

AVATION LABOR SHORTAGE FORECAST

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Oliver Wyman's Aviation, Aerospace & Defense practice is the largest and most capable consulting team dedicated to the industry

OUR EXPERIENCE

- ~250 professionals across Europe and North America
- Deep aviation knowledge and capabilities allow the practice to deliver data-driven solutions and provide strategic, operational, and organizational advice
- Increased technical aviation expertise in Europe from 2017 acquisition of UK-based AVISA Aviation Safety Systems

OUR CLIENTS

- We have worked with many of the industry's Fortune 500 companies, including
- All major US airlines
 - Leading airlines, MROs, OEMs, and independent parts manufacturers in the Americas, Europe, and Asia
 - Dominant aerospace and defense firms

OUR APPROACH

- Data-driven:** unbiased benchmarking and forecasting tools to establish problems and identify solutions
- Innovative:** ideas that are forward-thinking
- Actionable:** results-oriented recommendations
- Collaborative:** an emphasis on working with our clients, alongside executives, management, and support teams

This presentation incorporates Oliver Wyman's 2018–2028 Global Fleet & MRO Market Forecast and 2018 MRO Survey, available at oliverwyman.com



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**GLOBAL FLEET & MRO MARKET
FORECAST COMMENTARY**

2018–2028



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COMPANIES

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MRO SURVEY 2018

**TACKLING INDUSTRY
DISRUPTION**



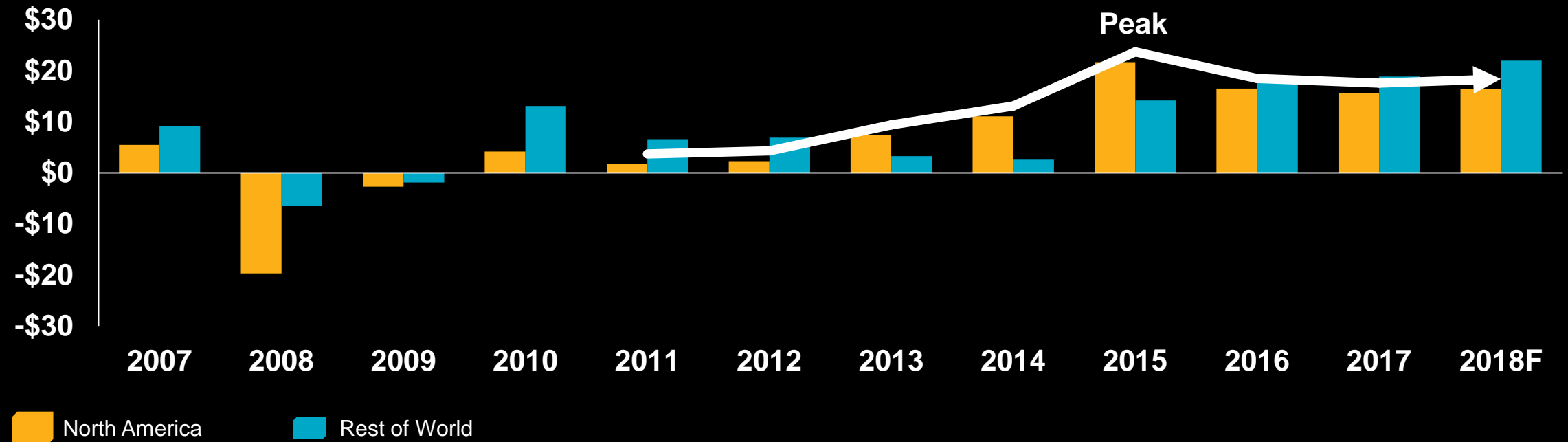
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Global performance remains strong with North American operators continuing to deliver strong financial performance

