Maze Shaping Report (No-Slip Setting)

February 13, 2026

1 Setup

This report summarizes reruns after removing action slip (deterministic transitions except wall blocking). Common settings: SARSA, 500 episodes, 12 runs, $\alpha = 0.02$, $\epsilon = 0.10$, $\gamma = 1.0$, max steps 350, validation every 25 episodes (30 greedy rollouts).
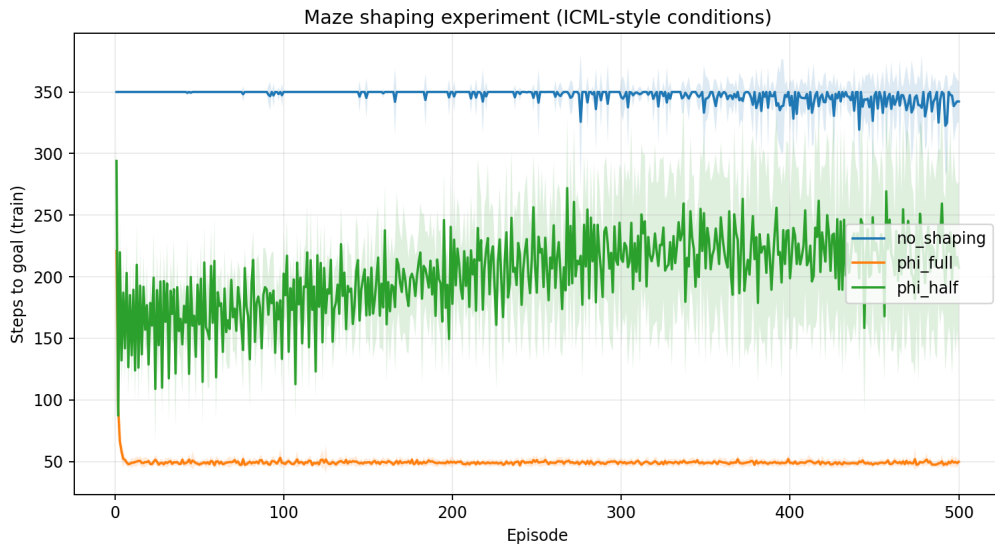
2 No-Slip Results: BFS Potential

Figure 1: BFS potential: training curve (no-slip).

