

Student Attendance Analysis Dashboard

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1. Background

The existing Academic Management System (AMS) presented four core pain points for DAs when analyzing student attendance data:

- **Misleading Metric:** The attendance rate in AMS was calculated using a “deduction from 100%” method, where all students started at 100% at the beginning of the semester. This failed to accurately reflect actual attendance, contradicting business intuition.
- **Limited Analytical Dimensions:** The system lacked flexible time-filtering capabilities, preventing DAs from examining attendance during specific periods (e.g., recent weeks, exam weeks). This made it difficult to conduct trend analysis or comparative studies.
- **Difficult Data Traceability:** The attendance rate was updated in real-time with no historical snapshots. DAs had to manually download

and archive data regularly, a process that was both cumbersome and inefficient.

- **Lack of a Holistic View:** Due to permission restrictions, DAs could only view data for their assigned students, creating data silos. They were unable to gain a macro-level understanding of attendance trends across the university, different colleges, or majors, which hindered strategic management and decision-making.

2. Solutions

To address these challenges, we adopted a “Data Middle Platform + BI” architecture to build a new student attendance analysis dashboard.

- **Data Transformation and Metric Optimization:** We collaborated with the data middle platform team to pre-process the raw attendance details from AMS. The core logic involved aggregating daily data into two key metrics: “Total Daily Courses” and “Daily Valid Attendances (including Present and Leave).” The attendance rate formula was re-engineered as $\text{SUM_AGG}(\text{Daily Valid Attendances}) / \text{SUM_AGG}(\text{Total Daily Courses})$, ensuring the metric’s accuracy and intuitive nature.

- FineBI Dashboard Functional Design: Based on the transformed data, we designed and implemented the following key features on the FineBI platform:

1) Holistic Overview & Multi-dimensional Drill-Down: The dashboard provides an at-a-glance view of the overall university attendance rate. Users can drill down by college, major, and grade level to quickly identify specific groups needing attention.

2) Flexible Time Filtering: A custom date range selector allows DAs to instantly retrieve and analyze attendance data for any historical period, facilitating easy period-over-period comparisons.

3) Interactive Data Exploration: Interactive charts and filter components enable users to freely combine dimensions for custom analysis (e.g., “view the attendance of first-year students in a specific college over the last month”).

4) Detail Data Export: A one-click export function for the detail table is available, empowering DAs to conduct in-depth analysis or create customized reports.

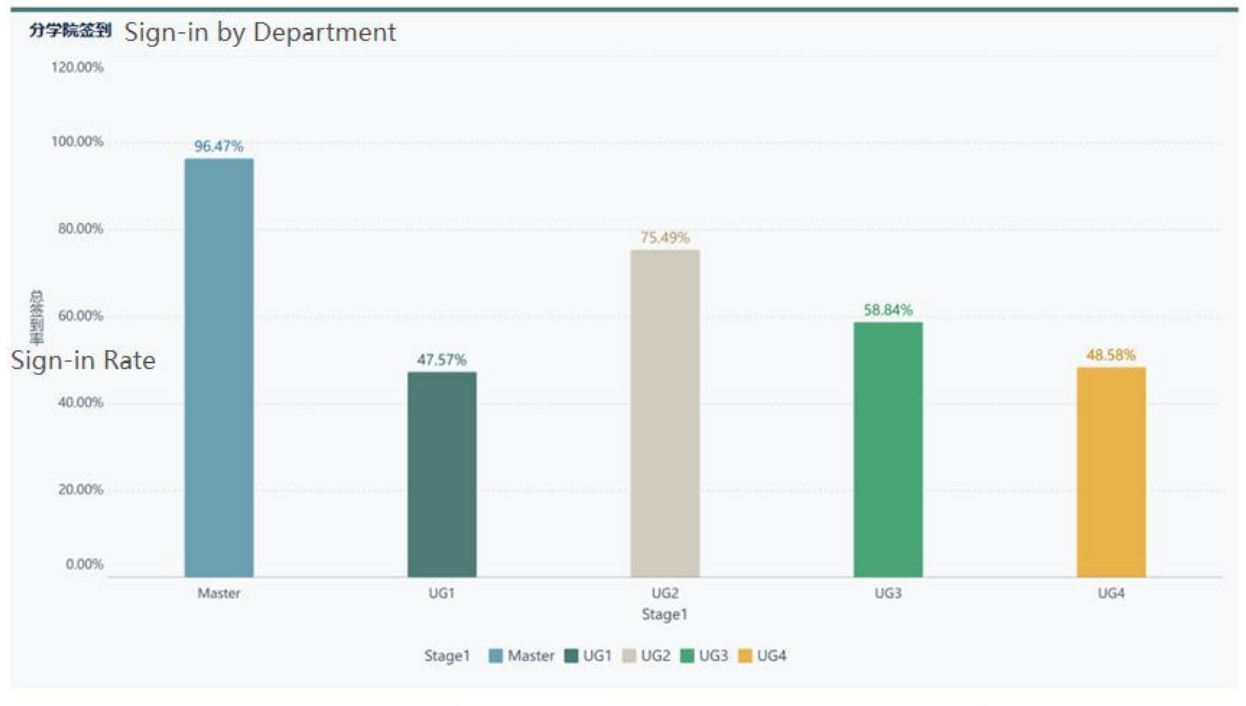


Figure 1. Check-in by College for Different Grades

3. Outcomes and Benefits

The implementation of this dashboard has delivered significant efficiency improvements and tangible value to student affairs management:

- **Enhanced Decision-Making Efficiency:** DAs are freed from the manual work of downloading and organizing data. They can now instantly access required information on the dashboard, allowing them to focus on analyzing problems and formulating strategies instead of repetitive tasks.

- **Deeper Data Insights:** The intuitive attendance rate and multi-dimensional cross-analysis have broken down the previous data silos. This enables DAs to gain a holistic view of student attendance patterns, providing a solid foundation for targeted interventions and management.
- **Improved Management Experience:** Features like custom filtering and drill-downs empower DAs with self-service analytics capabilities, catering to their specific analytical needs and boosting job satisfaction and autonomy.
- **Unlocked Data Value:** By transforming raw, dormant data from AMS into an intuitive, interactive analytical asset, we have fully unlocked its value. This provides a new perspective for the university's teaching quality monitoring and student affairs management.

4. Replicability and Promotion Value

The core value of this case lies in providing an agile solution to meet the specific needs of a particular user role (the DA) without overhauling a mature, established core system (AMS).

This “Data Middle Platform + Agile BI” model is highly replicable and scalable. It addresses a common challenge where organizations face rigid legacy systems with slow development cycles that cannot keep up

with diverse analytical demands. This approach can be widely adopted: by leveraging a data middle platform to integrate, clean, and transform data, and then using agile BI tools like FineBI to rapidly build role-specific and scenario-based analytical applications. This method is not only cost-effective and quick to implement but also maximizes the value of existing data assets, offering a flexible and efficient pathway for digital transformation.