Global Commercial Air Transport Industry Net Profit

By year / US\$ BN

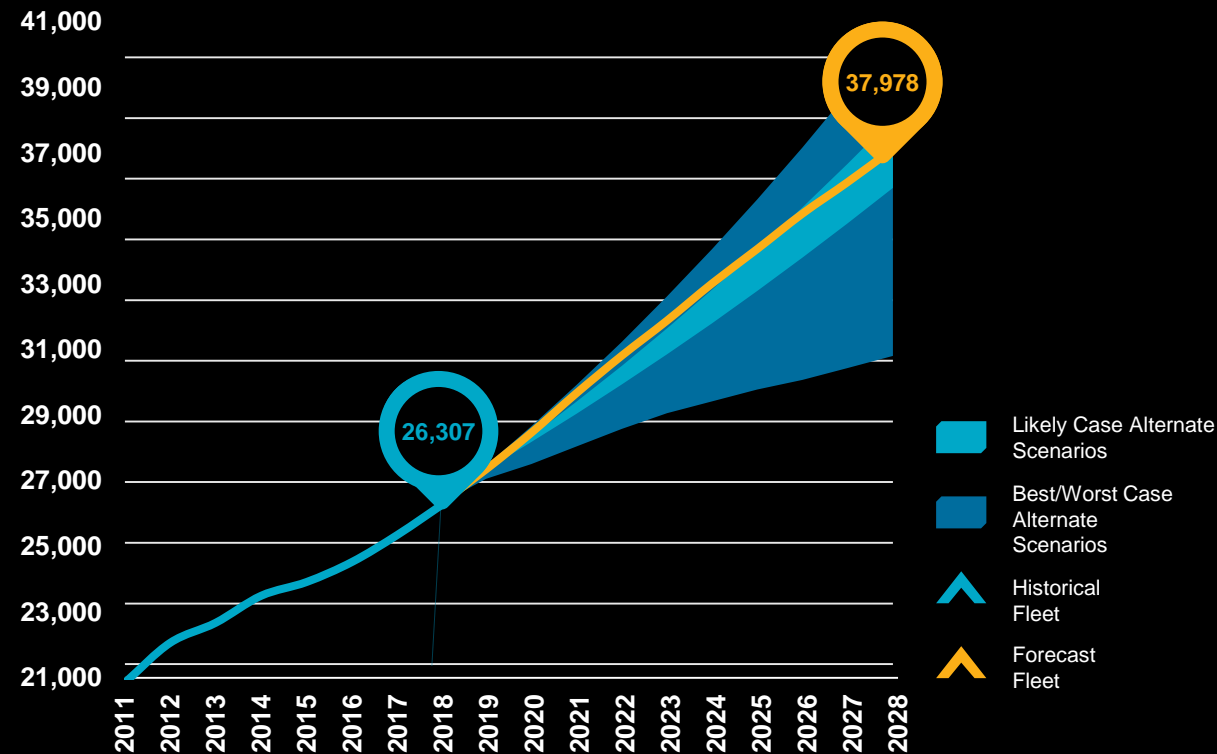


Continued growth in revenue from ancillaries, widespread capacity discipline, and a lack of new entrants are helping the North American operators offset the impact of shifting economics

