

DBEDT Monthly Arrivals Checker - Agent Design

Objective:

- Monitor monthly arrivals from DBEDT.
- Validate integrity, detect anomalies, and report results.

Data Source and Config:

- DBEDT dataset URL as CSV, XLSX, or API endpoint.
- Column mapping: month, arrivals, category, island.
- Update cadence and thresholds for MoM, YoY, z-score.

Workflow:

- 1) Check source last updated or file hash.
- 2) Download data with retries and store raw file.
- 3) Parse and normalize to month, arrivals, category, island.
- 4) Validate schema, missing months, duplicates, negatives.
- 5) Analyze MoM, YoY, rolling averages, and z-scores.
- 6) Store snapshots and anomalies in SQLite.
- 7) Generate report and notify if needed.

Validation Rules:

- Required columns present and non-empty.
- Month format YYYY-MM; no future months.
- No missing months per category and island series.
- No duplicate months per series.
- Arrivals must be numeric and ≥ 0 .

Anomaly Detection:

- MoM change ≥ 50 percent, configurable.
- YoY change ≥ 40 percent, configurable.
- Z-score ≥ 3.0 over last 36 months.

Outputs:

- Reports: agent/reports/latest.json and latest.md.
- Storage: agent/data/arrivals.db using SQLite.
- Alerts: Slack or webhook on errors or anomalies.

Key Files:

- agent/run.js orchestration
- agent/lib/downloader.js
- agent/lib/parser.js
- agent/lib/validator.js
- agent/lib/analyzer.js
- agent/lib/storage.js
- agent/lib/reporter.js
- agent/config/defaults.json and .env

Scheduling:

- Cron: 0 6 * * * node agent/run.js

Acceptance:

- New data detected, validated, stored, reported.
- Anomalies flagged with clear context.