

Logistics Company



2023

DELAYED DELIVERIES

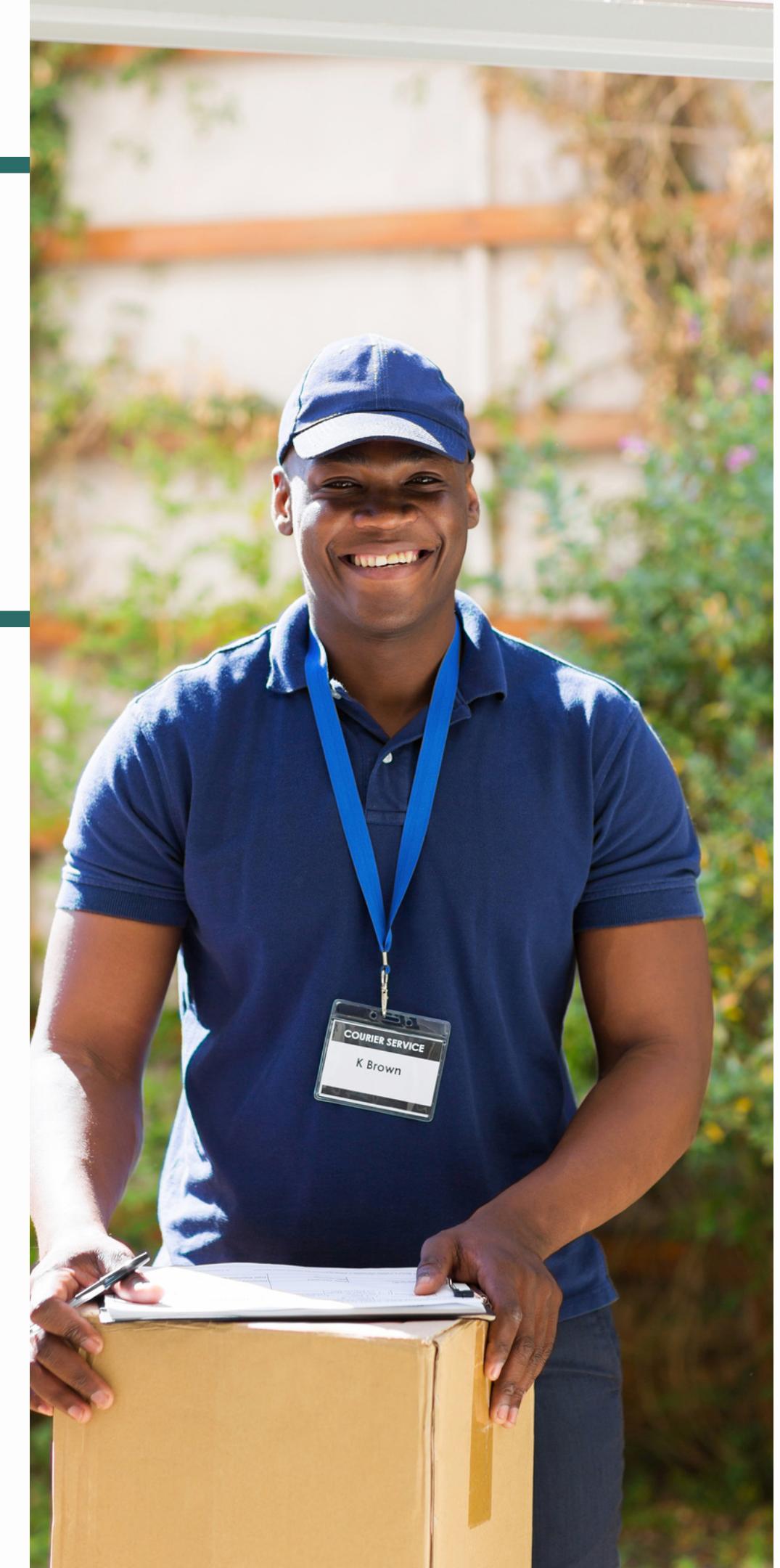
