# Institutional Effectiveness Data Project

## 1. Introduction

This document outlines the methodology, steps, tools used, and insights derived from the Institutional Effectiveness Data Project. The objective of this project was to calculate the graduation rates for the Fall 2012 cohort (including preceding Summer I and II terms) and analyze patterns and trends using Excel and Power BI.

## 2. Objective

To analyze graduation rates within 4, 6, and 8 years for the Fall 2012 cohort by integrating and transforming enrollment and graduation data, and provide actionable insights for institutional planning.

## 3. Data Sources

- Enrollment Data for Fall 2012 Cohort (including 201280, 201290, and 201310 term codes)  
- Degrees Awarded Data (used for graduation status identification)  
- Cohort Definition from Codebook provided in the dataset

## 4. Data Cleaning and Preparation

1. Filtered enrollment data to include only first-time, full-time students with term codes 201280, 201290, and 201310.  
2. Used VLOOKUP in Excel to match students with their graduation terms from DegreesAwarded.csv.  
3. Created flags for graduation within 4, 6, and 8 years using IF formulas comparing Graduation Term with target thresholds:  
 - 4 years: <= 201630  
 - 6 years: <= 201830  
 - 8 years: <= 202030  
4. Normalized 'Graduated' and 'Not Graduated' labels for dashboard readability.  
5. Cleaned and removed any rows with missing student IDs or unmatched data.

## 5. Excel Calculations and Logic

Used VLOOKUP to merge data:  
 =VLOOKUP(StudentID, DegreesAwarded!A:Z, ColIndex, FALSE)  
  
Graduation flags:  
 =IF(GraduationTerm <= 201630, 1, 0) for 4-year  
 =IF(GraduationTerm <= 201830, 1, 0) for 6-year  
 =IF(GraduationTerm <= 202030, 1, 0) for 8-year  
  
These were converted into readable labels for dashboard visualizations.

## 6. Power BI Visualization

Data was imported from the cleaned Excel into Power BI. A data model was created with calculated columns for Graduation Status. Visuals included:  
- Graduation Rates Over Time  
- Comparison by Ethnicity  
- First-Time Full-Time vs Overall Cohort  
- KPI Cards for Summary Metrics  
  
DAX Sample:  
 Graduated\_4yr = IF([Graduation Term] <= "201630", "Graduated", "Not Graduated")

## 7. Key Insights

- Only 31.7% of the cohort graduated within 8 years.  
- White and Asian students had higher graduation rates.  
- Underrepresented groups like Black and Hispanic students had lower graduation percentages.  
- First-time full-time students slightly outperformed the overall cohort.

## 8. Recommendations

- Early intervention programs targeting at-risk ethnic groups.  
- Mentorship programs and academic advising to increase 4-year graduation rates.  
- Better onboarding programs for Summer students.  
- Tracking of cohort performance to build predictive support mechanisms.

## 9. Tools Used

- Microsoft Excel (Data Cleaning, VLOOKUP, PivotTables)  
- Power BI (Data Modeling, DAX, Dashboarding)  
- Microsoft Word and PowerPoint (Documentation and Presentation)

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