

# Insights & Recommendations – Last Mile Delivery Optimization Strategy

## Key Insights

### 1 Semi-Urban Areas Are Causing Major Delivery Delays

- Average delivery time here is **200+ minutes**, much higher than Urban (110 mins) or Metro areas (130 mins).
- Highlights the need for route or hub optimization in these regions.

### 2 Traffic Jams with Bad Weather Lead to Longest Delays

- Under **cloudy or stormy** weather with **jammed traffic**, delivery times go up to **180 mins**.
- Even in better traffic, poor weather still slows deliveries noticeably.

### 3 Idle Time Peaks Mid-Morning and Afternoon

- Idle time before pickup hits **10.5+ mins** around **10 AM** and **2 PM**.
- Points to inefficiencies in pickup scheduling or driver availability.

## Recommendations

### Insight 1: Severe Delays in Semi-Urban Zones

**Problem:** Average delivery time exceeds 200 minutes in semi-urban areas, compared to 110 minutes in urban and 130 minutes in metro regions.

**Impact:** Causes serious inefficiencies in fulfillment speed, leading to lower customer satisfaction and higher operational costs.

**Recommendation:**

- Conduct a detailed route efficiency and hub placement analysis.
  - Deploy micro-fulfillment hubs or localized dark stores in delay-heavy areas.
  - Use clustering algorithms (e.g., K-Means) to redesign delivery zones more effectively.
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### Insight 2: Traffic and Bad Weather Drive Longest Delays

**Problem:** Delivery times rise to 180 minutes during heavy traffic and adverse weather. Even with moderate traffic, poor weather noticeably slows deliveries.

**Impact:** Limits delivery reliability and affects customer trust in service-level agreements (SLAs).

**Recommendation:**

- Integrate real-time weather and traffic data into the routing system.
  - Design dynamic fallback routes within delivery SOPs.
  - Build risk-adjusted buffer times into SLAs and ETA models.
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### Insight 3: Idle Time Peaks During Mid-Morning and Afternoon

**Problem:** Idle time before pickup exceeds 10.5 minutes around 10:00 AM and 2:00 PM.

**Impact:** Reduces fleet productivity and increases cost per delivery due to suboptimal dispatching.

**Recommendation:**

- Implement real-time driver assignment based on demand surges.
- Analyze order flow trends to optimize dispatch windows.
- Introduce staggered pickup slots to reduce clustering of dispatch tasks.