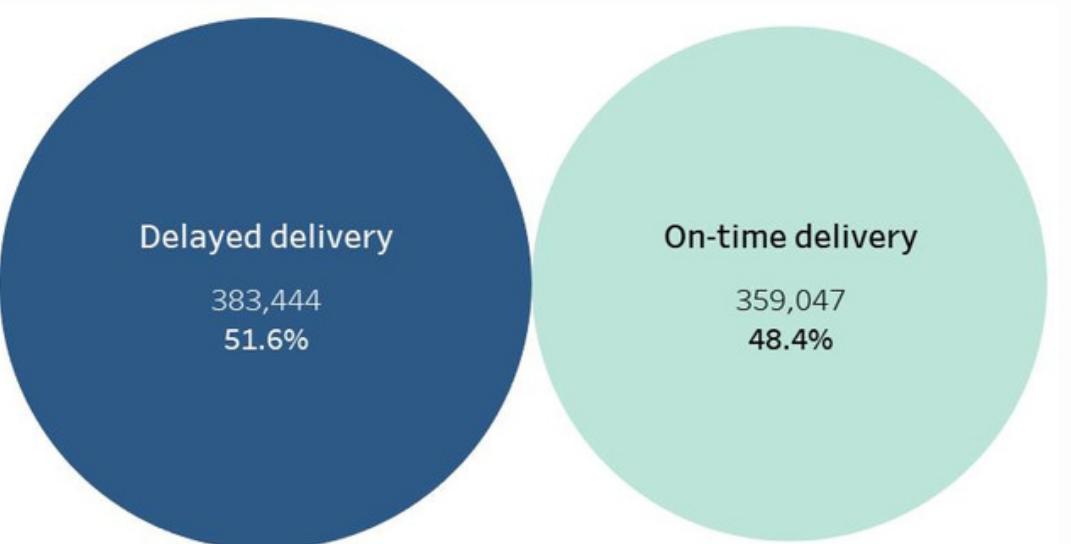
Liliana León

