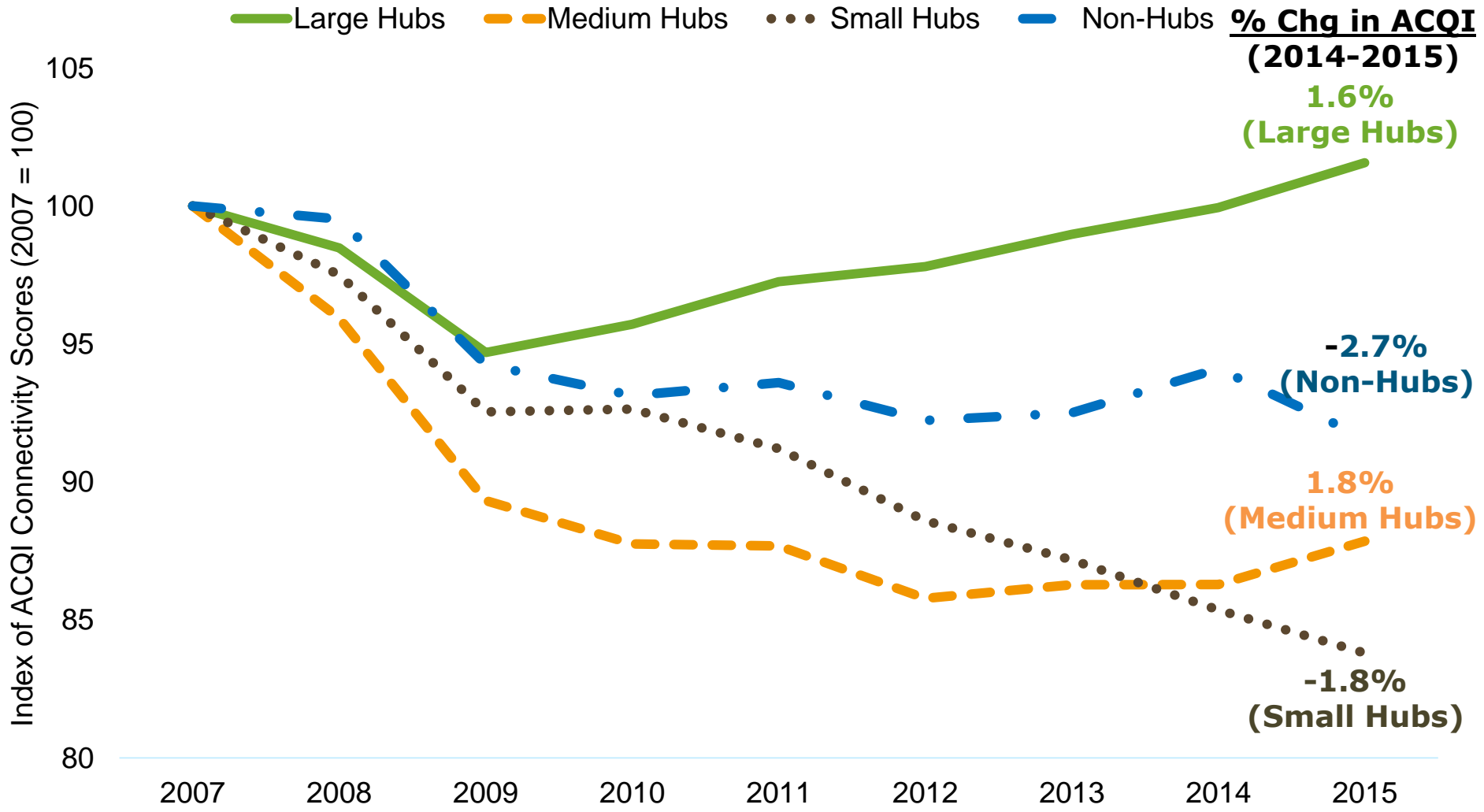


Source: MIT Airport Connectivity Quality Index (ACQI); Note: AA data includes US



Smaller Airports Have Seen Little or No Growth in Connectivity Through 2015

Growth Index of Average Airport Connectivity (ACQI) by Hub Type for U.S. Airports, 2007-2015

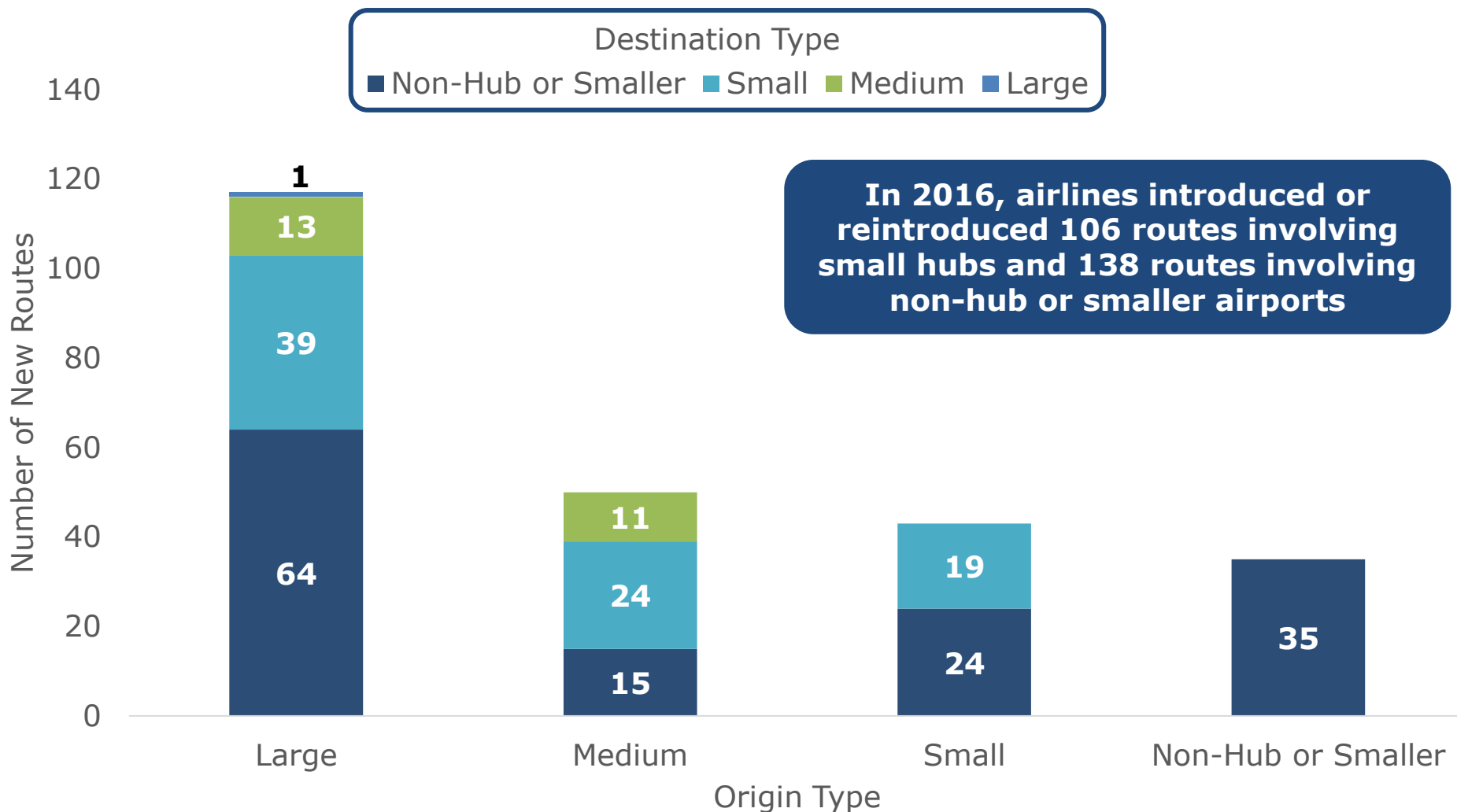


Source: MIT Airport Connectivity Quality Index (ACQI)



