DataAILite Mix Analysis Capabilities of DataAILite at http://DataAILite.com

DataAILite is the in-memory version of DataAI. It is designed for users who want to import or read data, view it, filter it, chart it, summarize it, analyze it, export results, and optionally ask AI to explain the results during a web session.

The application is built with ASP.NET Web Forms and VB.NET. Its analysis model is session-based: data is loaded into ASP.NET DataTable objects, stored in the user's session, analyzed in memory, displayed through web pages, and optionally sent to the AI interpretation workflow.

No imported data, analytical data, filtered data, generated summaries, charts, maps, correlation tables, or report result data is stored after the user logs off.

Two DataAILite Modes

1. DataAILite Import Mode

In this mode, users import files or generated outputs into the web session. The imported data is analyzed in memory and is not retained after logoff.

Data sources can include:

- Imported CSV and TXT files.
- Imported Excel files when import support is enabled.
- XML and JSON files converted into tabular data.
- Data returned from temporary SQLite-backed workflows.
- Existing report output stored in the current session.
- Chart, map, correlation, statistics, and matrix-balancing output generated by the application.

2. DataAILite Mix Mode

In this mode, SQL query results are read from the user's configured database, loaded into ASP.NET session memory, analyzed in memory, displayed as reports, charts, maps, statistics, and summaries, and then cleared after logoff.

Data sources can include:

- SQL Server-style relational databases.
- MySQL databases.

- PostgreSQL databases when configured.
- SQLite databases where supported.
- ODBC or OleDb-accessible data sources.
- Oracle, InterSystems IRIS, or InterSystems Cache when licensed providers are enabled.
- SQL query results returned from the user's database.
- SQL result sets based on user tables and views exposed through configured read permissions.

In Mix mode, the user's original database remains the source of truth. DataAILite Mix should not write analytical results back to the source database unless a separate explicit feature is programmed for that purpose.

What Makes DataAILite Different

DataAILite is lighter than the full DataAI system because it focuses on temporary, session-based analysis instead of long-term database-backed report administration.

Key characteristics:

- Data is processed in memory during the active session.
- Analytics are performed in ASP.NET/VB.NET using session DataTable objects.
- Reports can be generated from session data rather than stored analytical tables.
- Analytical results are temporary.
- No imported data or analytical report result data is retained after logoff.
- Users can export results before ending the session.
- Optional SQLite support can be used where the Lite configuration requires a small local operational store.

The best source for either mode is rectangular data: rows, columns, column names, and values that can be loaded into a DataTable.

Current In-Memory Analysis Workflows

1. Data Loading, Viewing, and Filtering

DataAILite can load imported data or database SQL query results into a session DataTable, display records in a web grid, and preserve both the original session result and the filtered result.

Possible analysis:

- Load imported files or SQL query results into the current session.
- View all returned records.
- Filter rows without changing the original imported file or source database.
- Count returned records after filtering.
- Reset filters back to the original session dataset.
- Export the current filtered result or report result.

2. Overall Statistics

DataAILite can calculate statistics for in-memory imported data or SQL query results.

Possible analysis:

- Record counts.
- Column counts.
- Numeric field summaries.
- Minimum and maximum values.
- Average values.
- Standard deviation.
- Missing or blank values.
- Basic data distribution notes.

This is useful for quickly understanding imported data or database query results without creating permanent analytical tables.

3. Exploratory Data Analysis

DataAILite can provide an exploratory analysis page for any imported data or SQL query result loaded into session memory.

Possible analysis:

- Identify numeric, date, and text columns.
- Show distinct value counts.
- Show most common values.
- Detect empty columns.
- Detect columns with mostly blank values.
- Detect likely ID fields.
- Detect likely category fields.
- Detect likely measure fields.
- Generate a readable summary of the dataset or database result.

4. Grouped and Cross-Tab Summaries

DataAILite can build grouped summaries without saving permanent report definitions or analytical output tables.

Possible analysis:

- Group rows by one category field.
- Group rows by multiple category fields.
- Calculate sums, counts, averages, minimums, and maximums by group.
- Build cross-tab tables from two category fields.
- Calculate percentages by row, column, or total.
- Rank groups by selected measures.

This is useful for quick operational reporting from imported files or live database data.

5. Time-Based Analysis

When a dataset includes date fields, DataAILite can summarize values over time.

Possible analysis:

- Group records by day, week, month, quarter, or year.
- Calculate period totals.
- Calculate period averages.

- Compare one period with another.
- Calculate percentage change.
- Calculate rolling totals.
- Calculate moving averages.

This supports practical trend analysis using direct ASP.NET/VB.NET calculations.

6. Correlation Analysis

DataAILite can analyze relationships between numeric fields in the current in-memory dataset.

Possible analysis:

- Detect numeric columns.
- Calculate correlation coefficients between numeric fields.
- Rank strongest positive and negative relationships.
- Filter weak correlations.
- Prepare correlation tables for display or export.
- Send correlation output to AI for plain-language interpretation.

7. Chart Analytics

DataAILite can create chart-ready data and summaries from imported data or database query results.

Possible analysis:

- Summarize values by chart category.
- Identify largest and smallest values.
- Rank categories.
- Calculate totals and percentages.
- Generate chart-ready tables for web visualization.
- Export chart data or send it to the AI interpretation workflow.

Useful chart types include bar, column, line, area, pie, scatter, histogram, and combo-style charts.

