

The Merits of Adopting Biometric Technology in Airport Security Checkpoints

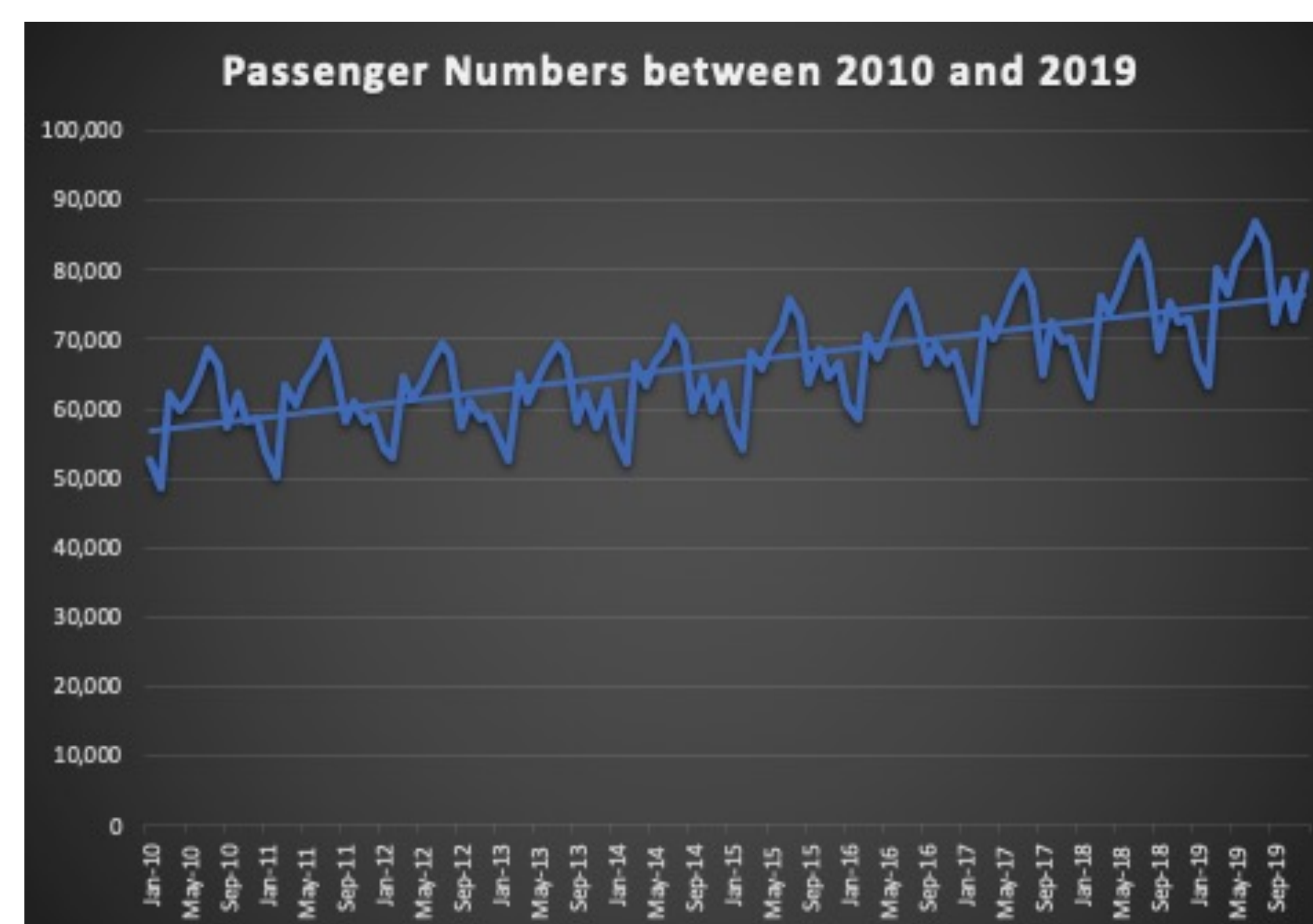
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Abstract

This study analyzed the merits of biometric technology adoption in TSA and CBP airport checkpoints in the United States, focusing on the changes in efficiency, safety levels, and passenger experience as well as the cost-benefit of adopting such technology. Research yielded mixed results in efficiency but positive results in safety levels, passenger experience, and the cost-benefit of implementing the technology.

Background

- Aviation security remains a high priority; aviation is a high-value target for bad-actors
- Congressional mandate for DHS under the USA Patriot Act PL 107-56 for the implementation of a biometric entry-exit program for all travelers
- Need at US airports for more efficient screening: stagnant staffing and infrastructure footprint as well as record passenger travel is overwhelming existing processes, including older biometric programs, leading to excessive waiting times and passenger dissatisfaction
- Newest biometric technology has the accuracy, speed, and ability to automate high-volume processes that fits DHS requirements
- Openness of the general public to the use of biometric technology



Research Questions

- How will the use of biometric technology impact efficiency in aviation security?
- How can biometric technology change aviation safety level?
- How will the use of biometric technology affect passenger experience at the airport?
- What is the cost and benefit result of biometric technology implementation?

