The North-South Airline

In 2008, Northern Airlines* merged with Southeast Airlines to create the fourth largest U.S. carrier. The new North-South Airline inherited both an aging fleet of Boeing 737—200 aircraft and Stephen Ruth. Ruth was a tough former secretary of the navy who stepped in as new president and chairman of the board.

Ruth's first concern in creating a financially solid company was maintenance costs. It was commonly believed in the airline industry that maintenance costs rose with the age of the aircraft. Ruth quickly noticed that, historically, there has been a significant difference in reported B737—200 maintenance costs (from ATA Form 41s) both in the airframe and engine areas between Northern Airlines and
On November 12, 2008, Ruth assigned Peg Young, vice president for operations and maintenance, to study the issue. Specifically, Ruth wanted to know (1) whether the average fleet age was correlated to direct airframe maintenance costs and (2) whether there was a relationship between average fleet age and direct engine maintenance costs. Young was to report back with the answer, along with quantitative and graphical descriptions of the relationship, by November 26.

First, Young had her staff construct the average age of Northern and Southeast B737-200 fleets, by quarter, since the introduction of the aircraft to service by each airline in late 1999 and early 2000. The average age of each fleet was calculated by first multiplying the total number of calendar days that each aircraft had been in service at the pertinent point in time by the average daily utilization of the respective fleet to total fleet-hours flown. The total fleet-hours flown was then divided by the number of aircraft in service at that time, giving the age of the "average" aircraft in the fleet.

The average utilization was found by taking the actual total fleet-hours flown at September 30, 2008, from Northern and Southeast data, and dividing by total days in service for all aircraft at that time. The average utilization for Southeast was 8.3 hours per day, and the average utilization for Northern was 8.7 hours per day. Because the available cost data were calculated for each yearly period ending at the end of the first quarter, average fleet age was calculated at the same points in time.

The fleet data are shown in the following table. Airframe cost data and engine cost data are both shown paired with fleet average age.

North-South Airline Data for Boeing 737-200 Jets

	Northern Airlines Data			Southeast Airlines Data		
Year	Airframe Cost per Aircraft	Engine Cost per Aircraft	Average Age (hours)	Airframe Cost per Aircraft	Engine Cost per Aircraft	Average Age (hours)
2001	$51.80	$43.49	6,512	$13.29	$18.86	5,107
2002	54.92	38.58	8,404	25.15	31.55	8,145
2003	69.70	51.48	11,077	32.18	40.43	7,360
2004	68.90	58.72	11,717	31.78	22.10	5,773
2005	63.72	45.47	13,275	25.34	19.69	7,150
2006	84.73	50.26	15,215	32.78	32.58	9,364
2007	78.74	79.60	18,390	35.56	38.07	8,259

*Dates and names of airlines and individuals have been changed in this case to maintain confidentiality. The data and issues described here are actual.

DISCUSSION QUESTION

Prepare Peg Young's response to Stephen Ruth.

Researching other variables and/or more data point is a big plus.