The Enrollment Detective

Uncover Hidden Insights in Your Program Data

Your Real-World Challenge

You've just been handed 4 years of enrollment data for all your executive education programs. ***Your Dean wants answers by tomorrow: Which programs are growing? Which are struggling? What's causing the volatility? And most importantly—what should we do about it?***

What You'll Discover:

- Top-performing programs by revenue growth
- Hidden seasonal enrollment patterns
- Regional market opportunities
- Data-driven recommendations for growth

Time Required: 20-30 minutes

STEP 0: Download Your Dataset

Before we begin, let's understand what you're working with:

About the Dataset

Your CSV file contains **4 years of enrollment data** (2021-2024) across **8 executive education programs**:

1. AI Strategy & Leadership
2. Financial Acumen for Executives
3. Digital Transformation Leadership
4. Strategic Innovation Workshop
5. Change Management Mastery
6. Data-Driven Decision Making
7. Leading Hybrid Teams
8. Executive Negotiation Skills

Data includes:

- **72 cohorts** across 4 years
- **3 regions**: North America, Europe, Asia Pacific
- **Metrics**: Applicants, Enrolled, Revenue per cohort

Download the Dataset

https://github.com/rihanamsaddek/CMED2025/blob/main/enrollment_data.csv

Quick Preview of the Data:

Program Name	Date	Number of Applicants	Number of Enrolled	Region	Revenue
AI Strategy & Leadership	2021-01-15	45	32	North America	128000
Financial Acumen for Executives	2021-01-20	38	28	North America	98000
Digital Transformation Leadership	2021-02-10	52	35	Europe	140000
Strategic Innovation Workshop	2021-02-18	29	22	Asia Pacific	88000
Change Management Mastery	2021-03-05	41	30	North America	105000
Data-Driven Decision Making	2021-03-22	33	25	Europe	87500
Leading Hybrid Teams	2021-04-12	47	34	North America	119000
Executive Negotiation Skills	2021-04-28	36	27	Asia Pacific	94500
AI Strategy & Leadership	2021-05-15	48	35	Europe	140000
Financial Acumen for Executives	2021-06-03	42	31	Asia Pacific	108500
Digital Transformation Leadership	2021-06-20	55	38	North America	152000
Strategic Innovation Workshop	2021-07-08	31	24	Europe	96000
Change Management Mastery	2021-07-25	44	32	Asia Pacific	112000
Data-Driven Decision Making	2021-08-14	35	26	North America	91000
Leading Hybrid Teams	2021-09-02	50	36	Europe	126000
Executive Negotiation Skills	2021-09-20	39	29	North America	101500
AI Strategy & Leadership	2021-10-10	51	37	Asia Pacific	148000
Financial Acumen for Executives	2021-10-28	40	30	Europe	105000
Digital Transformation Leadership	2021-11-15	58	40	Asia Pacific	160000
Strategic Innovation Workshop	2021-12-05	28	21	North America	84000
Change Management Mastery	2022-01-18	46	33	Europe	115500
Data-Driven Decision Making	2022-02-08	37	28	Asia Pacific	98000
Leading Hybrid Teams	2022-02-25	53	38	North America	133000
Executive Negotiation Skills	2022-03-15	41	31	Europe	108500

STEP 1: Upload to an AI Assistant for Deep Analysis

Goal: Transform raw data into strategic insights

Part A: Prepare Your AI Tool

Where to do this:

- **AI Assistant with file upload** (Gemini, Claude,ChatGPT, Perplexity)
- Make sure your tool supports CSV file uploads and data analysis

Part B: Upload Your File

1. Look for the 📎 **attachment** or **upload** icon
2. Select your enrollment_data.csv file
3. Wait for confirmation that the file is uploaded

Part C: Run Your Detective Prompt

Copy and paste this comprehensive analysis prompt:

Analyze this enrollment data for our executive education programs.
I need a strategic report covering:

1. TOP PERFORMERS:
- Identify the top 3 programs by revenue growth over the last 2 years (2023-2024 vs 2021-2022)
- Calculate the exact percentage growth for each
- What's driving their success?