Methodology

#1



Review of government issued reports from organizations such as DHS, CBP, TSA, and GAO

#2



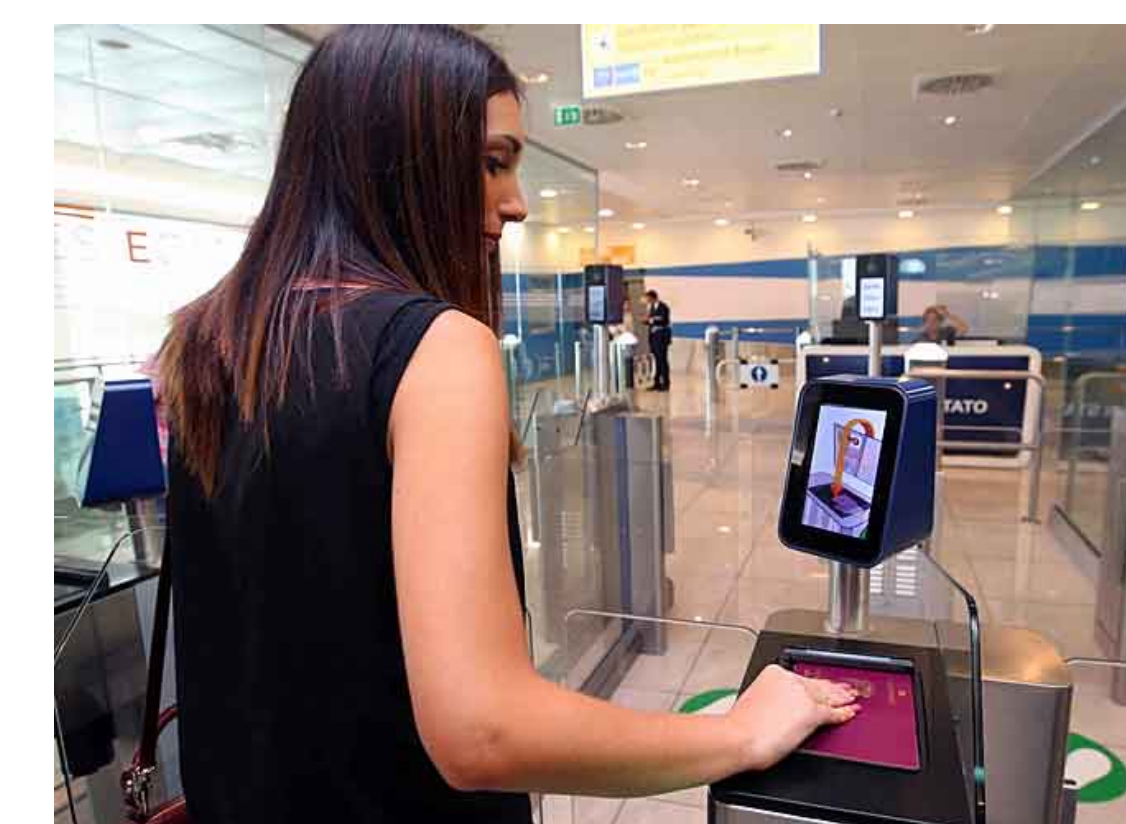
Review of scholarly articles from established journals or those that have been peer-reviewed/published

#3



Collection and analysis of data from Bureau of Transportation Statistics and CBP at five international airports to compare checkpoint wait times before and after biometric implementation using a weighted average calculation

Facial Scanning - Fingerprint



Wait Time Calculations

Airport	Time	Total Passengers	Weighted Average wait time	Additional wait time per passenger
ORD	June, 2013	430000	20.75539302	0.055144198
	June, 2015	445024	14.95750566	0.043527154
	Percentage Change	3.49%	-27.93%	-21.07%
IAD	June, 2013	312308	16.11771392	0.047917426
	June, 2015	306313	9.314221075	0.032403748
	Percentage Change	-1.92%	-42.21%	-32.38%
ATL	June, 2013	425782	8.542928071	0.018718927
	June, 2015	456117	10.54783312	0.027343976
	Percentage Change	7.12%	23.47%	46.08%
LAX	June, 2013	467395	19.65059746	0.028033146
	June, 2015	590118	19.92154959	0.020353807
	Percentage Change	26.26%	1.38%	-27.39%
MCO	June, 2013	115950	23.57638637	0.08374365
	June, 2015	152669	18.13812889	0.06517906
	Percentage Change	31.67%	-23.07%	-22.17%

Note: From the U.S. Customs and Border Protection (CBP) Airport Wait Times database (n.d.)

Biometric Technology

Biometric technology uses physiological and behavioral features to identify or verify one's identity. This relies on enrollment which is classified as voluntary or involuntary and uses both software and hardware features.



Findings

- The primary means of biometric data are fingerprints scans and facial recognition. When used in the right environment and set up properly, biometric capturing techniques have proven effective at matching biometric information to an individual.
- Human security systems have proven to be extremely unreliable, with some studies showing a 95% failure rate in testing. Biometric security systems, paired with human security systems, have proven to be significantly more effective.
- Automated passport checking relieves CBP officers of manually checking identification of U.S. citizens, freeing CBP personnel to perform more essential duties.

Discussion

- Mixed results for efficiency changes based on CBP wait time data
- Reduction in visa overstay and long-term manpower needs
- The majority of travelers are satisfied with automated immigration gates.
- Though expensive, biometric security systems are still cheaper than the cost of dealing with a large-scale terrorist attack.

Future Study

- Rapidly changing field, with advancements being made constantly. What is true now may change in the near-future.
- Access to classified data would allow for a more holistic approach to answering research questions.

References

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