Pareto Chart Practice – Little League Stats

During your off-duty hours, you coach a little league team composed of eleven- and twelve-year-olds. The team has lost a couple of close ball games recently. You decide to look at the statistics from the games you have already played and see whether you notice any areas that require attention in your next few practices.

**Steps:**

1. Record the raw data (below). List each category and its associated data count.

|  |  |
| --- | --- |
| **Type of Error** *(category)* | **Number**  (*data count)* |
| Wild Pitch | 5 |
| Missed fly ball to outfield | 29 |
| Missed grounder | 7 |
| Missed pop fly to the infield | 4 |
| Missed coaching signal | 5 |
| Taken third strike | 42 |
| Throw to wrong cutoff player | 25 |
| Failure to back up the play | 6 |
| Passed ball | 3 |

1. Order the data. Prepare an analysis sheet, putting the categories in order and placing the one with the largest count first. Calculate the percentage of each occurrence (column 3 below) and calculate the cumulative percentage of all occurrences (column 4 below)

|  |  |  |  |
| --- | --- | --- | --- |
| **Type of Error** | **Number** | **Percentage** | **Cumm %** |
| Taken third strike | 42 | 33.3 | 33.3 |
| Missed fly ball to outfield | 29 | 23 | 56.3 |
| Throw to wrong cutoff player | 25 | 19.8 | 76.1 |
| Missed grounder | 7 | 5.6 | 81.7 |
| Failure to back up the play | 6 | 4.8 | 86.5 |
| Wild Pitch | 5 | 4.0 | 90.5 |
| Missed coaching signal | 5 | 4.0 | 94.5 |
| Missed pop fly to the infield | 4 | 3.2 | 97.7 |
| Passed ball | 3 | 2.4 | 100.1 |
| Total | 126 |  |  |

1. Use Excel to create your chart and plot your data.  
     
   Select the following data: Type of Error, Number, and Cumulative % and then select “Insert” - Column Chart. Select the 1st Chart under 2D (Clustered Column). Your chart will look like this:
2. You need to change the chart type for Series 2, the cumulative percentage. You do this by selecting “Series 2”, and then on the “Design” tab click on “Change Chart Type”. Select the first chart type under ‘Line’ chart. Your chart will look like this:
3. Next, you want to change the line chart to plot on a secondary axis. To do this, select “Series 2” again, and then right click. Select “Format Data Series” and then under “Series Options” select ‘Secondary Axis’.   
     
   You can also add data markers by selecting the “Markers Options” tab and clicking “automatic” or customizing your markers with the “built-in” option. Click “Close”. Your chart will now look like this:
4. You will want to change your Secondary Axis to max out at 100%, not 120%. To do this, select your Secondary Axis (the numbers 0 – 120 on the right side of the graph) and right click. Select Format Axis and change the ‘Maximum’ Axis options to “Fixed” and the number to 100. Your chart will now look like this:

1. Last, make your chart easily understandable by adding a title and axis labels. Remove the legend and add a text box which tells:

* The period of time when the data was collected
* The location where the data was collected
* The person or team who collected the data

Your chart may look like this:

LEGEND: ERRORS COMMITTED DURING FIRST FIVE GAMES OF SPRING SEASON 1995

**Now answer the following questions:**

1. Does the Pareto Principle apply?
2. Where should you concentrate your efforts?
3. Do your proposed solutions pass a sanity check?