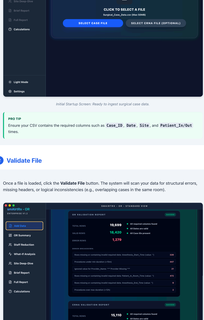
smAlrtRx OR Optimizer User Guide

Welcome to the smAlrtRx OR Schedule Optimizer. This guide will walk you through the primary workflow to analyze your Operating Room utilization and discover efficiency opportunities.

1 Open a File

Navigate to the **Add Data** tab in the sidebar. Click on the upload area or drag and drop your OR utilization CSV file.



Initial Startup Screen. Ready to ingest surgical case data.

> **PRO TIP**
> Ensure your CSV contains the required columns such as `Case_ID`, `Date`, `Site`, and `Patient_In/Out` times.

2 Validate File

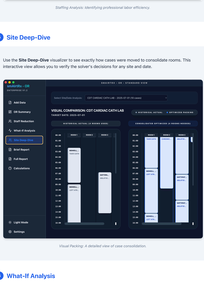
Once a file is loaded, click the **Validate File** button. The system will scan your data for structural errors, missing headers, or logical inconsistencies (e.g., overlapping cases in the same room).

Data validation. Identifying structural issues and data quality.

Review the validation report. If major errors are found, you may need to click **Clean & Normalize** to automatically fix common issues before proceeding.

3 Analyze File

After successful validation, click **Run Optimization Analysis**. The Java-based optimization engine (powered by Google OR-Tools) will process your schedule to find the minimum number of ORs required to support your volume.

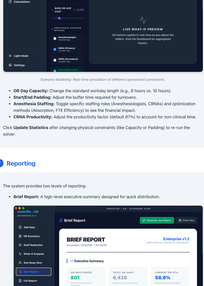


OR Summary Dashboard. Aggregated savings and efficiency metrics.

Once complete, you will be automatically redirected to the **Report** to view the executive summary.

4 Staff Reduction Analysis

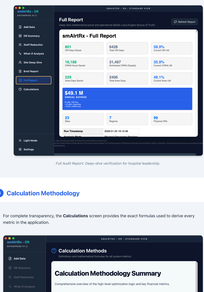
The **Staff Reduction** tab provides a deep dive into anesthesia staffing efficiency, separating clinical demand from scheduled supply across regional pools.



Staffing Analysis. Identifying professional labor efficiency.

5 Site Deep-Dive

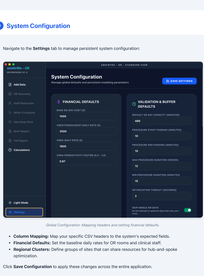
Use the **Site Deep-Dive** visualizer to see exactly how cases were moved to consolidate rooms. This interactive view allows you to verify the solver's decisions for any site and date.



Visual Packing. A detailed view of case consolidations.

6 What-If Analysis

Switch to the **What-If Analysis** tab. Here you can adjust key parameters to see their impact on savings in real-time.



Scenario Modeling. Real-time simulation of different operational constraints.

- **OR Day Capacity:** Change the standard workday length (e.g., 8 hours vs. 10 hours).
- **Start/End Padding:** Adjust the buffer time required for turnovers.
- **Anesthesia Staffing:** Toggle specific staffing models (Anesthesiologists, CRNAs) and optimization methods (Absorption, FTE Efficiency) to see the financial impact.
- **CRNA Productivity:** Adjust the productivity factor (default 97%) to account for non-clinical time.

Click **Update Statistics** after changing physical constraints (like Capacity or Padding) to re-run the solver.

7 Reporting

The system provides two levels of reporting:

- **Brief Report**. A high-level executive summary designed for quick distribution.

Brief Report. Key operational and financial indicators.

- **Full Report:** A comprehensive audit-ready document containing mathematical proofs and site-by-site breakdowns.

Full Audit Report. Deep-dive verification for hospital leadership.

8 Calculation Methodology

For complete transparency, the **Calculations** screen provides the exact formulas used to derive every metric in the application.

Technical Documentation. Ensuring confidence in the underlying math.

9 System Configuration

Navigate to the **Settings** tab to manage persistent system configuration.

Global Configuration. Mapping headers and setting financial defaults.

- **Column Mapping:** Map your specific CSV headers to the system's expected fields.
- **Financial Defaults:** Set baseline daily rates for OR rooms and clinical staff.
- **Regional Clusters:** Define groups of sites that can share resources for hub-and-spoke optimization.

Click **Save Configuration** to apply these changes across the entire application.