New Routes Introduced at Smaller Airports in 2016 Could Serve to Bolster Connectivity

Number of New or Reintroduces Routes in 2016 by Origin-Destination Hub Types





New Boise—Reno Service is the Perfect Case Study of the Change in Business Cycles

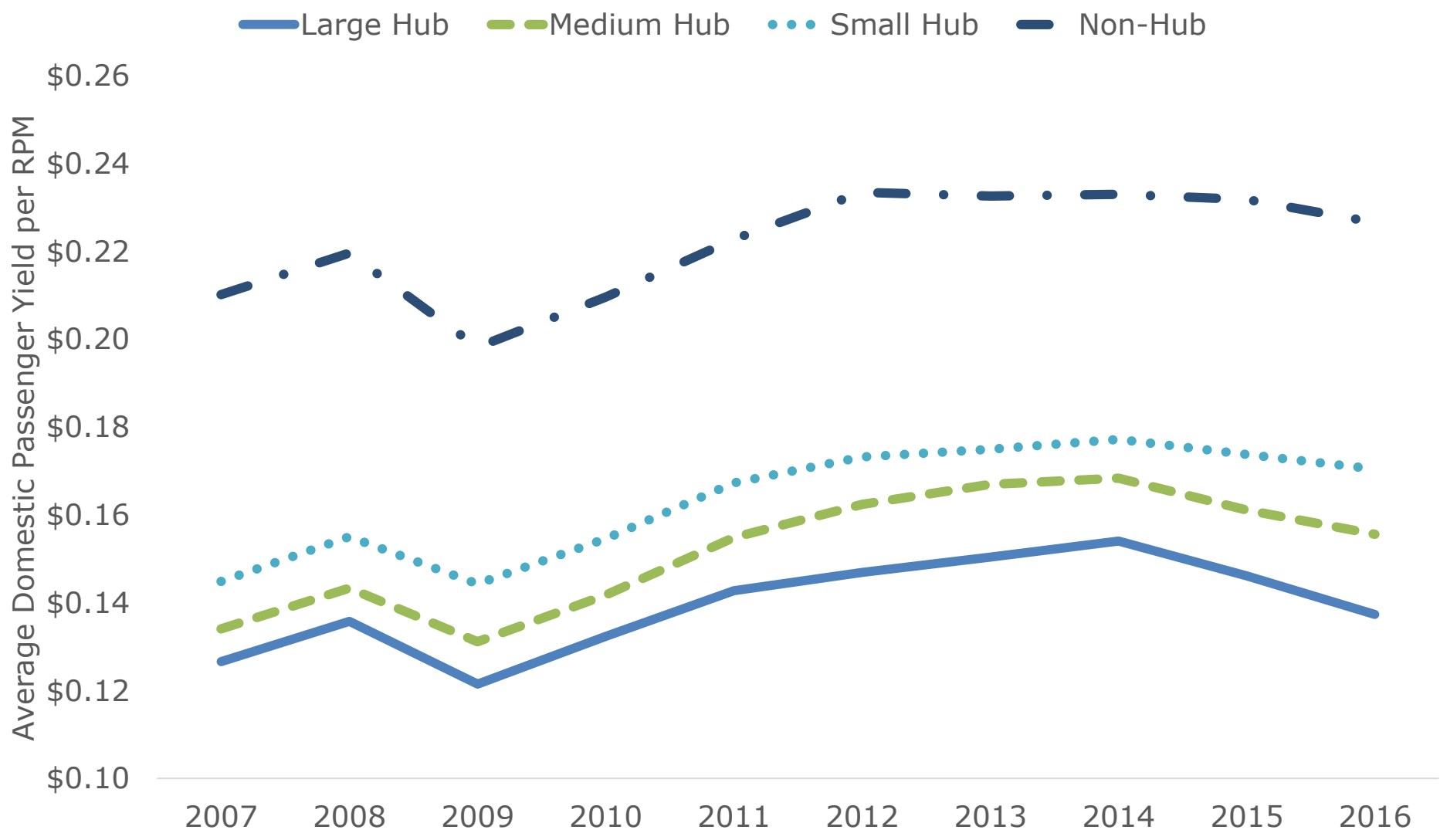
- Until 2012, Boise to Reno had been served nonstop by Southwest Airlines with 2-3 daily frequencies.
- The route was one of many Small Hub to Small Hub markets cut during the capacity discipline era.
- In late 2015, Alaska announced daily service on the route using Q400 aircraft.
- The route is Alaska's first Small Hub to Small Hub nonstop route since BOI-GEG was discontinued in 2010.





Due to Shorter Avg. Trip Lengths, Average Yields are Higher in Markets Involving Smaller Airports

