

# Comparing Consequences of Travel Restriction Policies

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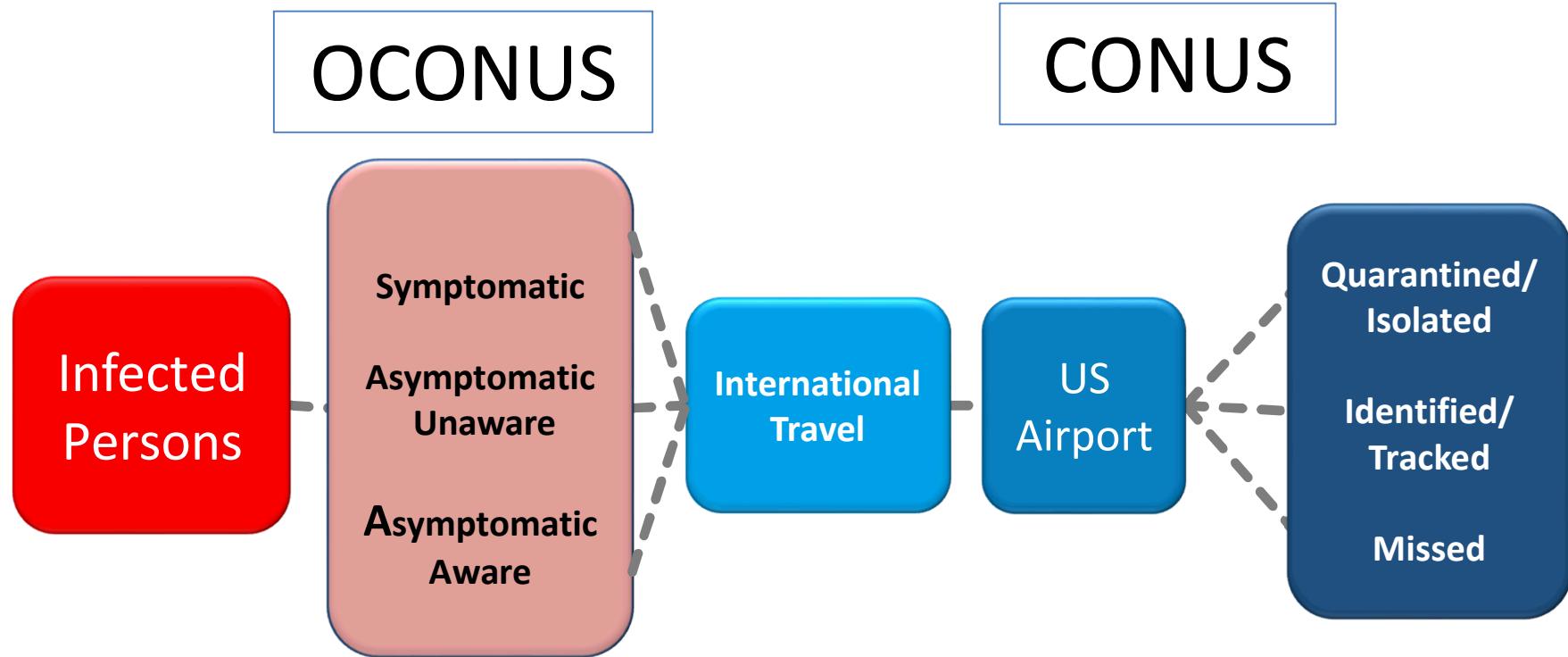
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# What does Sandia model analyze?