2. VOLATILITY ANALYSIS:
- Which program has the most volatile enrollment numbers (highest variance in enrolled students)?
- Show me the enrollment numbers for this program over time
- Are there any seasonal patterns? (Q1 vs Q2 vs Q3 vs Q4)
- Are there regional differences in performance?

3. HIDDEN PATTERNS:
- Which regions are growing fastest?
- Are there any programs that perform particularly well (or poorly) in specific regions?

- Any correlation between number of applicants and conversion rate?

4. DATA-DRIVEN RECOMMENDATIONS:
- Provide 3 specific, actionable recommendations for how we can stabilize and grow enrollment in the most volatile program
- Suggest 2 strategic opportunities based on the data

Format your response with clear sections and include the actual numbers so I can verify your analysis.

What to Expect

The AI will analyze:

- ✅ Revenue trends and growth rates
- ✅ Enrollment volatility patterns
- ✅ Seasonal fluctuations
- ✅ Regional performance differences
- ✅ Conversion rate insights
- ✅ Strategic recommendations

⏱️ **Time:** This takes about 2-3 minutes for the AI to process and respond.

STEP 2: Request Data Tables for Visualization

Goal: Extract clean, structured data ready for charts

Now that you have insights, let's prepare the data for visual storytelling.

Prompt for Structured Data

After reviewing the analysis, use this follow-up prompt:

Great analysis! Now I need the data in table format for visualization.
Please create the following tables:

TABLE 1: Top 3 Programs - Revenue Growth
Format as:
| Program Name | 2021-2022 Revenue | 2023-2024 Revenue | Growth $ | Growth % |

TABLE 2: Most Volatile Program - Enrollment Over Time
For [the program you identified as most volatile], format as:
| Quarter | Date | Enrolled | Region |
Sort chronologically.

TABLE 3: Seasonal Patterns Summary
For the volatile program, format as:
| Quarter (Q1-Q4) | Average Enrolled | Variance |

TABLE 4: Regional Performance Comparison
Format as:
| Region | Total Revenue 2023-2024 | Growth vs 2021-2022 | Best Program |

Use markdown tables so I can easily copy them for visualization.

💡 Pro Tip:

The AI might give you the tables immediately, or you might need to ask:

"Can you format TABLE 1 as a markdown table with exact numbers?"

✅ **SUCCESS CHECK:** You should now have 4 clean, structured tables with numerical data.

STEP 3: Create Stunning Visualizations

Goal: Turn tables into compelling visual stories

Now comes the fun part—let's make your data come alive! We'll create 4 different visualizations, each telling a different story.

📊 VISUALIZATION 1: Revenue Growth Champions

Chart Type: Horizontal Bar Chart
Story: "Which programs are our revenue superstars?"

Method A: Using an AI Assistant

Prompt:

Using TABLE 1 (Top 3 Programs - Revenue Growth), create a horizontal bar chart visualization.

Requirements:
- X-axis: Revenue Growth Percentage
- Y-axis: Program Names
- Use a bold, professional color scheme (blues and greens)
- Add data labels showing the exact growth percentage
- Title: "Revenue Growth Leaders: 2023-2024 vs 2021-2022"
- Make it presentation-ready

If you can generate the chart directly, please do. If not, provide the exact data I need to input into a charting tool.

What You'll Get:

- Either a downloadable chart image
- Or exact specifications to recreate in Excel/Google Sheets/Tableau

Method B: DIY in Excel/Google Sheets

1. **Copy the data** from TABLE 1
2. **Paste into a new spreadsheet**
3. **Select the Program Names and Growth % columns**
4. **Insert → Chart → Horizontal Bar Chart**
5. **Customize:**
    - Title: "Revenue Growth Leaders: 2023-2024 vs 2021-2022"
    - Colors: Use your brand colors or a professional palette
    - Add data labels (right-click bars → Add Data Labels)
    - Remove gridlines for cleaner look

Method C: Using a Specialized Tool

For Gemini/Claude/ChatGPT with Advanced Data Analysis or Code Interpreter :

Using the data from TABLE 1, write Python code using matplotlib or plotly to create a beautiful horizontal bar chart. Use these colors:
- Program 1: #14B8A6 (teal)
- Program 2: #0D9488 (darker teal)
- Program 3: #115E59 (darkest teal)

Make it publication-quality with proper labels and a clean design.