Average Passenger Yield by Hub Type, 2007-2016

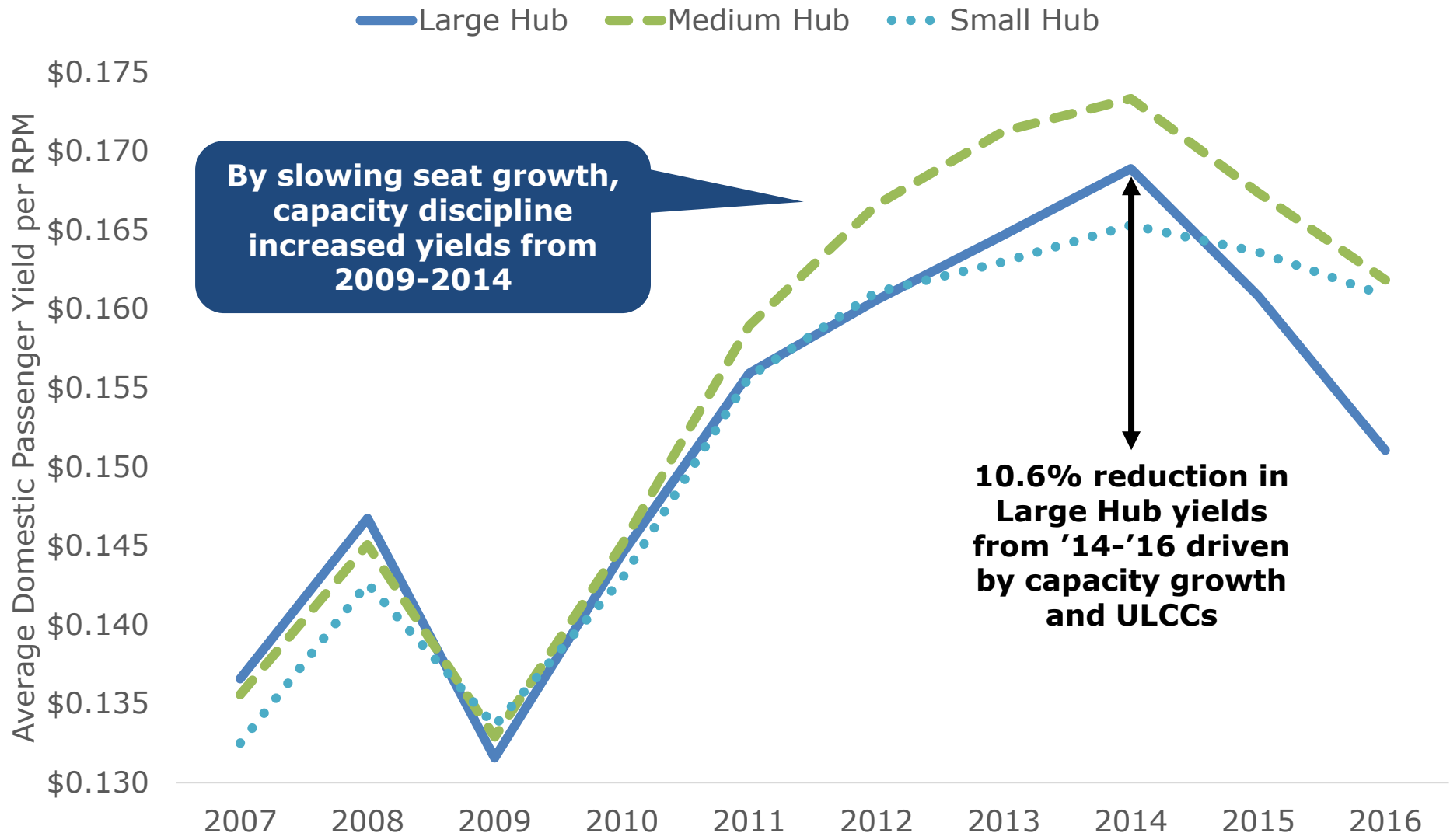


Source: Calculations from DB1B data via Diio (nondirectional yields) 11



Avg. Trip-Adjusted Yields at Small Hubs Have Not Seen the Recent Erosion Found at Large Hubs

Avg. Trip Length-Adjusted Domestic Yield by Hub Type, 2007-2016



Source: Calculations from DB1B data via Ddio (nondirectional yields)
Trip Length Adjustment: $(\text{Avg. Trip Length}/1000)^{(0.5)} * \text{Yield}$



Higher Yields Have Piqued the Interest of Major Network Carriers to Grow in Small Communities

- A *Wall Street Journal* article in Nov. 2016 documented a pivot towards growth in smaller cities for United Airlines.
- International yields have softened due to extreme capacity growth and weak worldwide economies.
- Since small airport capacity remained low, yields at those airports have not seen the softness found in large domestic or international markets.
- Southwest has also added back capacity to mid-sized cities.
- Could lead to a short-term opportunities for small communities to add service and potentially see lower fares.
- Growth will likely come with larger regional jets and narrowbodies.

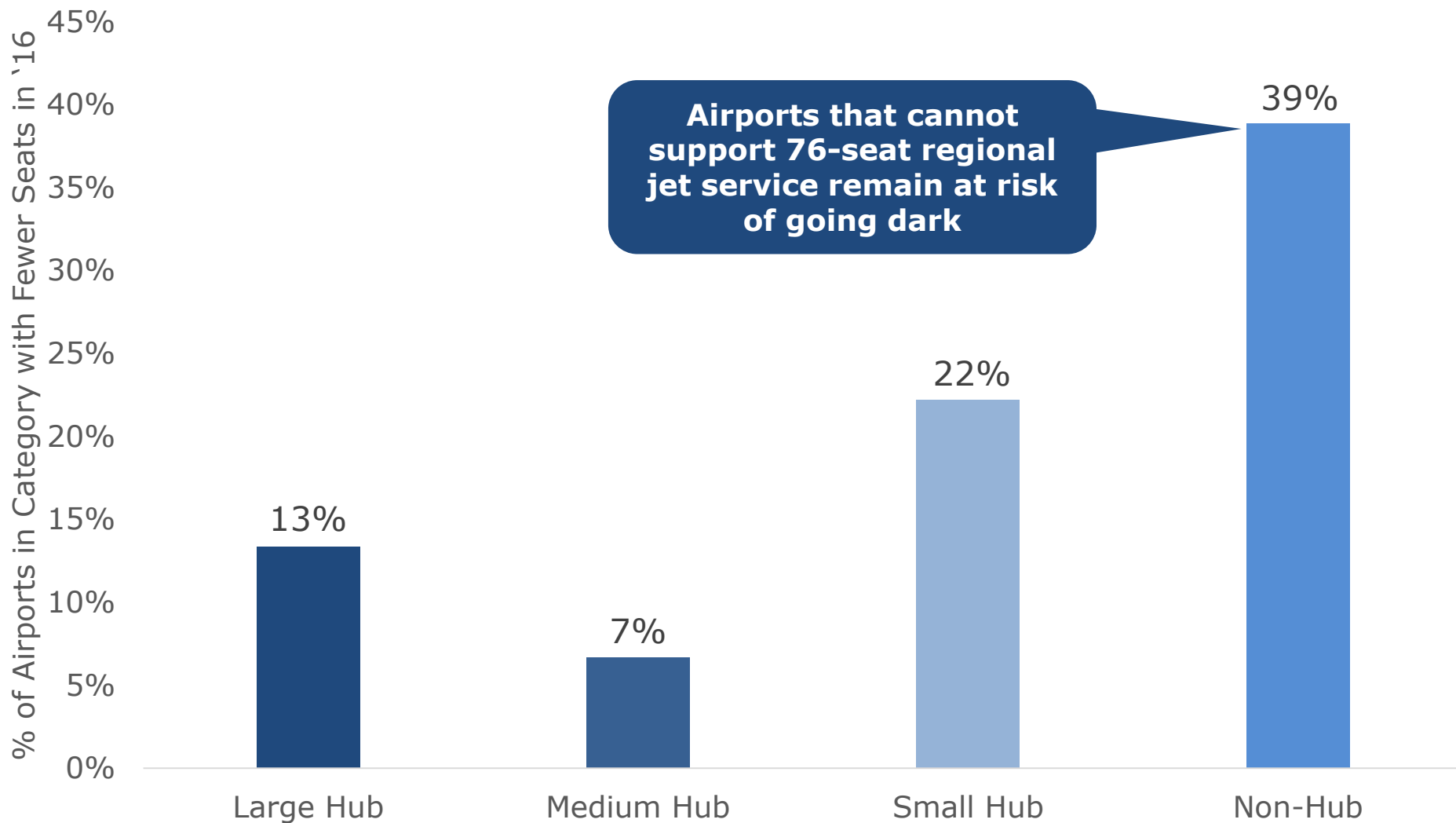


**"The only places with reasonable fares are the smaller cities. That's where the money is."
-Andrew Levy, United CFO**



With Renewed Growth in Medium and Some Small Hubs, Risks are Shifting to Non-Hubs

% of Airports by Hub Type that Saw a Reduction in Domestic Seats from 2015 to 2016





Not All Airports Are Able to Support 76-seat Regional Jet Service

Market Attributes of Airports Supporting 76-seat RJ Service

Large Hub Markets

	2015 Seats	Population	O&D Pax	PDEWs
Avg	20,866,123	6,272,132	20,332,634	27,853
High	53,527,980	20,007,684	38,925,199	53,322
Low	8,624,415	1,152,914	7,743,786	10,608

Avg. 76-seat RJ Departures per airport per day: 87.1

Medium Hub Markets

	2015 Seats	Population	O&D Pax	PDEWs
Avg	5,429,625	2,284,374	7,033,279	9,635
High	9,782,881	6,954,402	10,140,860	13,892
Low	2,599,804	666,086	3,621,682	4,961

