

### MRI Example - Simple Net Present Value (NPV) Analysis

**Assumptions:**

<p><b>Demand and Revenue</b></p> <p>Average Price of procedure \$ 1,250</p> <p>Estimated price increase per year 2.5%</p> <p>Initial # procedures per day 2</p> <p># proc increased per day per year 0.5</p> <p>Average Length of procedure in hours 2</p> <p># hours open per day - years 1 - 5 8</p> <p># hours open per day - years 6 - 8 12</p> <p># days per week open 5</p> <p># weeks per year open (given holidays) 50</p> <p>Human Research revenue est in year 1 \$ 24,000</p> <p>Human Research revenue increase per year 20%</p> <p>Animal Research revenue est in year 1 \$ 12,000</p> <p>Animal Research revenue increase per year 10%</p> <p>Other Research revenue est in year 1 \$ 2,000</p> <p>Other Research revenue increase per year 5%</p> <p>Other - Emergency use of MRI machine is not in this analysis</p> <p>MRI Technician \$ 50,000 per year salary</p> <p>Front Desk \$ 22,000 per year salary</p> <p>Manager \$ 75,000 per year salary</p>	<p><b>Variable Expenses</b></p> <p>Salary increase per year 3.5%</p> <p>Consumable price per procedure over all years \$ 24</p> <p><b>Start up costs</b></p> <p>MRI Machine costs \$ 1,000,000</p> <p>Installation is \$ 380,000</p> <p>Salvage value at the end of year 8 \$ 10,000</p> <p>Furniture cost of chairs, lockers, desks, etc \$ 12,000</p> <p>Equipment cost of PC's, fax, printers, phones, etc \$ 8,000</p> <p>Percent Cost of Human Research per each dollar of Revenue 20.0%</p> <p>Percent Cost of Animal Research per each dollar of Revenue 32.0%</p> <p>Percent Cost of Other Research per each dollar of Revenue 40.0%</p> <p>Maintenance of furniture 6.0% of initial cost per year, years 2 - 8</p> <p>Maintenance of equipment 3.5% of initial cost per year, years 2 - 8</p> <p>Service Contract on MRI 4.0% of initial cost per year, years 2 - 8</p> <p>Square footage required 500</p> <p>Rent per sq ft per year \$ 15</p> <p>Rent stays the same until the machine is sold or no longer used</p> <p>Equipment overhead 0.5% of initial equipment cost per year</p> <p>Hospital overhead 8.0% of all expenses except equipment</p> <p>Fringe Benefits 28.0%</p> <p>Cost of Capital per year 10.0%</p>
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	Year >>>	0	1	2	3	4	5	6	7	8
<b>Demand and Procedure Price:</b>										
Inpatient and Outpatient price for procedure		\$ 1,250	\$ 1,281	\$ 1,313	\$ 1,346	\$ 1,380	\$ 1,414	\$ 1,450	\$ 1,486	\$ 1,522
Average length of MRI scan in hours		4	2	2	2	2	2	2	2	2
Number of procedures done per day		2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0
Number of hours open per day		8	8	8	8	12	12	12	12	12
Number of Days per week procedures done		5	5	5	5	5	5	5	5	5
Number of Weeks per year procedures done		50	50	50	50	50	50	50	50	50
Est Total Number of Procedures per year		500	625	750	875	1,000	1,125	1,250	1,375	1,500
<b>Existing Hospital Payor Mix</b>										
Medicare		9.0%	9.5%	10.0%	10.5%	11.0%	11.5%	12.0%	12.5%	13.0%
Medicaid		11.0%	11.5%	12.0%	12.5%	13.0%	13.5%	13.0%	12.5%	12.0%
TriCare		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Managed Care - discounted FFS		65.0%	63.5%	62.0%	60.5%	59.0%	57.5%	57.0%	56.5%	56.0%
Managed Care - Capitated		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commercial		8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Self Pay		6.0%	6.5%	7.0%	7.5%	8.0%	8.5%	9.0%	9.5%	10.0%
Total of Payor Mix		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
<b>Estimated Payor Mix</b>										
Medicare		9.0%	9.5%	10.0%	10.5%	11.0%	11.5%	12.0%	12.5%	13.0%
Medicaid		11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
TriCare		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Managed Care - discounted FFS		55.0%	53.0%	51.0%	49.0%	47.0%	45.0%	43.0%	41.0%	39.0%
Managed Care - Capitated		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commercial		8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Self Pay		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Total of Payor Mix		85.0%	83.5%	82.0%	80.5%	79.0%	77.5%	76.0%	74.5%	73.0%
<b>Normalized Payor Mix</b>										
Medicare		10.6%	11.4%	12.2%	13.0%	13.9%	14.8%	15.8%	16.8%	17.8%
Medicaid		12.9%	13.2%	13.4%	13.7%	13.9%	14.2%	14.5%	14.8%	15.1%
TriCare		1.2%	1.2%	1.2%	1.2%	1.2%	1.3%	1.3%	1.3%	1.3%
Managed Care - discounted FFS		64.7%	63.5%	62.2%	60.9%	59.5%	58.1%	56.6%	55.0%	53.4%
Managed Care - Capitated		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commercial		9.4%	9.6%	9.8%	9.9%	10.1%	10.3%	10.5%	10.7%	10.9%
Self Pay		1.2%	1.2%	1.2%	1.2%	1.2%	1.3%	1.3%	1.3%	1.3%
Total of Payor Mix		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
<b>Percent of Price received by Payor Mix</b>										
Medicare		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Medicaid		30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
TriCare		35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%
Managed Care - discounted FFS		60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Managed Care - Capitated		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Commercial		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Self Pay		12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%

