Decision Tree Analysis in Litigation: A Step-by-Step Guide[1]

by Jay Young[2]

"The central goal of each party [in negotiation] is to reach a result that makes the party better off than it would be if the parties kept on litigating. . .When we know what a case is worth, we can negotiate with confidence. We can objectively weigh what the other side proposes and adopt positions that the other side is likely to take seriously.

It's often very hard to put a dollar value on a lawsuit, particularly an employment [or commercial] case. Unlike [personal injury matters], there are not so many essentially identical lawsuits that we can easily discern a "market price." The individual characteristics of [these] cases tend to have, relatively speaking, great impact on their value. Change a few details in the fact record or substitute a new trial judge, and the value of the case can plummet or skyrocket. . . [T]he process of valuing a lawsuit is so critical to settlement that we are always seeking ways to do so accurately.

One invaluable technique for determining the value of a case is the decision tree. A decision tree shows the various possible outcomes in a lawsuit and helps the parties evaluate the costs, risks and benefits of each outcome. In a typical lawsuit--where a plaintiff simply seeks to recover some amount of money from a defendant--a decision tree lists the most likely ways the case can come out and produces a weighted average of the results."[3]

BUILD YOUR OWN DECISION TREE. Take the following steps to build your own decision tree:

1. **List the Possible Outcomes.** List any matter which gives either party significant uncertainty, including:
   - Dispositive motions

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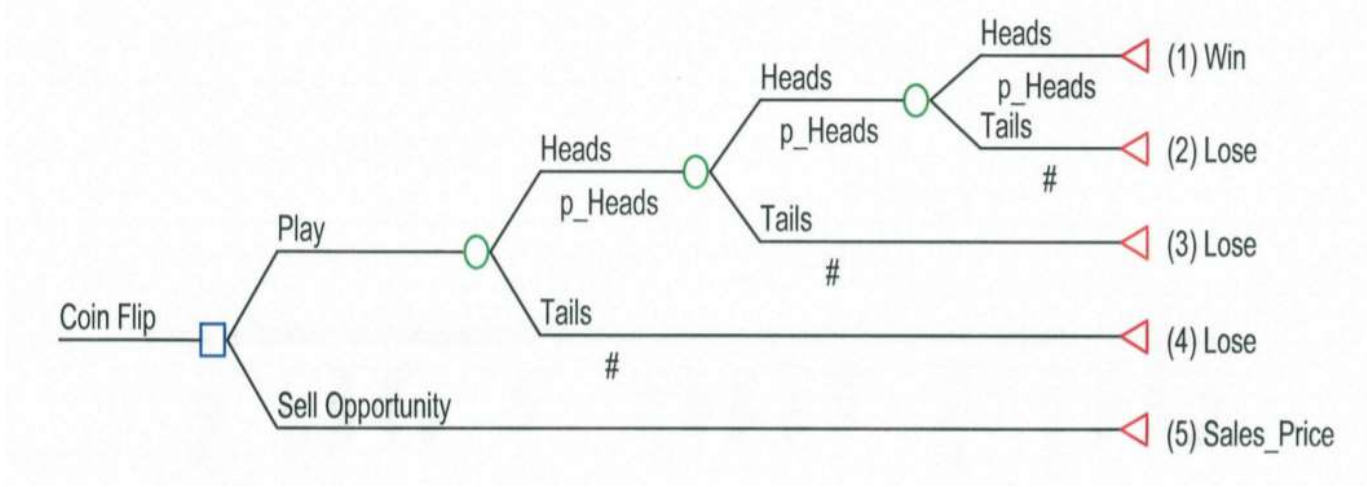
[1] This article is derivative of information created by and following the methods pioneered by Marc B. Victor and others. It merely synthesizes and organizes their ideas and information.

[2] Jay Young is a mediator and arbitrator in Las Vegas. See his blog at www.nevadalaw.info for contact information.

[3] Ben Klein, http://decisiontree.kleinmediation.com/site/about.

- Important evidentiary rulings that could sway the outcome
- Jury instructions that could sway the outcome
- Motions *in limine* that could sway the outcome
- Offer of judgment
- Ability to prove an element of a claim (i.e., the jury will find a breach, the jury will find causation)
- Finder of fact accepts an expert's opinion re: damages, etc.

