AR Baseline Features: Lt (Temporal Autoregressive) + Ls (Spatial Autoregressive)
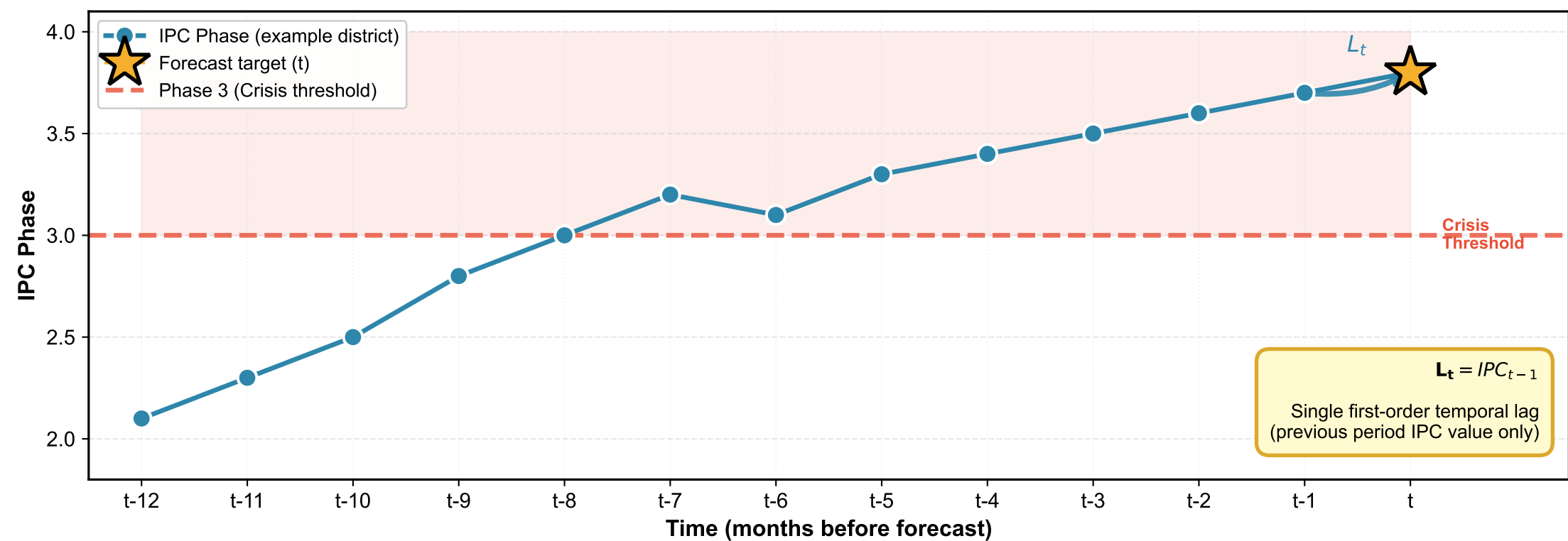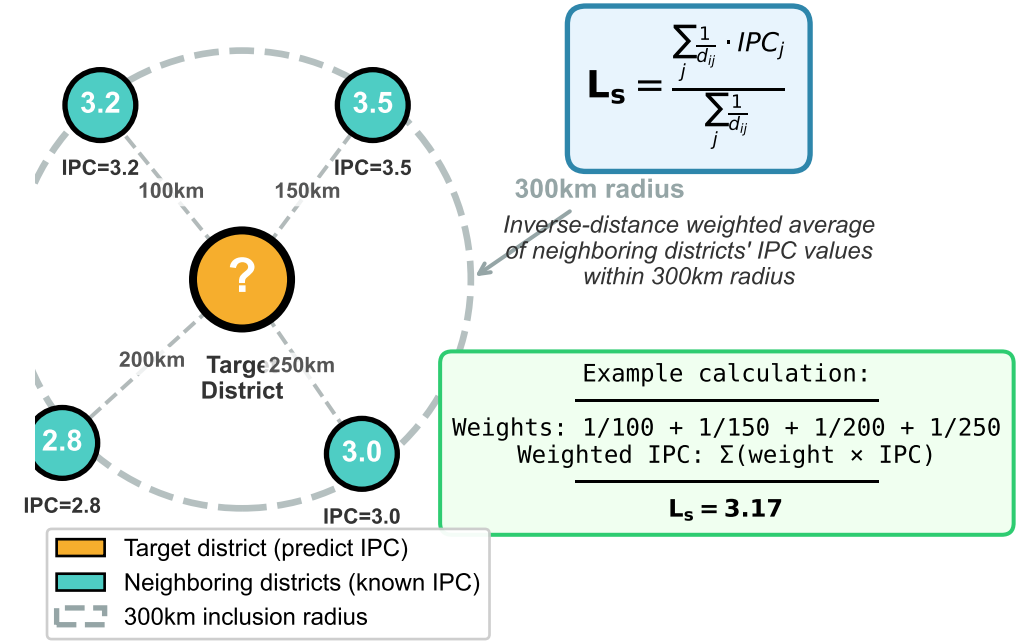
Panel A: Temporal Autoregressive Features (Lt)

Legend:
- IPC Phase (example district)
- Forecast target (t)
- Phase 3 (Crisis threshold)

L_t

Crisis Threshold

$$\mathbf{L_t} = IPC_{t-1}$$

Single first-order temporal lag (previous period IPC value only)

Y-axis: IPC Phase
X-axis: Time (months before forecast) — t-12, t-11, t-10, t-9, t-8, t-7, t-6, t-5, t-4, t-3, t-2, t-1, t

Panel B: Spatial Autoregressive Features (Ls)

3.2 — IPC=3.2 — 100km
3.5 — IPC=3.5 — 150km
? — Target District
2.8 — IPC=2.8 — 200km
3.0 — IPC=3.0 — 250km

$$\mathbf{L_s} = \frac{\sum_j \frac{1}{d_{ij}} \cdot IPC_j}{\sum_j \frac{1}{d_{ij}}}$$

300km radius
Inverse-distance weighted average of neighboring districts' IPC values within 300km radius

Example calculation:
Weights: 1/100 + 1/150 + 1/200 + 1/250
Weighted IPC: Σ(weight × IPC)
$\mathbf{L_s} = 3.17$

Legend:
- Target district (predict IPC)
- Neighboring districts (known IPC)
- 300km inclusion radius

AR baseline uses ONLY autoregressive features (lagged dependent variable IPC): Lt (single first-order temporal lag: IPC at t-1) and Ls (inverse-distance weighted average of neighboring districts' IPC within 300km radius). ZERO external covariates (no climate, conflict, news, prices). This enables measuring marginal value of any feature-based approach beyond pure spatio-temporal persistence. Performance: AUC-ROC = 0.907, Precision = Recall = 0.732 using Lt + Ls alone.