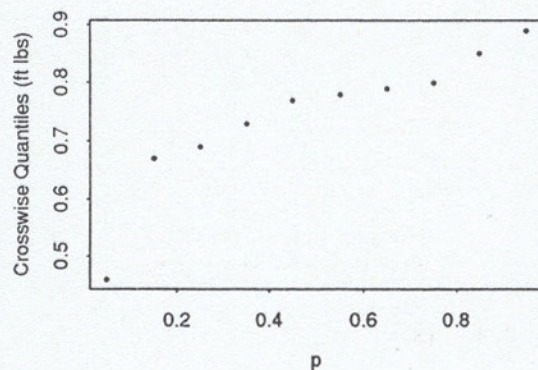
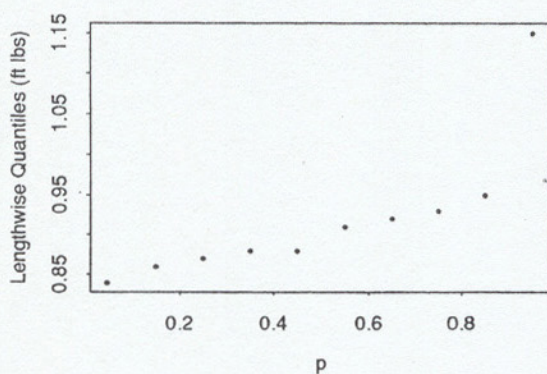


1. (a)

$i$	$\frac{i-.5}{10}$	$Q_L(\frac{i-.5}{10})$	$Q_C(\frac{i-.5}{10})$
1	.05	.84	.46
2	.15	.86	.67
3	.25	.87	.69
4	.35	.88	.73
5	.45	.88	.77
6	.55	.91	.78
7	.65	.92	.79
8	.75	.93	.80
9	.85	.95	.85
10	.95	1.15	.89



For the lengthwise sample:

$$\text{Median} = Q(.5) = \frac{.88 + .91}{2} = .895$$

$$1\text{st Quartile} = Q_1 = Q(.25) = .870$$

$$3\text{rd Quartile} = Q_3 = Q(.75) = .930$$

$$Q(.37) = .880$$

For the crosswise sample:

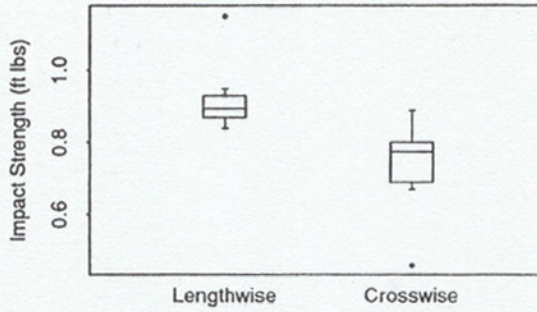
$$\text{Median} = \frac{.77 + .78}{2} = .775$$

$$Q_1 = .690$$

$$Q_3 = .800$$

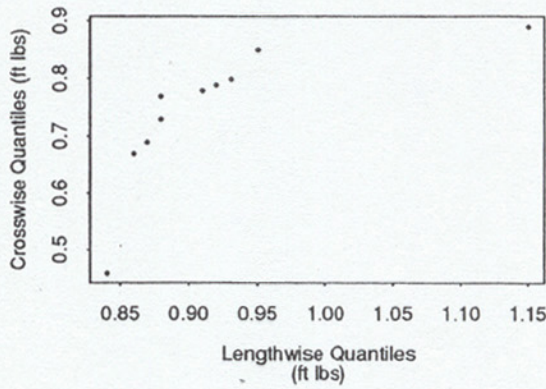
$$Q(.37) = (.8)(.73) + (.2)(.77) = .738$$

(b)



On the whole, the impact strengths are larger and more consistent for lengthwise cuts. Each method produced an unusual impact strength value (outlier).

(c)



The non-linearity of the Q-Q plot indicates that the overall shapes of these two data sets are not the same. The lengthwise cuts had an unusually large data point ("long right tail"), whereas the crosswise cuts had an unusually small data point ("long left tail"). Without these two outliers, the data sets would have similar shapes, since the rest of the Q-Q plot is fairly linear.