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Delayed Deliveries

The main purpose of any logistics company is to deliver **on time**, even more so for a company that sells Express services.

The current issue for this company is that half of the shipments are defined as delayed without any clue of what variable(s) are causing this problem.





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Objective

Identify the variables that have a significant impact on causing a delay by building a classification model that allows us to identify them and predict whether the delivery will be on time or delayed.



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Available information

Year | Month | Day of the month | Day of Week

Carrier name | Carrier number

Planned shipping time

Shipping delay

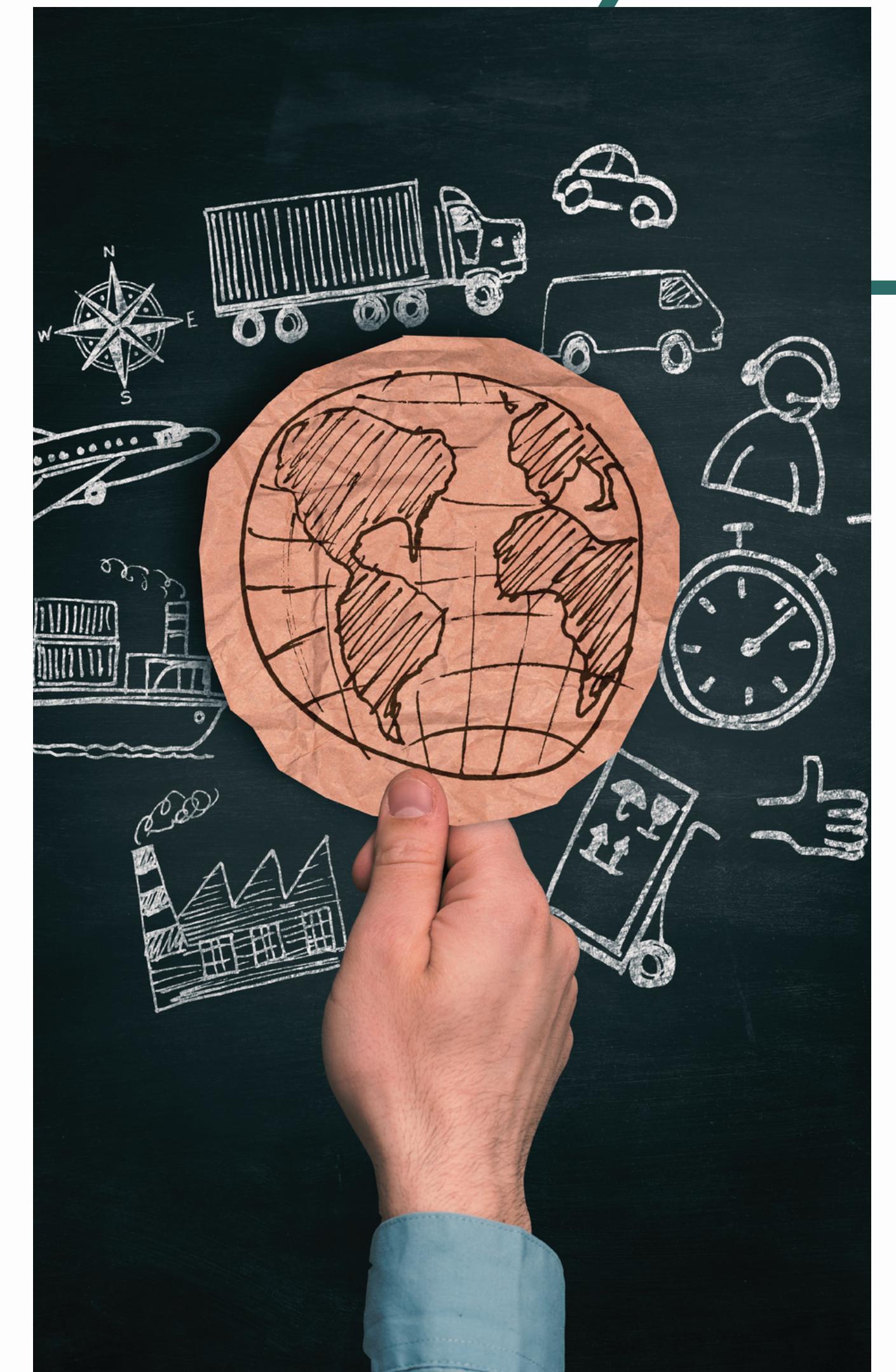
Actual shipping time

