

# Chart of the week #10: How fuel efficient are the A321neo and B737 MAX 8?



ANALYTIC FLYING

SEP 29, 2024



Airbus and Boeing have both faced considerable challenges with the entry into service of the A320neo and B737 MAX families. One might be forgiven for thinking that airlines would be taking a cautious approach to additional A320 and B737 orders. Yet airlines remain optimistic and the order book continues to grow despite persistent and even growing problems.

Analytic Flying is a reader-supported publication. To receive new posts and support our work, consider becoming a subscriber.

Boeing's MAX problems probably need little description while Airbus have most recently faced certification delays on the A321XLR and persistent engine troubles on the P&W powered aircraft. Qantas and Virgin have significant order books for the A321neo and B737 MAX, respectively, and the continuing challenges are having considerable impact on them both. Delays are creeping into Qantas's XLR order and Virgin are swapping B737 MAX 10 orders for the smaller MAX 8 due to reduce the impact of further delays.

**So why are airlines so optimistic? The answer is simple: fuel efficiency!**

The fundamental difference between the older generation A320 neo and B737 Next Generation (e.g. B737-800) and the A320 neo and B737 MAX are the engines: the CFM LEAP and P&W GTF.

The A320 is offered with the choice of either, while the B737 is only available with the CFM LEAP. For the most part, the aircraft is otherwise the same! This was a key design

principle that was meant to make things easier, although that's a discussion for another time!

### **So just how efficient are these new engines?**

Comparing fuel burn isn't straightforward since even on the same aircraft it varies across the phase of flight, and by stage length and payload carried. Data reported by US airlines to the US DOT allows for more consistent comparison. Analysis by our friends at [AirInsight](#) estimated the seats per gallon of fuel burned for each aircraft type by airline (2024 year-to-date). We used these data to make three comparisons that are most relevant to Australia.

- B737-800 and MAX 8: most relevant for Virgin;
- B737-800 and A321neo: most relevant for Qantas;
- A231ceo and neo: for good measure!

## MAX and NEO fuel efficiency gain

Seats per gallon of fuel (2024; year to date)