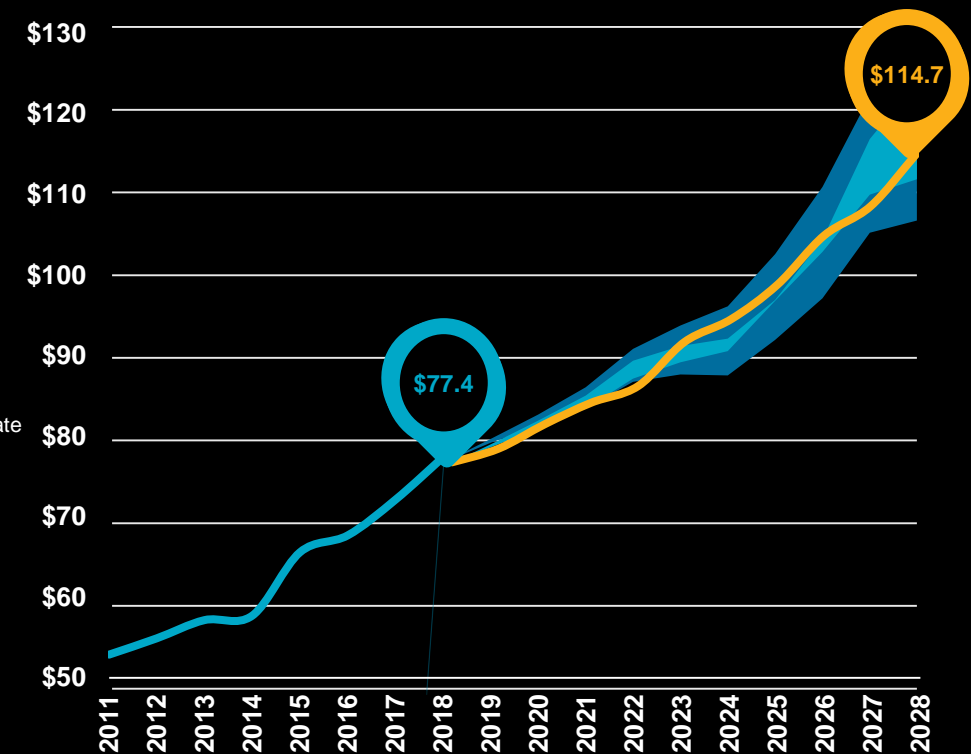
Source: Source: IATA

Though the global fleet & MRO market are expected to increase nearly 50% by 2028, higher costs and external factors create uncertainty for realized growth

Global Commercial Air Transport Fleet Forecast
By year / number of aircraft



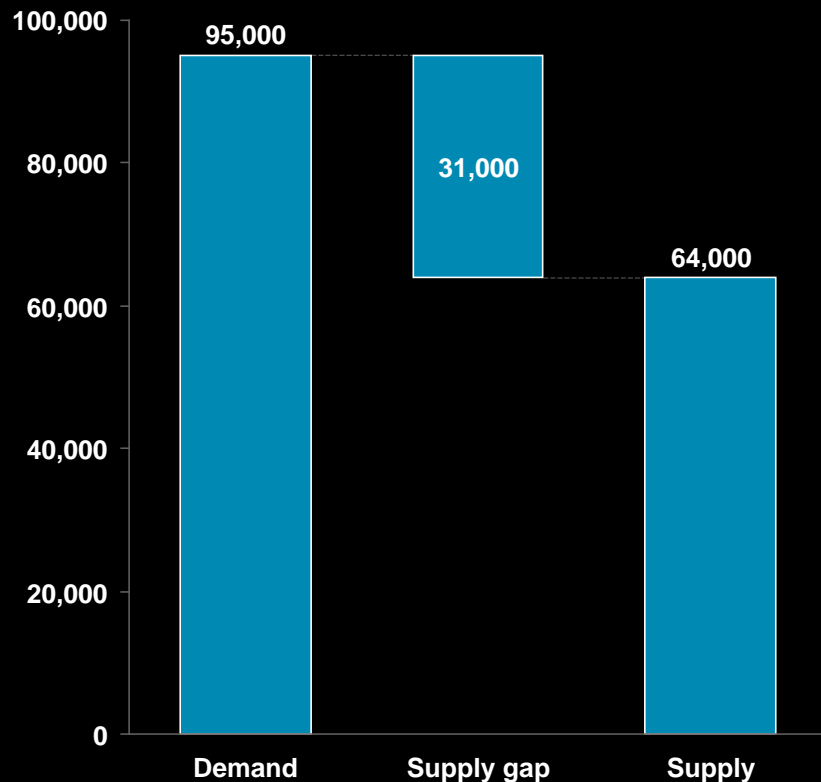
Global Commercial Air Transport MRO Market Forecast
By year / US\$ BN



As a result of this growth, airlines face a pilot shortage over the next 20 years as retirements surge, air traffic grows, and the supply of new pilots decreases

Expected pilot supply and demand

Number of positions in the US, 2015-2034, cumulative



Supply factors

Regulatory requirements

- In the U.S., increased flight hours and required ATP rating for First Officers

Military pilot production

- Decreasing military pilot production and pilot attrition to civilian market

Training capacity

- Lower number of training centers due to soft demand, rising costs and new regulations

Financial impediments

- High commercial training costs vs. low entry-level pay and uncertain career prospects



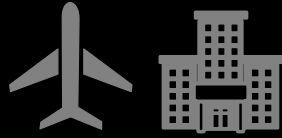

Exogenous pilot demand

- Foreign draw of U.S. pilots due to superior initial wages and career prospects abroad

Career attractiveness

- Less attractive career path due to low pay, slow progression and diminished work rules

Potential solutions...what combination of solutions uniquely address an airline's need to address this gap?

