

# AI-Powered Urban Traffic Optimization – Evaluation Dashboard

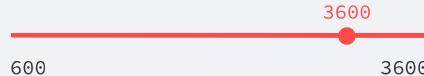
This dashboard compares **Fixed-time** vs **AI (GNN-A2C)** traffic signal control on your SUMO network.  
All metrics are collected live from the simulation via TraCI.

Simulation(s) completed.

## Simulation Settings

Simulation steps

3600



Run Fixed-time baseline

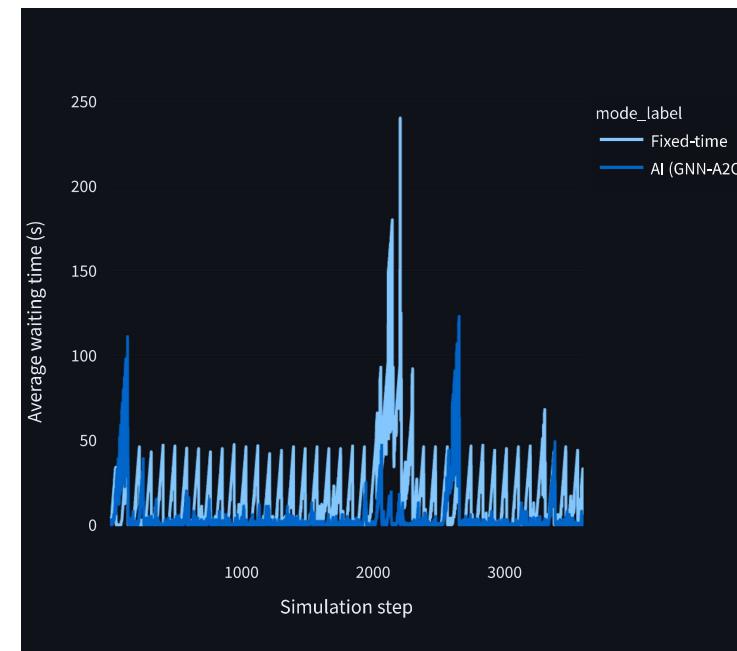
Run AI (GNN-A2C)

Run simulations

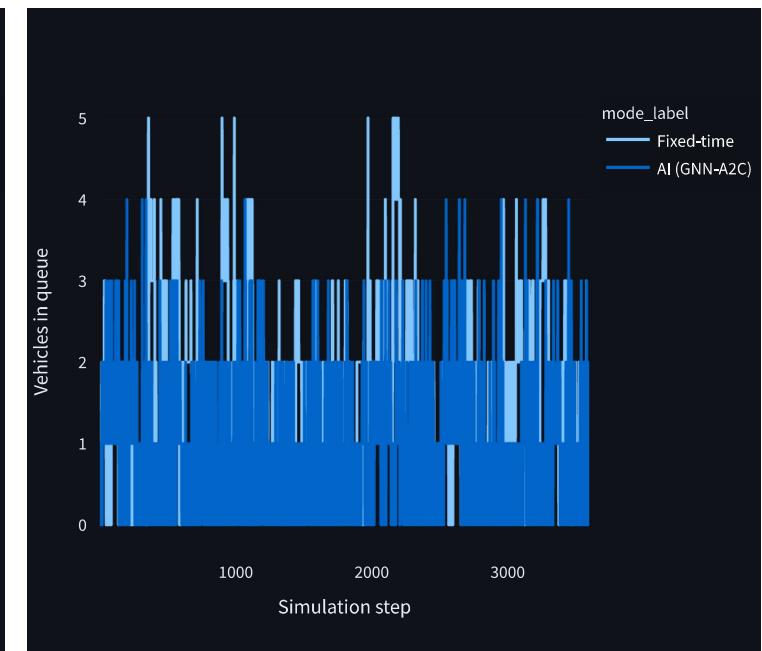
Longer episodes give smoother trends but take more time.

## Global Episode Metrics

Average waiting time over time



Total queue length over time (vehicles in queue)



