

## Economic Analysis of California Meal and Rest Break (MRB) Law

*Impacts on Airline Workers, Customers, and the California and U.S. Economies*

March 15, 2022

# Background and Purpose of Study

- California's Meal and Rest Break (MRB) law requires that employees take one 10-minute paid rest break within each four-hour block of completed work and a 30-minute unpaid lunch break no later than the fifth hour of work.
- MRB establishes that during their breaks, employees must be free of any work-related duties, not recallable to work, and, during meal breaks, able to leave their physical place of work.
- The meal and rest break requirement has existed for decades in one form or another. Though never applied to airline crews, recent court challenges have called this into question.
- Applying MRB to scheduled air transportation would be highly disruptive, since airlines do not staff flights with "spare" crew to provide substitute labor inflight for the crew on break, and do not schedule aircraft and crew turns to provide time for breaks on the ground.
- This study estimates the air service network, economic, and employment impacts to airlines, customers, and employees—and to the California and U.S. economies—if MRB were applied to passenger and cargo air transportation by U.S. carriers.

# Implications of California MRB – Key Issues

- Incremental financial costs on industry and likely air service reductions
- Impact on airline and non-airline jobs
- Unintended consequences of closed California crew bases, reduced crew bid options, and increased crew time away from home to earn paid work hours
- Impact to California and U.S. national economies
- Route cancellations impact many states — not just California
- Distortion of competition in domestic and international markets
- Reduced U.S. carrier-operated California long-haul international nonstops
- Threat to sustainability of California hub operations
- Exacerbates supply chain challenges due to removal of freighter and belly capacity

# Airline Industry Options to Adapt to California Meal and Rest Break Laws

(1) Staggered Augmentation of Crews*	(2) Complete Augmentation of Crews*	(3) Intermediate Stops	(4) Close California Crew Bases
<ul style="list-style-type: none"> <li>▪ Add one pilot and one flight attendant to every flight whose total crew duty time exceeds 4:00. Staggering of flight crew active duty ensures FAA and carrier minimums are met continuously.</li> <li>▪ Flights with duty time less than 4:00 incur crew/aircraft ground delay cost to permit MRB breaks.</li> </ul>	<ul style="list-style-type: none"> <li>▪ MRB + FAA-mandated rest may require the complete crew (two pilots + full complement of flight attendants) to be replaced after each 4:00 block of duty time.</li> <li>▪ Flights with duty time less than 4:00 incur crew/aircraft ground delay cost to permit MRB breaks.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Add intermediate stops to flights after each successive 4:00 block of duty time, with crews taking break during intermediate stops.</li> <li>▪ Flights with duty time less than 4:00 incur crew/aircraft ground delay cost to permit MRB breaks.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Potentially avoid MRB exposure by closing CA crew bases and requiring all flights to be crewed from non-CA bases.</li> <li>▪ New deadhead and rest overnight expense (crews must be positioned to continue to operate duty trips that currently originate in California), and crew commute downsides.</li> </ul>

(\*) MRB-compliant Staggered Augmentation example for an 8-hour duty time flight: Pilot A operates flight hours 1-4 and 6-8, Pilot B operates flight hours 1-3 and 5-8, and Pilot C operates flight hours 4-5. Complete Augmentation example for an 8-hour duty time flight: Pilots A and B operate flight hours 1-4, Pilots C and D operate flight hours 5-8.

# Study Methodology

## Utilize 2019 Data for Analysis

- DOT public data on revenue, cost, and operations by carrier (O&D, T100, Form 41).
- Estimate carrier route-level profitability and flight crew cost components.
- Airlines provided data on California / non-California crew mix, crew complements, and duty time standards.

## Estimate MRB Change in Costs and Profitability

- Routes  $\geq 4.0$  duty time hours trigger augmentation or intermediate stops.
- Routes  $< 4.0$  duty time hours trigger extended aircraft / crew turn times.



## Identify MRB-Impacted Routes

- Cancel route if route profit margin declines by at least 10 points and is negative.
- Reduce capacity on route if (a) margin declines by at least 5 points and pre-MRB is  $< 5$  points positive, or (b) margin is positive post-MRB but declines by more than 10 points.

## Estimate Economic Impact

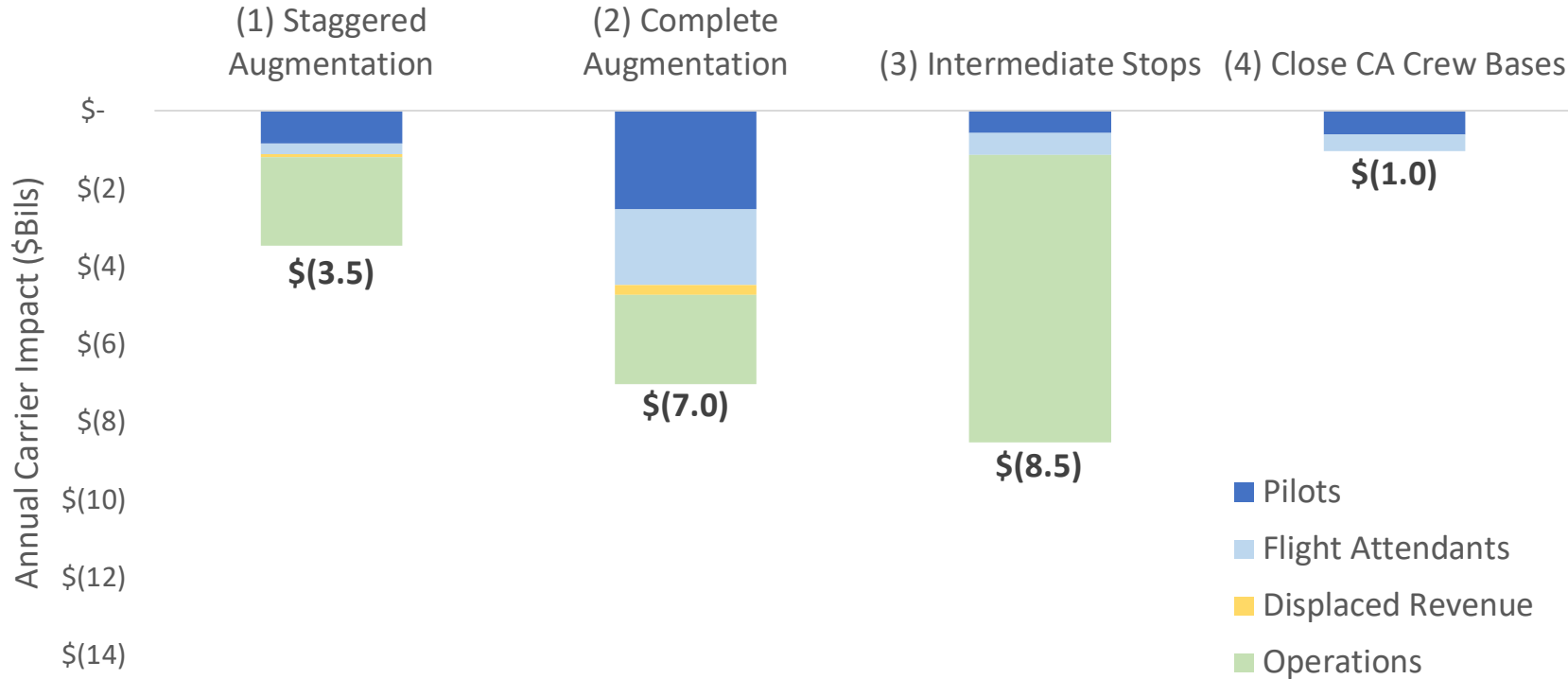
- Employment: Add employment based on required augmentation (based on duty time) but reduce employment according to canceled/reduced flights.
- Calculate MRB impacts on direct / indirect / induced air transportation employment.
- Measure economic output, tax, and multiplier effects using IMPLAN macroeconomic forecasting model.

## Measuring MRB Impacts: Two Examples

Route	 Southwest Oakland–Portland	 Alaska Newark–San Francisco		
California MRB Impact	Extended Turn Time	Staggered Augmentation	Complete Augmentation	Intermediate Stops
California Pilots / Flight Attendants Mix %	46% / 42%	26% / 96%		
Seats / Day	1,749	966		
Block Time (Hours)	1.7	5.9		
Crew Duty Time (Hours)	2.7	7.2		
Pre-MRB Estimated Profit Margin	Positive	Positive		
Post-MRB Estimated Profit Margin	Negative	Positive	Negative	Negative
Change Profit Margin	Down > 10%	Down < 5%	Down > 10%	Down > 10%
Model Prediction	<b>Cancel</b>	<b>No Change</b>	<b>Cancel</b>	<b>Cancel</b>

Source: InterVISTAS analysis utilizing public DOT financial/traffic/revenue data, and Innovata schedule data. Market assumed to Cancel if profitability margin decreases by at least 10 points and is negative. Market assumed to Reduce if (a) profitability margin declines by more than 5 points and pre-MRB margin is < +5%, or (b) profitability margin remains positive but decreases by at least 10 points following MRB.

