Boeing Confident Travel Initiative Passenger Screening Model

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Boeing Confident Travel Initiative

Leadership in the global effort to provide passengers and crew a safe, healthy, and efficient travel experience

Protect people in the travel system

Protect communities connected by air travel

Safely expanding international air travel

- As part of Boeing's efforts to combat the COVID-19 pandemic, we are taking a data-driven, risk-based approach to reduce risk of disease importation through travel between countries

- Boeing developed a passenger screening model to aid policy decisions on passenger screening, testing, and quarantines

- New modeling shows that screening and testing protocols reduce disease importation and minimize quarantine requirements for the flying public
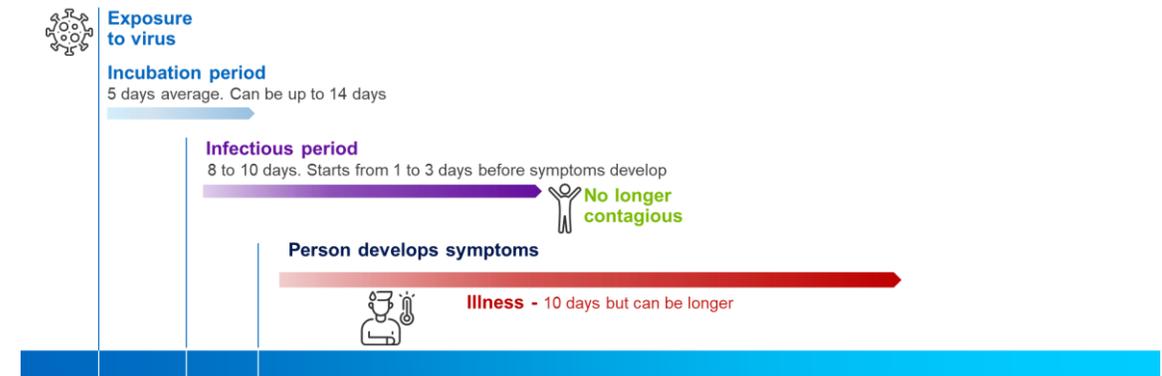
Boeing Passenger Screening Model

Analyze the effectiveness of various screening & quarantine protocols that **lower COVID-19 prevalence** in travelers

- Compares testing, quarantine, and hybrid testing/quarantine scenarios

- Uses current disease prevalence of origin and destination countries (Johns Hopkins University COVID database)

- Considers the disease timeline for COVID-19, including both symptomatic and asymptomatic infections

- Includes the efficacy over time of RT-PCR and rapid antigen tests

- Findings validated by actual testing data from air travelers to Iceland and Canada
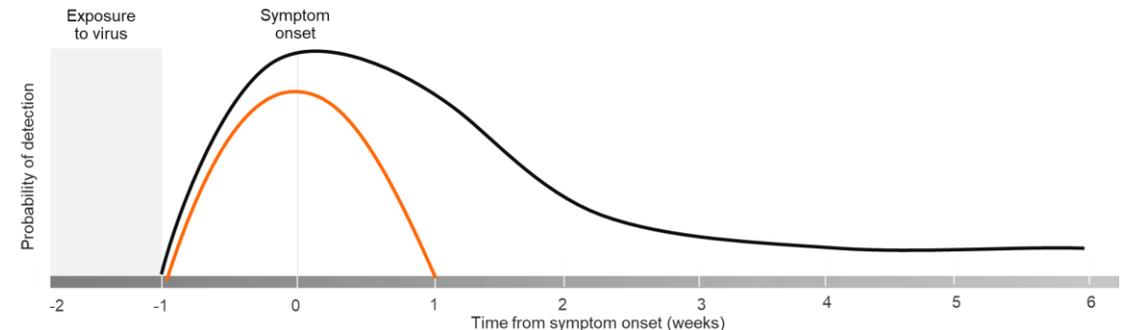
COVID-19 disease timeline
For individuals with mild infections

Exposure to virus

Incubation period
5 days average. Can be up to 14 days

Infectious period
8 to 10 days. Starts from 1 to 3 days before symptoms develop
No longer contagious

