

I The Y2K Problem-

	Total costs (\$K)			EMV
	small problem	big problem, but good consultant	big problem and bad consultant	
Probability	0.4	0.55	0.05	
don't worry, no consultant	500	3,500	3,500	2,300
hire consultant for 500K	500	500	4,200	<b>685</b>
Buy new, guaranteed, no consultant	2,000	2,000	2,000	2,000
EMV certain	500	500	2,000	575

EVPI= 685-575= 110

The Y2K Problem--Regrets

	Total costs (\$K)			Minimax Regret
	no problem	problem, but good consultant	problem and bad consultant	
don't worry, no consultant	0	3,000	1,500	3,000
hire consultant for 500K	0	0	2,200	2,200
Buy new, guaranteed, no consultant	1,500	1,500	0	<b>1,500</b>

2000-685=1315 extra cost for CYA vs. Max EMV (min cost)

II

1. incremental business profit of \$5.60-0.60 collection charge= \$5 per sale net. to cover FC, need Q=\$60/\$5 =12. This was a real decision but is a little like the bus driver's eyes, so I called this one "extra credit."

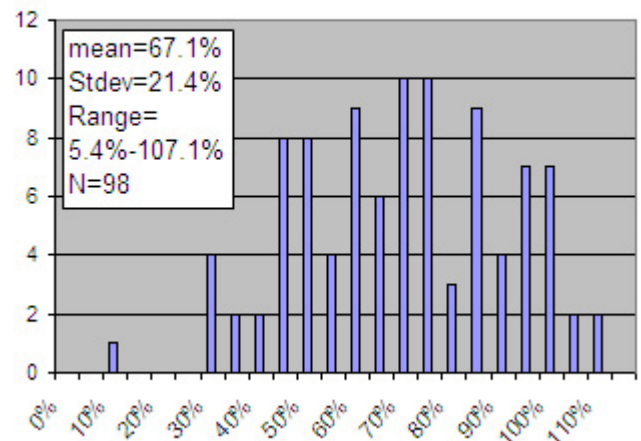
2.  $Z=(19-23)/4 = -1.0 \implies P=.1587$

3.  $UCL= \text{mean} + 3*2/\text{sqrt}(9) = 202$

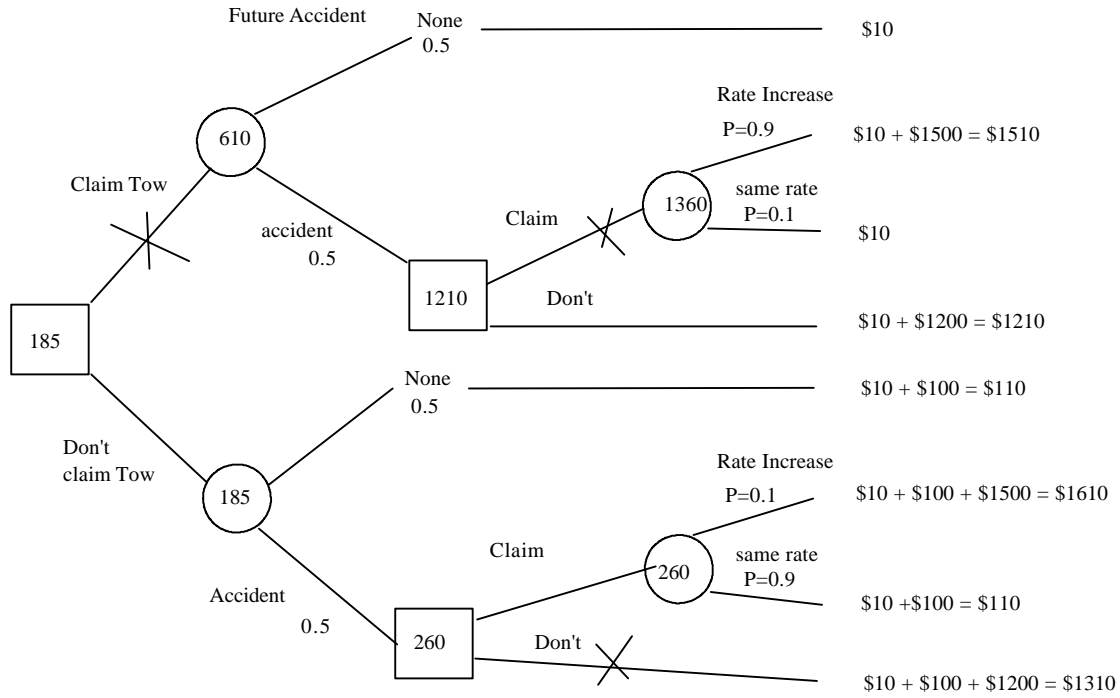
4. R-chart (range) shows changes in variability.

5. with backup,  $R=0.91*0.8 = 0.728$   
 without backup,  $R=0.7*0.8=0.56$   
 increase in reliability =  $0.728-0.56= 0.168$   
 Reduction in expected cost of Failure =  $0.168 * \$2000 = \$336$

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III



Better to not claim, as claiming the tow charge would result in an increase in expected cost, thus you have insurance you wouldn't use, and you are wasting the \$10, and would still have the towing charge of \$100.  
 The Auto club costs \$50, but would pay the \$100 towing charge, So you would spend \$50 instead of \$110. I think this works because the tow operator gets incremental business and market segmentation out of arrangements with auto clubs.  
 Better to have more expensive insurance that you will use than less expensive insurance that you won't use.

IV

**Short term Profits in \$M as a function of Pay and quality performance**

HiQ / Jones	lowQ/shoddy	Minimum	Thorough/excellent	Jones' Maximum Profit
underpay,hardball	10 / 25	45 / 22	85 / 20	
Pay average rate	5 / 30	50 / 27	90 / 25	
overpay/reward	0 / 33	43 / 35	80 / 30	

HiQ's Maximum profit  
 Prisoner's dilemma outcome is underpay, shoddy quality.  
 The best total is average pay, excellent quality, but I also accepted overpay/excellent.

V

1. Rational laziness is a virtue and the source of human progress.
2. Depersonalize decisions and reward the process to drive out fear and promote good decision making.
3.  $(3000-1500)/(150-50) = 15$  quilts to be indifferent
4.  $10 + 30Pr = 20 - 15Pr$   
 $(30 + 15) Pr = 20 - 10$   
 $Pr = 10 / 45$