

Deal or no deal?

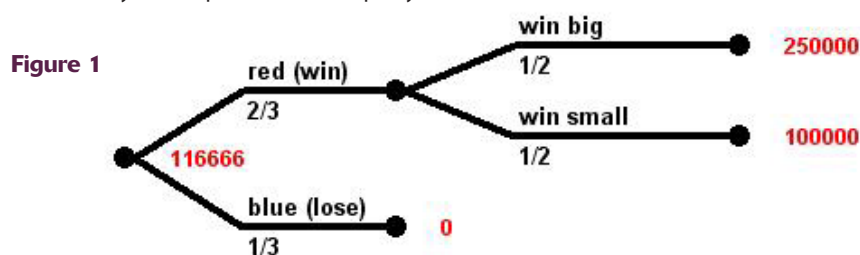
Using decision trees in litigation risk assessment



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mediator
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shows how using
probability theory
can help you and
your client make
the right decision.

A decision tree is a graphical representation of risk. They are used widely in business and industry and have a place in litigation risk analysis for those who know when and how to use them. Their successful use depends entirely upon the knowledge and skill of the legal representatives who prepare them and are in no way a replacement for that expertise.

This is how they work. Imagine your dream has come true and you are a contestant on a popular push-your-luck TV programme. There are only three sealed boxes left. One is the dreaded one pence box. The other two contain £100,000 and the jackpot prize of £250,000. The host has offered you £120,000. Do you accept that offer or open your box and take whatever it contains – is it deal or no deal?



This decision tree (Figure 1) will help you make a reasoned assessment. The first chance event is that you get either a red or a blue box. The blue box means that you lose because it contains just one pence. The probability of losing is 1/3 so the probability of winning is 2/3. If you win there is another chance event, either you win big (£250,000) or you win small (£100,000). If a red box is chosen the chance of winning big or small is half, because there are two winning boxes. You now have to calculate the expected monetary value (EMV). This is the average result that you would get if the game played over many times. To calculate the EMV you take the values of each potential outcome, multiply them by the probability of each one happening and add these sums together.

In our example there are three possible outcomes; losing (£0.01), winning small (£100,000) and winning big (£250,000). The probability of the first is 1/3. Multiplying the value by the probability gives 0.33 pence – effectively zero. The probability of each of the other two outcomes depends on two chance events. Firstly that a red box is chosen (probability 2/3) and secondly that this particular red box is chosen from the two available (probability 1/2). The probability of each of the winning boxes being chosen is therefore 1/2 multiplied by 2/3. That gives an overall probability of 1/3. Multiplying each value by its probability gives £33,333 and £83,333 respectively. The EMV is therefore the sum of £0, £33,333

and £83,333 which is £116,666. There is your answer; if you are risk neutral accept the banker's offer, because it is higher than your EMV.

negligence and the third represents the ruling on quantum. Each event can have any number of outcomes (for example you might want to have a high, medium and low

because that is the overall EMV.

To create your own tree, start by listing all the possible chance events. They may include findings on the admissibility of a particular piece of evidence; preference for one expert over another; rulings on aspects of special damages claims, in addition to the obvious ones in the tree above. Each event has a node with a branch coming off for all of the possible outcomes that you have identified and you have to assess the probability of each outcome. The sum of these probabilities at each node must equal one. These two requirements of foreseeing all the chance events and assessing the probability of each outcome answer the question; do decision trees take the legal skill out of the analysis? Rubbish in, rubbish out is the maxim. Your skill at understanding the steps of the process and your ability to analyse each one determines the success of the exercise. Not preparing a full list of reasons before assessing the probabilities for each outcome is a common failing in the construction of a decision tree.

Having drawn up the tree you calculate the probability of each outcome and

Figure 2

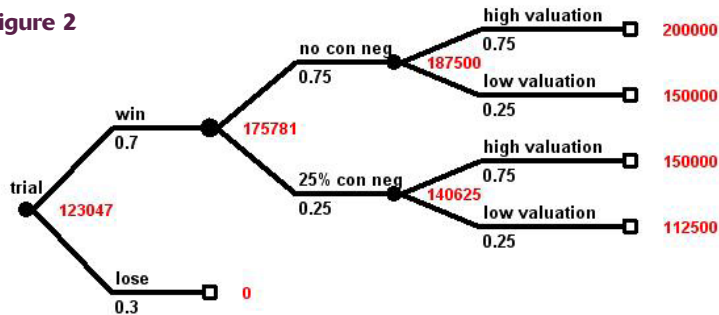


Figure 2 demonstrates how decision trees can be used in personal injury litigation risk assessment. Your high valuation is £200,000 and your low valuation is £150,000. You have decided there is a 25 per cent chance that the judge will reduce the damages by 25 per cent for contributory negligence and the chance of winning you assess at 70 per cent. Each black dot (or node to use the terminology) represents one of those chance events. The first chance event is the liability trial outcome, the second is the finding on contributory

