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Boeing's Pilot Demand Forecast May Be Too High

The word “forecast” sounds far more sophisticated than “educated guess”, which it really is. Boeing released its annual Pilot And Technician Outlook for the next 20 years estimating a need for 763,000 new civil aviation pilots which is a whole lot of swagger. But not taking into account the technological progress being made in semi- and fully-autonomous flight, this number would seem drift away from the educated part of a guess.

Let's first put that number of new pilots required into perspective. That's more airmen than the entire population of Boeing's birthplace of Seattle. It's more than the number of people living in Denver, Washington DC or Boston. Outside of North America, it numbers the inhabitants of Frankfurt in Europe or Zhuji in China.

Boeing's latest forecast dropped 5% from last year's to take into account the large number of current pilot furloughs and layoffs. Still, they predict pilot demand will return driven by a combination of crew retirements and aircraft fleet growth. That may be, but only if the world of cockpit technology stands still for the next two decades, which would seem highly unlikely.

Today some aircraft are already partially or fully flying themselves without a traditional cockpit crew. Helicopters are slinging cargo loads for the military in high risk areas without onboard pilots while a technology company seeks approval for autonomous cargo flights over unpopulated areas monitored by a remote operator. Drones are moving even more quickly towards flight autonomy, including military versions and those used by delivery services like Amazon, Walmart and others.

Right now, avionics maker Garmin introduced its Autoland system which has been approved on a few small, general aviation aircraft. Should the single pilot become incapacitated in flight, a passenger can push a panic button that automatically brings the aircraft in for a safe landing taking into account nearest suitable airport, terrain, weather and even radio communications with air traffic control. This is perhaps a baby step towards technology assisting a captain of larger aircraft with startup, communications, taxi, cruise and landing - typically the copilot's domain.

Urban Air Mobility (UAM) is another fledging tech sector that foresees small, mostly electric Jetson-like vehicles whisking passengers between metropolitan points. While initial flights will feature an airman acting as more of a systems babysitter than a pilot, the goal is to eventually prove the aircraft capable of flying itself without a human at the controls.

Military aircraft would be the first to shed cockpit crew, since they play by their own regulatory rules and the human risk isn't as great as a passenger jet with hundreds of seats. Towards the end of Boeing's forecast period, this trend will inevitably spill over into the civil aircraft arena. And it won't take a special, clean-sheet aircraft design to accommodate this, but instead a retrofit to the existing fleet similar to what Garmin is doing with its Autoland panic button.

An airline's chief focus is on profitability, and finding ways to cut costs by downsizing the number of pilots needed to operate an aircraft is a strong motivator. This was proven long ago when technology first made the navigator and later the flight engineer obsolete, saving airlines a considerable amount of money.

Boeing's forecast anticipates a fleet 48,400 airliners by 2039. Airlines assign multiple crews to a single airliner to maximize its flying hours. For simplicity, the use of 10 pilots (5 crews) to staff each aircraft would suggest 484,000 airline pilots will be needed just to operate the airline fleet in 2039.

Removing 1 copilot out of 10% of this future fleet through automation would reduce that need by almost 50,000 pilots. Factoring in additional airline pilots scuttled by automation prior to 2039, plus the technological culling of the copilot ranks in the civil business jet and helicopter fleets, suggests Boeing's forecast is overstated by perhaps 10% and maybe more.

It's never easy to forecast aviation 20 years out, let alone next year nowadays. It will admittedly take years of technological advances and flight proving, followed by arduous regulatory challenges and public acceptance to make a dent in future pilot demand. However taking into account the adoption of at least some degree of automated flight assistance over the next 2 decades would make Boeing's latest pilot demand forecast seem overstated, but still a high number nonetheless.

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