

Readme – Security Checkpoint Data

The dataset as provided in the 'data' folder, contains detailed timing information of passengers moving through the security checkpoint. The data is manually collected using camera images.

Data is collected for the lanes as outlined below. Each lane can be found in a different tab of the dataset.

Name	Date	Time	Lane Type	Number of passengers	Number of open lanes	Number of flights
o1	23/02/2018	05:00-07:15	Standard	232	1	5
o2	01/03/2018	16:00-18:00	Standard	149		
o3	10/03/2018	14:30-16:00	Standard	186	2	3
o4	12/03/2018	05:00-06:15	Standard	160	2	6
o5	31/03/2018	14:30-15:30	Standard	115	2	3
o6	07/04/2018	17:00-18:40	Standard	138	2	3
o7	15/04/2018	05:00-06:30	Standard	211	3	5
o8	17/04/2018	08:00-10:05	Standard	102	1	2
o9	17/04/2018	13:00-14:20	Standard	41	1	1
n1	17/12/2018	05:00-07:00	Normal	175	2	3
s1	17/12/2018	05:00-07:00	Service	177	2	3
n2	18/12/2018	05:00-07:15	Normal	318	2	5
s2	18/12/2018	05:00-07:15	Service	273	2	5

In standard lanes, passengers individually choose where they will undergo their security checks. Usually passengers assess the queue lengths of each of the available lanes, and choose the lane with the shortest queue. This leads to similar distribution of passenger types over the available lanes, and ensures that each lane has a similar arrival rate of passengers.

On the experimental days (17 and 18 December 2018) both a service lane and a normal lane were used. For service lanes, slow passengers were identified a priori, such that they can be directed there. Based initial data analysis, and discussions with security experts, three types of passengers were identified:

- Senior passengers (inexperienced)
- Families
- Passengers with reduced mobility (PRM)

Passengers that were not part of these groups were directed to the normal lane. In cases where a lane was receiving insufficient passengers to operate at full capacity, any passenger was sent to that lane, regardless of their characteristics.

Each row in the dataset represents a single passenger that went through a security lane. The following data is collected for each passenger. Times are in (h)hmmss format.

Column name	Column Index	Description
Comments	A	Comments on the passenger.
Lane number	B	The lane number.
Date	C	The date.

business	D	Passenger is business passenger.
senior	E	Passenger is senior passenger.
family	F	Passenger is family passenger.
young	G	Passenger is young passenger.
PRM	H	Passenger is PRM passenger.
regular	I	Passenger is regular passenger.
Experience	J	Passenger is experienced.
Time Start Baggage drop off	K	The time the passenger starts to drop his/her luggage.
Number of boxes	L	The number of boxes the passenger uses.
Time End Baggage drop off	M	The time the passenger stops to drop his/her luggage.
Time Start WTMD	N	The time the passenger is at the walk through metal detector for the first time.
Time Start WTMD 2	O	The time the passenger is at the walk through metal detector for the second time.
Time Start WTMD 3	P	The time the passenger is at the walk through metal detector for the third time.
Time Start WTMD check	Q	The starting time that the passenger receives a patdown.
Time End WTMD check	R	The ending time that the passenger receives a patdown.
Time Start ETD check	S	The starting time that the passenger receives an explosive trace detection check.
Time End ETD check	T	The ending time that the passenger receives an explosive trace detection check.
Time Start Baggage reclaim	U	The time the passenger starts to reclaim his/her luggage.
Time End Baggage reclaim	V	The time the passenger ends to reclaim his/her luggage.
Group size	W	The size of the group the passenger is travelling with.
Time Start Baggage Check	X	The starting time that the passenger receives a baggage check.
Time End Baggage Check	Y	The ending time that the passenger receives a baggage check.

The experience of passengers was assessed during the baggage-drop. This is since passengers have most freedom to execute this process - compared to the WTMD or ETD procedure - which are more guided by the security personnel.

Experienced passengers usually arrange their belongings such that putting it into boxes can be done swiftly. This includes already removing ones belt, shoes, jackets, and other garments which are required to pass through the x-ray scanner. Unloading into boxes also starts as soon as possible (even putting belongings into boxes on stacks while there is no place yet on the rollers).

Furthermore, the more experienced traveller seems to be more comfortable using more x-ray boxes and keeping the amount of belongings per box low, compared to the less prepared traveller, which uses less boxes, while each box contains more belongings. The more experienced passenger is

confident in the steps to take during unloading, hence, interaction with the security officer is lower compared to a less experienced passenger.

Passengers were classified into categories using the following guidelines.

Passenger Type	Shorthand	Characteristics
Business	b	Carries a laptop, wears a suit.
Senior	s	Appears older than 60.
Family	f	Part of group travelling with children under the age of 18.
Young	y	Appears between 18 and 35.
PRM	p	Passenger with Reduced Mobility. Any form of observable reduced mobility.
Regular	r	None of the above.

The accompanying paper provides an analysis of the dataset.