Hema Ravi Teja Bollam

3.957 GPA - Montclair State University

Question 1 [10 Min]

**What is the total number of units utilized/administered (how much was used) in each month for each medication across all patients?**

**Response:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sum of Units** | Column Labels |  |  |
| Row Labels | Med A | Med B | Grand Total |
| Jul | 4303700 |  | 4303700 |
| Aug | 4477100 |  | 4477100 |
| Sep | 849900 | 535 | 850435 |
| Oct |  | 393 | 393 |
| Nov | 75300 | 420 | 75720 |
| Dec | 10200 | 1 | 10201 |
| **Grand Total** | **9716200** | **1349** | **9717549** |

Question 2 [ 10 Min]

**How many patients received Med A in each month from July to November? And how many received Med B?**

**Response:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Distinct Count of ID** | Column Labels |  |  |
| Row Labels | Med A | Med B | Grand Total |
| Jul | 92 |  | 92 |
| Aug | 92 |  | 92 |
| Sep | 73 | 76 | 87 |
| Oct |  | 66 | 66 |
| Nov | 4 | 72 | 76 |
| **Grand Total** | **110** | **97** | **126** |

Question 3 [20 min]

**What's the average total monthly dose per patient for each medication in each month (July to November)?**

**Response:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Column Labels |  |  |  |  |  |
|  | Med A |  |  | Med B |  |  |
| Row Labels | Distinct Count of ID | Sum of Units | average | Distinct Count of ID | Sum of Units | average |
| Jul | 92.00 | 4303700.00 | 46779.35 |  |  |  |
| Aug | 92.00 | 4477100.00 | 48664.13 |  |  |  |
| Sep | 73.00 | 849900.00 | 11642.47 | 76.00 | 535.00 | 7.04 |
| Oct |  |  |  | 66.00 | 393.00 | 5.95 |
| Nov | 4.00 | 75300.00 | 18825.00 | 72.00 | 420.00 | 5.83 |
| Dec | 3.00 | 10200.00 | 3400.00 | 1.00 | 1.00 | 1.00 |

Question 4 [10 Min]

**In each month separately (September, October, and November) and also all together across these 3 months, how many patients are switched from Med A to Med B? In each month separately (September, October, November), how many patients are started on Med B having not been on Med A before?**

**Response:**

|  |  |  |
| --- | --- | --- |
| Row Labels | Sum of Switched | Sum of New Start |
| Sep | 67 | 5 |
| Oct | 0 | 5 |
| Nov | 0 | 6 |
| **Grand Total** | **67** | **16** |

Question 5 [30 min]

**In each month separately (September, October, and November) and across all 3 months, for patients switched to Med B, what is the average number of weeks the patients were on Med A before being switched to Med B?**

**Response:**

|  |  |
| --- | --- |
| Row Labels | Average of Difference in Weeks |
| Sep | 8.388059701 |
| Oct | #DIV/0! |
| Nov | #DIV/0! |
| **Grand Total** | **8.388059701** |
|  |  |

Question 6 [30 min]

**What is the average total monthly dose per patient per month (in patients that switched) of Medication A before switching to Medication B (use time from question 5)? What is the average total monthly dose per patient per month of Medication B (in patients that switched—assume Med B dose is for 1 month)?**

**Response:**

|  |  |  |
| --- | --- | --- |
| Row Labels | Average of Average per patient,per id for switched | Average of Average of switched Med B |
| Sep | 5285.323383 | 7.039473684 |
| Oct | #DIV/0! | 5.779411765 |
| Nov | #DIV/0! | 5.6 |
| **Grand Total** | **5285.323383** | **6.155251142** |

Question 7 [20 min]

**If Medication A costs $1 for 100 units, what is the breakeven price point for Medication B per unit?**

**Response:**

|  |  |  |
| --- | --- | --- |
| total sum of units of Switched Med A units per patient = | 8390900 |  |
|  |  |  |
|  |  |  |
| total sum of units of Switched Med B units per patient = | 1349 |  |
|  |  |  |
|  |  |  |
| cost of med A would be as 100units per 1$= | 83909 |  |
|  |  |  |
|  |  |  |
| for break even, Med B price should be per unit | 62.20089 | usd/unit |