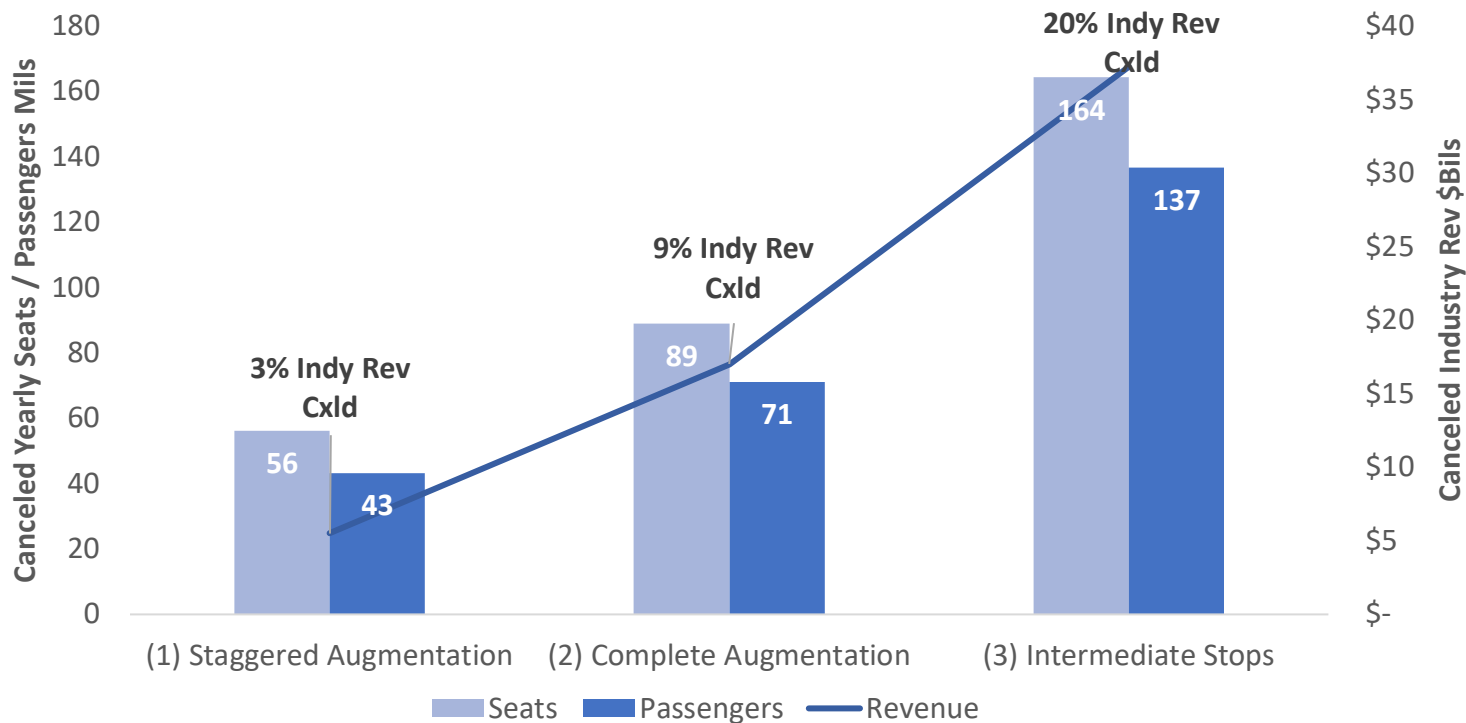
# Total Airline Industry MRB Annual Impact by Option (\$Bils)



Source: InterVISTAS analysis utilizing public 2019 DOT financial/traffic/revenue data, and Innovata schedule data, assuming 2019 schedules continue to be operated. Included combination carriers: Alaska Airlines, Allegiant Air, American Airlines, Atlas Air, Delta Air Lines, Frontier Airlines, Hawaiian Airlines, JetBlue Airways, Southwest Airlines, Spirit Airlines, and United Airlines. Included cargo carriers: Atlas Air, FedEx Express, and UPS Airlines. Included Regional carriers: Compass, Envoy, ExpressJet, GoJet, Horizon, Mesa, Republic, SkyWest, and Trans States.

# MRB May Cause Cancellation of 3%~20% of U.S. Passenger Airlines' Revenue, the Loss of 43~137 Million Passengers, and the Loss of 56~164 Million Seats Annually

Canceled Yearly Industry Revenue, Seats, and Passengers Due to MRB

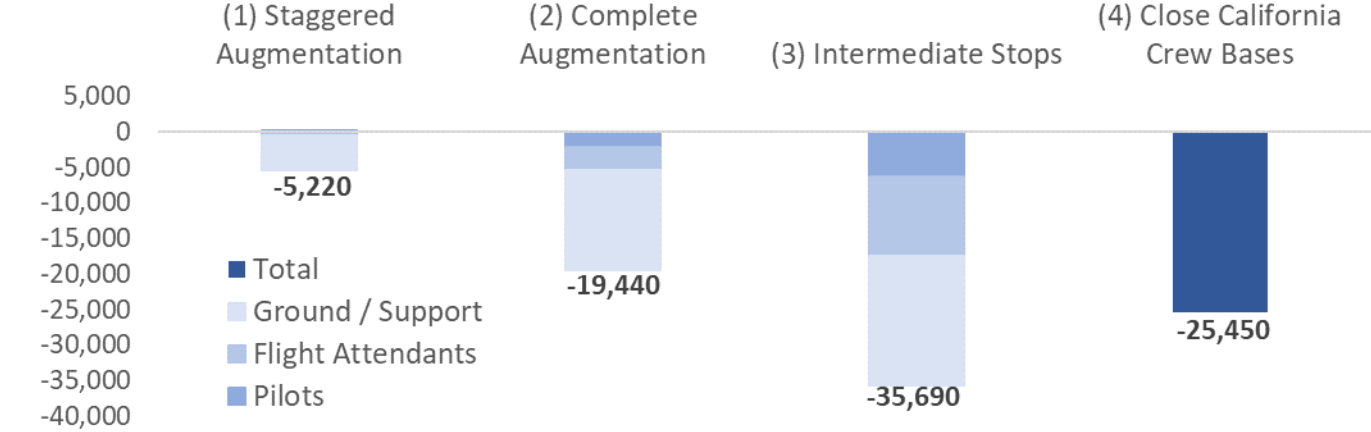


Source: InterVISTAS analysis utilizing public DOT financial/traffic/revenue data, and Innovata schedule data.

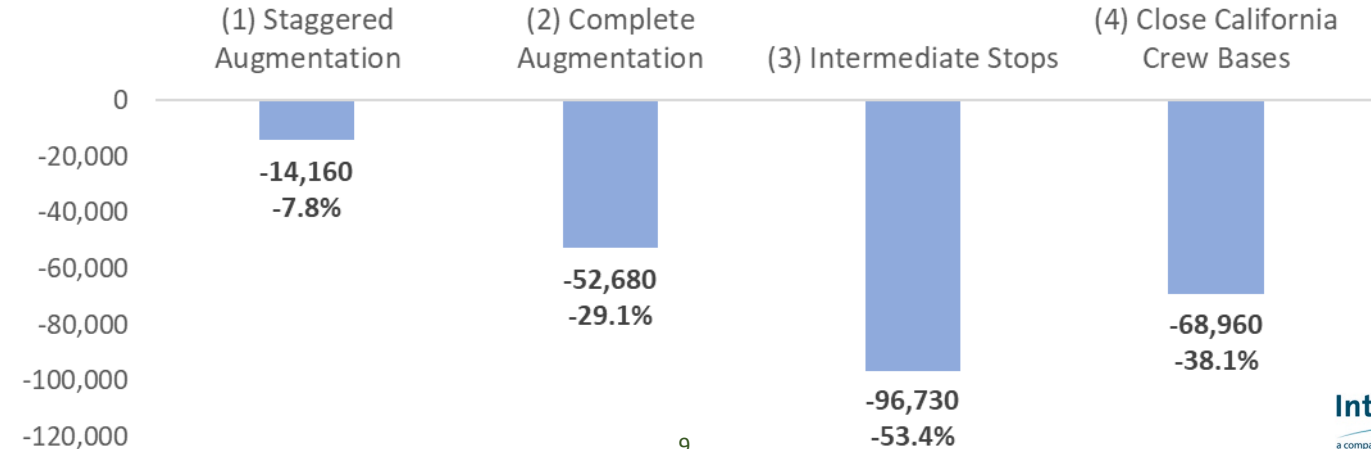


# MRB Compliance Causes 8%~53% Loss of California Aviation Jobs – With Ground Employees Impacted Far More than Flight Crews