📸 **Save your chart** as "revenue_growth_chart.png"

📈 VISUALIZATION 2: The Volatility Rollercoaster

Chart Type: Line Chart with Trend Line
Story: "See the ups and downs of enrollment over time"

The Powerful Prompt

Using TABLE 2 (Most Volatile Program - Enrollment Over Time), create a line chart that shows enrollment fluctuations.

Requirements:
- X-axis: Date (chronological)
- Y-axis: Number of Enrolled Students
- Plot a line showing enrollment numbers over time
- Add a moving average trend line (smoothed) to show overall direction
- Use different colors for different regions (if showing all regions)
- OR create separate lines for each region to compare
- Title: "[Program Name] Enrollment Volatility: 2021-2024"
- Add markers for each data point
- Highlight any obvious peaks or valleys

Make this visually striking—we want to show the dramatic swings.

Advanced Option: Multi-Line Regional Comparison

Create THREE separate lines on the same chart:
- Line 1: North America enrollment (blue)
- Line 2: Europe enrollment (green)
- Line 3: Asia Pacific enrollment (orange)

This will show if volatility is global or region-specific.
Add a legend and make sure lines don't overlap confusingly.

DIY Instructions (Excel/Sheets):

1. **Set up your data** with Date in Column A, Enrolled in Column B
2. **Sort by date** (oldest to newest)
3. **Select both columns** → Insert → Line Chart
4. **Add a trend line:** Right-click on the line → Add Trendline → Moving Average (Period: 3)
5. **Format:**
    - Make data points visible (marker style: circle)
    - Use a bold line (3pt width)
    - Add title and axis labels
    - Consider using a dual-axis if you want to show applicants too

💡 **Insight Tip:** Look for:

- Consistent drops (same time every year = seasonal pattern)
- Regional differences (one region consistently higher/lower)
- Recent trends (is it getting better or worse?)

📸 **Save as** "enrollment_volatility_chart.png"

🎯 VISUALIZATION 3: Seasonal Heatmap

Chart Type: Heatmap or Column Chart
Story: "When do enrollments peak and valley?"

The Visual Prompt

Using TABLE 3 (Seasonal Patterns Summary), create a visualization
that makes seasonal patterns obvious.

OPTION A - Column Chart:
Create a column chart with:
- X-axis: Quarter (Q1, Q2, Q3, Q4)

- Y-axis: Average Enrolled Students
- Add error bars or variance indicators
- Color-code: Green for high enrollment quarters, yellow for medium, red for low
- Title: "Seasonal Enrollment Patterns: [Program Name]"

OPTION B - Heatmap (more advanced):
Create a heatmap showing:
- Rows: Years (2021, 2022, 2023, 2024)
- Columns: Quarters (Q1, Q2, Q3, Q4)
- Color intensity: Darker = higher enrollment
- Add numbers in each cell

Which visualization style do you recommend for executive presentations?

Quick DIY Heatmap in Excel:

1. **Create a table** with Years as rows, Quarters as columns
2. **Fill in enrollment numbers** for each year-quarter combination
3. **Select the data range**
4. **Home → Conditional Formatting → Color Scales → Green-Yellow-Red**
5. **Adjust:** Format → Format Cells → Center text
6. **Add borders** for clarity

This creates an instant visual pattern detector!

🔍 **What to Look For:**

- Are Q1 or Q4 consistently weak? (Post-holiday slump? Budget cycles?)
- Are summer months (Q3) strong or weak?
- Has the pattern changed over time?

📸 **Save as** "seasonal_patterns_chart.png"

🌍 VISUALIZATION 4: Regional Powerhouse Map

Chart Type: Geographic Map or Grouped Bar Chart
Story: "Which regions are our growth engines?"