Solutions	Description	Key drawbacks	Driving party(ies)
Regulatory change ➤	<ul style="list-style-type: none"> Develop a dedicated airline professional pilot license such as the multi-crew pilot license (MPL) already in place abroad (Europe, Asia, etc) Replace hours-based experience requirements with skills based requirements 	<ul style="list-style-type: none"> May require significant lobbying Time-consuming to implement 	
Carrier partnerships ➤	<ul style="list-style-type: none"> Mainline carriers formalize flow through agreements with regional carriers (e.g. career path programs) Enable accelerated path to mainline (for regionals) Mainline carrier forms partnerships with Part 135 operators to build quality time pilots with meaningful experiences influenced by the mainline carrier 	<ul style="list-style-type: none"> Some partnerships may not address supply shortage for regionals 135 capacity is limited 	
Educational partnerships ➤	<ul style="list-style-type: none"> Ab initio programs with vocational or collegiate flight schools Sponsoring pilot education Acquire/invest in flight training schools to get exclusive rights to CFIs 	<ul style="list-style-type: none"> Programs to directly or in-directly insource pilot production can be costly 	
Incentive alignment ➤	<ul style="list-style-type: none"> Create a more attractive offer to address increasingly competitive market for pilots E.g. Signing and retention bonuses, improved salary and benefits 	<ul style="list-style-type: none"> Extremely costly Risk of running smaller players out of the business 	

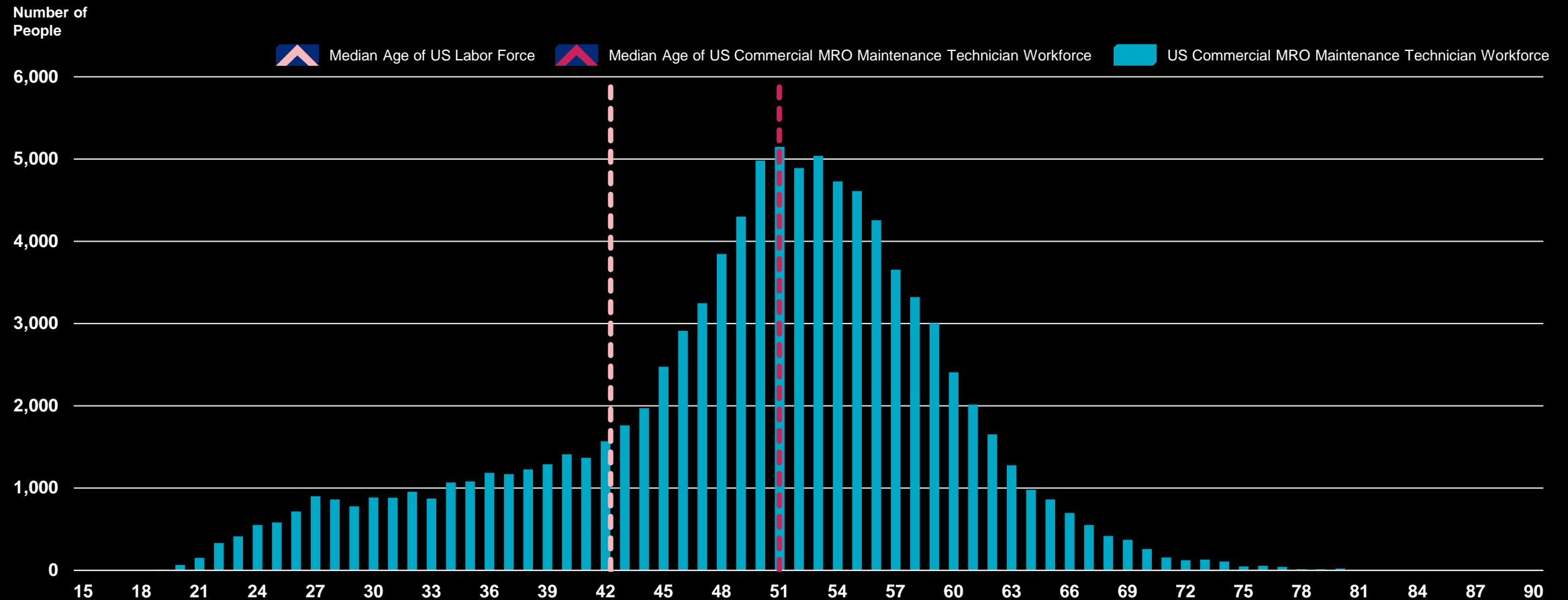
On the maintenance side, Oliver Wyman's MRO Survey found that 84% of respondents are experiencing labor imbalances

