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Heart Attack Treatment Options

Decision Problem

Choose the best treatment option for a normally active & healthy (no prior conditions like smoking, diabetes, etc.) 60 yr. old patient with insurance that has just suffered a heart attack in California

Objectives



Out-of-Pocket Cost



Longevity of Life



Likelihood of Survival

Quality of Life



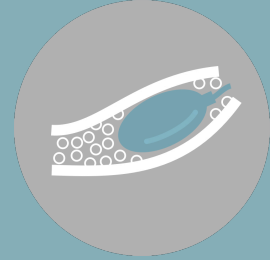
Pain Level



Alternatives



Coronary Bypass
Graft



Angioplasty



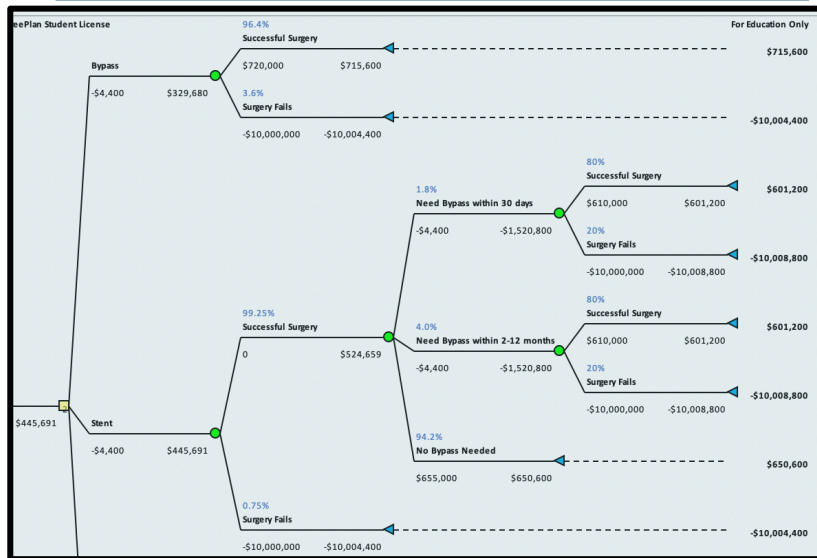
Pharmaceutical
Treatments

Consequence Table

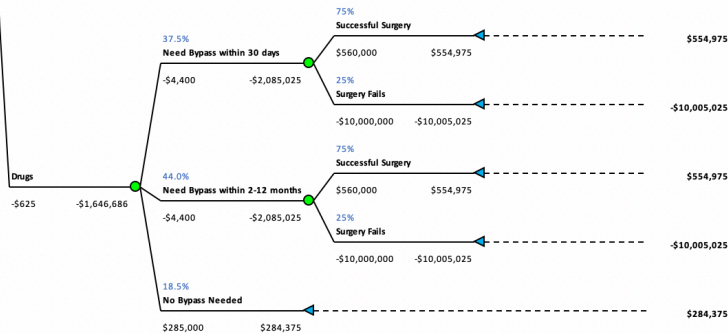
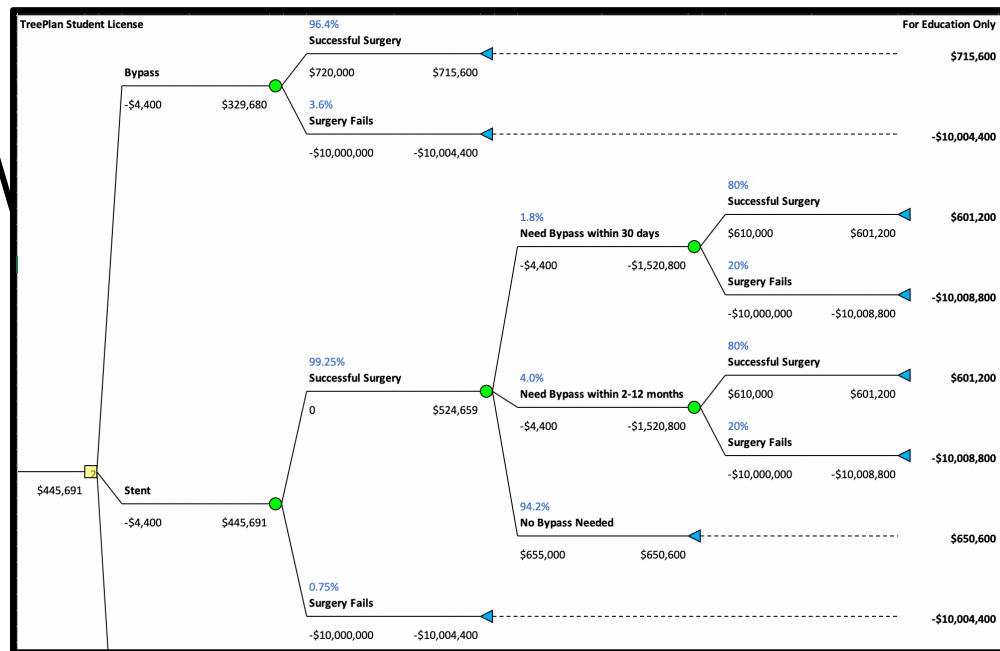
	5 Yr. Survival Rate <i>[%]</i>	Longevity of Life <i>[years]</i>	Quality of Life <i>[scale: 5-normal, 3-slight change, 1-severe difference]</i>	Pain Level <i>[scale:10-none, 5-medium, 1-severe]</i>	Out-of-Pocket Costs <i>[dollars]</i>	Quality Adjusted Life Expectancy <i>[dollars]</i>
Coronary Bypass Graft	90%	4.5	5	7	-\$4,400 *	\$720,000
Angioplasty	89%	4.45	4	5	-\$4,400 *	\$655,000
Pharmaceutical Treatments	35%	1.75	2	3	-\$625	\$285,000
Angioplasty + Bypass	90%	4.5	3	4	-\$8,800	\$610,000
Pharm. Treatments + Bypass	90%	4.5	2	3	-\$5,025	\$560,000
Equivalent Life Years	-	\$100,000	\$40,000	\$10,000		

