Drain Choking Probability – Calculation Methodology

Overview
Drain Choking Probability is an AI-assisted risk indicator used to estimate the likelihood of stormwater drains getting blocked during monsoon conditions. The calculation combines urban activity indicators with environmental factors to generate a percentage-based risk score.

Key Parameters Used
1. **Market Density** (markets per km²): Represents waste generation pressure.
2. **Tree Density** (trees per hectare): Indicates organic debris such as leaves and branches.
3. **Rainfall Trigger** (Live Weather Feed): Intensifies clogging risk during rainfall events.

Base Formula
Drain Choking Probability (%) is calculated using the following weighted formula:

Probability = (Market Density × 1.5) + (Tree Density × 0.05)

Rainfall Adjustment
If live rainfall is detected, an adaptive multiplier is applied internally by the system, increasing the final probability score to reflect real-time risk escalation.

Probability Cap
The calculated value is capped at **98%** to avoid unrealistic outputs and ensure operational reliability.

Risk Interpretation
• Below 50% → Low Risk (Routine Monitoring)
• 50–75% → Medium Risk (Preventive Cleaning Recommended)
• Above 75% → High Risk (Emergency Desilting Required)

Purpose
This metric supports proactive decision-making for municipal authorities, enabling prioritised deployment of desilting crews and equipment before flooding occurs.