Percent of organizations using stop-gap strategies to temporarily address labor challenges:



The US commercial MRO workforce has 86,000 maintenance technicians with a median age of 51, 9 years older than that of the US labor force

US Commercial MRO Maintenance Technician Workforce by age

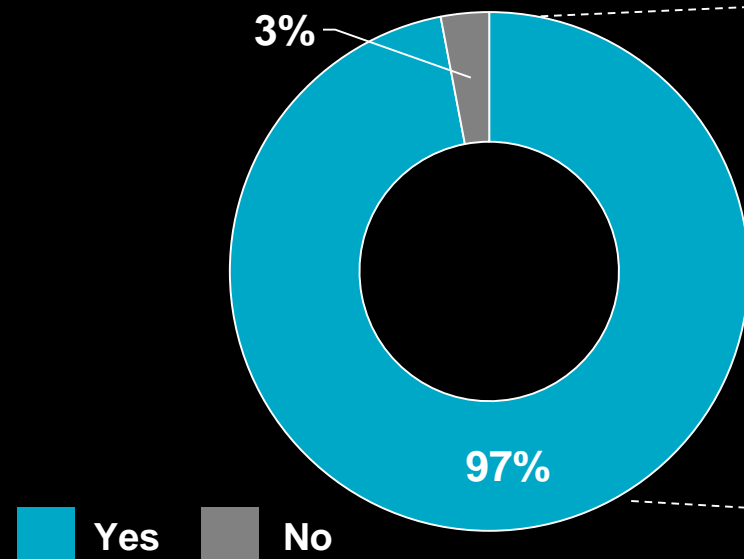


Source: A4A Members, Other US Airlines, US MROs, BLS, FAA, Oliver Wyman Analysis

Respondents overwhelmingly indicate that a lack of labor supply is the primary driver of wage increases

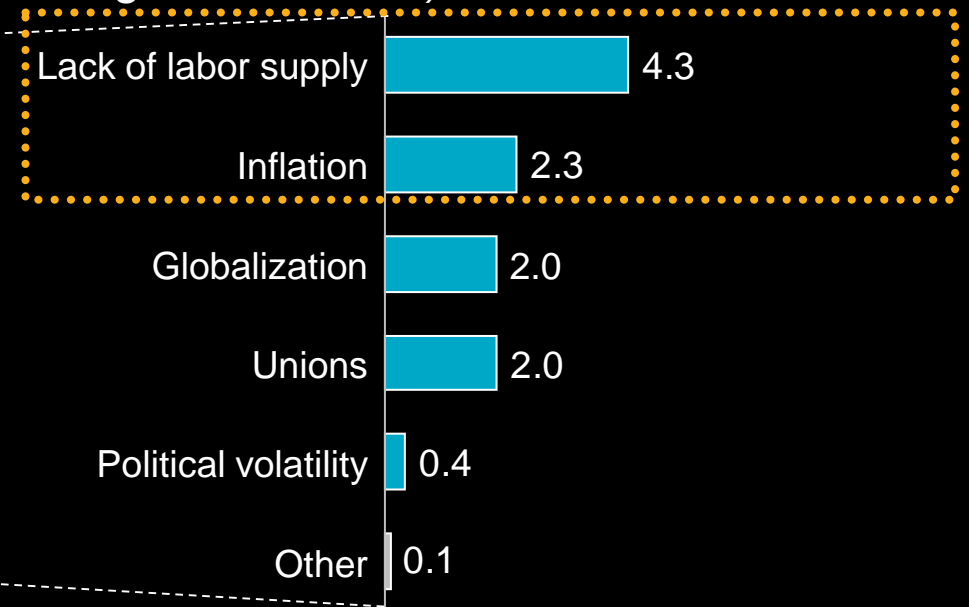
Have you experienced any upward *technician* wage pressure?