3 No-Slip Results: Manhattan Potential

4 Final Episode Summary (Episode 500)

5 Takeaway

Removing slip made the environment easier, and BFS-based `phi_full` reached stable success (1.0) with near-shortest validation steps (44). Manhattan-based shaping still improved training steps versus no shaping but did not produce successful greedy validation under this budget.
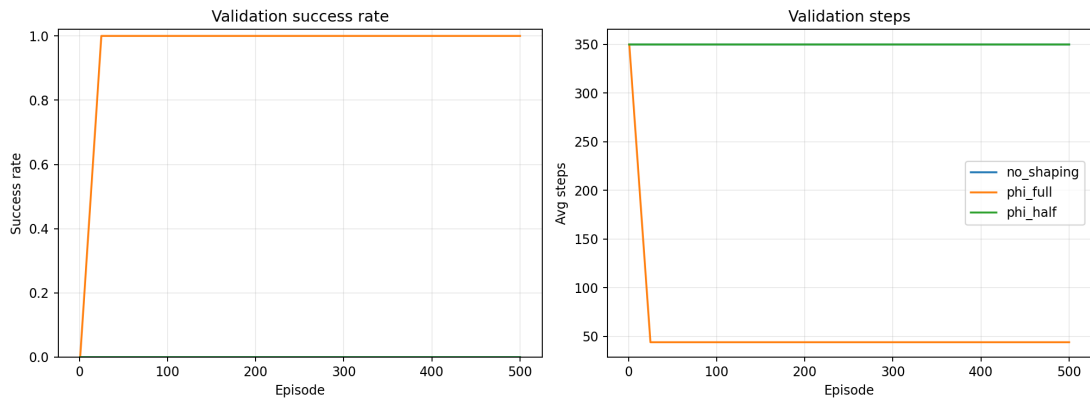
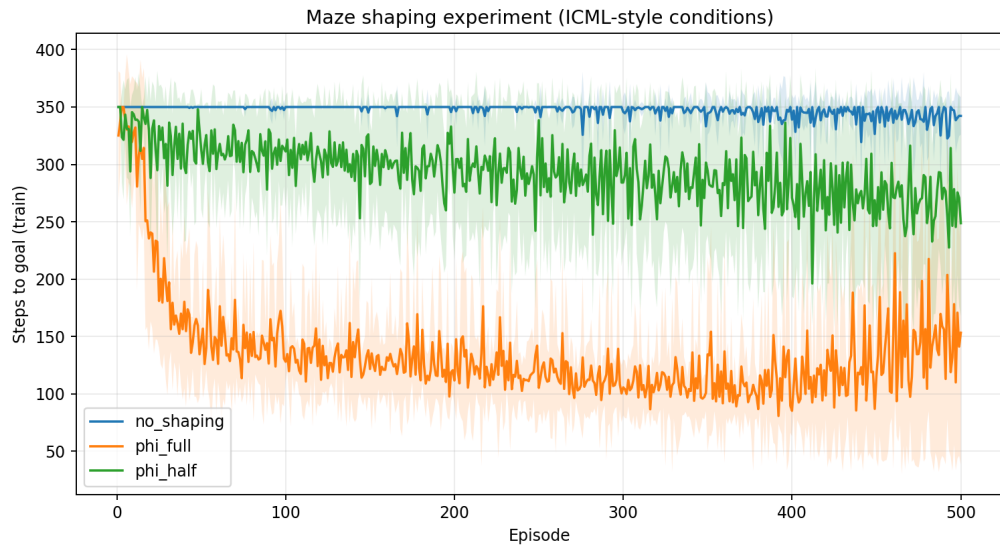Figure 2: BFS potential: validation progress (no-slip).

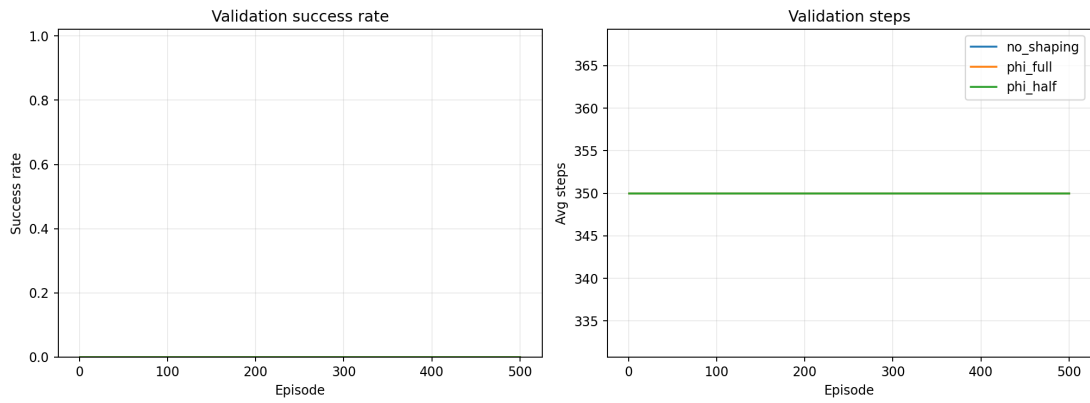Figure 3: Manhattan potential: training curve (no-slip).

Figure 4: Manhattan potential: validation progress (no-slip).

Potential	Condition	Train mean steps	Validation success	Validation mean steps
BFS	no_shaping	342.25	0.0	350.0
BFS	phi_half	207.33	0.0	350.0
BFS	phi_full	49.75	1.0	44.0
Manhattan	no_shaping	342.25	0.0	350.0
Manhattan	phi_half	248.75	0.0	350.0
Manhattan	phi_full	153.25	0.0	350.0

Table 1: No-slip rerun results at episode 500.