Background Information

- The Transportation Security Administration rolled out a new expedited screening program, the TSA Pre✓®, in October of 2011.
- The TSA has begun pre-screening passenger at participating airports. Approved applicants can get sent to expedited and less restrictive screening lanes at the airport. Passengers can apply to a Known Traveler Program to increase chances of being selected.
- Currently over 130 airports support the expedited screening lanes.
- A map of current airports that are utilizing the TSA Pre✓® expedited screening lines can be seen in (Figure 1) [1].

Notable Terms

- The variables and parameters used in the game theoretical model are shown in (Figure 3).
- Utility Functions for Applicants
  - The utility functions for applicants can be seen in (Figure 5).
  - The applicants will decide at what rate to apply for the expedited screening program based on the parameters and payoff of their function.
- Utility Function for Approver
  - The approver decides the probability of letting a previously approved applicant into the expedited lines based the utility function seen in (Figure 6).
- Best Responses for Applicants
  - The best response for adversary applicants is shown which stays at zero.
  - The best responses for normal applicants are included which are affected by the adversary applicants and approver is included in (Figure 6).
- Sensitivity Analysis
  - We looked at how the optimal values for decision variables reacted to changes in the error values in the red line and the application process. The results are illustrated in (Figure 11).

Further Discussion

There was further research that was conducted for this paper that deals with how the model changes as the number of utilized benefits changes for passengers in the expedited lines. This was omitted due to the lack of space on the poster.

Designing human experiments to validate the theoretical model outlined in this project would provide more practical results.

We could also look into potential applicants with different attributes in regards to their inherent risk when applying.

References


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