StorePulse

User Manual

Version 1.0.0 | Client-Ready Edition

Know tomorrow's visits. Act today.

"Know tomorrow's visits. Act today."

```
**Version 1.0.0 | Client-Ready Edition**
```

Introduction

StorePulse is an offline-first desktop application that forecasts store visits for the next 14 days and translates them into actionable staffing and inventory recommendations.

Key Features

- • **Offline-First**: No internet connection required after installation
- • **Two Operating Modes**:
- • **Lite**: Simple daily visit counts for quick forecasting
- • **Pro**: Rich contextual data (sales, promotions, weather) for enhanced accuracy
- • **Uncertainty-Aware**: P10/P50/P90 prediction bands for risk management
- • **Business Intelligence**: Automatic staffing and inventory recommendations
- • **What-If Lab**: Test scenarios like "What if we run a 20% off sale?"
- • **Export Ready**: Professional PDF reports for executive review

How It Works

StorePulse is powered by a production-grade **Negative Binomial INGARCH** engine:

- • Captures overdispersion in retail traffic data with autoregressive + GARCH-style volatility terms
- • Supports both Lite and Pro datasets with contextual drivers (promotions, weather, events)
- • Generates calibrated P10/P50/P90 prediction bands directly from dispersion estimates for trustworthy planning
- • Streams training progress with deterministic, offline execution so you retain full control of your data

---

System Requirements

Minimum Requirements

- • **macOS**: 10.15 (Catalina) or later
- • **Windows**: Windows 10 version 1903 or later
- • **RAM**: 8GB minimum, 16GB recommended
- • **Storage**: 2GB free space

- • **Display**: 1280x800 minimum resolution

Recommended Specifications

- • **Processor**: Intel i5 or equivalent (M1/M2 for macOS)
- • **RAM**: 16GB or more for Pro mode training
- • **Storage**: SSD with 5GB+ free space for data storage

Installation

macOS Installation

1. **Download** the StorePulse `.dmg` file from the release package
2. **Mount** the disk image by double-clicking the `.dmg` file
3. **Drag** StorePulse.app to your Applications folder
4. **Launch** StorePulse from Applications
5. **Grant Permissions** when prompted (required for local data storage)

First Launch Time: ~30 seconds (models load and self-calibrate)

Windows Installation

1. **Download** the StorePulse `.msi` installer from the release package
2. **Run** the installer as Administrator
3. **Follow** the installation wizard
4. **Launch** StorePulse from the Start Menu or Desktop shortcut

Note: Windows may show a security warning on first launch. Click "More info" → "Run anyway"

Getting Started

First Launch

1. **Welcome Screen**: Click "Get Started" to begin setup

2. **Data Check**: System validates sample data and model availability

3. **Mode Selection**: Choose Lite or Pro mode based on your data availability

Navigation Overview

- • **Home**: Dashboard with key metrics and quick actions
- • **Data**: Add today's visits and import historical data
- • **Train**: Train forecasting models on your data
- • **Forecast**: Generate predictions and view recommendations
- • **Lab**: Test What-If scenarios
- • **Reports**: View exports and historical analyses
- • **Settings**: Configure preferences and data paths

Data Management

Adding Today's Data

Daily Workflow: Add today's actual visitor count to improve model accuracy.

1. **Navigate** to Data page

2. **Click** "Add Today"

3. **Enter**:

- • Date (defaults to today)
- • Visitor count (required)
- • Pro mode: Additional context (sales, promotions, weather)

Pro Mode Fields:

- • **Sales**: Daily revenue ($)
- • **Conversion**: Sales-to-visits ratio (%)

- • **Promo Type**: "none", "sale", "coupon", etc.
- • **Price Change**: Percentage change from normal pricing
- • **Weather**: "sunny", "rainy", "cloudy"
- • **Paydays**: Boolean (regional payday timing)
- • **School Breaks**: Boolean (local school schedules)
- • **Local Events**: Text description of events impacting traffic
- • **Open Hours**: Hours store was open that day

Importing Historical Data

For New Users: Import existing visit data for immediate forecasting.

1. **Prepare a CSV, Excel (.xlsx/.xls), or JSON file** with columns:

- • `event_date` or `date` (YYYY-MM-DD format)
- • `visits` (integer, required)
- • Pro mode: Additional columns as needed

2. **Click** "Import Data" on the Data page

3. **Select** the file — StorePulse automatically validates and, when needed, converts Excel sheets to CSV

4. **Preview** the most recent rows in the export panel to confirm formatting

5. **Confirm** import (data is validated before saving)

Sample Format (CSV/Excel):

```
event_date,visits,sales,conversion,promo_type
2024-01-01,125,2500.00,0.20,sale
2024-01-02,98,1960.00,0.20,none
```

Data Export: The same panel lets you preview recent entries and download your dataset in CSV, JSON, or Excel format for audits or BI tools.

Data Validation

Automatic Checks:

- • Date format validation
- • Non-negative visit counts
- • Reasonable data ranges

- • Duplicate date detection
- • Missing value identification

Data Quality Indicators:

- • ■ **Good**: 30+ days of consistent data
- • ■ **Fair**: 14-29 days of data
- • ■ **Poor**: <14 days (basic trend forecasting only)

Model Training

When to Train

Automatic Triggers:

- • After importing new data
- • When data quality improves significantly
- • Before generating forecasts (if no recent training)

Manual Training: Click "Train Models" when you want to:

- • Update models with new data patterns
- • Switch between Lite and Pro modes
- • Improve forecast accuracy

Training Process

1. **Data Preparation**: Features extracted from historical data

2. **Model Building**: NB-INGARCH (Negative Binomial INGARCH) engine trained via maximum likelihood

