MINI CASE: A Delayed Flight[1]

Judy planned to fly from Shanghai Pudong Airport to Hong Kong airport on 20 May 2012 with MU505, China Eastern Airline (Planned departure: 17:00 and planned arrival 19:25), and transfer from Hong Kong Airport to London Heathrow Airport with BA28 British Airways (Planned departure: 23:45). She gave herself 4 hours for transferring and thought that would be more than enough. Unfortunately, MU505 was extremely delayed, so she missed the flight BA28 from Hong Kong to London. The Certificate of Delay issued by China Eastern Airline showed that MU505 was delayed due to weather condition and air traffic control, namely the reasons were out of the control of China Eastern Airline, thus Judy could not get compensation.

In order to get compensation, Judy downloaded all flight data from Shanghai Pudong Airport to Hong Kong Airport on that day (20 May 2012). Judy thought that, if the delay was due to weather condition and air traffic control, all flights from Shanghai Pudong to Hong Kong in the data set should be delayed. If the delay of MU505 is more severe than other flights in the data set, it denotes that there should be other reasons for MU505's delay, instead of weather condition and air traffic control. In this case, Judy may be able to get compensation. As a business analyst, based on the data, can you use hypothesis testing to help Judy show that the delay of MU505 is in fact significantly longer than the average delay on that day?

After Judy presented the hypothesis testing results to China Eastern Airline, the customer service representative argued that both weather and air traffic control could change during the day. To rule out this possibility, you decide to only examine the flights with planned arrival time up to 3 hours earlier or 3 hours later than Judy's flight (MU505's planned arrival time + or – 3hours). Does your conclusion still hold? Can you still show that the delay of MU505 is significantly longer than the average delay?

[1] Based on real data. Dr. Yufei Huang.

Table: Arrival Time for All the Flights from Shanghai Pudong to Hong Kong (20 May 2012)

Flight	Origin	Destination	Airline	Planned Arrival	Actual Arrival	Delay (mins)
KA857	Shanghai	Hongkong	Dragonair	10:10	10:31	21
HX235	Shanghai	Hongkong	Hong Kong Airlines	10:45	10:52	7
HO1293	Shanghai	Hongkong	Juneyao Airlines	10:50	11:23	33
KA871	Shanghai	Hongkong	Dragonair	11:00	11:07	7
KA831	Shanghai	Hongkong	Dragonair	11:15	11:43	28
MU501	Shanghai	Hongkong	China Eastern Airlines	11:35	12:50	75
9C8921	Shanghai	Hongkong	Spring Airlines	12:20	13:20	60
CX365	Shanghai	Hongkong	Cathay Pacific	12:25	13:56	91
MU701	Shanghai	Hongkong	China Eastern Airlines	12:40	13:34	54
KA803	Shanghai	Hongkong	Dragonair	14:05	15:16	71
HX237	Shanghai	Hongkong	Hong Kong Airlines	14:30	15:12	42
MU503	Shanghai	Hongkong	China Eastern Airlines	14:35	14:41	6
CX367	Shanghai	Hongkong	Cathay Pacific	15:05	15:15	10
KA865	Shanghai	Hongkong	Dragonair	15:35	15:23	-12
KA877	Shanghai	Hongkong	Dragonair	16:05	16:00	-5
9C8959	Shanghai	Hongkong	Spring Airlines	16:35	16:48	13
KA805	Shanghai	Hongkong	Dragonair	17:05	17:09	4
MU509	Shanghai	Hongkong	China Eastern Airlines	17:30	17:38	8
KA893	Shanghai	Hongkong	Dragonair	17:55	18:39	44
HO1291	Shanghai	Hongkong	Juneyao Airlines	18:35	19:25	50
KA875	Shanghai	Hongkong	Dragonair	19:05	19:31	26
MU505	Shanghai	Hongkong	China Eastern Airlines	19:25	23:32	247
CX369	Shanghai	Hongkong	Cathay Pacific	20:10	20:32	22
KA891	Shanghai	Hongkong	Dragonair	21:05	22:23	78
9C8597	Shanghai	Hongkong	Spring Airlines	21:25	22:21	56
KA835	Shanghai	Hongkong	Dragonair	21:35	21:57	22
KA897	Shanghai	Hongkong	Dragonair	22:15	22:32	17
KA809	Shanghai	Hongkong	Dragonair	23:05	23:23	18
MU725	Shanghai	Hongkong	China Eastern Airlines	23:35	23:53	18