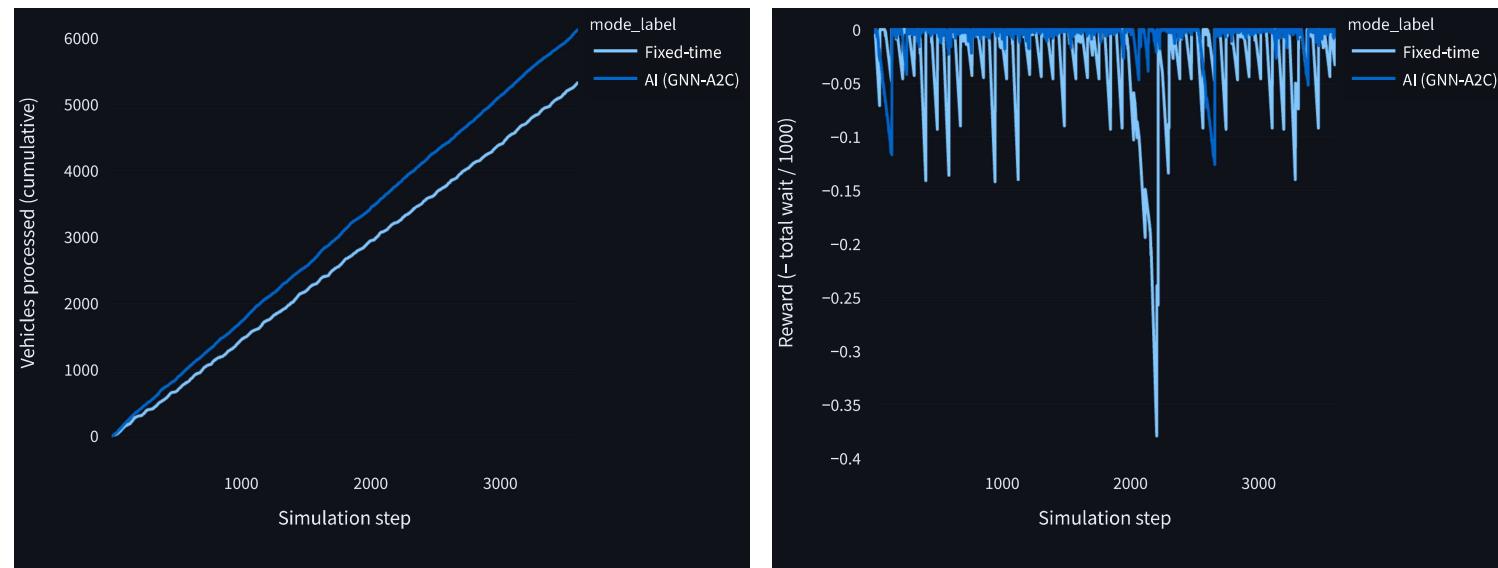
Vehicles processed over time



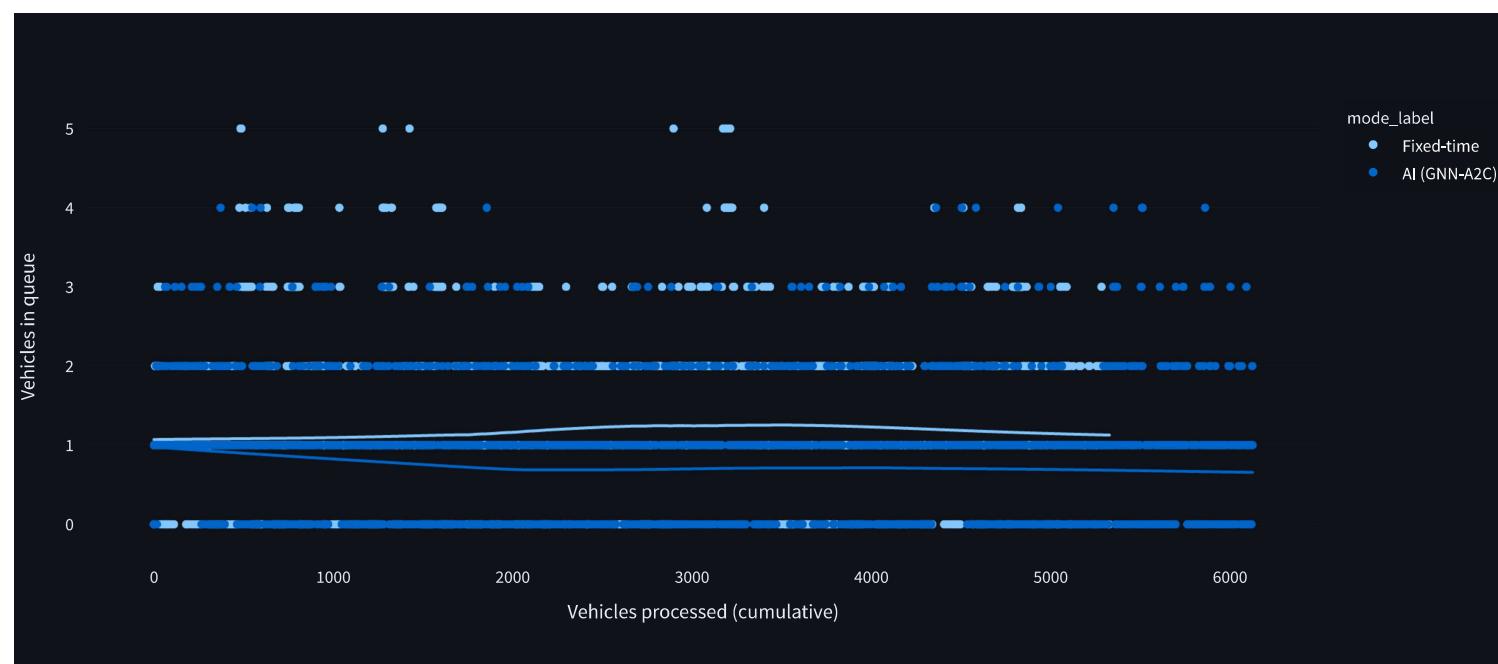
Reward trend over time



## Traffic Optimization