Avg. 76-seat RJ Departures per airport per day: 24.9

Small Hub Markets

	2015 Seats	Population	O&D Pax	PDEWs
Avg	1,187,947	744,726	1,656,091	2,269
High	2,574,801	2,947,709	3,414,253	4,677
Low	324,747	99,072	712,608	976

Avg. 76-seat RJ Departures per airport per day: 10.9

Non Hub Markets

	2015 Seats	Population	O&D Pax	PDEWs
Avg	119,475	196,384	159,252	218
High	666,411	2,828,892	906,282	1,241
Low	117	7,384	205	0.3

Avg. 76-seat RJ Departures per airport per day: 1.0

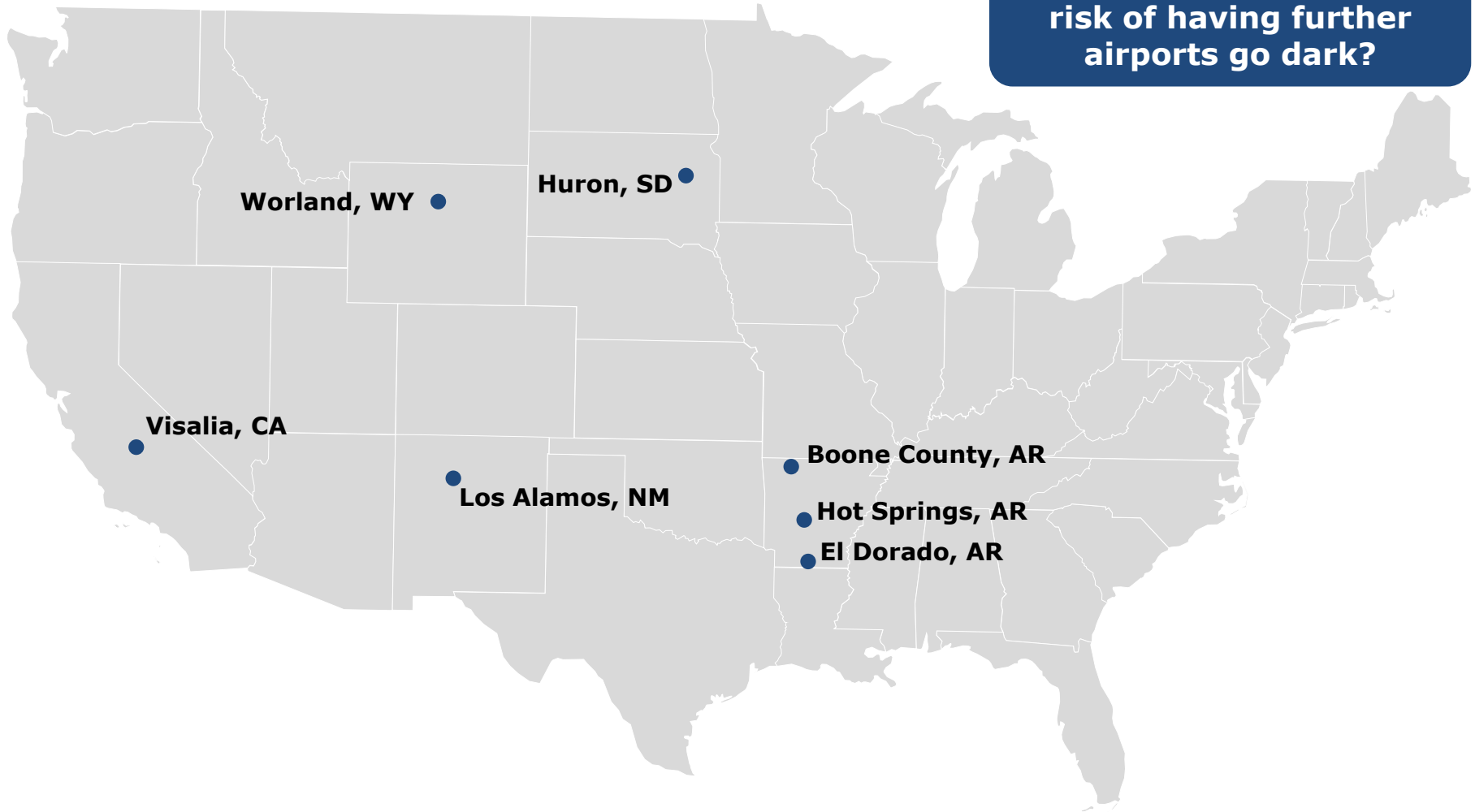
On average, airports need nearly 80,000 enplanements to support large RJ service

Note: Hub size based on FAA definition. Population is for 2014. O&D Pax and PDEWs is for YE1q2016, domestic only.



At Least 7 Continental U.S. Airports with Service in January 2016 Had Gone Dark by December

Which states could be at risk of having further airports go dark?



Identifying States with Potentially Vulnerable Airports: The RASA Air Service Vulnerability Index

InterVISTAS

a company of Royal HaskoningDHV

The Air Service Vulnerability Index for Small and Non-hub Airports

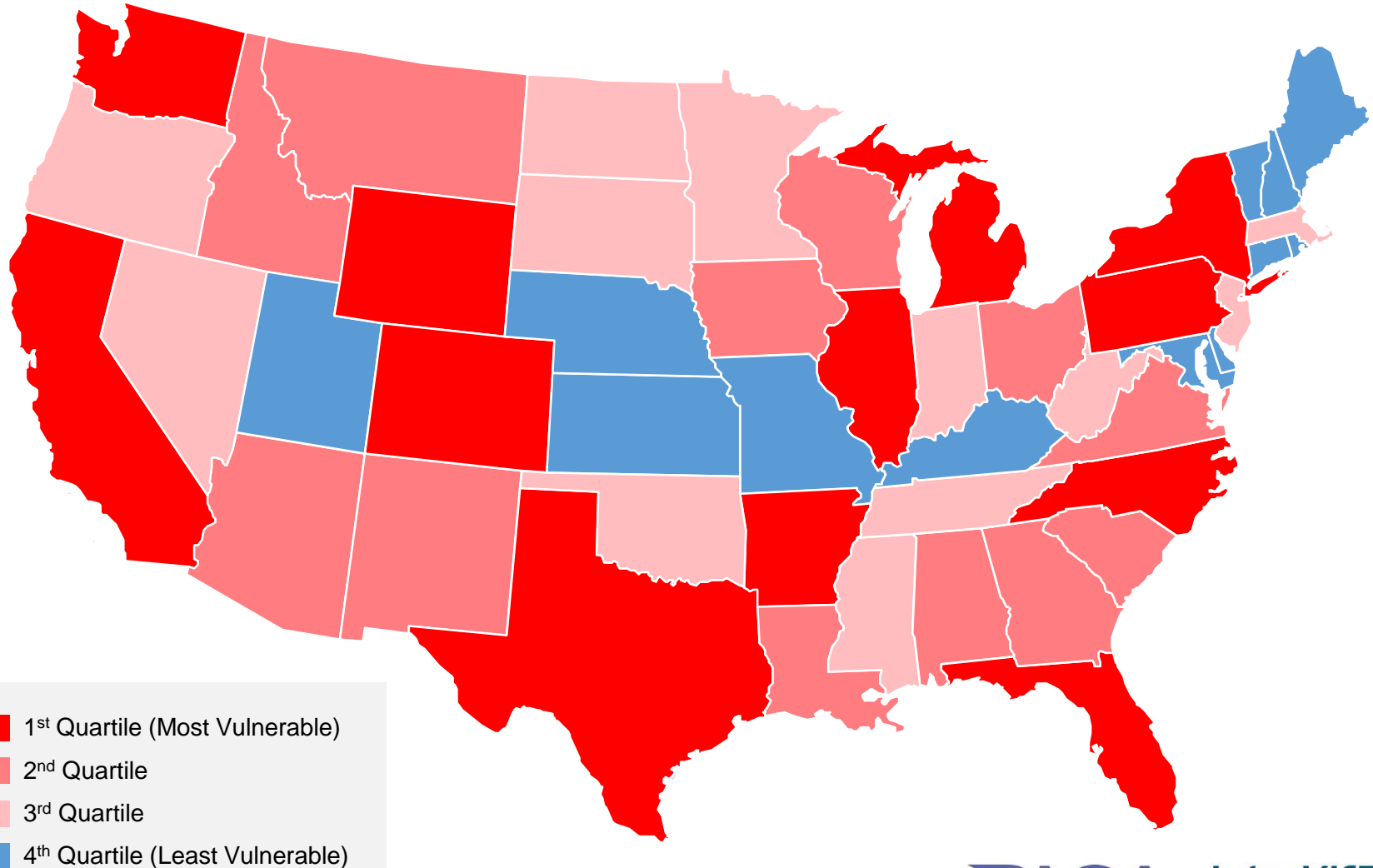
- InterVISTAS and RASA created an Air Service Vulnerability model for each of the 225 mainland small and non-hub airports, incorporating 7 metrics:
 - **Weighted at 20%:**
 - » **Geography:** How close is a better connected airport;
 - » **Percent of departures operated with 30-50 seat aircraft;** and
 - » **Percent change in departures between 2014 and 2016.**
 - **Weighted at 10%:**
 - » **Population:** air service migration to populous areas a clear trend;
 - » **Enplanements per Population:** what is market's propensity to travel?;
 - » **Airline Revenue:** more robust markets will contribute higher revenues; and
 - » **Connectivity per 1000 Enplaned Passengers:** a high connectivity ratio is considered an attribute of market sustainability.