Lost California Direct Air Transport Employment Jobs

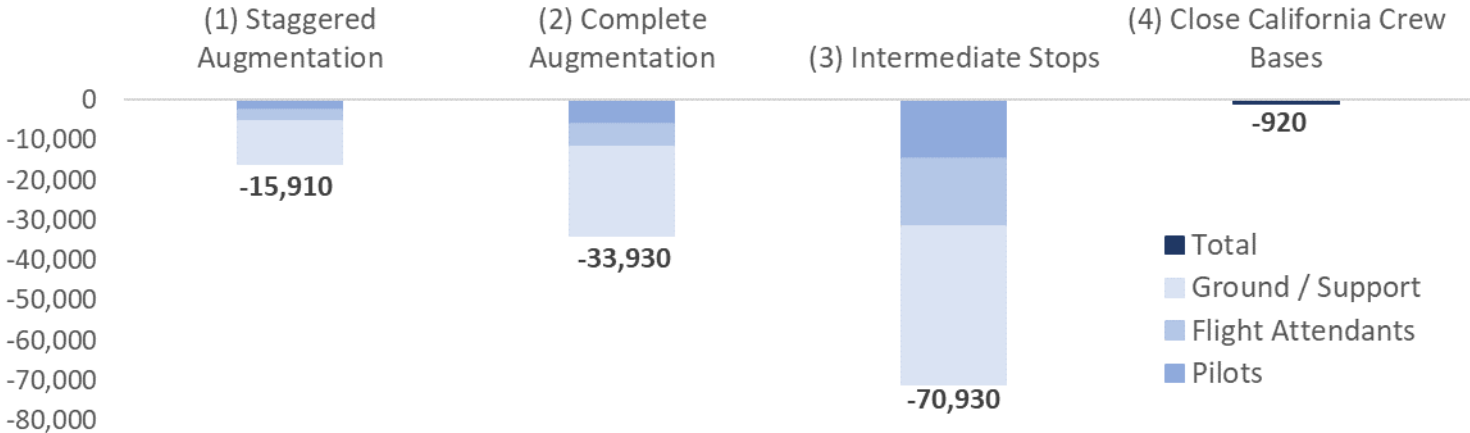


Lost California Air Transport Jobs (Including Multiplier Impacts)

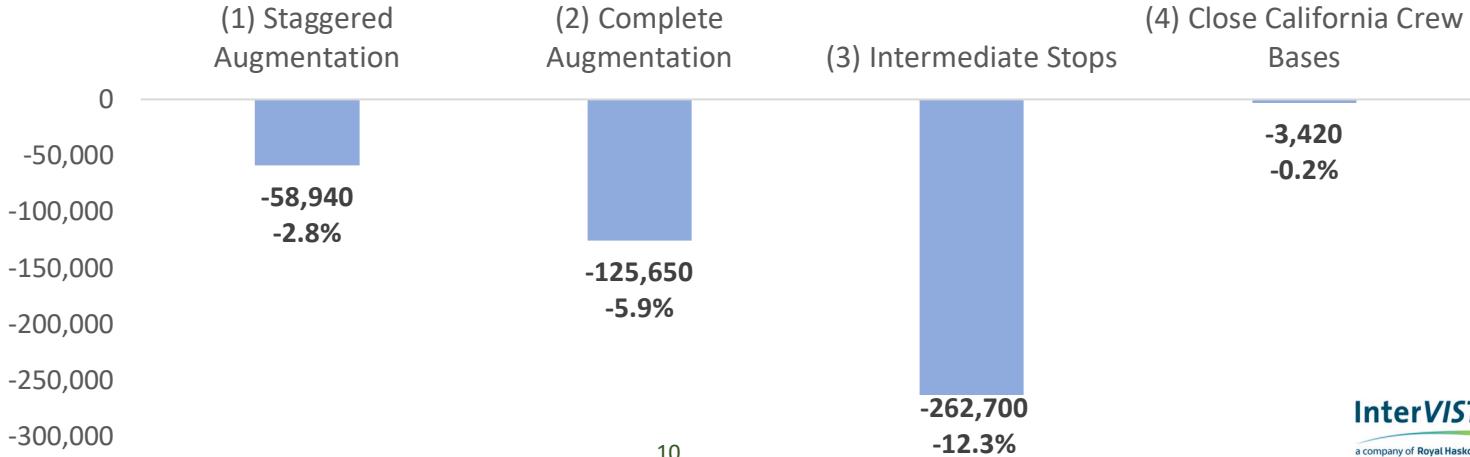


# MRB Compliance Causes 3%~12% Loss of U.S. Aviation Jobs – With Ground Employees Impacted Far More Than Flight Crews

Lost U.S. Direct Air Transport Employment Jobs



Lost U.S. Air Transport Jobs (Including Multiplier Impacts)



# Unintended Employee Consequences of MRB

## More Time Away From Home to Accrue Work Hours

- MRB mandatory paid 10-minute breaks and unpaid 30-minute meals extend the working day of flight crew and increase the duty time away from home with minimal increase in accrued work hours
- Duty day for example SkyWest LAX-based flight attendant routing extends by almost two hours post MRB, with only thirty minutes' additional paid time:

Pre-MRB SkyWest Example Flight Attendant Routing*			
Origin	Time	Destination	Time
Crew check-in time: 7:25a			
LAX	8:10a	COS	11:35a
COS	12:16p	LAX	1:49p
LAX	2:30p	MRY	3:47p
MRY	4:20p	LAX	5:49p
Crew off-duty time: 6:04p			
Total duty time: 10:39			
Total paid time: 7:44			



Post-MRB SkyWest Example Flight Attendant Routing*			
Origin	Time	Destination	Time
Crew check-in time: 7:25a			
LAX	8:10a	COS	11:35a
Meal+Break	11:50a		12:30p
COS	1:00p	LAX	2:33p
Break	2:48p		2:58p
LAX	3:28p	MRY	4:45p
Meal+Break	5:00p		5:40p
MRY	6:10p	LAX	7:39p
Crew off- duty time: 7:54p			
Total duty time: 12:29 (+1:50)			
Total paid time: 8:14 (+0:30)			

(\*) Hypothetical routing created from July 2019 SkyWest schedule (operated for United). Assumes only block time + rest break are paid. Assumes 0:45 pre-flight check-in time, 0:15 post-flight deplaning time, and 0:30 boarding time.

Note: Under California MRB, the airline schedule would require a cascading delay/revision to the pre-MRB schedule for the crew to operate this same city sequence. To operate the schedule times of the original pairing would require multiple crew changes.

# Unintended Employee Consequences of MRB

## Closure of California Crew Bases

- Flight crew options if California crew bases close:
  - Move outside California to new crew base (quality of life, family dislocation, etc.).
  - Maintain California residence. May be required to begin / end duty trips at new crew base. Lost personal time to commuting. Example of American LAX captain flying LAX-DFW-LAX:

### Today

Day 1 Drive to LAX early morning  
Day 1 Pilot on morning LAX-DFW-LAX flight  
(6:30 earned flight hours)  
Day 1 Return home in evening

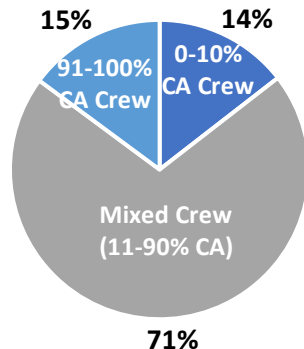
### Post-Closure

#### New PHX Crew Base

Day 1 Drive to LAX in the evening  
Day 1 Personal commute travel LAX-PHX  
Day 1 Deadhead trip PHX-LAX, rest overnight in LAX  
Day 2 Pilot on morning LAX-DFW-LAX flight  
(6:30 earned flight hours)  
Day 2 Deadhead trip LAX-PHX to complete the trip  
Day 2 (or 3) Personal commute travel PHX-LAX  
Day 2 (or 3) Return home