Revenue

Revenue per Payor Mix									
Medicare	\$ 26,471	\$ 36,443	\$ 48,047	\$ 61,453	\$ 76,848	\$ 94,436	\$ 114,443	\$ 137,118	
Medicaid	\$ 24,265	\$ 31,648	\$ 39,639	\$ 48,284	\$ 57,636	\$ 67,748	\$ 78,680	\$ 90,498	
TriCare	\$ 2,574	\$ 3,357	\$ 4,204	\$ 5,121	\$ 6,113	\$ 7,185	\$ 8,345	\$ 9,598	
Managed Care - discounted FFS	\$ 242,647	\$ 304,968	\$ 367,559	\$ 430,171	\$ 492,524	\$ 554,299	\$ 615,133	\$ 674,619	
Managed Care - Capitated	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Commercial	\$ 58,824	\$ 76,722	\$ 96,094	\$ 117,053	\$ 139,723	\$ 164,237	\$ 190,739	\$ 219,388	
Self Pay	\$ 882	\$ 1,151	\$ 1,441	\$ 1,756	\$ 2,096	\$ 2,464	\$ 2,861	\$ 3,291	
Other Revenue	\$ 355,662	\$ 454,288	\$ 556,983	\$ 663,839	\$ 774,940	\$ 890,368	\$ 1,010,202	\$ 1,134,512	
Research	\$ 24,000	\$ 28,800	\$ 34,560	\$ 41,472	\$ 49,766	\$ 59,720	\$ 71,664	\$ 85,996	
Animal	\$ 12,000	\$ 13,200	\$ 13,200	\$ 13,200	\$ 13,200	\$ 13,200	\$ 13,200	\$ 13,200	
Other	\$ 2,000	\$ 2,100	\$ 2,205	\$ 2,315	\$ 2,431	\$ 2,553	\$ 2,680	\$ 2,814	
Sale of Machine								\$ 10,000	
Total Revenue	\$ -	\$ 393,662	\$ 498,388	\$ 606,948	\$ 720,826	\$ 840,337	\$ 965,840	\$ 1,097,745	\$ 1,246,522
Variable Expenses									
Personnel									
FTE's (Full Time Equivalent) required									
MRI Technician: (# proc/day*hrs per proc) / 8 hr day	0.50	0.63	0.75	0.88	1.00	1.13	1.25	1.38	
Front Desk/Phones - ((# proc/day * hrs per proc) / 8 hr day) * 1.5	0.75	0.94	1.13	1.31	1.50	1.69	1.88	2.06	
Supervisor/Manager - 0.25 FTE each year	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	
Salary and Wages per FTE									
MRI Technician 1 FTE	\$ 50,000	\$ 51,750	\$ 53,561	\$ 55,436	\$ 57,376	\$ 59,384	\$ 61,463	\$ 63,614	
Front Desk Personal 1 FTE	\$ 22,000	\$ 22,770	\$ 23,567	\$ 24,392	\$ 25,246	\$ 26,129	\$ 27,044	\$ 27,990	
Manager 1 FTE	\$ 75,000	\$ 77,625	\$ 80,342	\$ 83,154	\$ 86,064	\$ 89,076	\$ 92,194	\$ 95,421	
Salary and Wages									
MRI Technician 1 FTE	\$ 25,000	\$ 32,344	\$ 40,171	\$ 48,506	\$ 57,376	\$ 66,807	\$ 76,828	\$ 87,469	
Front Desk Personal 1 FTE	\$ 16,500	\$ 21,347	\$ 26,513	\$ 32,014	\$ 37,868	\$ 44,093	\$ 50,707	\$ 57,730	
Manager 1 FTE	\$ 18,750	\$ 19,406	\$ 20,085	\$ 20,788	\$ 21,516	\$ 22,269	\$ 23,049	\$ 23,855	
Total Salary and Wages	\$ 60,250	\$ 73,097	\$ 86,769	\$ 101,309	\$ 116,760	\$ 133,169	\$ 150,584	\$ 169,054	