Visualization Prompt

Using TABLE 4 (Regional Performance Comparison), create a visualization comparing regional performance.

OPTION A - Grouped Bar Chart:
Create a grouped bar chart with:
- X-axis: Regions (North America, Europe, Asia Pacific)
- Y-axis: Revenue (in thousands)
- Two bars per region:
  * 2021-2022 Total Revenue (lighter color)
  * 2023-2024 Total Revenue (darker color)
- Add percentage growth labels above each region
- Title: "Regional Revenue Growth: A Global Success Story"

OPTION B - Radial Chart (Cool Factor):
Create a radial/spider chart showing:
- Three axes: one for each region
- Two polygons: 2021-2022 (outlined) and 2023-2024 (filled)
- This shows growth visually as the polygon expanding

Which would look better in an executive presentation?

Advanced: Combination Chart

Create a combination chart showing:
- Bars: Total revenue by region (2023-2024)
- Line overlay: Growth percentage by region
- This shows both absolute performance AND growth rate

Use dual Y-axes:
- Left: Revenue ($)
- Right: Growth (%)

DIY Steps:

1. **Create a table** with Regions and two revenue columns
2. **Select data** → Insert → Clustered Column Chart
3. **Format colors:** Use two shades of the same color (light = old, dark = new)
4. **Add data labels** showing growth percentages
5. **Optional:** Add a map background image and overlay transparent bars

💼 **Executive Insight:** This chart answers: "Should we invest more in one region? Which region needs support?"

📸 **Save as** "regional_performance_chart.png"

STEP 4: Create Your Dashboard Summary

Goal: Combine insights into one powerful visual story

Now let's bring it all together!

Option A: AI-Assisted Dashboard Creation

I have 4 visualizations:
1. Revenue growth bar chart (top 3 programs)
2. Enrollment volatility line chart (most volatile program)
3. Seasonal patterns chart (quarterly breakdown)
4. Regional performance chart (geographic comparison)

Create a one-page executive dashboard layout that:
- Arranges these 4 charts in a logical flow
- Adds a title: "Executive Education Enrollment Analysis 2021-2024"
- Includes 3-5 bullet points of "Key Findings"
- Includes 3 "Strategic Recommendations" at the bottom
- Uses professional spacing and hierarchy