## Fewer Crew Bid Opportunities

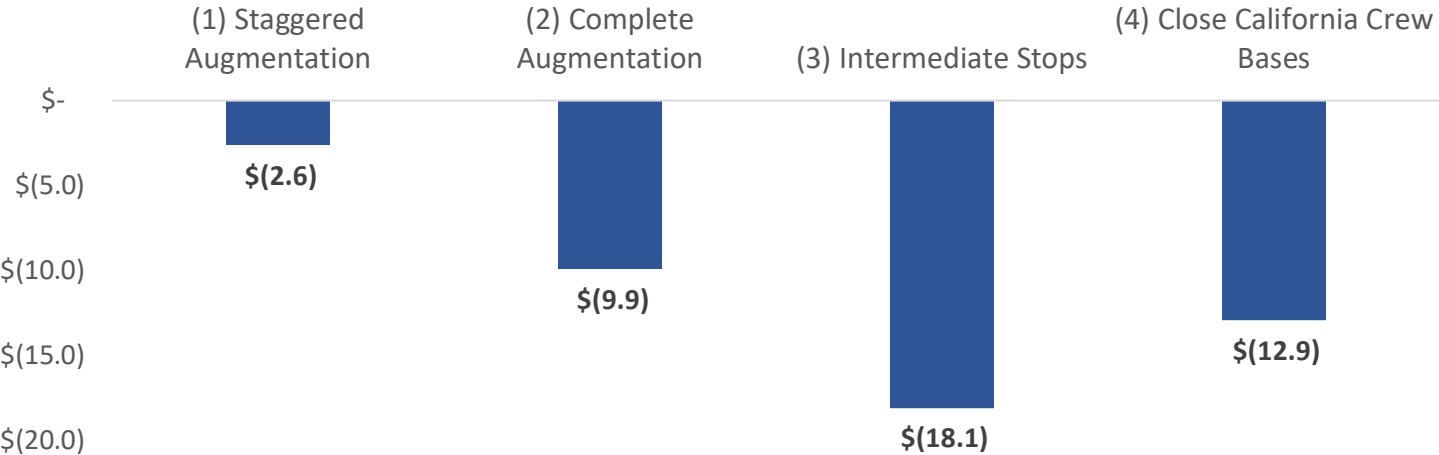
- Today, most flights to/from/within California have “mixed” California and non-California based flight crews.
- Post-MRB, airlines likely to end mixed crews to maintain operational integrity and control costs, which likely means moving most “mixed” flights to zero California crews, and therefore fewer California crew opportunities.



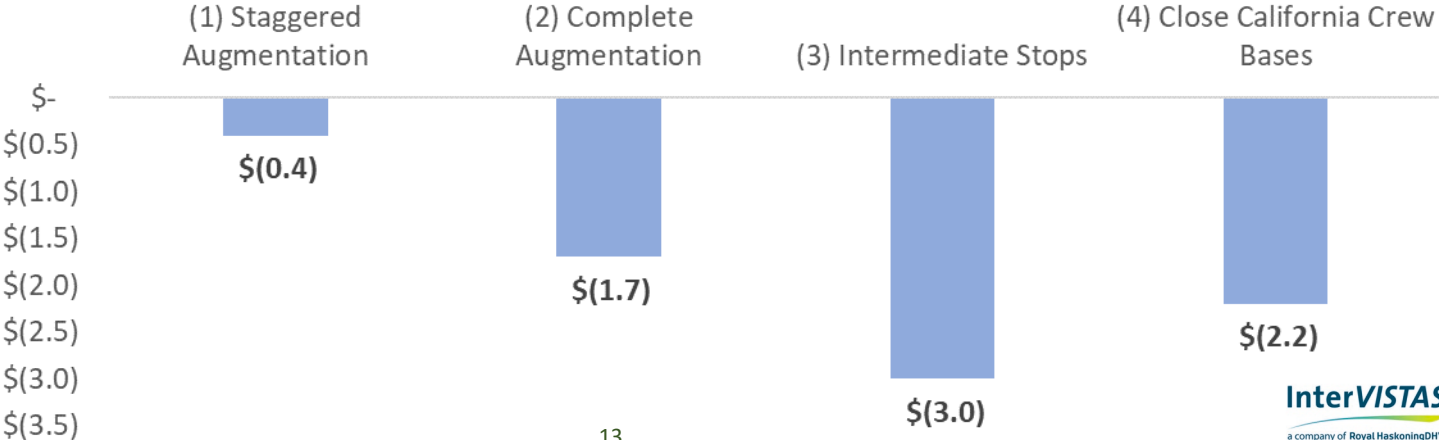
In 2019, 71% of the revenue on flights to/from/within California was generated on Mixed Crew flights (with 11-90% California Crew Mix)