valuation of quantum or add a finding of 50 per cent contributory negligence) but the probability of them all added together must equal exactly one. The figure to the right of each box is a final outcome – if you lost the outcome is zero, if you won with no finding of contributory negligence but the judge assessed the damages low the result would be £150,000. The red figure to the right of each node shows the EMV at that stage. The figure to the right of the trial node is the overall EMV. A risk neutral client would be advised to accept an offer of £123,047

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multiply it by its value. Add all the values together to reach the EVM. You may have to take into account defendant Part 36 offers. If your outcome gives a figure below any Part 36 offer, your client may have to pay some costs to the defendant or to you; it will depend on insurance and the nature of your retainer. If a payment would be due then you have to calculate that and subtract it from the outcome figure. For example, losing the trial would have a notional outcome of zero. However if your client would then be exposed to paying the defendant's costs then the outcome for losing that goes into your tree is a negative figure, which will lower the overall EVM. Commercial decision tree software can be found on the internet if you do not wish to prepare them longhand.

Decision trees can help clients who want a valuation based on more than your legal intuition. Working through a decision tree with your client will show them that you have vigorously evaluated each aspect of their claim. They will know each and every hurdle in their way and understand how you have assessed each. You can go through your list of reasons for each assessment which may give them a new perspective on the claim, and may also elicit further insight and information from them about different elements of the case. This work through with the client will show them a deeper analysis of the problem than they would receive if you simply provided an overall valuation of their claim. It requires a candid discussion between you and your client about the likelihood of each branch of the tree. In a mediation or joint settlement meeting, the decision tree can be used to demonstrate to the mediator or your opponent the reasoned basis for your settlement position. If you believe your client's settlement expectations are too optimistic a decision tree can be used to demonstrate, in a tangible way, why you think they need to alter those expectations. The process may not be for every client; that is for you to assess, case by case.

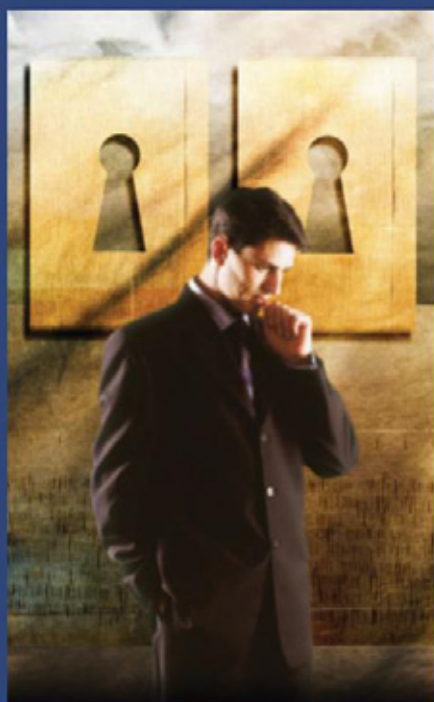
Using and understanding decision trees requires some practice and effort. I have seen them used inappropriately during mediation when the client has never seen a decision tree before. It was an attempt to explain a reasoned position but there had been no preparation for this and the client simply did not grasp the concept. There is also a danger that lawyers or their clients will become fixated upon the EVM which is after all just a statistical average based on numerous variables that have been assessed from the information available. The chance that any judge would come up with the figure equivalent to the EVM is remote. It must not therefore be used inflexibly. You also have to take into account your client's aversion to risk (and indeed your own and your insurer's if you are on a CFA with ATE cover).

Decision trees need to be updated whenever there is a material change to your assessment of individual risks or outcomes. A new medical report may substantially alter your views on quantum, or the defendant's witness statements may affect your assessment of liability or contributory negligence. The tree needs amending in each of these circumstances. You may also create a tree from the defendant's perspective to see where their EVM may lie. In these cases you must add your costs and the defendant's costs to the outcomes.

Decision trees can help you assess risk in personal injury litigation. They can also help certain clients appreciate your evaluation of their claim and inform them when they are faced with difficult decisions. A decision tree is a valuable tool and well worth considering. ■

Philip Hesketh is a professional mediator at www.heskethmediation.com and author of the Personal Injury Mediation Service, www.injurymediation.co.uk.

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