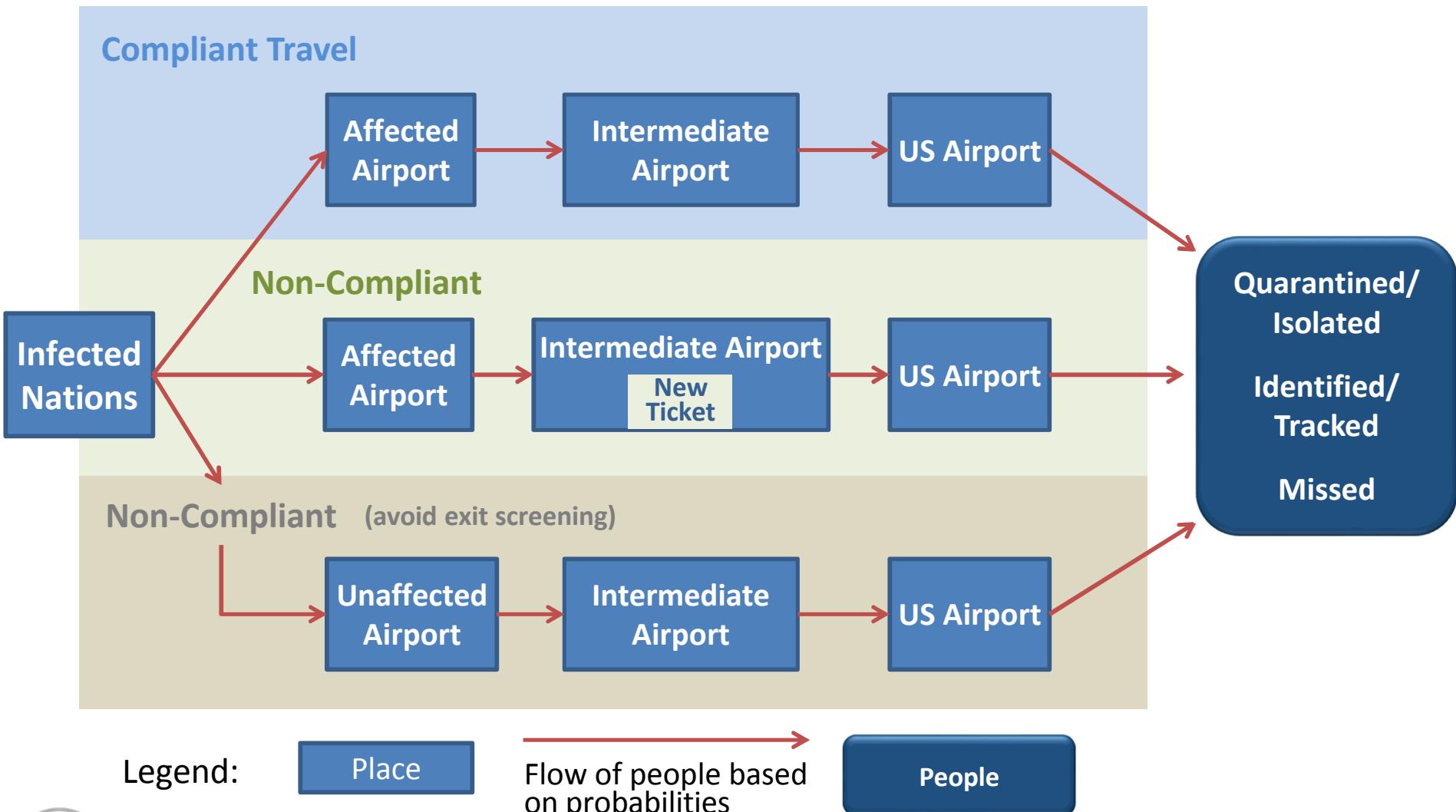
- International travel network flow well modeled by many groups
  - Alex: Northeastern University
  - Jonathan Read et al.: University of Liverpool
  - Bogoch et al.: University of Toronto
  - Daniels et al.: Los Alamos National Laboratory
- Sandia model addresses different questions:
  - Potential near-term effects of travel restrictions and non-compliance
    - Policy shifts can incentivize travelers to take alternative travel routes
    - Effect of policy shifts on disposition of travelers within CONUS
  - Relative importance of host country and CONUS factors on likelihood of evading travel restriction policies.



# Schematic Flow of Infected Travelers



# Model Pathways



# Comparison of Travel Restriction Scenarios

	Missed (%)	Identified (%)	Quarantined (%)	Blocked/ Deterred (%)
<b>Screening Scenario*</b>	$1.8 \pm 0.8$	$44 \pm 9.2$	$18 \pm 6.3$	$36 \pm 6.7$
<b>Full Travel Ban Scenario*</b>	$4.6 \pm 2.1$	0	$13 \pm 5.6$	$82 \pm 8.0$
<b>Ratio</b>	2.5		0.7	2.3

## Table Notes:

\* Scenarios are plausible options; not specific ideas under consideration

Percentages are relative to initial group of travelers and is the same for both scenarios