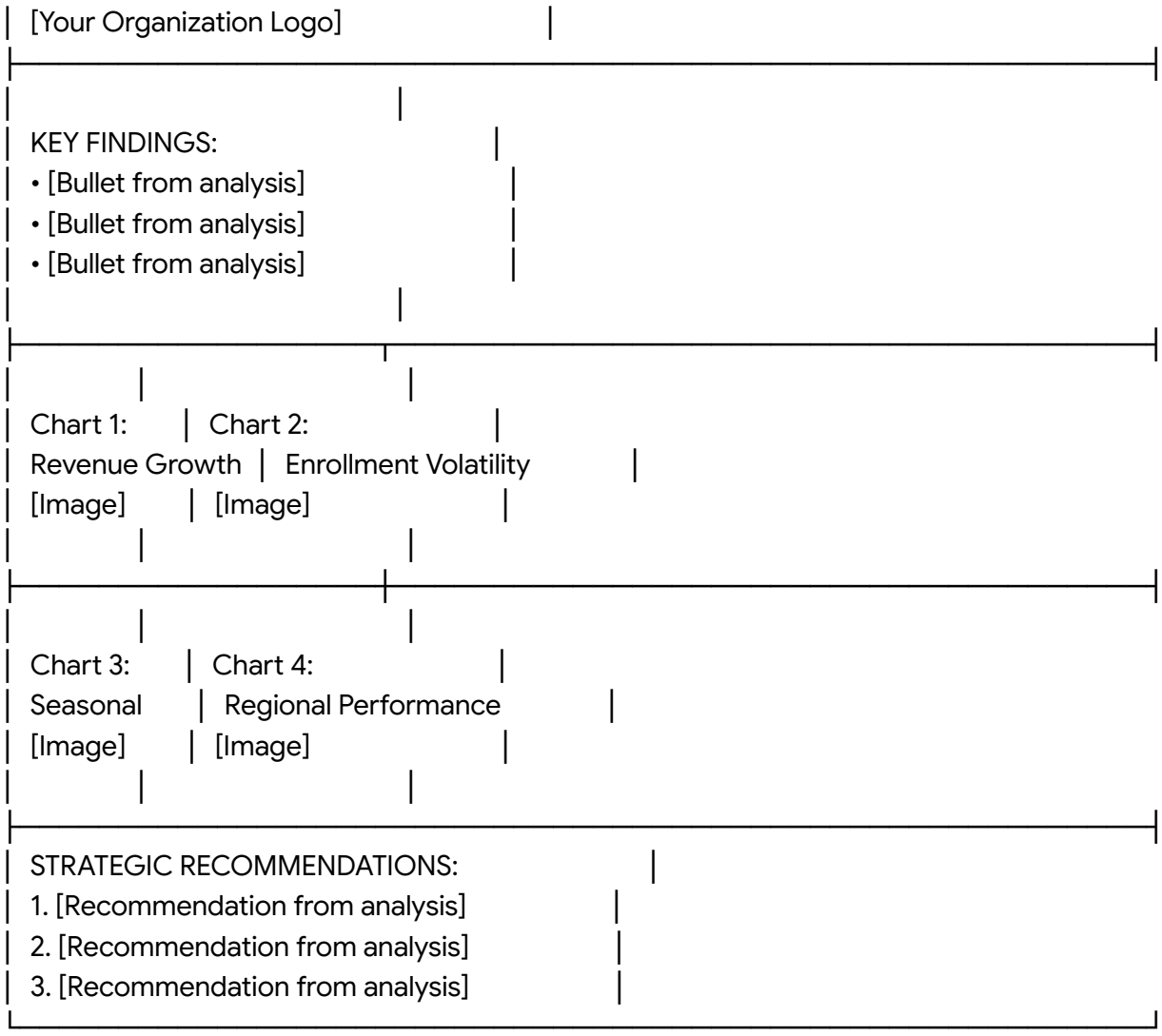
Provide me with either:
A) A layout/template I can use in PowerPoint/Google Slides
B) HTML/CSS code to create a web dashboard
C) A PowerPoint file with placeholder images

Which format would you like to provide?

Option B: Manual Dashboard in PowerPoint

Template Structure:

```
┌──────────────────────────────────────────────────────────┐
│ EXECUTIVE EDUCATION ENROLLMENT ANALYSIS 2021-2024        │
```



How to Build It:

1. **Open PowerPoint** → New Blank Presentation
2. **Set slide size:** Design → Slide Size → Custom (16:9)
3. **Add text boxes** for title and sections
4. **Insert your 4 charts** → Insert → Pictures
5. **Resize and position** using the template above as a guide
6. **Add bullet points** for findings and recommendations
7. **Apply your brand colors** to headers and borders

STEP 5: Generate Strategic Recommendations

Goal: Turn insights into action

Now that you've visualized everything, let's create concrete next steps.

Final Analysis Prompt

Based on all the visualizations and analysis we've done, I need a strategic action plan.

Create a one-page memo with:

EXECUTIVE SUMMARY (2-3 sentences):
What are the most important takeaways from this enrollment data?

IMMEDIATE ACTIONS (Next 30 Days):
What 3 things should we do right now based on this data?

STRATEGIC INITIATIVES (Next 6-12 Months):
What 2-3 longer-term strategies should we pursue?

RISK MITIGATION:
What's the biggest risk we see in the data, and how do we address it?

RESOURCE ALLOCATION RECOMMENDATIONS:
- Which programs deserve more marketing budget?
- Which programs need curriculum refresh?
- Which regions need more sales focus?

Format this as a memo to the Dean that I can send immediately.

