



✈️ AVIATION

MAJOR US CARRIER

# Network-Wide Check-In Operations Redesign

## BACKGROUND

US air travel reached record levels in 2025. TSA screened over three million passengers in a single day for the first time in its history that June, and eight of the ten busiest checkpoint days on record fell in a single summer. The pressure landed unevenly across the network. Terminals built for an earlier volume era now absorb peak loads that exceed their design capacity, and check-in halls have become one of the visible pinch points.

A major US carrier began planning a network-wide redesign of its check-in operations against this backdrop. The airline needed to modernize kiosk configurations, calibrate staffing levels, and protect passenger throughput across dozens of stations while peak travel periods kept setting new highs.

The airline had floor plans, staffing tables, and transaction volume reports. What it lacked was a way to know which configuration would actually hold under operating pressure before rolling it out across the network.

SimWell partnered with the carrier to build a simulation-based decision tool that could evaluate configurations under realistic demand conditions. SimWell built the model for reuse, letting the airline test scenarios across its station network and refine operational strategies as conditions changed.

## CHALLENGE

Check-in looks simple from a distance. Passengers approach kiosks, complete transactions, and move to security. In practice, the operation runs as a queuing system with interdependencies that punish intuition.

Passengers arrive in waves tied to departure banks rather than steady streams. A station that feels empty at 6:15 AM is overwhelmed by 6:40 when three flight banks converge. Some passengers complete transactions independently in forty seconds. Others need agent assistance for bag drops, seat reassignments, or rebooking. The mix varies by route, time of day, and season.

Shared roaming agents create resource competition that spreadsheets cannot capture. When assistance wait times climb, passengers abandon kiosks mid-transaction, blocking units and spreading congestion into adjacent queues. The airline had modeled check-in before using averages, but averages masked the failure modes that only appeared when timing, volume, and passenger mix interacted under pressure.

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## SOLUTION

SimWell built a configurable simulation model that represented the full check-in operation as a decision tool. Kiosk configurations, agent staffing, shift timing, and passenger arrival patterns functioned as adjustable parameters rather than fixed assumptions.

Scoping discipline shaped the engagement. When the airline proposed testing minor layout variations within the same kiosk count, SimWell advised against it. The physical differences were too small to change outcomes, and the modeling effort would not earn its keep. The team focused instead on the variables that actually drove performance: transaction type distributions, assistance request rates, and agent response logic. Where input data fell short, the model surfaced gaps as calibratable variables rather than burying them in point estimates.

SimWell built the model for network scale. Standing up a new station required loading a floor plan and adjusting site-specific inputs. A trained operator could configure a new location in under an hour.



*Configurable model evaluated kiosk, staffing, and arrival-pattern scenarios across dozens of stations*

## RESULTS

The model tested configurations under realistic demand conditions drawn from actual flight schedules and historical passenger volumes.

### Key project findings included:

- **A 15-minute wait time spike** emerged during high-assistance departure banks, invisible in the airline's prior spreadsheet analysis.
- **Quantified staffing tradeoffs** showed exact thresholds where service performance degraded against labor cost targets.
- **Demand growth scenarios at 10% and 20%** identified configurations requiring rework within 18 months.
- **Network-scale deployment** let trained operators configure a new station in under one hour per location.
- **Full capability transfer** let the airline's planning team run scenarios independently as conditions changed.

**15 min**

PEAK WAIT SPIKE  
IDENTIFIED

**3**

DEMAND GROWTH  
SCENARIOS TESTED

**100%**

CAPABILITY  
TRANSFERRED

**SimWell** helps operators make better decisions under uncertainty. We build simulation and optimization models that reflect operational reality, test scenarios before committing resources, and transfer capability so teams can run decisions independently.