Origin | Destination

Planned delivery time

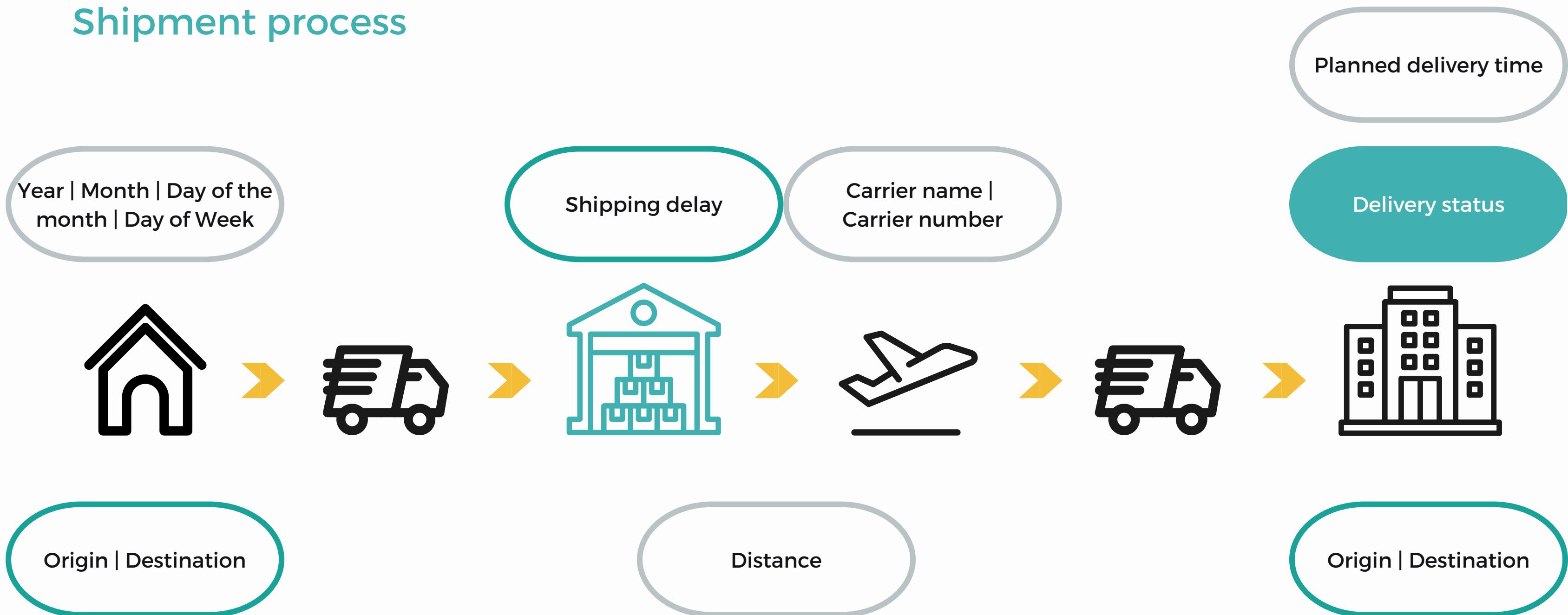
Distance

Delivery status



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Shipment process



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Classification model

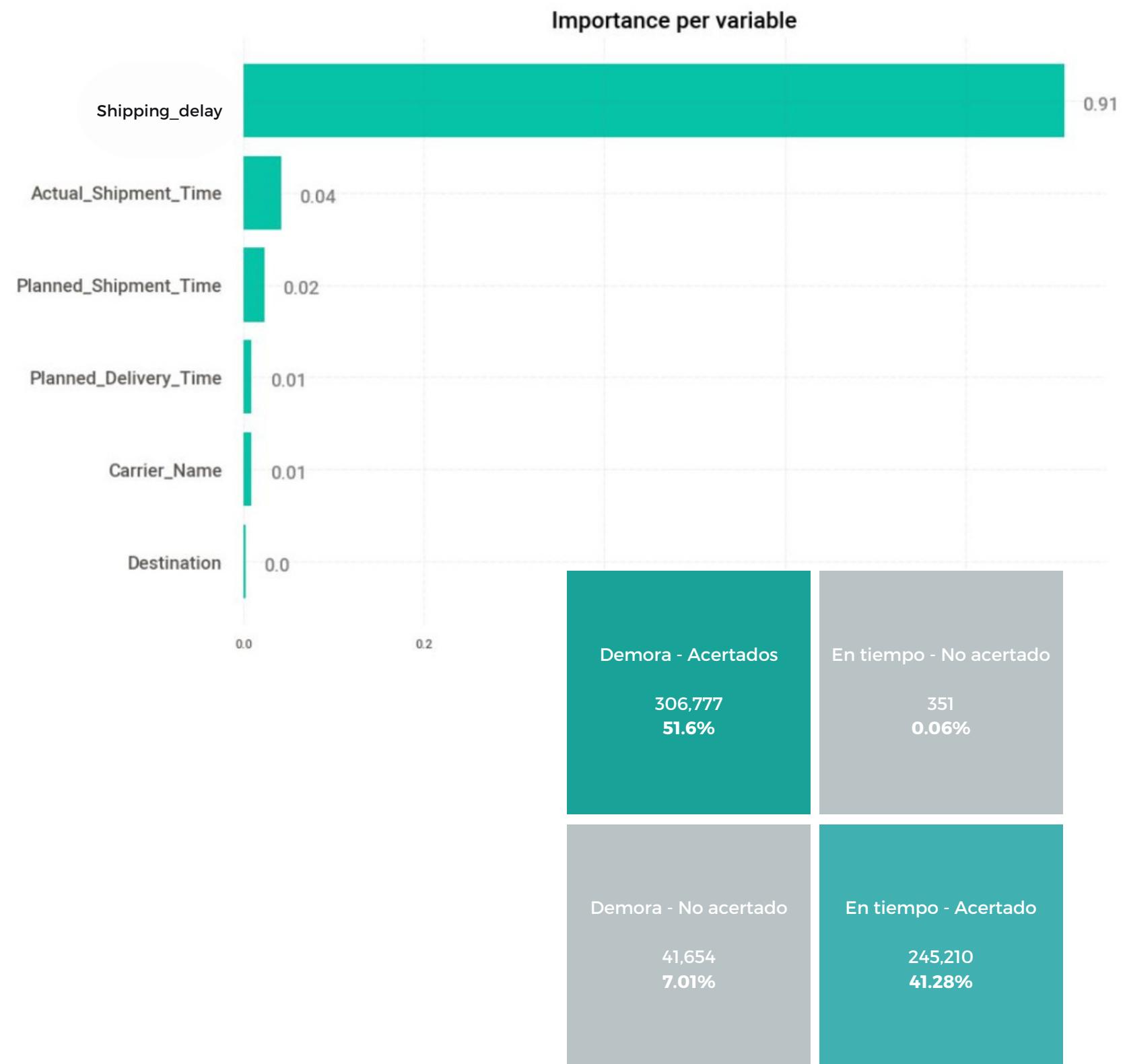
By building a Random Forest model, it is clear that Shipping_delay is the variable that has the most impact on the delayed delivery of a shipment