Question 8 [30 Min]

**How much does the average total monthly dose per patient (for Medication A and B) change for those switched in September, October, and November?**

**Response:**

|  |  |  |
| --- | --- | --- |
| Row Labels | Average of Average per patient,per id for switched on med A | Average of Average of switched Med B |
| Sep | 5285.323383 | 7.039473684 |
| Oct | #DIV/0! | 5.779411765 |
| Nov | #DIV/0! | 5.6 |
| **Grand Total** | **5285.323383** | **6.155251142** |

Question 9 [ 90 min]

**In patients switched to Med B, what percentage had their second Med B dose equal to the first dose? What percentage had it higher? Lower (but not zero)? Or had no dose at all? Calculate this for September, for October, and for both months combined, assuming each Med B dose is for one month only.**

**Response:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Count of Change** | Column Labels |  |  |  |  |
| Row Labels | Higher | Lower | No subsequent Med B | Same | Grand Total |
| Sep | 30.86% | 13.58% | 7.41% | 35.80% | 87.65% |
| Oct | 2.47% | 6.17% | 0.00% | 3.70% | 12.35% |
| **Grand Total** | **33.33%** | **19.75%** | **7.41%** | **39.51%** | **100.00%** |

Question 10 [ 60 min]

**For patients who switch from Med A to Med B (as mentioned in question 4), what is the average LAB B value during the time they were on Med A, and what is it when they are on Med B?**

**Response:**

|  |  |  |
| --- | --- | --- |
| Row Labels | Average of Avg of LAB B for Med A | Average of Avg of LAB B for Med B |
| Jul | 11.7 | 11.86263736 |
| Aug | 11.07180556 | 10.92278018 |
| Sep | 10.38803838 | 10.48606461 |
| Oct | #DIV/0! | #DIV/0! |
| Nov | #DIV/0! | #DIV/0! |
| Dec | #DIV/0! | #DIV/0! |
| **Grand Total** | **10.52173133** | **10.58854836** |

Question 11 [30 min]

**Assume that more medication A and B is generally associated with higher LAB B values. How does your answer to question 9 and 10 impact the breakeven price point?**

**Response:**

Correlation between dose and lab results higher doses of both medications are associated with higher lab values this suggests a positive correlation between medication dose and lab outcomes. When it comes to continuously generating higher LAB B values, Med B is not outperforming Med A; hence, its breakeven price may need to be lower than anticipated. Both the dose cost and the LAB B results should be reflected in the breakeven price. It could be required to carry out a thorough cost-effectiveness study that considers several elements and accounts for the full treatment time, not just one month.

1. The pivot table data indicates that in September, there were more instances where LAB B values were "Higher" or "Same" compared to "Lower", but in October, there were more instances where they were "Lower".
2. In September, Med A led to lower LAB B values than Med B, suggesting that Med A was more effective in this period, or patients were potentially not given an adequately adjusted dose of Med B.
3. Patients switched to Med B had lower or no subsequent Med B outcomes, suggesting that the dosing needs to be adjusted.
4. In October, despite fewer data points, the trend is not as clear for Med B, suggesting that the effectiveness of Med B might vary over time, or that it might take time for Med B to show its full effect.

Impact on Breakeven Price:

* Potency and Dosage Efficiency:

Med B may be deemed more powerful and thus warrant a higher breakeven price if it takes fewer units to attain the same or better LAB B readings.

* Effectiveness:

On the other hand, the September LAB B values data indicate a greater number of cases in which the levels were lower with Med B than Med A. In the event that Med B's efficacy is compromised by these cases, its price may need to be reduced accordingly.

* Long-term Efficacy:

It's important to take into account the monthly variation. LAB B readings for Med B were generally lower in September; however, in October, the trend is less evident even with fewer data points. This could imply that Med B's efficacy varies with time or that it takes some time for Med B to reach full effect.