Person develops symptoms
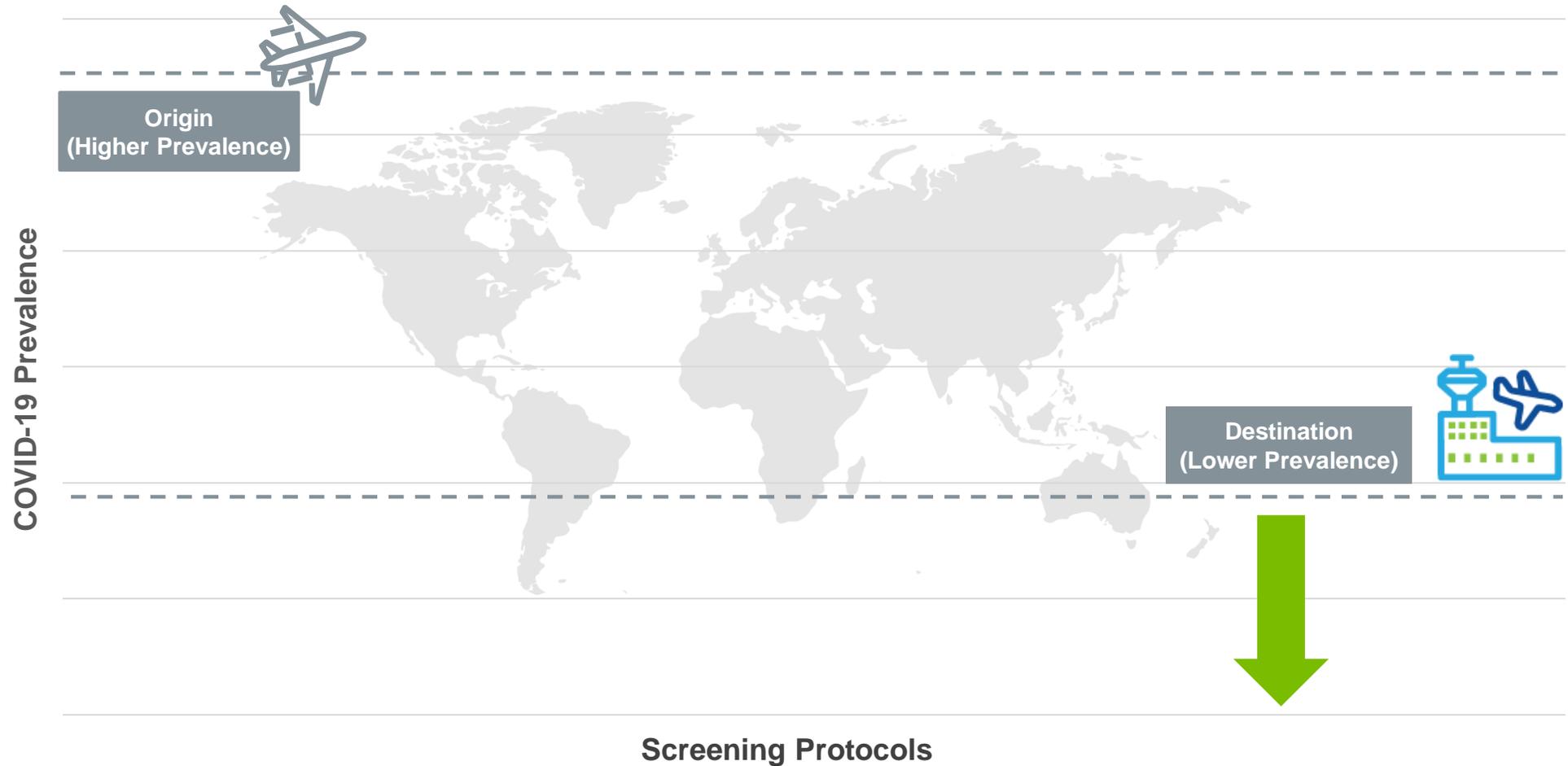**Illness** - 10 days but can be longer

COVID-19 diagnostic test efficacy
Based off of "Fast Coronavirus Tests: What They Can and Can't Do" from Nature

— **PCR-based tests** can detect small amount of viral genetic material, so a test an be positive long after a person stops being infectious

— **Rapid antigen tests** detect the presence of viral proteins and can return positive results when a person is most infectious

Exposure to virus   Symptom onset

Probability of detection

Time from symptom onset (weeks)
-2   -1   0   1   2   3   4   5   6

U.S. Centers for Disease Control and Prevention

Guglielmi, Giorgia. "Fast Coronavirus Tests: What They Can and Can't Do." Nature News, Nature Publishing Group, 16 Sept. 2020, www.nature.com/articles/d41586-020-02661-2.

Boeing Passenger Screening Model

The goal is to identify screening protocols below the destination prevalence

Boeing Passenger Screening Model Scenarios

Results demonstrate that there are screening protocols **as effective as a 14-day quarantine**

Origin (High Prevalence)