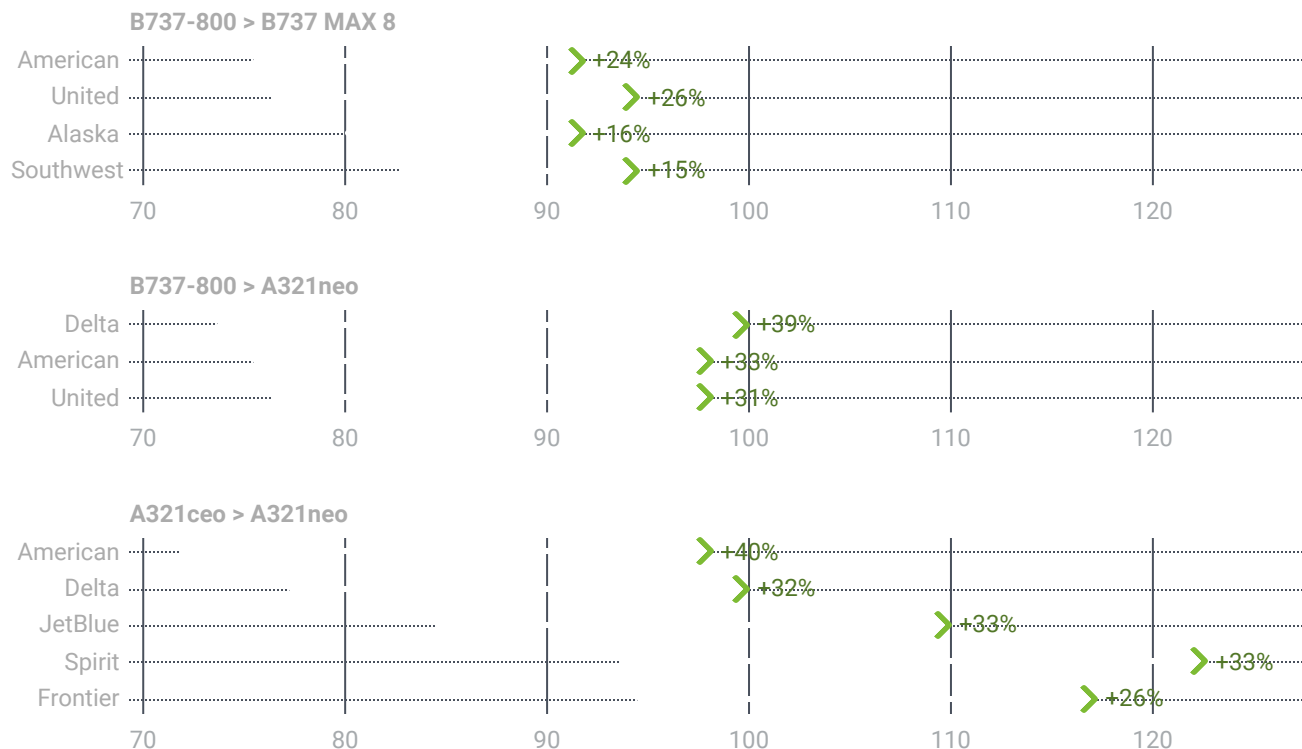


Chart: [www.analyticflying.com](http://www.analyticflying.com) • Source: Air Insight using USDOT T-2 data • [Download image](#) • Created with [Datawrapper](#)

First up, we can see that the B737 MAX 8 is between 15% and 24% more efficient than the B737-800 in terms of the seats per gallon of fuel. Southwest Airlines gained the least in relative terms despite being more efficient than other carriers due to their higher density configurations. For example, their -800's and MAX 8's seat 175 passengers compared to 159 on Alaska. This highlights the importance of separating airlines to make like-for-like comparisons.

The A321neo is between 31% and 39% more efficient than the B737-800 in terms of the seats per gallon of fuel, with all airlines in similar ranges in both absolute and relative terms. This is not unexpected as they are all FSCs with similar operating models. Notably, the A321neo gains more by this measure (seats per gallon of fuel) than the B737 MAX 8 because it is larger.

Meanwhile, the A321neo generated an incredible gain of between 26% to 40% over the A321ceo! As these data aren't normalised for stage length, a significant comes from the

longer average stage length that the neo can and does fly compared to the ceo. For example, American and Delta's average stage lengths were 69% and 77% longer on the neo than ceo during this period. Stage length is less important for the other comparisons, for example, Southwest's average stage length was only 5% longer their MAX 8s than -800s.

### **That's quite some leap!**

These data provide a compelling insight into why airlines remain bullish on the neo and MAX despite their significant and persistent problems. While Airbus and Boeing are disappointing airlines, the efficiency gains are dramatic!

These aren't hypothetical gains but empirical! Airlines are observing these on a like-for-like operational basis. In that respect, Airbus and Boeing are delivering, and then some!

### **Thanks for reading and remember to subscribe and share!**

Thanks for reading Analytic Flying! This post is public so feel free to share it.

In case you missed it, last week's "chart of the week" looked back at the end of an era and the history's of Emirates's somewhat exotic 5th freedom routes to Australia.

## **Chart of the week #9: End of an era for Emirates's Dubai-Singapore-Melbourne flight**

ANALYTIC FLYING · SEP 22



Recent media reports have broken the news that Emirates Airline will end its final 5th freedom route between Asia and Australia sometime next year. In regulatory filings to the Competition and Consumer Commission of Singapore, Emirates notified them of their intention to cease flying the Dubai-Singapore-Melbourne route.

[Read full story →](#)

### **Discussion about this post**

Comments

Restacks



Write a comment...

---

© 2024 Analytic Flying · [Privacy](#) · [Terms](#) · [Collection notice](#)  
[Substack](#) is the home for great culture