Dashboard



## Queue vs Processed Vehicles



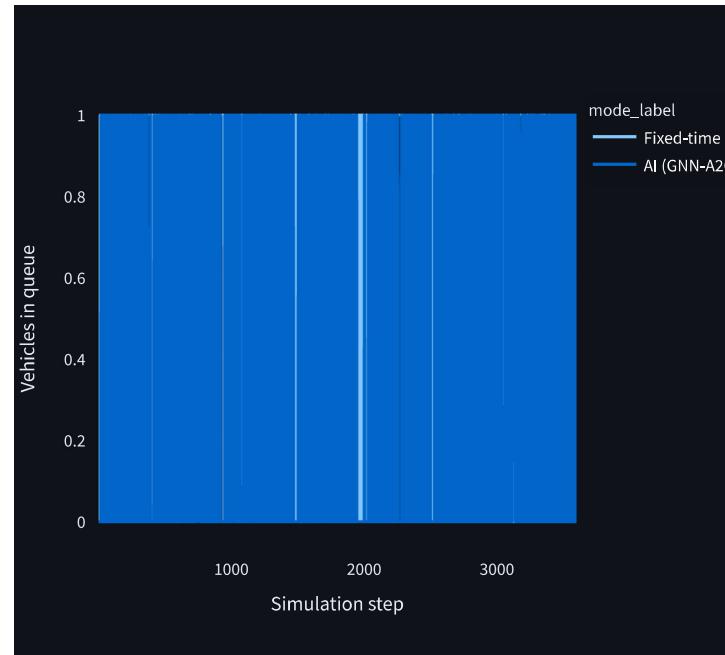
## Intersection-level Performance (per TLS)

Select traffic light signal (TLS):