Fringe Benefits	\$ 16,870	\$ 20,467	\$ 24,295	\$ 28,367	\$ 32,693	\$ 37,287	\$ 42,163	\$ 47,335	
Consumables	\$ 12,000	\$ 15,000	\$ 18,000	\$ 21,000	\$ 24,000	\$ 27,000	\$ 30,000	\$ 33,000	
Research 65% of revenue	\$ 4,800	\$ 5,760	\$ 6,912	\$ 8,294	\$ 9,953	\$ 11,944	\$ 14,333	\$ 17,199	
Animal 75% of revenue	\$ 3,840	\$ 4,224	\$ 4,224	\$ 4,224	\$ 4,224	\$ 4,224	\$ 4,224	\$ 4,224	
Other 10% of revenue	\$ 800	\$ 840	\$ 882	\$ 926	\$ 972	\$ 1,021	\$ 1,072	\$ 1,126	
Total Variable Expenses	\$ -	\$ 98,560	\$ 119,388	\$ 141,083	\$ 164,120	\$ 188,603	\$ 214,646	\$ 242,376	\$ 271,938
Start Up Expenses									
Cost of Machine	\$ 1,000,000								
Cost of Installation	\$ 380,000								
Misc office furniture	\$ 12,000								
Misc office Equipment	\$ 8,000								
Total Start Up Expenses	\$ 1,400,000								
Fixed Costs									
Machine Service Contract		\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000
Rent including Maintenance	\$ 7,500	\$ 7,500	\$ 7,500	\$ 7,500	\$ 7,500	\$ 7,500	\$ 7,500	\$ 7,500	\$ 7,500
Furniture Maintenance		\$ 720	\$ 720	\$ 720	\$ 720	\$ 720	\$ 720	\$ 720	\$ 720
Equipment Maintenance		\$ 280	\$ 280	\$ 280	\$ 280	\$ 280	\$ 280	\$ 280	\$ 280
Total Fixed Costs	\$ 7,500	\$ 48,500	\$ 48,500	\$ 48,500	\$ 48,500	\$ 48,500	\$ 48,500	\$ 48,500	\$ 48,500
Overhead									
Equipment overhead	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000	\$ 7,000
Hospital overhead	\$ 8,485	\$ 13,431	\$ 15,167	\$ 17,010	\$ 18,968	\$ 21,052	\$ 23,270	\$ 25,635	
Total Overhead	\$ -	\$ 15,485	\$ 20,431	\$ 22,167	\$ 24,010	\$ 25,968	\$ 28,052	\$ 30,270	\$ 32,635
Total Revenue	\$ -	\$ 393,662	\$ 498,388	\$ 606,948	\$ 720,826	\$ 840,337	\$ 965,840	\$ 1,097,745	\$ 1,246,522
Total Expenses	\$ 1,400,000	\$ 121,545	\$ 188,319	\$ 211,749	\$ 236,630	\$ 263,071	\$ 291,197	\$ 321,146	\$ 353,073
Net Income	\$ (1,400,000)	\$ 272,117	\$ 310,068	\$ 395,199	\$ 484,196	\$ 577,266	\$ 674,643	\$ 776,599	\$ 893,449
NPV Year 0	\$ (1,400,000)								
NPV Year 1	\$ 247,379								
NPV Year 2	\$ 256,255								
NPV Year 3	\$ 296,919								
NPV Year 4	\$ 330,713								
NPV Year 5	\$ 358,437								
NPV Year 6	\$ 380,818								
NPV Year 7	\$ 398,518								
NPV Year 8	\$ 416,801								
NPV Revenue Total	\$ 1,285,839								