8. Map Analytics

DataAILite can analyze data with location fields.

Possible analysis:

- Identify records with latitude and longitude.
- Count mapped locations.
- Find highest and lowest values by location.
- Summarize values by place, region, or category.
- Prepare data for map charting or Google Maps-style output.
- Generate AI-readable map summaries.

This works best for data with coordinates, place names, region fields, or location-based metrics.

9. Data Quality Analysis

DataAILite can check data quality without writing cleanup data back to the source file or source database.

Possible analysis:

- Count blank values by column.
- Detect duplicate rows.
- Detect duplicate IDs.
- Find invalid numeric values.
- Find invalid date values.
- Flag out-of-range values.
- Flag inconsistent categories, such as spelling variations.
- Identify columns with mixed data types.
- Create a downloadable data quality report.

This helps users understand whether data is ready for reporting or needs correction in the original source.

10. Matrix and Balancing Analysis

DataAILite can create, display, and interpret matrix-style outputs in memory.

Possible analysis:

- Build matrix outputs from imported data or database SQL query results.
- Show starting matrix, target matrix, balanced matrix, and balancing coefficients.
- Compare differences between starting, target, and balanced values.
- Calculate maximum cell differences.
- Summarize row and column totals.
- Explain balancing results in plain language.
- Export matrix results.

This is useful for allocation, reconciliation, survey weighting, proportional adjustment, and target balancing workflows.

11. AI-Assisted Explanation

DataAILite can send the current in-memory result, filtered data, chart analysis, map analysis, correlation output, statistics, or matrix-balancing result to the AI page.

Possible analysis:

- Explain what the current data shows.
- Summarize key patterns.
- Explain chart results.
- Explain map results.
- Explain correlations.
- Explain statistics.
- Explain matrix-balancing results.
- Answer follow-up questions about the current session result.

The AI workflow should be used for explanation, summarization, and plain-language interpretation. The numeric calculations should remain in ASP.NET/VB.NET so results are consistent and repeatable.

Export Options

Depending on the report type and configured output workflow, DataAILite results can be exported to:

- CSV.
- Excel.
- PDF.
- Word.

Exports allow users to keep the analytical output they need before ending the session. The application should not retain analytical data after logoff.

Existing ASP.NET Features

Several analysis and reporting features are already present in the project.

SQLquery.aspx already provides a report SQL query designer with:

- SQL data field selection.
- Join definition.
- Filter definition.
- Sorting.
- Report parameters.
- Query saving.
- Query-based report updates.
- Links into report data, charts, analytics, exports, and matrix balancing.

RDLformat.aspx already provides report formatting and output features with:

- Column order and expressions.
- Friendly names and formatting functions.
- Groups and totals.
- Combined column values.
- Advanced report designer navigation.
- Map definition navigation.
- Data export to Excel, CSV, delimited file, and XML.

- Report export to Excel, Word, and PDF.
- Generic report display.
- Report charts.
- Overall statistics.
- Group statistics.
- Field correlation.
- Matrix balancing.

Analytics.aspx already provides report analytics features with:

- Report data retrieval for analytics.
- Automatic analytics recalculation.
- Category/group field selection.
- Value field selection.
- Count and count-distinct calculations.
- Sum, maximum, minimum, average, standard deviation, and value calculations for numeric fields.
- Generated group analytics records.
- Correlation display for selected fields.
- Matrix graph links.
- Bar, pie, and line graph links.
- Detail reports with category totals and statistics.
- Statistics dashboard links.
- Google chart links.
- Advanced analytics and matrix-balancing navigation.
- AI interpretation link for analytical output.

ASP.NET Features That Can Still Be Programmed

Good remaining extensions for DataAILite include:

- A dedicated "Analyze Imported Data" page focused on session-only imported datasets.
- A dedicated "Analyze Database SQL Results" page focused on Mix mode query results.
- A data profiling panel for the current session result.
- A data quality report page.
- A cross-tab builder with row, column, and value selectors.
- A time summary builder for date fields.
- A top/bottom ranking report.
- A percentage-of-total report.
- A compare-two-groups report.
- A compare-two-files report for Import mode.
- A compare-two-queries report for Mix mode.
- A correlation threshold filter.
- A chart recommendation helper based on selected fields.
- A map readiness checker for latitude/longitude data.
- Additional one-click "Explain with AI" buttons for any new analysis result pages.

Best Fit

DataAILite is best suited for quick, temporary, in-memory business analysis:

- Import a file or connect to a user database.
- Load selected SQL query results into memory.
- Inspect the result.
- Filter records.
- Generate statistics.
- Build charts.
- Build grouped summaries.
- Check data quality.

- Review correlations.
- Analyze locations.
- Analyze matrix outputs.
- Export results.
- Ask AI to explain the results.

Import mode is especially useful for lightweight analysis, demonstrations, training, temporary datasets, and users who do not want to configure a full reporting database.

Mix mode is useful when users need live data from their own database but do not want DataAILite to store analytical result data after logoff.

Important Limits

DataAILite analysis depends on source data size, database permissions in Mix mode, query size, returned row count, available server memory, ASP.NET session limits, configured import/export limits, and timeout settings. Very large datasets are better handled by the full DataAI database-backed workflow or by narrowing the query before loading it into memory.

The source database in Mix mode may retain its original data according to the user's own database rules. DataAILite should not retain imported data, analytical data, filtered data, generated summaries, charts, maps, correlation tables, or report result data after the user logs off.