AUC ROC result = Model consistency metric

Train



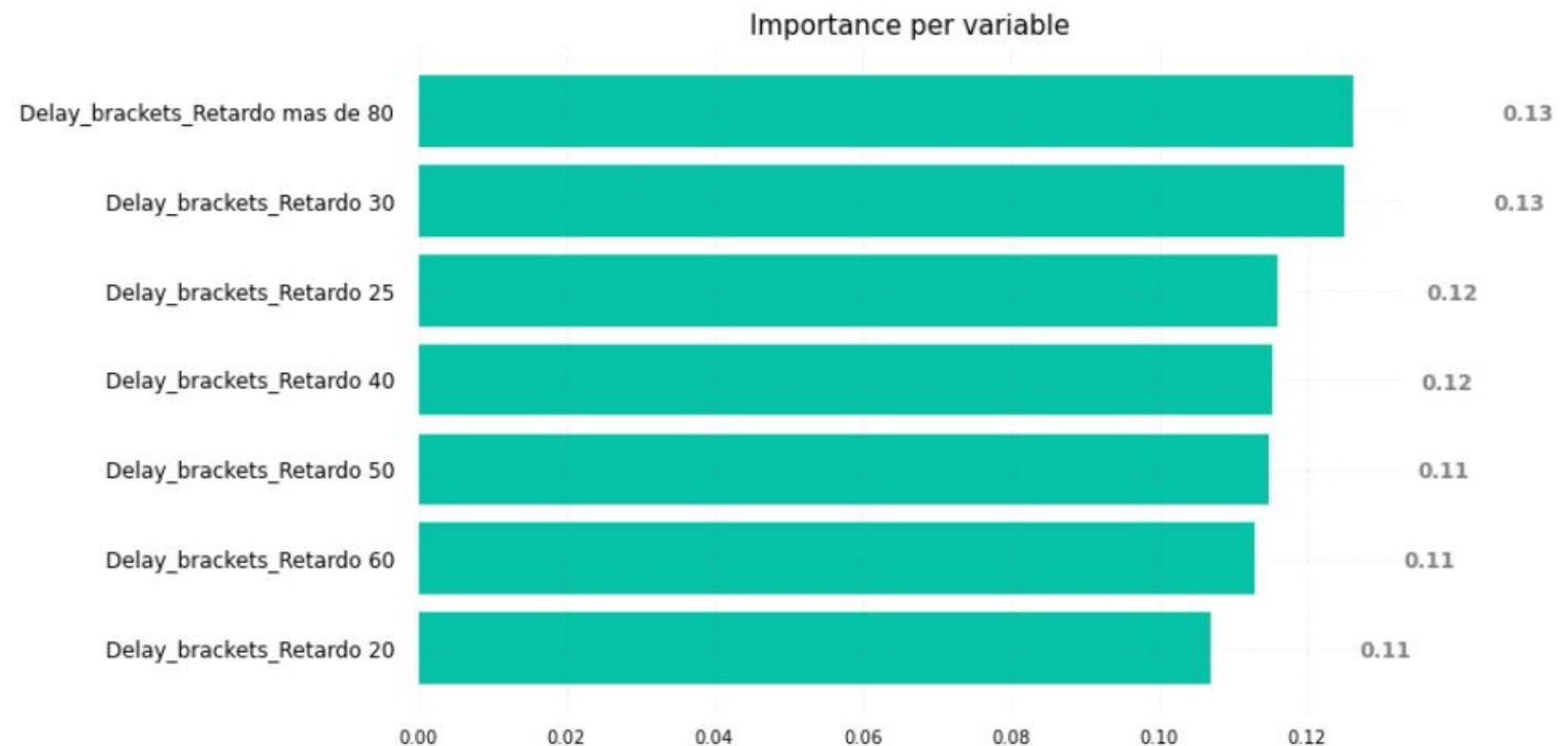
Test



Classification model - Deep dive

Deep diving into the Shipping delay variable, we can determine the brackets that impact on-time delivery.

Delays in shipping above 15 minutes hold 50% of the importance based on the random forest model



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Conclusions - Next steps

Based on the classification model, the logistics company is now able to:

- Predict on-time delivery of shipments after the improvement of the main variables
- Keep monitoring the impact of the evaluated variables
- Root cause analysis on shipping delays