Destination (Medium Prevalence)
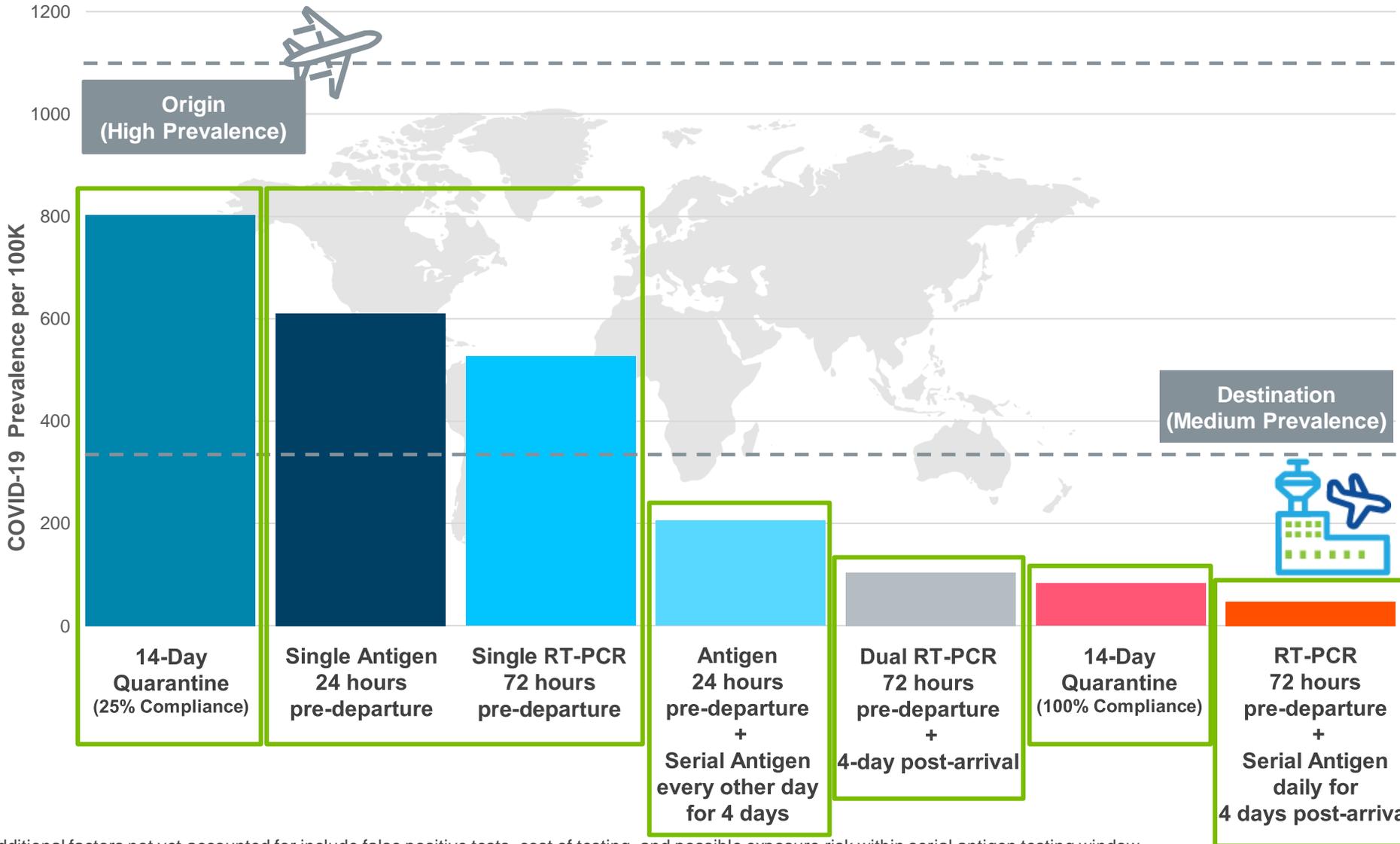
Screening is most beneficial for travel from **high to low prevalence area**

There is **no risk free** protocol

Screening protocols **lower the risk** to the destination country

COVID-19 Prevalence per 100K

| 1200 |
| 1000 |
| 800 |
| 600 |
| 400 |
| 200 |
| 0 |

- 14-Day Quarantine (25% Compliance)
- Single Antigen 24 hours pre-departure
- Single RT-PCR 72 hours pre-departure
- Antigen 24 hours pre-departure + Serial Antigen every other day for 4 days
- Dual RT-PCR 72 hours pre-departure + 4-day post-arrival
- 14-Day Quarantine (100% Compliance)
- RT-PCR 72 hours pre-departure + Serial Antigen daily for 4 days post-arrival

Additional factors not yet accounted for include false positive tests, cost of testing, and possible exposure risk within serial antigen testing window
Positive test results for serial antigen testing scenarios should be followed up by confirmatory PCR to mitigate high false positive rates.

Next step modeling and considerations

SARS-CoV-2 Variants

COVID-19 Vaccination

Multiple variants are circulating globally

Tracking variants to understand implications to screening protocols

Defined approach for increasingly vaccinated population

Current model assumes every passenger is tested

Summary

- Research shows that **test-based screening protocols can be just as effective as quarantines** when traveling from countries with a higher prevalence of COVID-19

- The model provides governments, regulators and industry stakeholders with **validated findings that will inform decisions** on safe travel between countries

- For an in-depth look at the modeling, we've published a white paper on our website: **https://www.boeing.com/confident-travel/**

Boeing Passenger Screening Model Tool