# MRB Compliance Causes \$2.6B~\$18.1B GSP Loss, and \$0.4B~\$3.0B California Tax Revenue Loss

Lost California Gross State Product \$Bils

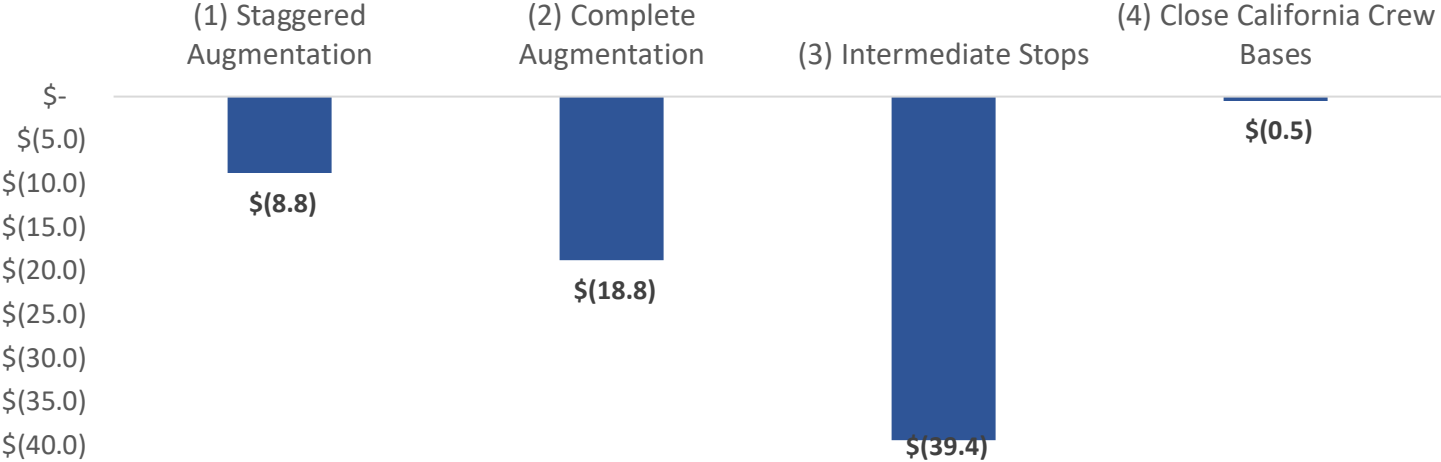


Lost California Tax Revenue \$Bils

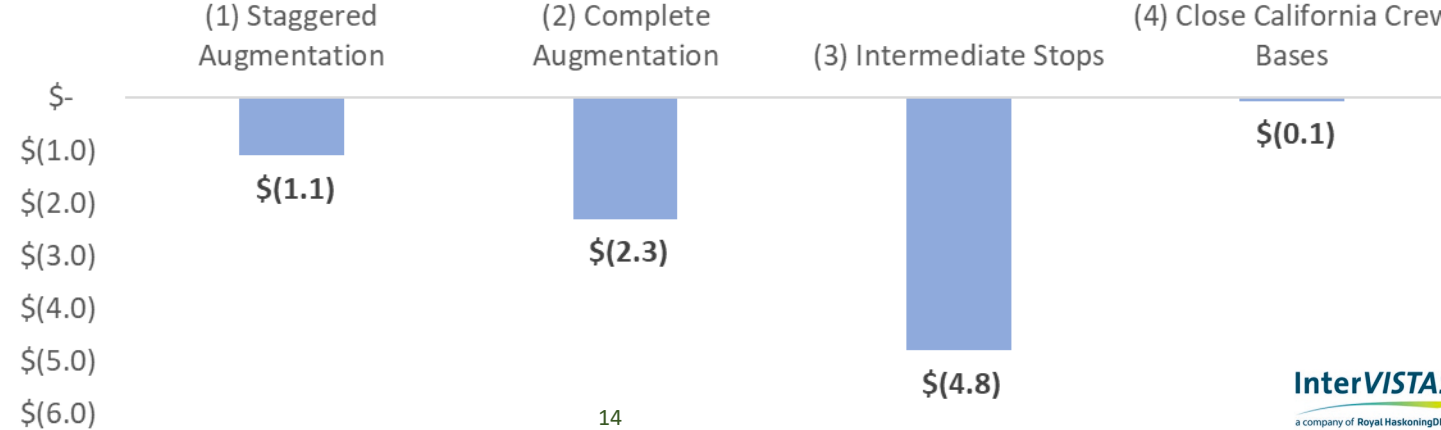


# MRB Compliance Causes \$8.8B~\$39.4B GDP Loss, and \$1.1B~\$4.8B Federal Tax Revenue Loss

**Lost U.S. Gross  
National Product  
\$Bils**

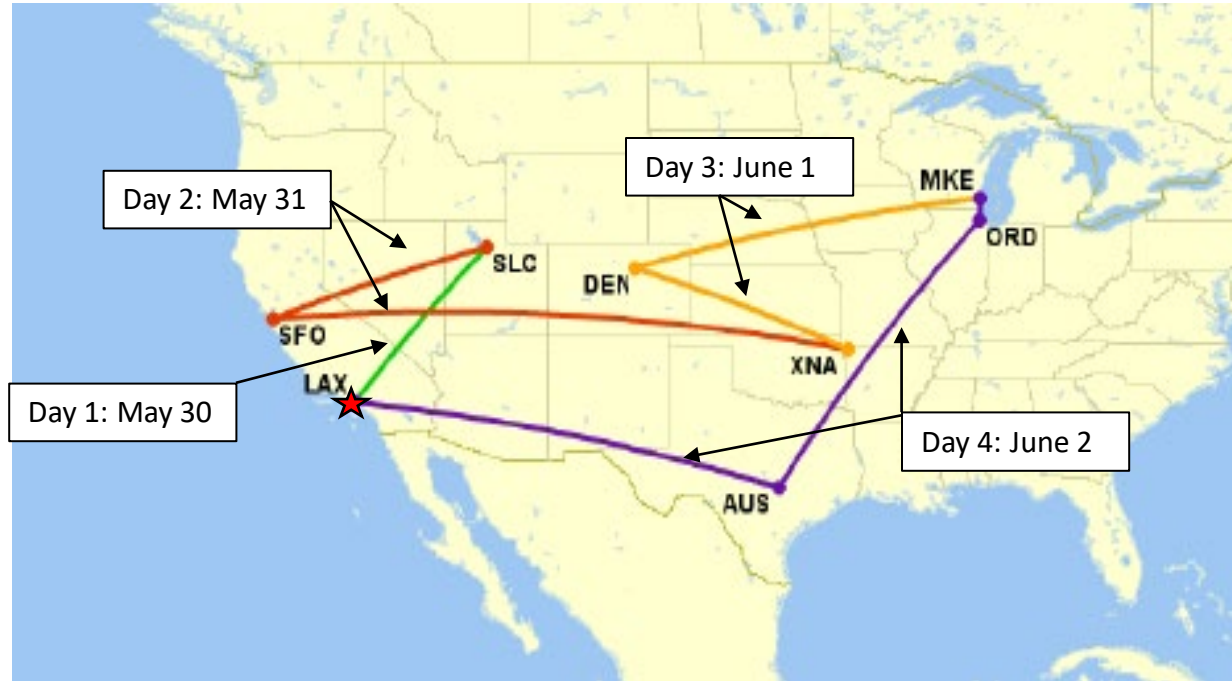


**Lost U.S.  
Tax Revenue  
\$Bils**



# California Crews Often Fly Routes That Do Not Touch California

*Example LAX-Based SkyWest Flight Attendant 4-Day Duty Trip: Only 4 of 7 Flight Segments Involve California*

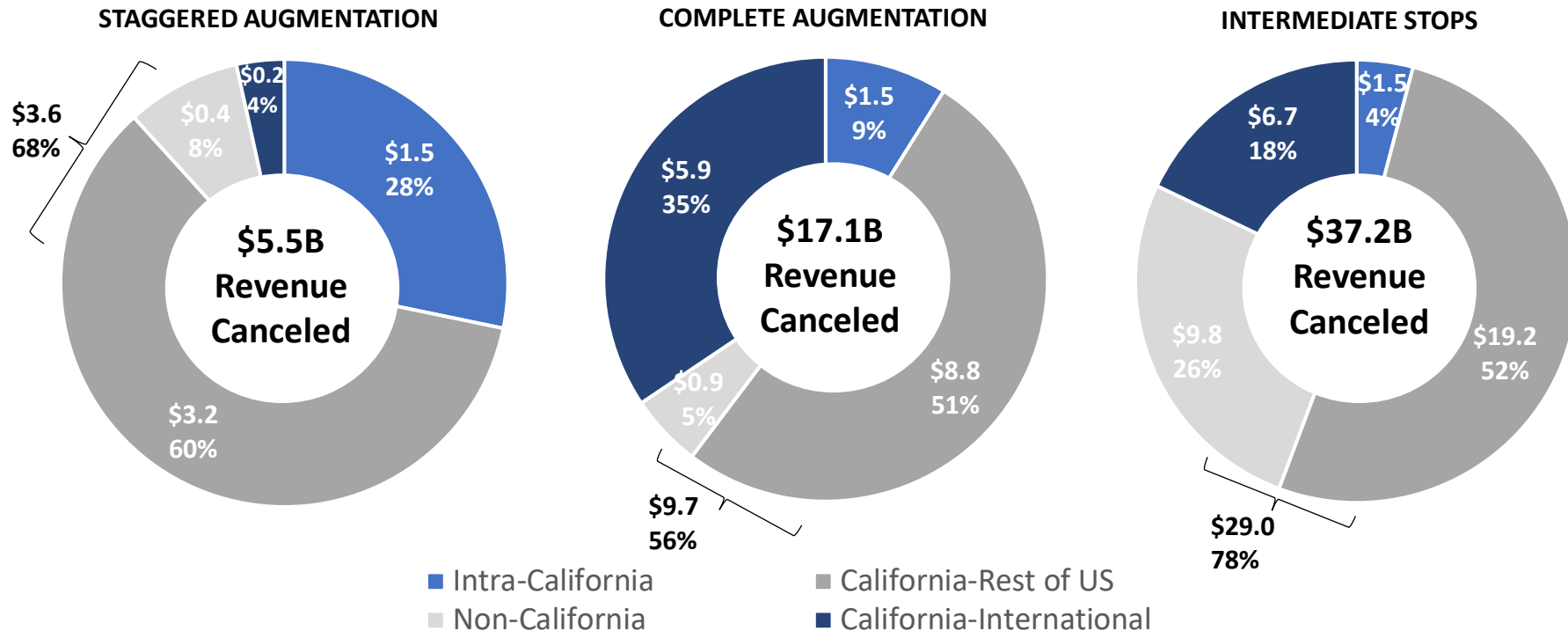


Source: US Dist Court Nd Cal, Wilson et al v SkyWest Airlines, Inc (Case 3:19-cv-01491-VC Document 60-1, Page 34). Analysis of SkyWest flight attendant pairing data. Pairing G5334 flown by SkyWest flight attendants from May 30-June 2, 2019. Flight from MKE to ORD was a deadhead on United. All other flights were operated by SkyWest.

