**Oracle Crystal Ball Monte Carlo Simulation for** **ONC, Inc**

This Oracle Crystal Ball Monte Carlo Simulation for ONC, Inc. is to determine if there is sufficient demand for infusionservices among newly diagnosed cancer patients to justify investment

It is estimated that Kentucky will have 30,630 new cases of cancer diagnosed in the calendar year 2024, with the population of the Commonwealth of Kentucky totaling 4,526,154 as of December 31, 2023.

The counties that ONC is considering serving include:

• Bullitt – population = 84,863

• Hardin – population = 112,273

• Meade – population = 30,131

• Nelson – population = 47,730

• Spencer – population = 20,531

The issue for the management is whether there is sufficient infusion demand to warrant ONC, inc. pursuing the opportunity.

Internally, there is some debate amongst the company’s experts regarding how much demand (by way of infusion visits) exists amongst the new cancer patient diagnoses realized each year. The Min, Likeliest, Max estimates of new cancer patients requiring infusion services are 50%, 75% and 85% respectively, though the min estimate seems a little suspect.

Likewise, there is some debate amongst the company’s experts about how many infusion treatments those who require infusion must obtain. The Min, Likeliest, and Max estimates are 8, 10, and 20 respectively, though the likeliest estimate seems a little suspect.

Lastly, given the reputation of ONC, Inc, it is anticipated that the company will conservatively treat 20% of the newly diagnosed patients (e.g., market share assumption = 20%).

Knowing that ONC leadership wants to treat the patients of Kentucky but the company cannot be profitable and continue operations of a new venture with fewer than 4,000 infusion visits per year. Investor dynamics are also such that ONC’s CEO will not pursue anything that is less than 90% certain.

Based on the above information, a Monte Carlo simulation in Crystal Ball was built to answer the pertinent questions (use BetaPERT assumptions where appropriate):

Annual Infusion Visits formula,

Total Annual infusion visits = New cancer cases (in targeted area) \* Average percentage of patients requiring

infusion \* Avg number of treatments per patient \* Market share

**Should ONC, Inc. invest and provide services as outlined above?**

ONC, Inc. should not invest in south Louisville with a 20% market share as the Monte Carlo simulation forecast indicates only a 14.6% certainty of achieving the minimum 4000 infusion visits per year, this significant certainty difference in certainty indicates not profitable investment for ONC, Inc, and CEO will not pursue this investment.



**Forecast: Forecast @ 20% Mkt Share**

**Trials = 10,000**

**Certainty = 14.60%**

**Selected range is from 4,000.00 to ∞**

**If it turns out that ONC leadership miskeyed the market share assumptions above and is comfortable assuming 30% market share. Should ONC, Inc. invest now?**

No, ONC, Inc CEO should not pursue investing at a 30% market share considering less than 90% certainty of achieving the minimum 4000 infusion visits per year. Although there is a significant improvement over the 20% market share scenario, it is still ~7% lower than the preferred metric of decision-making. Although the median indicates ~4800 visits in a year, standard deviation and descriptive statistics do not give the required confidence level to plan.

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**Forecast: Forecast @ 30% Mkt Share**

**Trials = 10,000**

**Certainty = 83.33%**

**Selected range is from 4,000.00 to ∞**

**What else might you suggest ONC, Inc leadership assess or reassess that could materially impact the decision?**

Based on the simulation results, I would suggest the following:

The results show that a 32% market share yields a 91.17% certainty of achieving the minimum of 4,000 visits in a year, while a 35% market share provides 97.13% certainty. So, ONC, Inc. should carefully assess whether they can realistically achieve and maintain a market share between 32-35%. This minor increase in market share significantly improves the project's viability and profitability.

Following marketing, operational plans help in increasing market share or lowering the visits per year threshold while mitigating associated potential risks.

* Review the assumptions about the percentage of cancer patients requiring infusion and the number of treatments per patient. Slight changes in these factors could significantly impact the results.
* Identifying new regions where the cancer cases are higher than assumed or identifying regions where the number of cases is increasing and including such regions in the proposal will help to meet the threshold limit. This can be achieved by conducting secondary or primary research
* Partnerships with local healthcare providers or oncology practices could help secure a higher market share.
* Reassessing current and projected competition with the latest market data and having robust plans, reducing costs, and operational efficiency could lower patient visit threshold value
* Also, future population growth and cancer incidence trends in the target regions could affect the long-term viability of the project, so research must be conducted in this direction.

ONC, Inc.’s leadership can make a more informed decision and potentially identify ways to make the project viable even at a lower market share or with a slightly reduced certainty threshold.



**Forecast @ 35% Mkt Share; Trials = 10,000; Certainty = 97.13%.**

**Selected range is from 4,000.00 to ∞**



**Forecast @ 32% Mkt Share; Trials = 10,000; Certainty = 91.17%.**

**Selected range is from 4,000.00 to ∞**