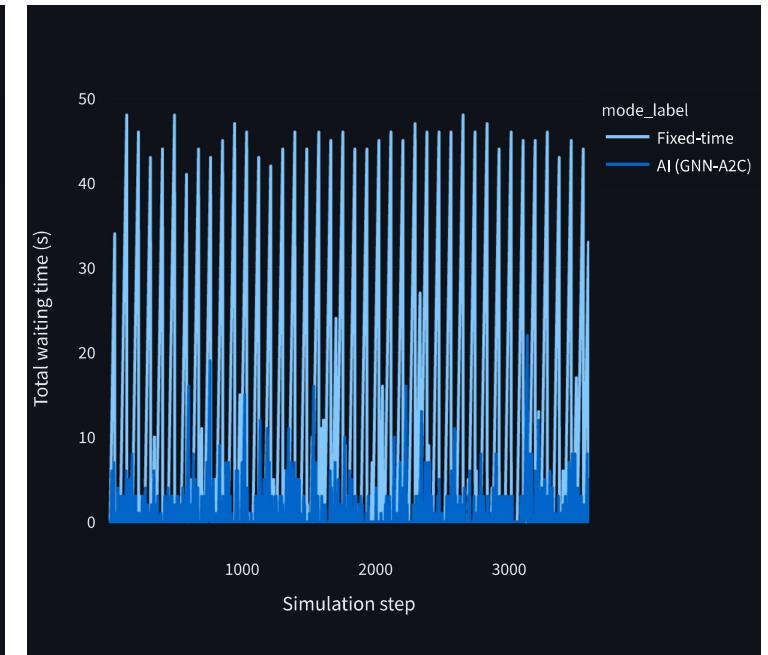
1234828897



Queue length over time – 1234828897

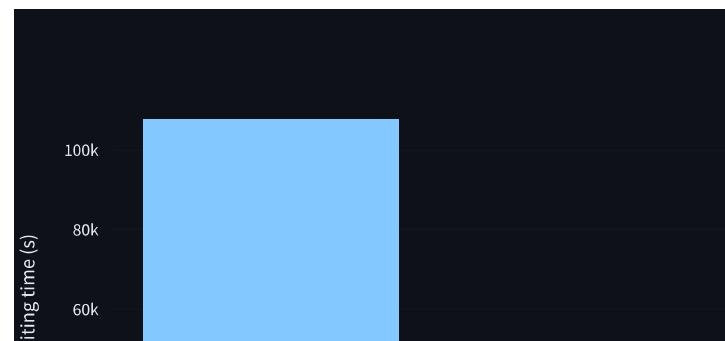


Waiting time over time – 1234828897

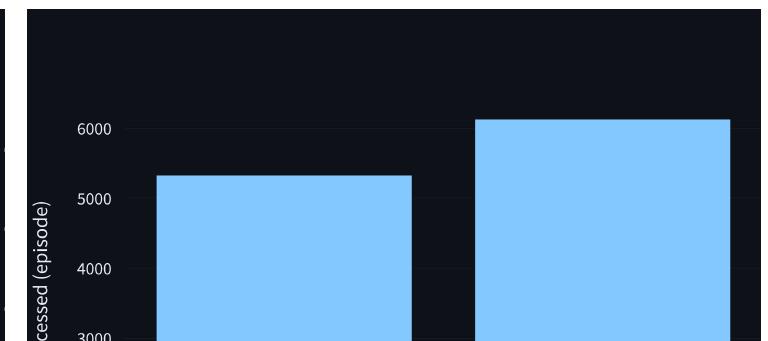


## Fixed vs AI – Episode-level Comparison

Total waiting time (lower is better)



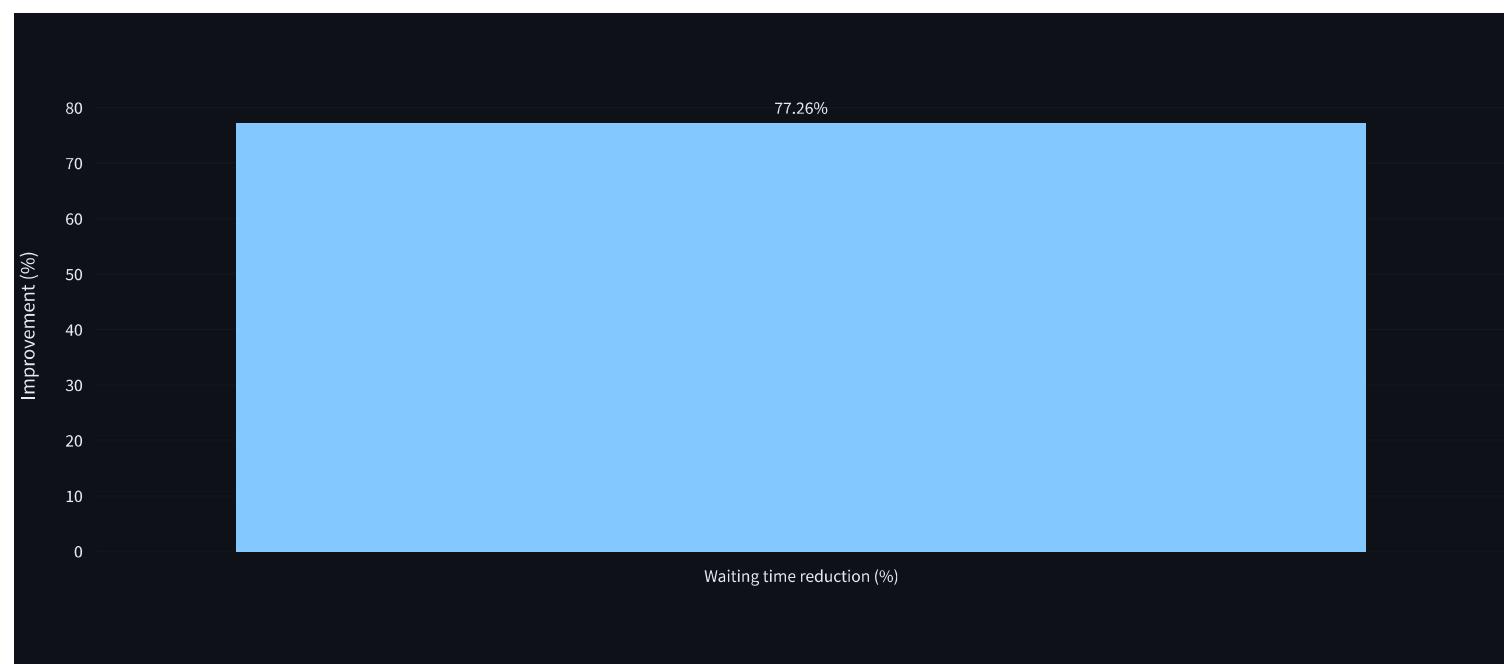
Total vehicles processed (higher is better)



## Traffic Optimization Dashboard



## Overall Improvement of AI over Fixed-time



Estimated waiting time reduction of AI vs Fixed-time: 77.26%

## Download Metrics as CSV

Global metrics (all controllers)

Download global metrics CSV

TLS-level metrics (all controllers)

Download per-TLS metrics CSV