Example: The *Coin Flip* bet. Two parties bet over flipping a coin three times, with the winner taking or risking $100 if it comes up heads each time. The tree looks something like this:



[4]

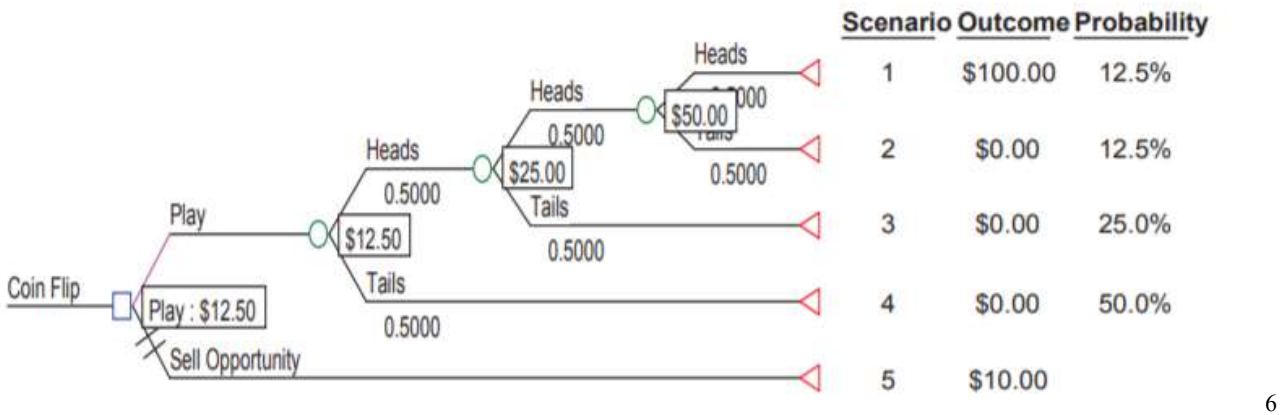
The "Sell Opportunity" represents the offer made to the party flipping the coin before the game is played. You either take the Sell Opportunity or to play the game and accept the outcome of the game of chance.

2. Consider the Cost Required to Get to Each Possible Outcome: the outcomes or uncertainties do not come without a cost, so calculate the cost needed to get to each decision point. Note separately. If each flip of the coin

[4] Douglas L. Irish and Jose A. Cardenas, *Legal Risk Evaluation Services Using Decision Tree Analysis*, https://www.lrrc.com/files/uploads/documents/dta_august08.pdf.

represents an event in the litigated case (defendant's motion for summary judgment, determination of liability, and determination of punitive damages, for instance), then determine the cost to get to that phase of the case.

3. List the Chances That Each Possible Outcome Will Occur. Stated another way, discounting each possibility by its probability, or the estimated likelihood that it will occur.[5] With each flip, the probability of the coin coming up heads is 50%, so the tree looks something like this when the probability of a positive result is factored in:



[6]

4. Evaluating the overall picture by multiplying each possibility by its probability.

The "solved" coin flip tree shows the mathematical probability of getting heads 3 times in a row (.5 x .5 x .5 = .125 or 12.5%) times $100, which gives an "expected value" of $12.50. If you ran the scenario 100 times, you could expect to "win" the $100 only 12.5 times. Conversely, you would expect to lose 87.5% of the time. Therefore, without running the game, before the first coin flip, your "expected value" of the game is $12.50.

A Risk Neutral Player will turn down the Seller Opportunity $10.00 offer, and will accept any offer greater than $12.50

[5] Kathleen M. Scanlon, *Mediator's Deskbook*.
[6] *See* FN 1.

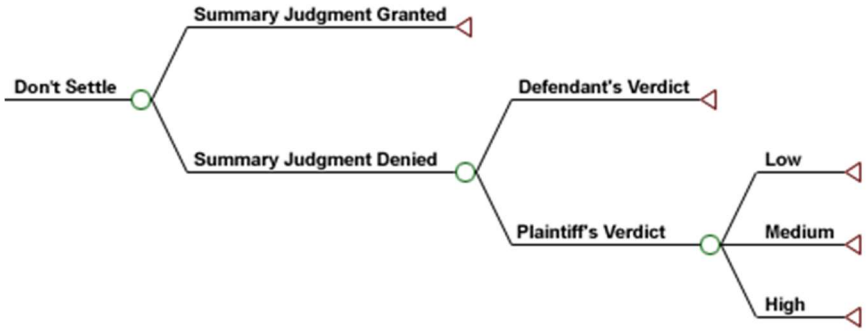
A Risk Averse Player Might accept the $10.00 Seller Opportunity rather than play the game and risk losing everything.
A Risk Taking Player: Will accept only an amount higher than $12.50

Outcome by scenario

Scenario	Outcome	Probability
1	$100	12.5%
2	$0	87.5%

Illustrative Example from Dan Klein's blog[7]