# MRB-Driven Air Service Reductions Impact the Rest of U.S. as Much as California

*56%~78% of Canceled Revenue Involves at Least One Rest of U.S. Point*

## Canceled Revenue Due to MRB, \$Bils

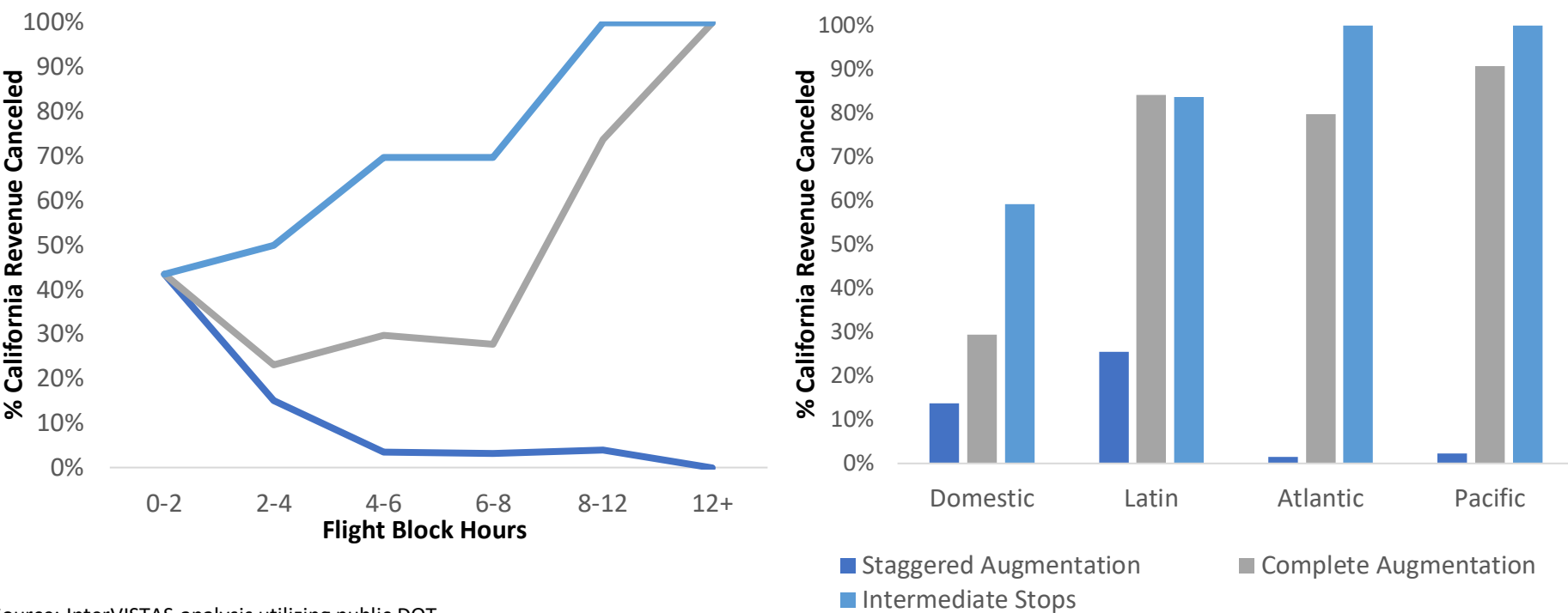


Source: InterVISTAS analysis utilizing public DOT financial/traffic/revenue data, and Innovata schedule data.



# All Lengths of Haul Impacted by MRB; Long-Haul Cancellations Spared Under Staggered Augmentation, but Heavily Impacted in Other Compliance Scenarios

Canceled U.S. Carrier California Revenue Due to MRB, by Flight Block Hours and Region



Source: InterVISTAS analysis utilizing public DOT financial/traffic/revenue data, and Innovata schedule data.

# MRB Cancellations Would Impact the Entire Domestic U.S. Market

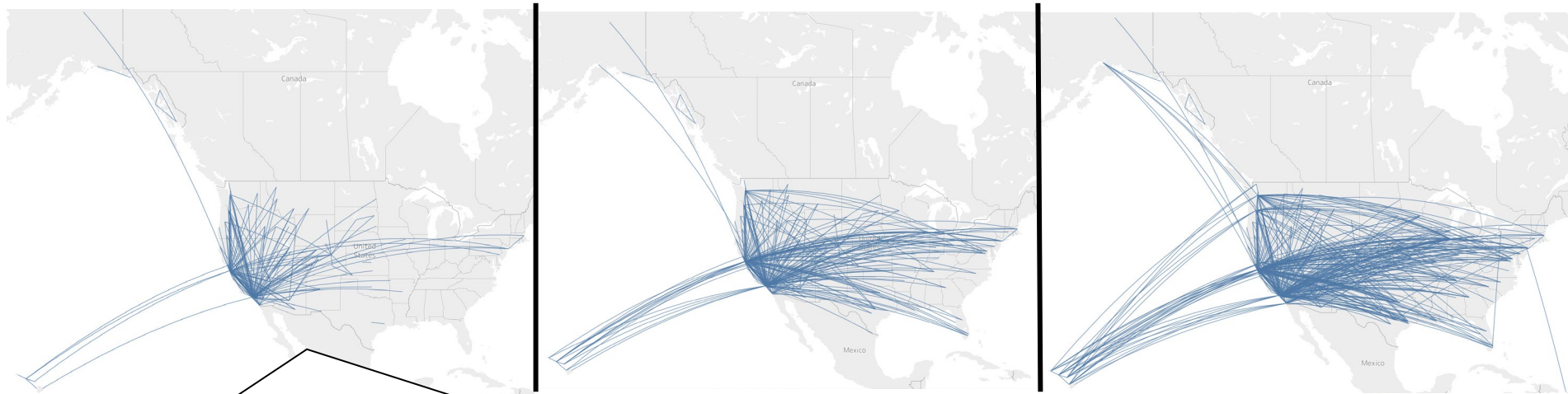
*Impacts Would Be Centered in California, but Other Western States' Networks Would Be Substantially Harmed (Hawaii, Oregon, Washington, Alaska)*

## Domestic City-Pair Routes Canceled or Reduced Service by at Least One Carrier

STAGGERED AUGMENTATION

COMPLETE AUGMENTATION

INTERMEDIATE STOPS



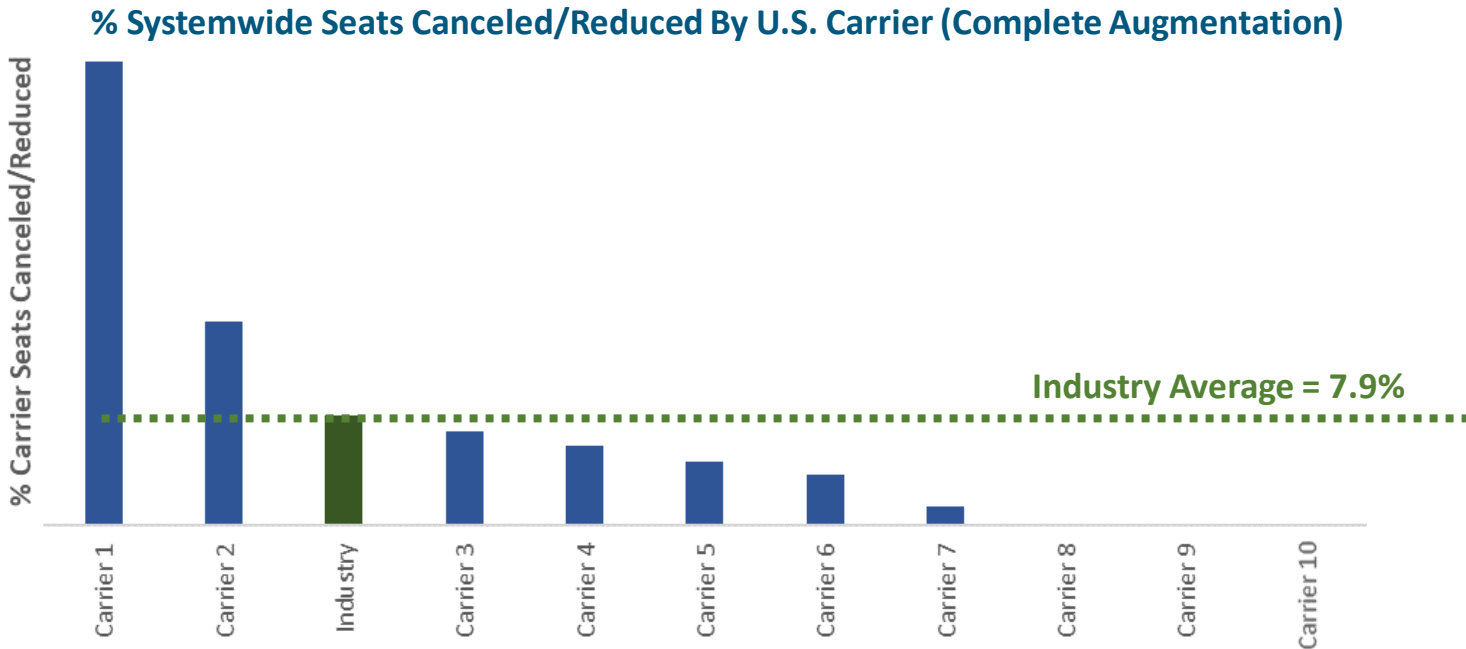
### Top 10 Canceled Cities (by Airport, Seats/Year Canceled, % Seats Canceled)

① LAX	23M	30%	④ PDX	7M	29%	⑦ OAK	5M	33%	⑩ LGB	3M	71%
② SFO	18M	32%	⑤ SEA	6M	11%	⑧ SAN	5M	15%			
③ LAS	7M	13%	⑥ SJC	6M	31%	⑨ DEN	3M	3%			

Source: InterVISTAS analysis. For clarity, only route cancellations and route reductions of at least 20% of capacity are shown.

# MRB Would Distort / Reduce Competition Among U.S. Carriers





*MRB Imposes Harm Very Unevenly on U.S. Carriers — Two Carriers Bear a Disproportionate Share of Seats Canceled Due to MRB, Four Carriers Slightly Below Average, and Four Carriers Almost Completely Unimpacted*



Source: InterVISTAS analysis under Complete Augmentation case.