3. **Uncertainty Estimation**: NB-INGARCH dispersion term generates calibrated P10/P50/P90 bands—no auxiliary Bayesian or booster stacks required

4. **Quality Gates**: Accuracy, coverage, and weekend uplift checks enforce the 8% / 20% / 80–95% thresholds before the model is saved for forecasting

Training Time:

- • **Lite Mode**: 2-5 minutes

- • **Pro Mode**: 5-15 minutes (depends on data size)

Training Quality Gates

Automatic Validation:

- • Lite model ≥8% better than simple moving average
- • Pro model ≥20% better on weekends than Lite
- • Prediction intervals 80-95% reliable
- • Training completes in ≤90 seconds

Failed Gates: System alerts and suggests fixes

Forecasting

Basic Forecasting

1. **Navigate** to Forecast page
2. **Select** mode (Lite/Pro) and horizon (1-30 days)
3. **Click** "Generate Forecast"
4. **Review** results with uncertainty bands

Forecast Output:

- • **P10**: Conservative estimate (10% chance below)
- • **P50**: Most likely outcome
- • **P90**: Optimistic estimate (10% chance above)

Understanding Prediction Bands

Risk Management:

- • **Staffing**: Use P90 for busy day planning
- • **Inventory**: Use P50 for normal operations
- • **Budgeting**: Use P10 for conservative financial planning

Confidence Indicators:

- • **Narrow Bands**: High confidence, stable patterns
- • **Wide Bands**: Lower confidence, unusual conditions

Lite vs Pro Mode

```
| Feature | Lite Mode | Pro Mode |
```

|---------|----------|---------|

```
| **Data Required** | Just visits | Visits + context |
| **Accuracy** | Good baseline | Enhanced by context |
| **Weekend Performance** | Standard | 20%+ improvement |
| **Training Time** | Faster | Slower but more accurate |
| **Use Case** | Quick forecasts | Detailed planning |
```

What-If Analysis

Scenario Testing

Common Scenarios:

- • **Promotional Impact**: "What if we run a 20% off sale?"
- • **Weather Effects**: "What if it rains all weekend?"
- • **Competitive Pressure**: "What if a competitor opens nearby?"
- • **Economic Factors**: "What if prices increase 10%?"

Creating Scenarios

1. **Open** What-If Lab
2. **Select** baseline forecast period
3. **Choose** scenario type or create custom
4. **Adjust** scenario parameters
5. **Compare** results to baseline

Scenario Templates

Pre-built Scenarios:

- • 20% Off Sale (25% visit increase)
- • Rainy Weather (15% decrease)
- • Payday Week (10-15% increase)
- • Competitor Opening (20% decrease)
- • Holiday Weekend (15% increase)
- • Price Increase (10% decrease)

Custom Scenarios: Combine multiple factors for complex analysis

Saving Scenarios

- • **Save** scenarios for later reference
- • **Export** scenario comparisons to PDF
- • **Share** scenarios with team members

Reports & Export

PDF Export

Automatic Generation:

- • **Operations Plan**: Complete forecast with staffing and inventory
- • **Executive Summary**: High-level metrics and trends
- • **Scenario Comparison**: What-If analysis results

Export Contents:

- • Visit forecasts with confidence bands
- • Staffing recommendations by role
- • Top 5 SKU stocking suggestions
- • Scenario notes and assumptions

Export Options

- • **Format**: PDF (professional printing)
- • **Frequency**: On-demand or scheduled
- • **Sharing**: Email-ready or print-ready layouts

Troubleshooting

Common Issues

"No Models Available"

- • **Solution**: Train models on Data page first
- • **Cause**: First launch or insufficient data

"Forecast Generation Failed"

- • **Solution**: Check data quality and retrain models
- • **Cause**: Model training issues or corrupted data

"Slow Performance"

- • **Solution**: Ensure 16GB+ RAM, close other applications
- • **Cause**: Large datasets or insufficient resources

"Export Failed"

- • **Solution**: Check disk space and permissions
- • **Cause**: Insufficient storage or write permissions

Performance Optimization

For Large Datasets:

- • Use SSD storage for faster I/O
- • Close unnecessary applications during training
- • Consider Pro mode only for complex forecasting needs

Database Maintenance:

- • System automatically optimizes SQLite database
- • No manual maintenance typically required
- • Data is compressed and indexed automatically

FAQ

Q: Does StorePulse require internet?

A: No, StorePulse works completely offline after installation.

Q: How much historical data do I need?

A: 30+ days for good accuracy, 14+ days for basic forecasting.

Q: Can I use StorePulse for multiple stores?

A: Yes, but requires separate data files and model training per store.

Q: How accurate are the forecasts?

A: Typically 8-25% better than simple baselines, depending on data quality.

Q: What if my data has gaps?

A: StorePulse handles missing data gracefully with trend extrapolation.

Q: Can I export data for other systems?

A: Yes, forecasts can be exported to CSV or integrated via API.

Q: How often should I retrain models?

A: After significant data changes or monthly for optimal accuracy.

Q: What are "quality gates"?

A: Automated checks ensuring forecast reliability before release.

Support

Getting Help

1. **In-App Help**: Click "?" icons for context-sensitive help

2. **Documentation**: This manual covers all features

3. **Troubleshooting Guide**: Built-in diagnostics and solutions

Contact Information

For Technical Issues:

- • Check system requirements and installation steps
- • Review troubleshooting section above
- • Verify data format and quality

For Feature Requests:

- • Use in-app feedback form
- • Contact development team

Version Information:

- • Current: StorePulse v1.0.0
- • Release Date: [Current Date]
- • Support: Until v2.0.0 release

StorePulse v1.0.0 User Manual

This document explains how to use StorePulse effectively for store visit forecasting and operational planning. For technical details, see the Methodology.pdf document.