The Air Service Vulnerability Index for Small and Non-hub Airports (page 2)

- The index ranks every small and non-hub airport by each of the 7 metrics to assess vulnerability.
- Small and non-hub airports are first assessed individually. The sum of an airport's ranks based on its relative positions in each of the seven metrics determines its **overall vulnerability**.
- Because some states have more small and non-hub airports than other states, an **average vulnerability per state airport** is also calculated and presented on a separate map.
- Finally a **composite index** is derived by equally weighting the two rankings derived above.
- This is viewed as the best measure to rate state vulnerability as it takes into account not only performance by airport but also accounts for the sheer number of airports in the state.

Air Service Vulnerability Index

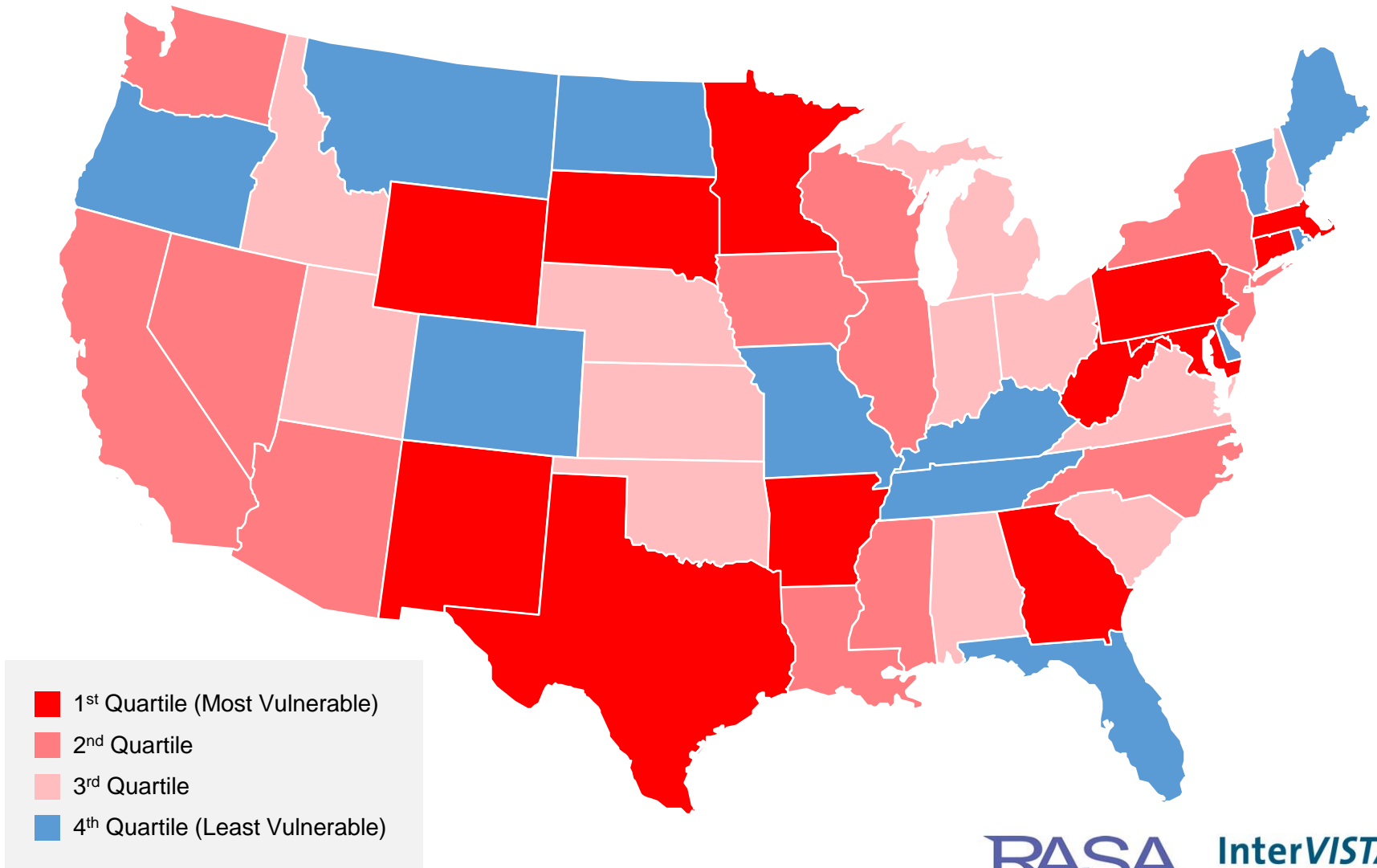
Total System Vulnerability of Small and Non-hub Airports



- 1st Quartile (Most Vulnerable)
- 2nd Quartile
- 3rd Quartile
- 4th Quartile (Least Vulnerable)