# MRB Would Distort / Reduce U.S. Domestic Competition: Long-Haul Example





*In New York JFK–San Francisco, Based on Exposure to California-Based Crews, Alaska May Exit After MRB, American May Reduce Service, While JetBlue Is Completely Unimpacted (No San Francisco Crew Base)*

New York JFK–San Francisco Nonstop Market				
Airline				
California Pilots / Flight Attendants Mix %	52% / 95%	12% / 51%	9% / 59%	0% / 0%
Seats / Day	1,350	900	2,300	1,800
Block Time (Hours)	6.2	6.2	6.2	6.2
Crew Duty Time (Hours)	7.3	7.4	7.4	7.2
Pre-MRB Model Estimated Profit Margin	Positive	Positive	Positive	Positive
Post-MRB Model Estimated Profit Margin	Negative	Breakeven	Positive	Positive
Change Profit Margin	Down > 10%	Down > 5%	Down > 5%	No Impact
Model Prediction	<b>Cancel</b>	<b>Reduce</b>	No Change	No Change

Source: InterVISTAS analysis utilizing public DOT financial/traffic/revenue data, and Innovata schedule data. Complete Augmentation case.

# MRB Would Distort / Reduce U.S. Domestic Competition: Short-Haul Example

*In Los Angeles–Sacramento, Model Predicts Cancellation by All Four Nonstop Carriers Due to California Based-Crews Exposure and Low Pre-MRB Profitability; Likely Outcome Is Reduction to One Airline With Fewer Seats and Higher Prices*

Los Angeles–Sacramento Nonstop Market				
Airline				
California Pilots / Flight Attendants Mix %	28% / 30%	88% / 91%	78% / 77%	92% / 95%
Seats / Day	2,300	820	350	600
Block Time (Hours)	1.5	1.5	1.7	1.6
Crew Duty Time (Hours)	2.4	2.7	2.8	2.7
Pre-MRB Model Estimated Profit Margin	Breakeven	Negative	Breakeven	Positive
Post-MRB Model Estimated Profit Margin	Negative	Negative	Negative	Negative
Change Profit Margin	Down > 10%	Down > 10%	Down > 10%	Down > 10%
Model Prediction	<b>Cancel</b>	<b>Cancel</b>	<b>Cancel</b>	<b>Cancel</b>
Qualitative Prediction	Reduce to one airline with fewer seats, higher prices			

Source: InterVISTAS analysis utilizing public DOT financial/traffic/revenue data, and Innovata schedule data. Elongated turn times applies to all cases.

# MRB Would Result in the Disappearance of Many U.S. Carrier-Operated California-International Routes and Some Non-California International Routes

## International City-Pair Routes Canceled or Reduced by at Least One Carrier

**STAGGERED AUGMENTATION**



**COMPLETE AUGMENTATION**



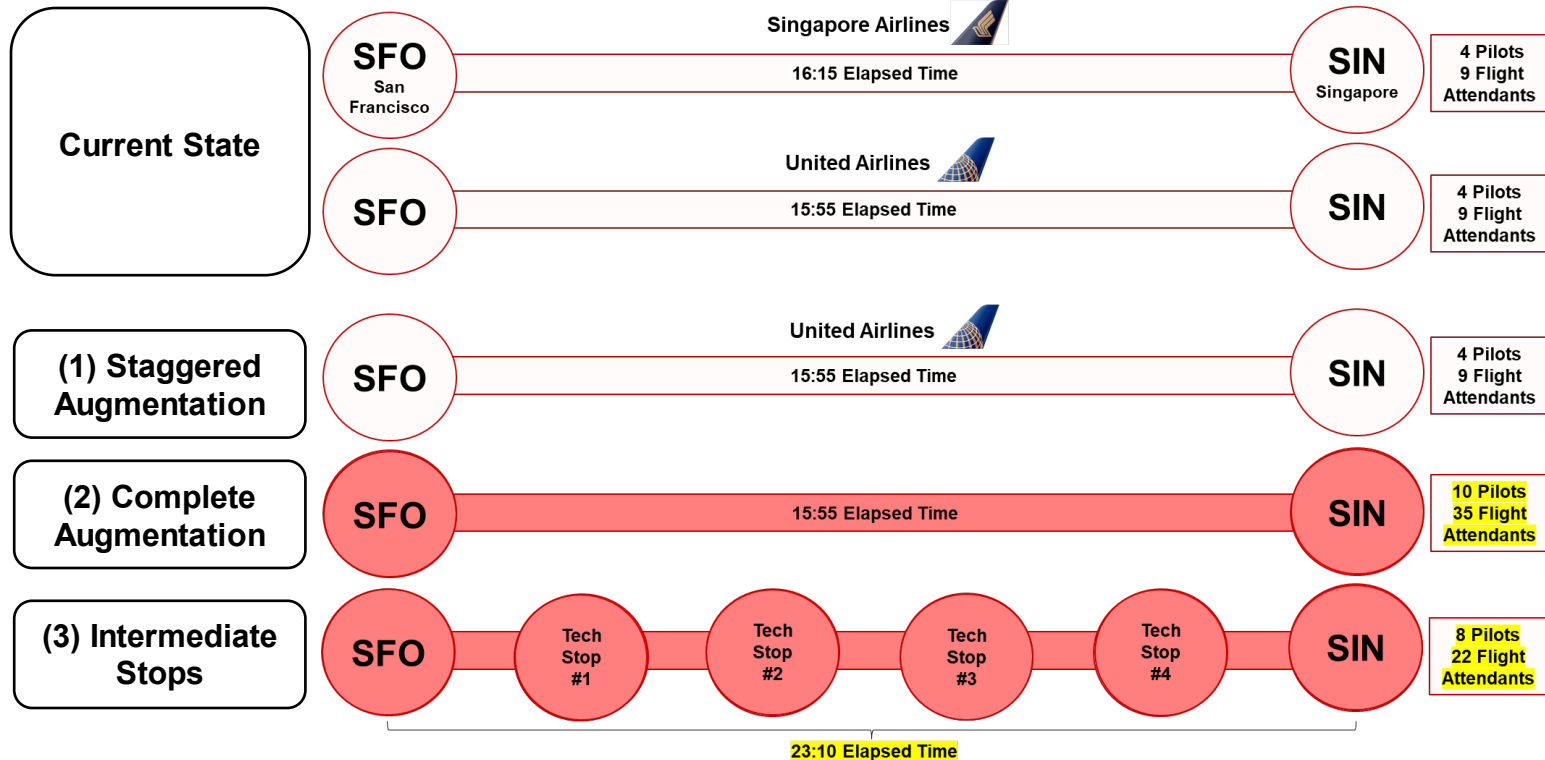
**INTERMEDIATE STOPS**



Source: InterVISTAS analysis. For clarity, only route cancellations and route reductions of at least 20% of capacity are shown.

# MRB Would Distort / Reduce Competition in International Markets

*San Francisco–Singapore Nonstop Example: MRB Compliance May Force United to at Least Double Flight Crew — Impossible to Remain Cost-Competitive Versus Singapore Airlines*


















Source: InterVISTAS analysis. SQ crew complement estimated utilizing UA complements for similar aircraft max seat count.

# MRB Would Decimate U.S. Carrier California–International Nonstops

*Foreign Flags Overlap on 95% (by Revenue) of U.S. Carrier California–International Nonstops, and Do Not Face MRB*

## Foreign Carrier Weekly Nonstop Overlaps on U.S. Carrier California–International Flights

United

DELSFO 1x 	CDGSFO 7x 
HKGSFO 8x 	FRASFO 14x 
HNDSFO 7x 	LHRLAX 7x 
ICNSFO 10x 	LHRSFO 14x 
NRTLAX 7x 	MUCSFO 5x 
NRTSFO 7x 	ZRHSFO 3x 
PEKSFO 7x 	TLVSFO 7x 
PVGLAX 7x 	AKLSFO 5x 
PVGSFO 14x 	MELLAX 7x 
SINSFO 14x 	MELSFO 1x 
TPESFO 7x 	PPTSFO 3x 
AMSSFO 4x 	SYDLAX 5x 
CTUSFO 3x	SYDSFO 7x 
KIXSFO 7x	