🎯 Learning Objectives Check

By completing this activity, you learned to:

✅ **Upload and analyze complex datasets** using AI
✅ **Ask strategic analytical questions** that yield actionable insights
✅ **Extract structured data** from AI responses
✅ **Create multiple visualization types** for different stories

✅ **Build executive dashboards** that communicate clearly
✅ **Generate data-driven recommendations** from patterns

⏱️ Time Breakdown

Step	Time	Output
Step 0: Download Dataset	1 min	CSV file ready
Step 1: Upload & Analyze	5-7 min	Strategic insights
Step 2: Extract Tables	3-5 min	Structured data
Step 3: Create Visualizations	10-15 min	4 powerful charts
Step 4: Build Dashboard	5-7 min	Executive summary
Step 5: Strategic Memo	3-5 min	Action plan
TOTAL	**27-40 min**	**Complete analysis package**

🆘 Troubleshooting Guide

Problem	Solution
CSV won't upload	Try converting to .xlsx or paste data directly into chat
AI gives vague analysis	Ask: "Show me the actual numbers and calculations you used"
Charts look unprofessional	Specify: "Use these exact colors: [hex codes]" or "Make it look like a McKinsey report"
Can't identify volatile program	Ask: "Calculate the standard deviation of enrolled students for each program"
Seasonal patterns unclear	Request: "Group by month instead of quarter" or "Show year-over-year comparison"
Too much data to visualize	Focus on one program: "Show me just [Program X] across all regions and time periods"

💡 Pro Tips for Maximum Impact

1. The Power of Comparison

Always show before/after or year-over-year comparisons. Single data points don't tell stories.

2. Color Psychology for Presentations

- **Green:** Growth, success, positive trends
- **Red:** Decline, concern, areas needing attention
- **Blue:** Trust, stability, primary data
- **Orange/Yellow:** Caution, volatility, watch areas

3. The "So What?" Test

For each chart, ask: "If my Dean looks at this for 5 seconds, what's the one thing they'll remember?"

4. Numbers + Narrative

Charts without context are just pretty pictures. Always add:

- A headline that states the insight
- 1-2 sentences explaining what it means
- A recommendation based on the data

5. The Executive's Question

Every chart should answer one of these:

- "Are we winning or losing?"
- "Where should we invest?"
- "What's the risk?"
- "What action should we take?"

🎓 Bonus Challenges

Want to go further? Try these advanced analyses:

Challenge 1: Predictive Modeling

Based on the 4-year trend, predict enrollment for Q1 2025 for each program. Show your methodology and confidence level.

Challenge 2: Cohort Analysis

Calculate the average "conversion rate" (enrolled/applicants) for each program. Which programs are best at converting interest into enrollment? Create a scatter plot showing conversion rate vs revenue.

Challenge 3: Regional Deep Dive

For the fastest-growing region, analyze which programs are driving that growth. Create a stacked area chart showing regional revenue composition over time.

Challenge 4: Anomaly Detection

Identify any unusual data points (outliers). Were there any cohorts with unexpectedly high or low enrollment? What external factors might explain these anomalies?

📊 Sample Insights You Might Discover

Here are examples of the kinds of insights this analysis typically reveals:

Revenue Growth:

- *"Digital Transformation Leadership grew 71% in revenue (2023-24 vs 2021-22), emerging as our flagship program"*

Volatility Patterns:

- *"Strategic Innovation Workshop shows 40% variance in enrollment, with consistent Q4 drops suggesting year-end budget freeze impacts"*

Regional Opportunities:

- *"Asia Pacific grew 85% while Europe grew only 22%, signaling a major geographic shift in demand"*

Seasonal Trends:

- *"Q1 enrollments average 15% lower across all programs, likely due to post-holiday budget delays"*

🎬 Ready to Present?

When you're done, you'll have:

- ✅ 4 professional visualizations
- ✅ 1 executive dashboard
- ✅ Strategic recommendations backed by data
- ✅ A compelling story about your programs

Share your dashboard with leadership and watch as data transforms into decisions!

📚 What's Next?

After mastering enrollment analysis, you could apply these same techniques to:

- **Student satisfaction survey data**
- **Faculty performance metrics**
- **Marketing campaign ROI**
- **Alumni career progression tracking**
- **Program profitability analysis**

The methodology is the same: Upload → Analyze → Visualize → Recommend → Act.