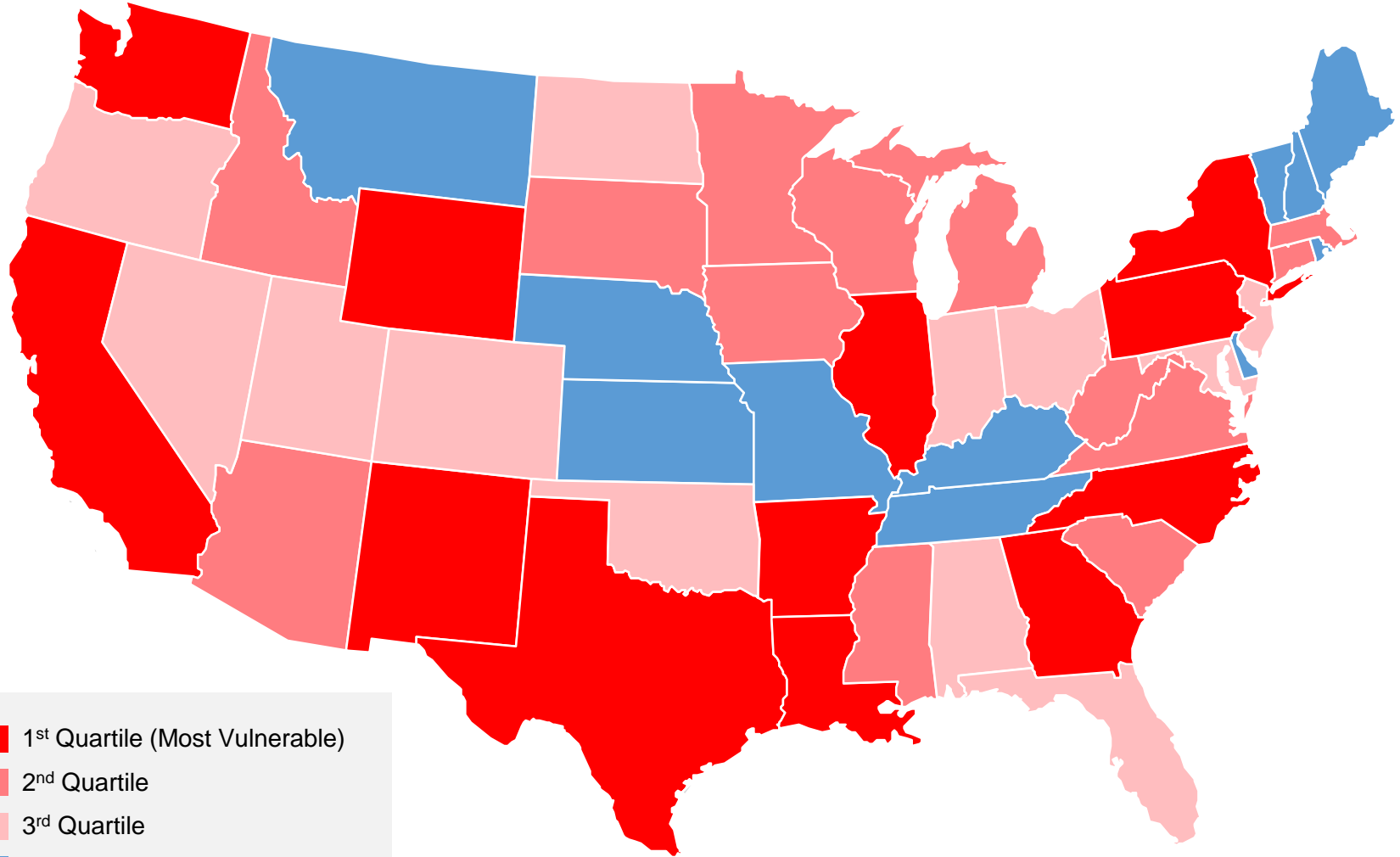
Air Service Vulnerability Index

Per Airport/Per State Average Vulnerability of Small and Non-hub Airports



Air Service Vulnerability Index

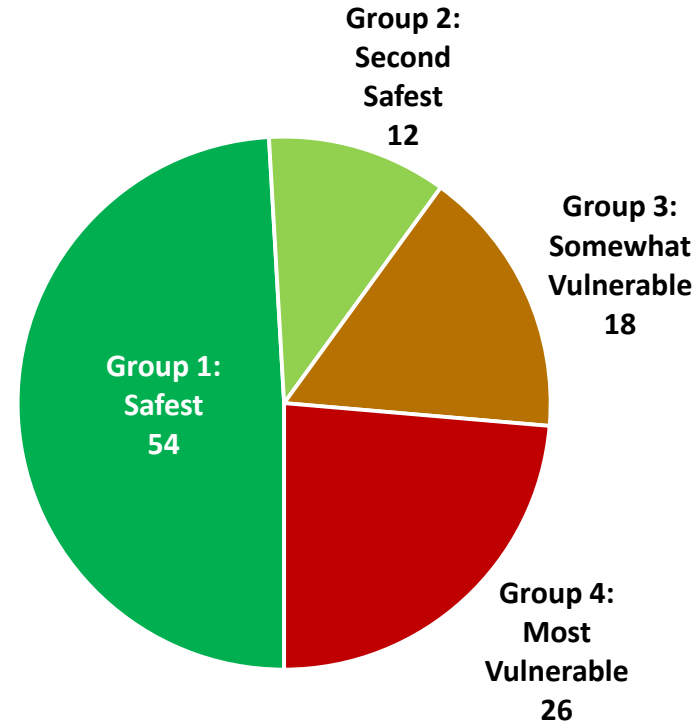
Composite Ranking of Small and Non-hub Airport Air Service Vulnerability



- 1st Quartile (Most Vulnerable)
- 2nd Quartile
- 3rd Quartile
- 4th Quartile (Least Vulnerable)