No foreign  
airline

American

HKGLAX 7x 
HNDLAX 7x 
NRTLAX 7x 
PEKLAX 7x 
PVGLAX 7x 
LHRLAX 14x 
AKLLAX 3x 
SYDLAX 7x 
EZELAX 3x
GRULAX 4x

No foreign  
airline

Delta

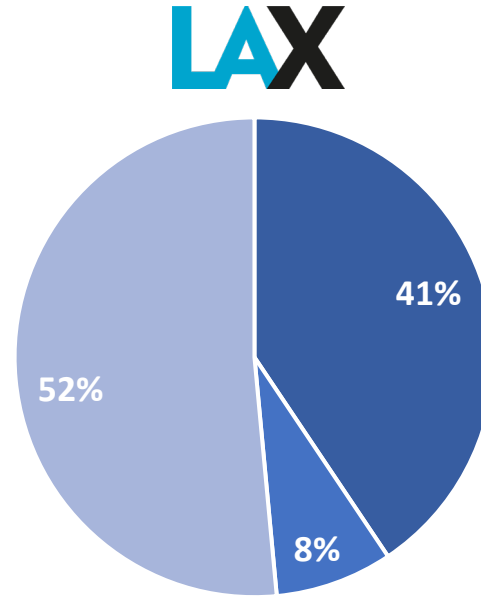
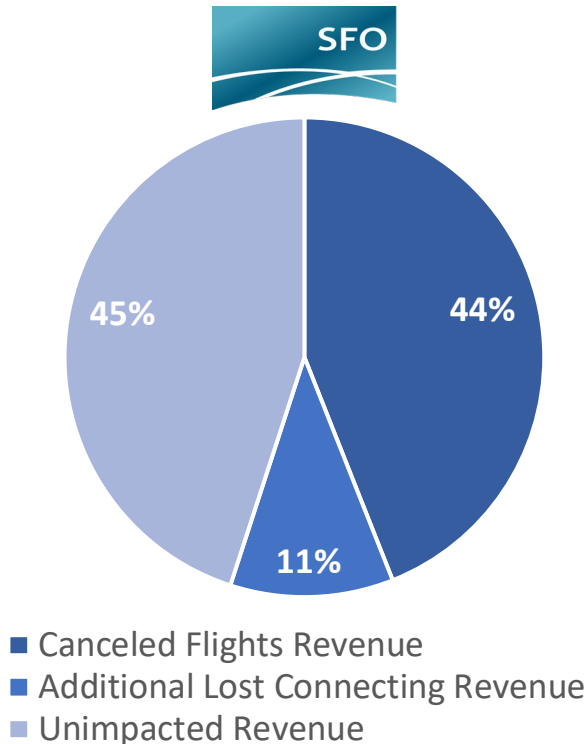
HNDLAX 7x 
PVGLAX 6x 
AMSLAX 3x 
CDGLAX 5x 
SYDLAX 7x 



# California Hubs Substantially Threatened by MRB Cancellations

*Under Complete Augmentation, LAX and SFO Would Lose 41%~44% of Total Hub Carrier Revenue From Canceled Flights, Plus 8%~11% of Hub Carrier Revenue on Surviving Connecting Flights*

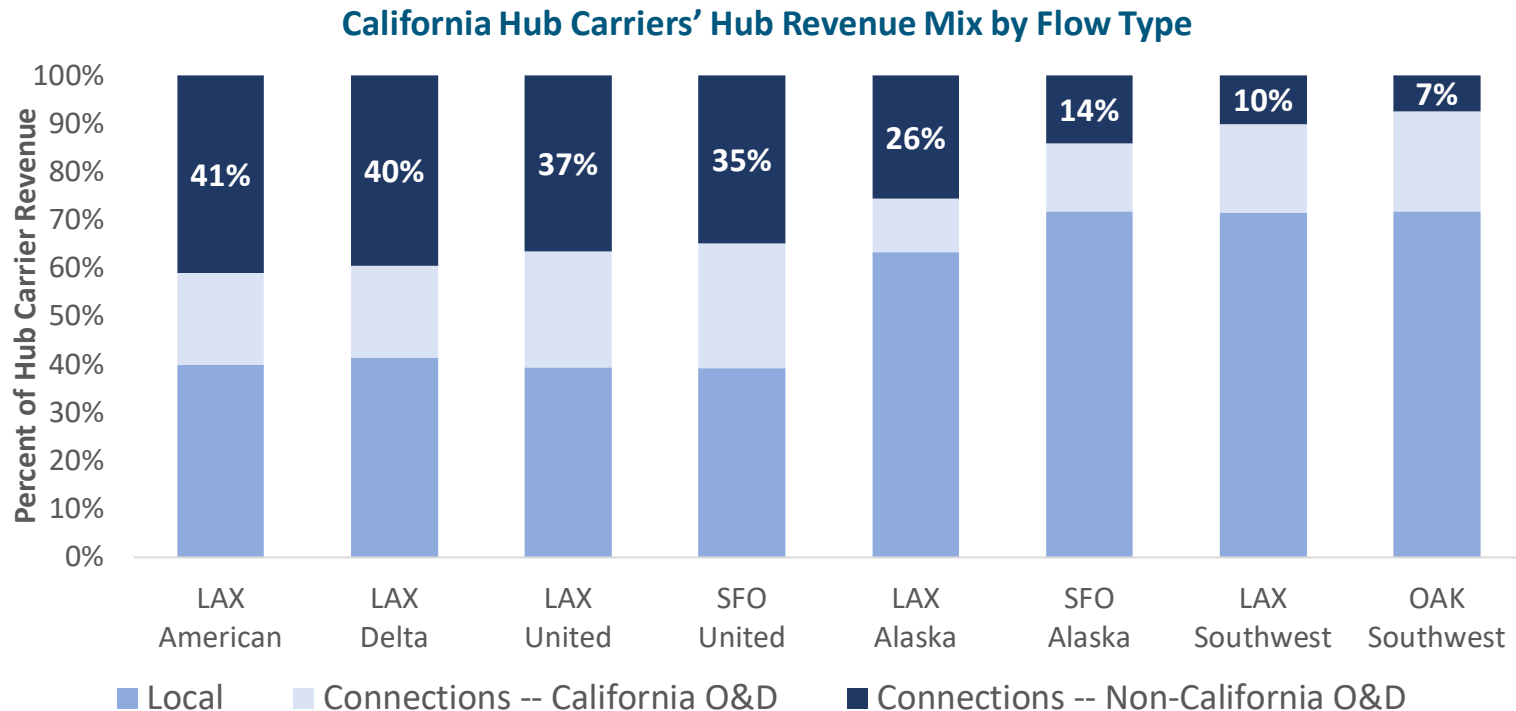
California Hub Carriers' Hub Revenue Loss



Source: InterVISTAS analysis. SFO hub carriers include Alaska and United. LAX hub carriers include Alaska, American, Delta, Southwest, and United.

# After MRB, Carriers May Reallocate Flow Traffic Away From California Hubs

*Several California Hubs Derive More Than 35% Total Hub Revenue From Non-California O&D Flow Traffic, Which Can Be Reallocated to Non-California Hubs Over Time*



# Other Unintended Consequences of MRB

## Lost Cargo Connectivity / Supply Chain Risk

- Cargo cancels due to MRB range from 0.1% of U.S. cargo carrier Revenue Ton Miles (RTMs) under Staggered Augmentation to 8.1% of RTMs under Intermediate Stops.
- Fewer flights between California and key integrated express cargo operator hubs harm reliability of time-sensitive overnight packages.
- California-Anchorage service reductions lessen access to critical Anchorage transfer hub for high-value air freight shipments between Asia and the U.S.
- Study did not estimate the impact of reduced belly cargo capacity on canceled passenger flights

## Lost Community Benefits

- Loss of flights reduces airport revenue and visitor expenditures for surrounding local communities — not analyzed in this study.

## Increased Risk of Operational Delays and Cancellations

- Increased flight crew requirements exacerbates pilot shortage, likely leading to reduction in the reserve crew capability needed to remedy irregular operations.
- Segregation of California and non-California flight crews eliminates airlines' ability to backfill sick/delayed flight crew with any available crew.

# Airline Workers, Customers, and the Economy: Implications of MRB

- Imposes significant incremental financial costs on industry, resulting in significant air service reductions affecting millions of passengers nationwide
- Reduces airline and non-airline jobs, could cause airlines to close California crew bases, reduces crew bid options for California-based flight crews and increases crew time away from home to earn paid work hours
- Causes significant damage to California and to the national economy
- Triggers route cancellations and fewer passengers across many states — not just California
- Distorts competition in domestic markets, and shifts market share and jobs to foreign carriers
- Decimates U.S. carrier-operated California long-haul international nonstops, with direct adverse consequences for U.S. airline employees
- Threatens sustainability of California hub operations and results in diminished community benefits linked to nonstop air capacity
- Exacerbates supply chain challenges due to removal of freighter and belly capacity and creation of suboptimal routings



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