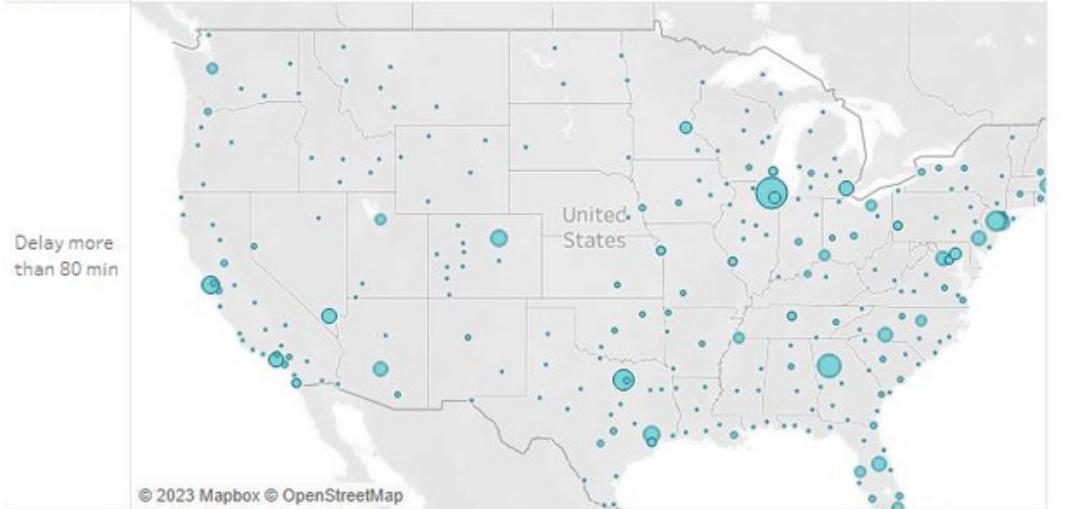


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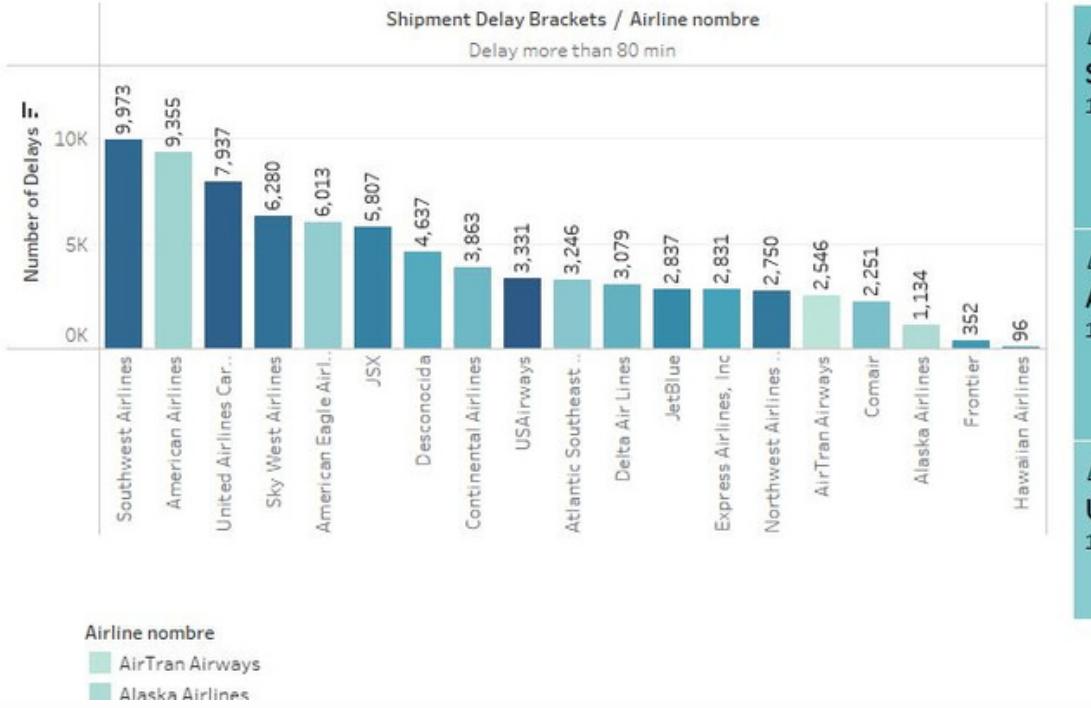
Shipment Delay Brackets
Delay more than 80 min ▾

Delays by origin stations

Shipment D...



Delay by airline



Delay by airline

Delay more than 80 min Southwest Airlines 12.77%	Delay more than 80 min Sky West Airlines 8.06%	Delay more than 80 min	Delay more than 80 min	Delay more than 80 min
Delay more than 80 min American Airlines 12.00%	Delay more than 80 min American Eagle	Delay more than 80 min	Delay more than 80 min	Delay more than 80 min
Delay more than 80 min JSX	Delay more than 80 min	Delay more than 80 min	Delay more than 80 min	Delay more than 80 min
Delay more than 80 min United Airlines Cargo 10.18%	Delay more than 80 min	Delay more than 80 min	Delay more than 80 min	Delay



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THANK
YOU

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