Assessing the Vulnerability of Mainland EAS Airports

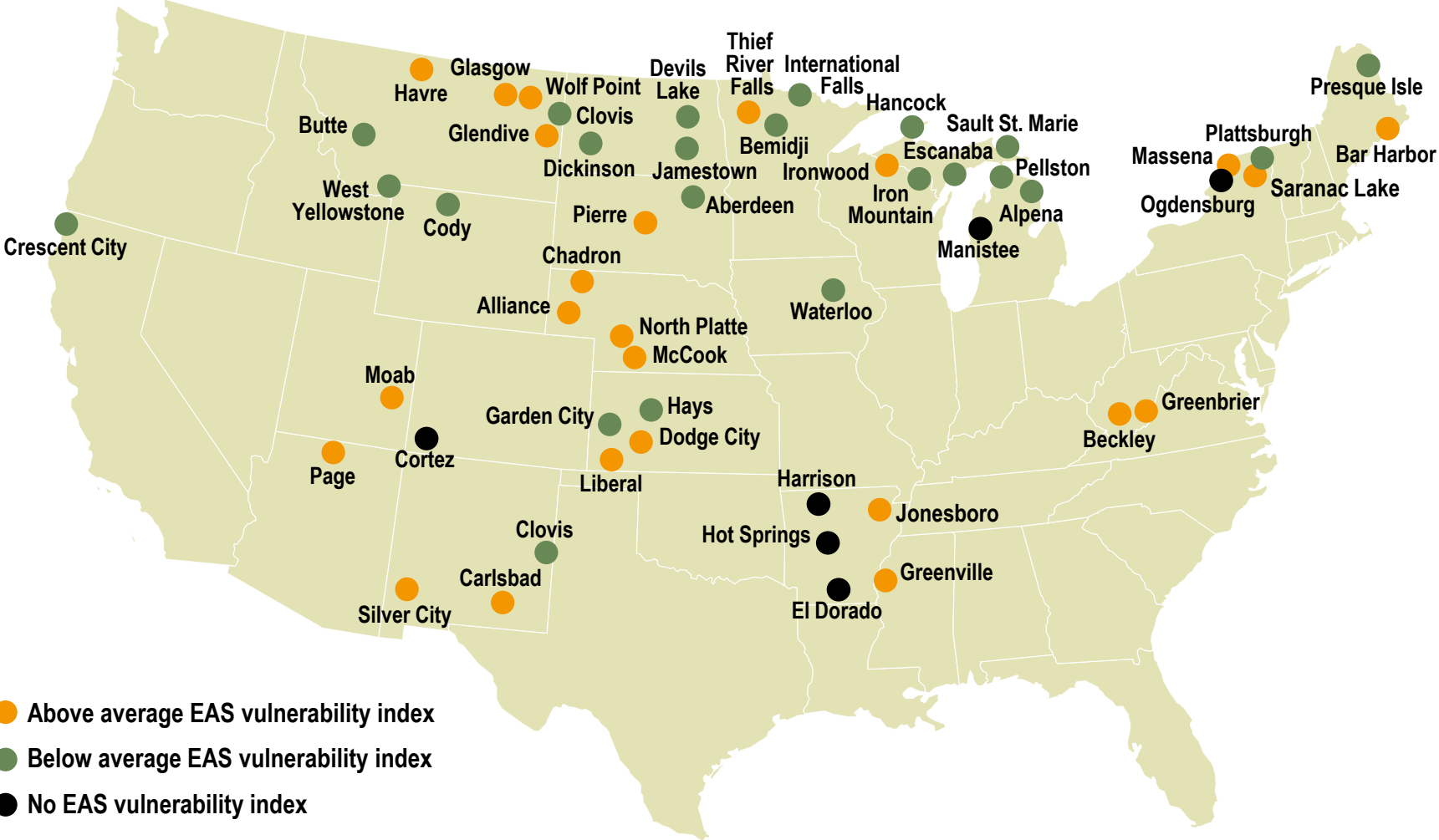
- From the guidelines established by the EAS program, we segmented the 110 mainland EAS markets into four distinct groupings:
- **Group 1 (Considered the SAFEST):** > 210 miles from a Large/Medium airport and therefore not subject to the \$200 per passenger subsidy cap
- **Group 2:** < 210 miles from a Large/Medium hub airport and are receiving less than \$100 per passenger subsidy
- **Group 3:** < 210 miles from a Large/Medium hub airport and are receiving between \$100 - \$200 per passenger subsidy
- **Group 4 (Considered the MOST VULNERABLE):** < 210 miles from a Large/Medium hub airport and are receiving more than \$200 per passenger subsidy



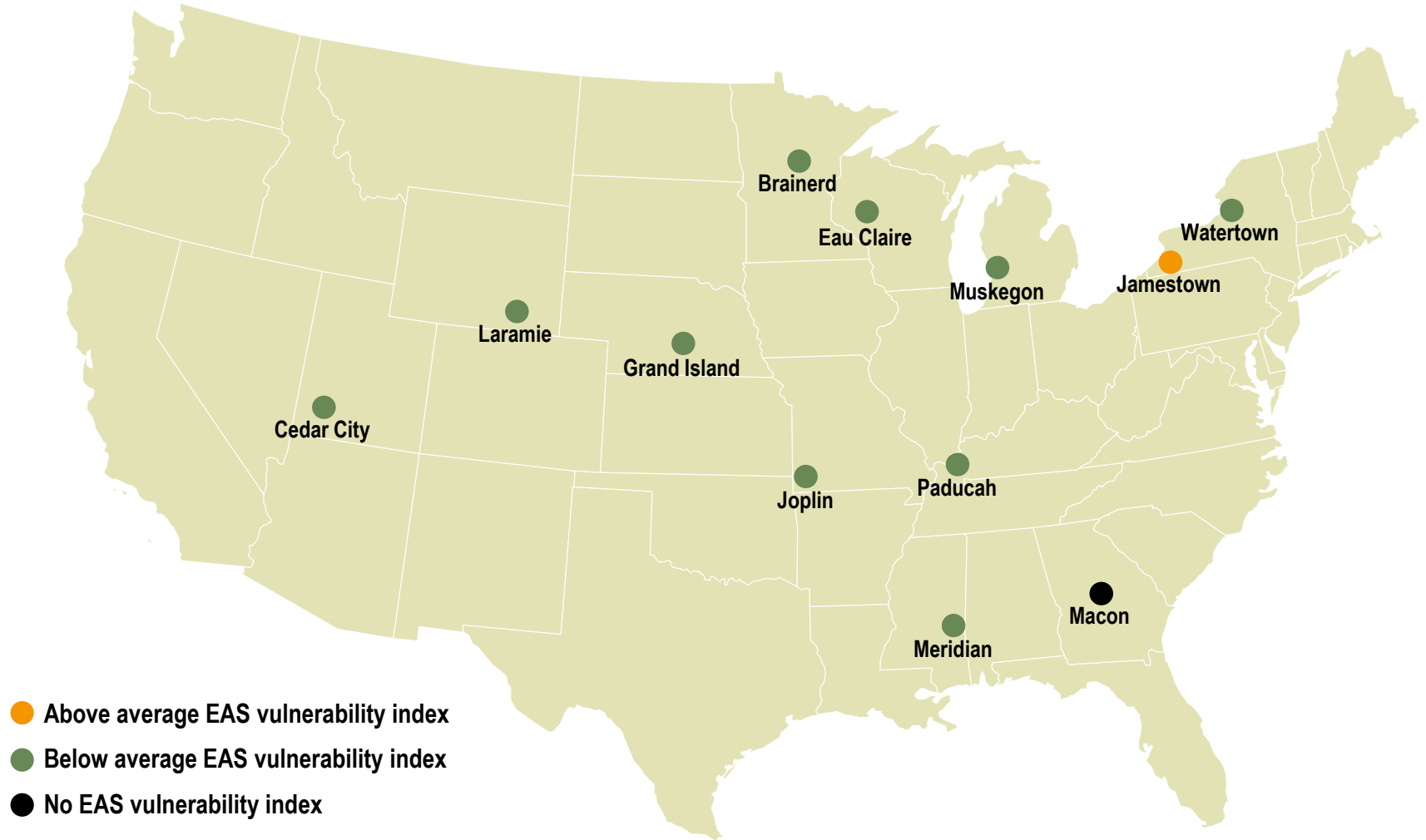
Average Vulnerability Index	
Group 1	306
Group 2	207
Group 3	353
Group 4	399

Group 1: Seen as Safest Group.