Distribution of total responses



Main drivers of technician wage pressure (for yes responses)

Weighted average of rankings (highest to lowest ranking, scale of 1–5)

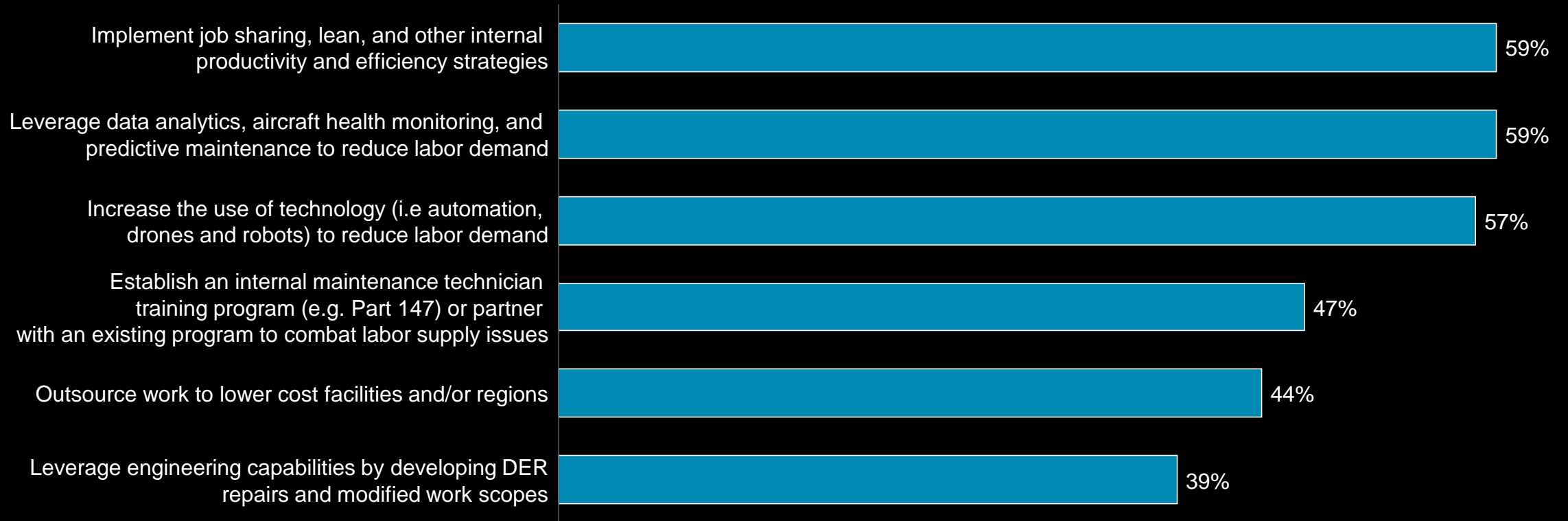


Technician retirements and a lack of new technician creation continue to squeeze both ends of the workforce spectrum – a trend that is unlikely to be resolved soon