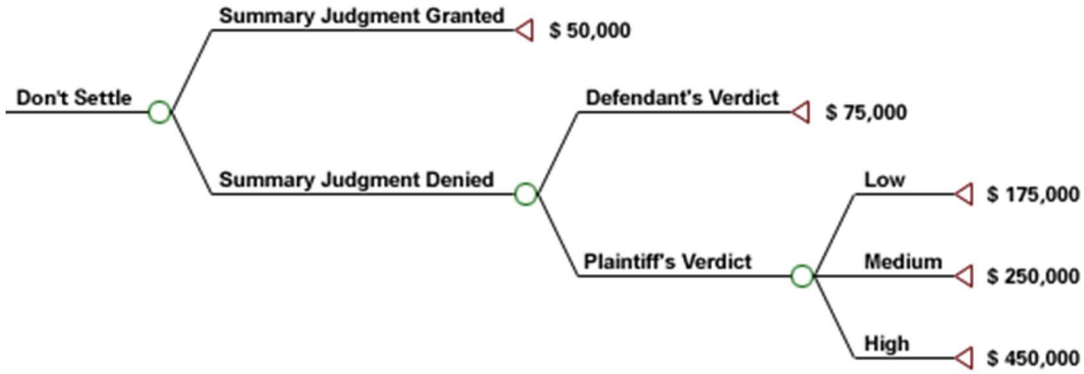
Assume the following:



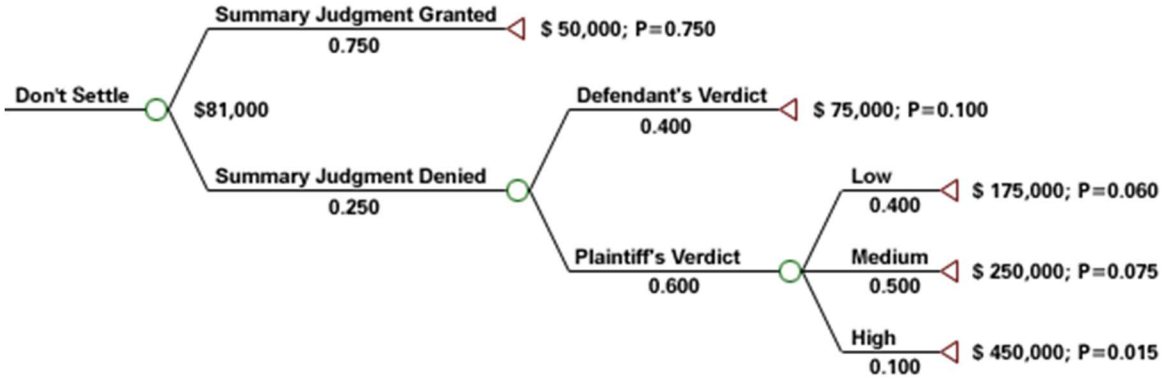
- Employment case. If employer wins the MSJ and employee appeals, the cost is $50K in fees, etc. Cost for a win at trial and appeal is $75K in fees, etc.
- If plaintiff wins, she will likely get back pay, and might get compensatory and punitive damages. The expected win for plaintiff would be $25K. Three possible verdicts are for low, medium, and high values
- If plaintiff wins, the court would award $75K in attorney fees, so add that amount to each anticipated award (the low value is the expected $25K, plus $75K in attorney fees, for a total of $100K

[7] http://decisiontree.kleinmediation.com/site/about (all graphs and information in this section are from the referenced article. I profess no authorship)

New tree with values associated with each outcome



Note the chance of each possible outcome stated as a percentage. Next, assign a value to each outcome.



The "Expected Value" of the case is $81K. In other words, if you ran the scenario 100 times, you could expect the employer would come out of pocket an *average* of $81,000 (including fees, costs, etc). The employer would use this information when determining whether to accept a demand made by the employee.

The following table shows how Klein arrived at the Expected Value:

Outcome	Exployer's Ligitation Expense	Plaintiff's Recovery	Total Cost to Reach Outcome	Odds of Occurring	Expected Cost per Outcome
Summary Judgment for Defendant	$ 50,000	$ 0	$ 50,000	0.750	$ 37,500
Verdict for Defendant	$ 75,000	$ 0	$ 75,000	0.100	$ 7,500
Low Verdict for Plaintiff	$ 75,000	$ 100,000	$ 175,000	0.060	$ 10,500
Medium Verdict for Plaintiff	$ 75,000	$ 175,000	$ 250,000	0.075	$ 18,750
High Verdict for Plaintiff	$ 75,000	$ 375,000	$ 450,000	0.015	$ 6,750
Weighted Cost					$ 81,000

The following table shows the cost to the employer by each end scenario.

Cost to Employer as Ranked by Scenario			Chances of Verdict	
1	$50K	75%	D Verdict	85%
2	$75K	10%	P Verdict	15%
3	$175K	6%		
4	$250K	7.5%		
5	$450K	1.5%		
Total		100%		

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