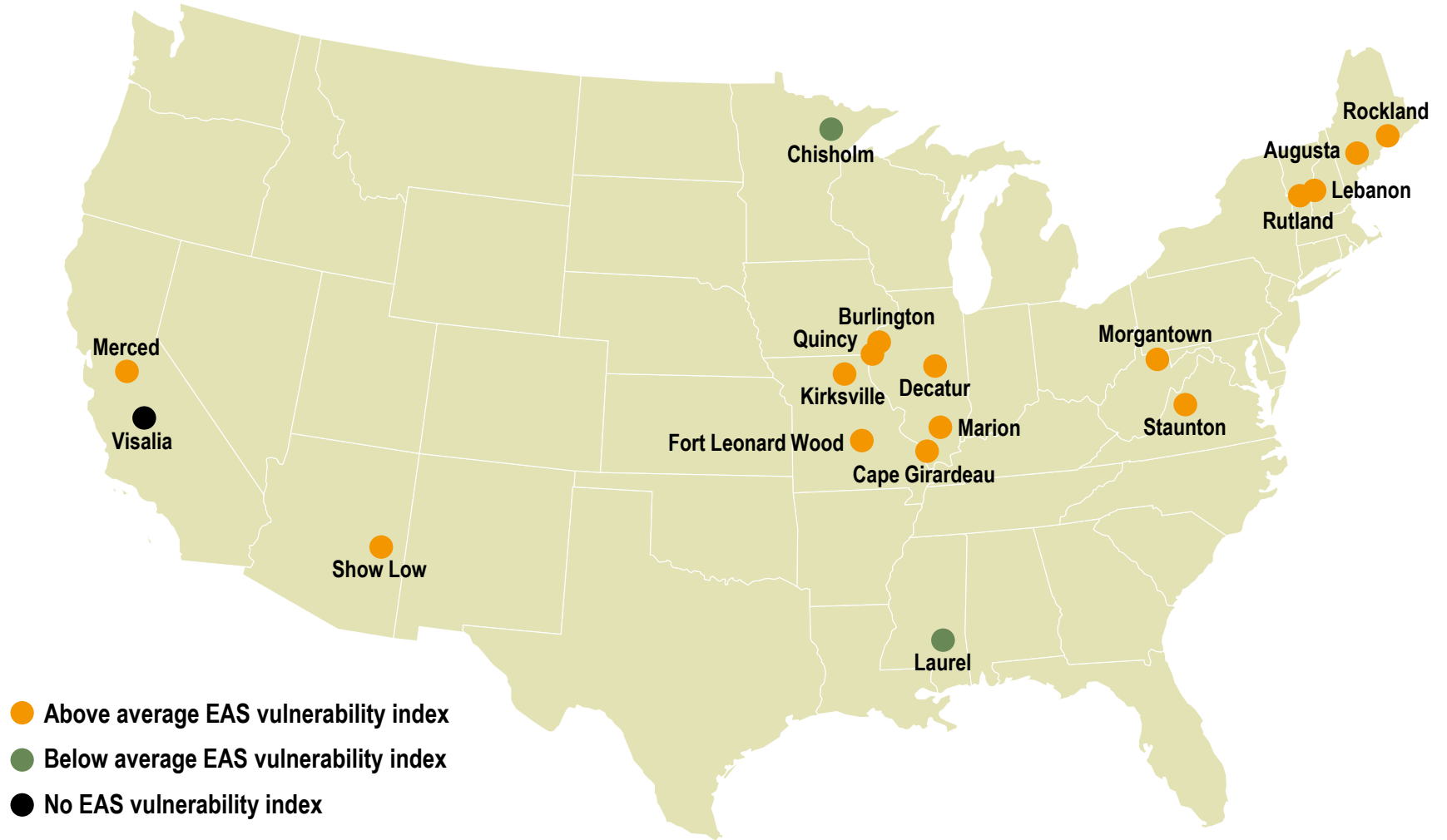
A Mix of Vulnerability Outcomes



Group 2: Virtually all Markets Demonstrate Relative Strength

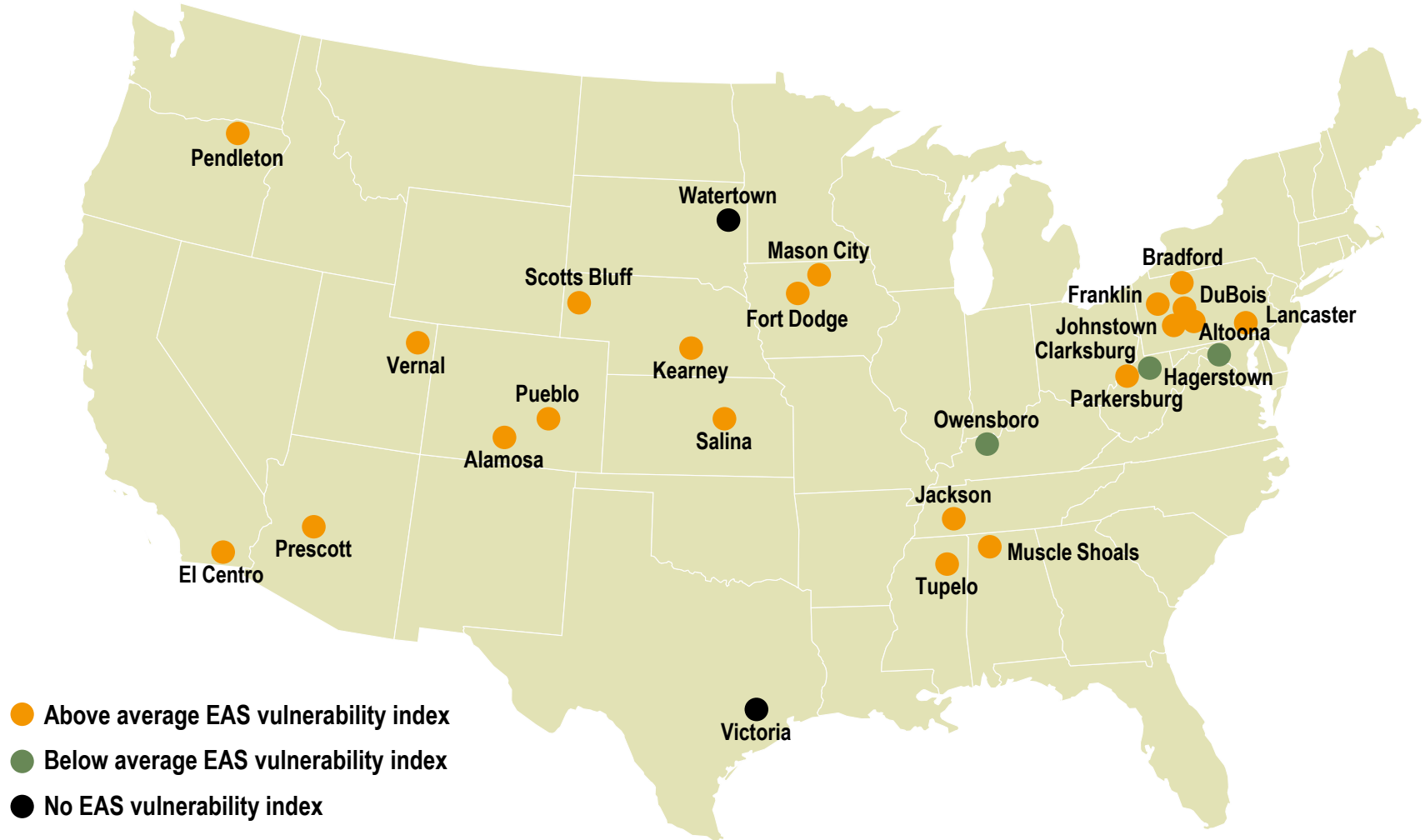


Group 3: Most Airports With Higher Than Average Vulnerability



Group 4: Seen as Most Vulnerable.

Virtually All With Higher than Average Vulnerability





Conclusions: Framing RASA's Discussion for Enhancing Small Community Air Service

- As the industry emerges from the capacity discipline era to a new business cycle of modest domestic growth, small communities stand at the crossroads:
 - Communities that can support service with larger regional jets stand to gain connectivity to major hubs and an increase in service.
 - ❖ These airports should be assisted in making the case for growth.
 - Communities that cannot support larger-RJ service may be vulnerable to losses in service—even at EAS airports.
 - ❖ At least seven mainland U.S. airports went dark in 2016.
 - ❖ Pilot shortage and airline network planning trends will prevent the return of the 50-seat jet, even at lower fuel prices.
- RASA² should consider how to assist its community members that fall in both of these categories—bolstering communities that are poised for growth while strategizing how to prevent vulnerable airports from losing further service.