*Average deductible

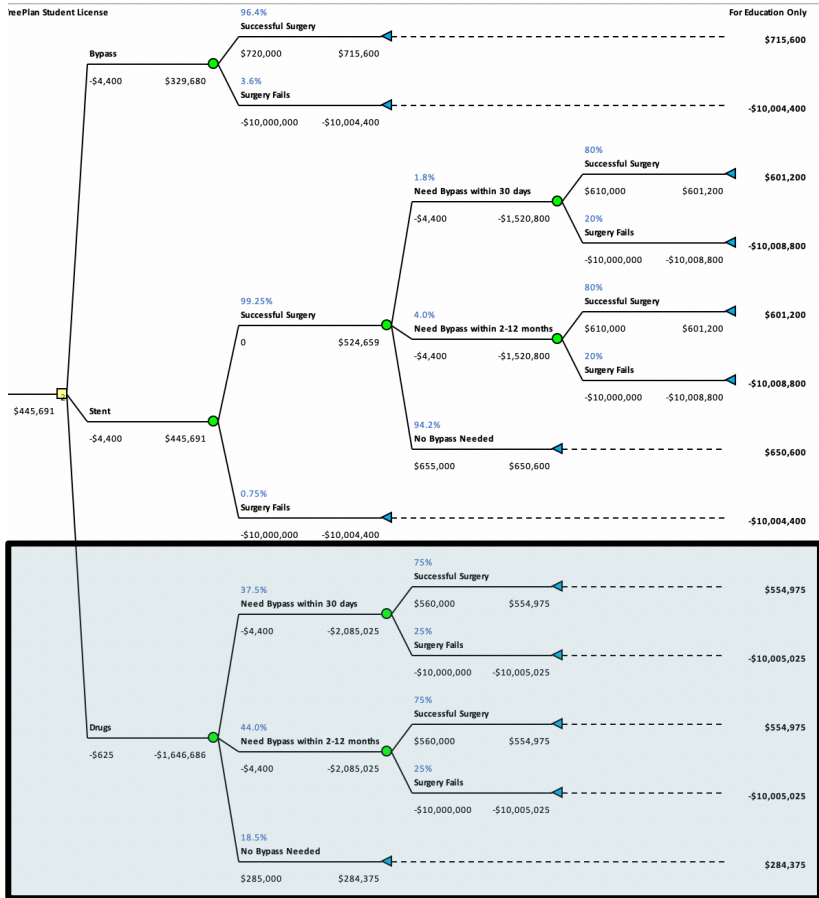
Analysis Framework



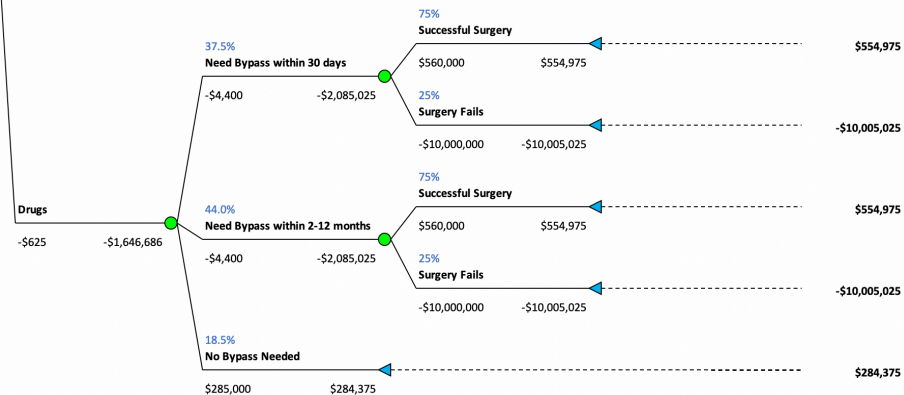
Zoom in: Bypass and Stent



Analysis Framework



Zoom in: Drugs



Preliminary Results

Decision Tree Results <i>[dollars]</i>	
Coronary Bypass Graft	\$329,680
Angioplasty	\$445,691
Pharmaceutical Treatments	-\$1,646,686

Initial Conclusions

The difference between CBG and Angioplasty is significant in the case of our patient, therefore based on the preliminary results, choosing **Angioplasty** is our recommendation

Resources

- [1] <https://www.lendingpoint.com/blog/coronary-bypass-what-it-costs-and-how-to-pay-for-it/>
- [2] <https://health.costhelper.com/stents.html>
- [3] <https://www.uphelp.org/costs-surviving-cardiovascular-disease-it%E2%80%99s-enough-give-you-heart-attack>
- [4] <https://www.webmd.com/heart-disease/news/20071015/bypass-angioplasty-similar-survival#1>
- [5] <https://www.ncbi.nlm.nih.gov/pubmed/11995845>
- [6] <https://newsarchive.heart.org/younger-heart-attack-survivors-have-higher-risk-of-premature-death/#:~:text=>
- [7] <https://www.nih.gov/news-events/nih-research-matters/comparing-heart-disease-treatments>
- [8] <https://www.webmd.com/heart-disease/news/20071015/bypass-angioplasty-similar-survival#1>
- [9] https://dcri.org/wp-content/uploads/2017/03/Oral-Presentation_10yoMortality_ACC_3-9-17_AK3.pdf
- [10] <https://www.everydayhealth.com/heart-attack/symptoms/life-after-heart-attack-people-share-their-recovery-journey/>
- [11] <https://www.sciencedaily.com/releases/2015/06/150630135103.htm>
- [12] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6064921/>
- [13] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5939136/>
- [14] <https://www.practiceupdate.com/content/mortality-after-coronary-artery-bypass-grafting-vs-pci-with-stenting-for-coronary-artery-disease/64628>
- [15] [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(19\)32972-1/fulltext?dgcid=raven_jbs_etoc_email](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(19)32972-1/fulltext?dgcid=raven_jbs_etoc_email) (probabilities)
- [16] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4764380/>
- [17] (averaged drug survival rate without graft or stent)<https://openheart.bmj.com/content/openhrt/3/2/e000489.full.pdf>
- [18] <https://bmccardiovascdisord.biomedcentral.com/articles/10.1186/1471-2261-6-21/figures/2>