Interpret Mean Absolute Deviation

1. Eight of each of two varieties of tomato plants, LoveEm and Wonderful, are grown under the same conditions. The numbers of tomatoes produced from each plant of each variety are shown:

Plant	1	2	3	4	5	6	7	8
LoveEm	27	29	27	28	31	27	28	27
Wonderful	31	20	25	50	32	25	22	51

a) Draw dot plots to help you decide which variety is more productive.

b) Calculate the mean number of tomatoes produced for each variety. Which one produces more tomatoes on average?

c) If you want to be able to accurately predict the number of tomatoes a plant is going to produce, which variety should you choose—the one with the smaller MAD or the one with the larger MAD? Explain your reasoning.

d) Calculate the MAD of each plant variety.

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   b) Calculate the mean number of tomatoes produced for each variety. Which one produces more tomatoes on average?

The mean number of LoveEm tomatoes is 28, and the mean number of Wonderful tomatoes is 32. Wonderful produces more tomatoes on average.

   c) If you want to be able to accurately predict the number of tomatoes a plant is going to produce, which variety should you choose—the one with the smaller MAD or the one with the larger MAD? Explain your reasoning.

LoveEm produces fewer tomatoes on average but is far more consistent. Looking at the dot plots, its variability is far less than that of Wonderful tomatoes. Based on these data sets, choosing LoveEm should yield numbers in the high 20's consistently, but the number from Wonderful could vary wildly from lower yields in the low 20's to huge yields around 50.

   d) Calculate the MAD of each plant variety.

The sum of the distances from the mean for LoveEm is 8 because $1 + 1 + 1 + 0 + 3 + 1 + 0 + 1 = 8$. Therefore, the MAD for LoveEm is 1 tomato because $\frac{8}{8} = 1$.

The sum of the distances from the mean for Wonderful is 74 because $1 + 12 + 7 + 18 + 0 + 7 + 10 + 19 = 74$. Therefore, the MAD for Wonderful is 9.25 tomatoes because $\frac{74}{8} = 9.25$.

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