Averages and standard deviations from a 1,000-sample Monte Carlo analysis

Analysis assumes 74% interdiction success



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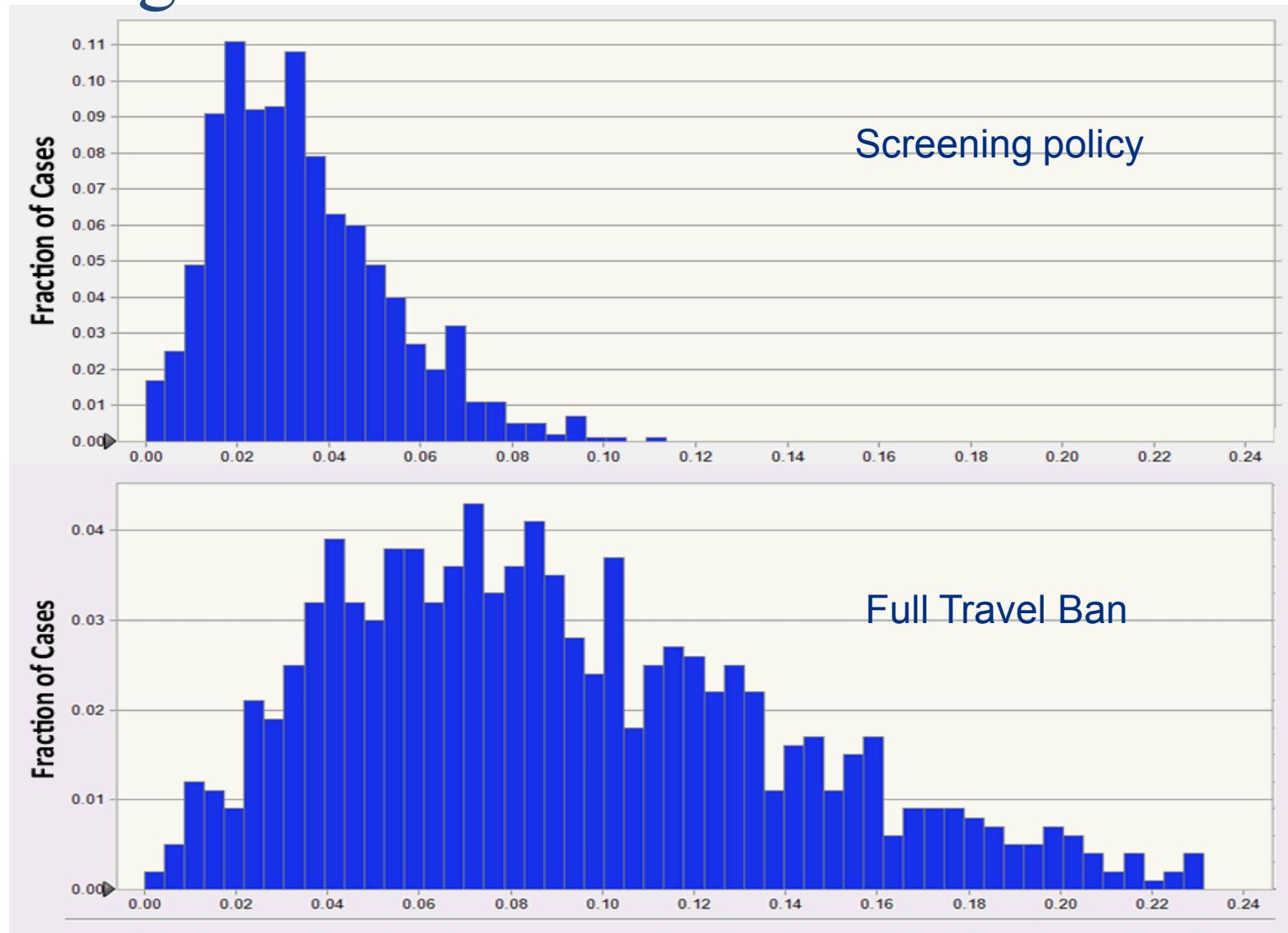
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# Histograms: Focus on Missed Arrivals



Simulated Probability of “Missed” Arrival of an Infected Traveler (1,000 Cases run)

# Summary and Conclusions

- Implementation of a travel ban is expected to
  - Decrease the number of Ebola-infected individuals entering the US
  - Increase the number of infected individuals who will be missed by screening and therefore not be tracked or monitored



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# Backup Slides



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# Categories of Infected Travelers who Gain Entry to the United States

- “Missed” (not identified as having recently been in an infected nation);
- “Identified/Tracked” (identified as having recently been present in an infected country, monitored and potentially subject to additional protocols);
- “Isolated/Quarantined” (suspected by health authorities of being infected).



# Travel Ban Scenarios

Scenario	Description
Screening	Travelers coming from affected countries are subject to airport screenings put in place 22 October 2014 (see backup slide).
Partial Travel Ban	Travelers from affected countries are banned from entry to the United States if present in any of those countries within the previous 21 days. United States citizens and Legal Permanent Residents (LPRs) are subject to airport screenings put in place 22 October 2014 (see backup slide).
Full Travel Ban	Travelers from affected countries are banned from entry to the United States if present in any of those countries within the previous 21 days. Infected Foreign National travelers are either turned back (if asymptomatic) or are Isolated/Quarantined if symptomatic. United States citizens and Legal Permanent Residents who have been in the affected countries within the previous 21 days are subject to Isolation/Quarantine.



# Screening Scenario Assumptions

## **SCREENING PROCEDURES AS OF 22 OCTOBER 2014**

- Applies to: People who arrive from affected countries (or are suspected to have been in those countries within the previous 21 days)
- They are identified by Customs and Border Protection (CBP) targeting rules at the five identified United States airports; are subject to the following:
  - A questionnaire regarding their trip to the affected countries
  - A temperature screening
  - Further questioning by a TSA agent
- Travelers indicating contact with Ebola-infected individuals are Identified/Tracked.
- If asymptomatic: Travelers receive a CDC Check and Report Ebola (CARE) Kit that includes general information, a thermometer, and a CARE card to inform hospitals that the passenger has visited an Ebola-affected region.
- If symptomatic: Travelers are subject to Isolation/Quarantine.