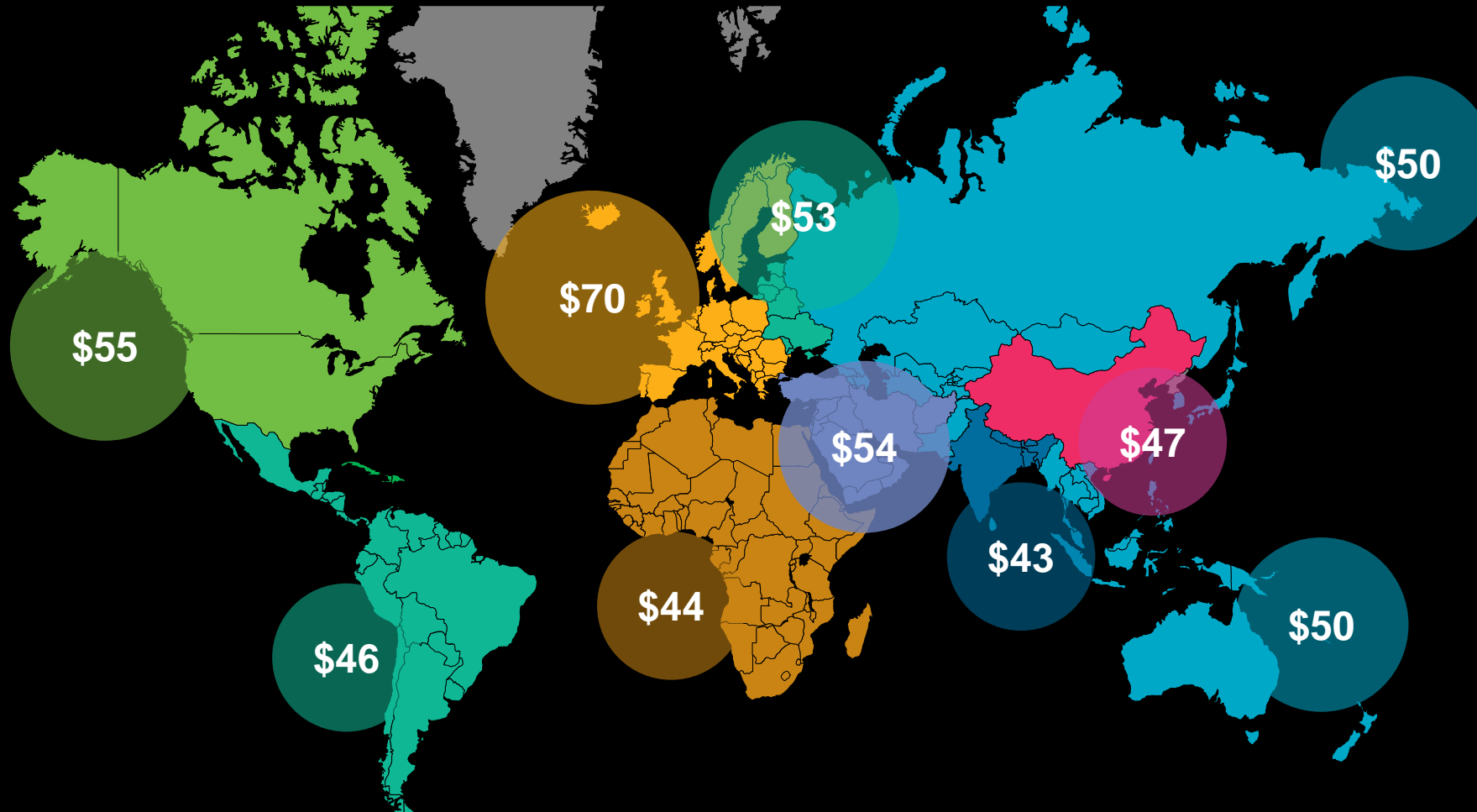
To combat rising labor costs, operators view outsourcing/right-shoring and data analytics as a major levers; MROs and OEMs are looking to productivity

What strategy or strategies have you adopted or are you considering to combat rising labor costs?

% of respondents who selected each response



W Europe is the highest technician pay rate region, E Europe and N America are on par, with all other regions substantially lower¹



1. Average estimate of current prevailing technician billed airframe rates for heavy airframe maintenance by region (in US\$)

One way to mitigate the impact of the tight labor market is to modernize training to deliver content that is personalized, relevant, and easier to retain



Traditional L&D resources are ineffective at building long-term knowledge

- They **do not offer a personalized learning experience** for employees to directly apply to their specific roles
 - The content is **not easily digestible**
 - Employees are expected to **know more than ever before**, but have less time to spend on L&D
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Millennial learning approaches are becoming increasingly dominant

- By 2025, millennials will make up **75% of the workforce**
 - Millennials prefer **non-traditional** learning methods
 - Millennials absorb information more effectively when they are **presented in shorter bursts** and delivered digitally
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Employers are struggling to develop relevant L&D content

- Developing innovative, effective material for employees requires **a lot of time, money, and internal resources**
 - A majority of organizations indicate their **biggest challenge** for L&D is ensuring that what is taught is actually utilized on the job
 - The **fastest-growing segment** in HR tech spending is now the adoption of new employee learning systems
 - At most companies, the learning management system (LMS) is **among the oldest and most challenging to use**
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