# 1. Create Pseudo-Truth Data

$p_1$

$p_2$

$\vdots$

$p_n$

Model and agent parameters are fixed for all experiments

Pedestrian Model

Truth Data
Locations of agents at each time step
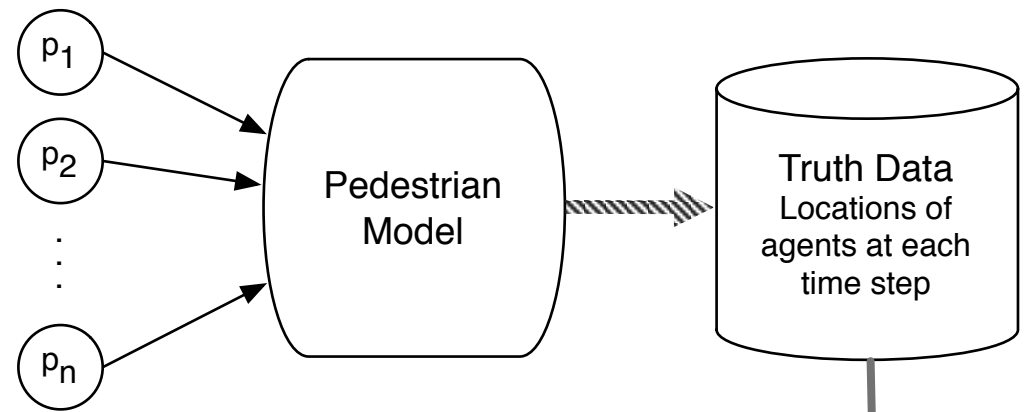
# 2. Data Assimilation Framework

Prior estimates of the system state are generated by running the model multiple times

Posterior state estimates are generated by the probabilistic model using MCMC sampling

Forecasts should have improved accuracy

Pedestrian Model

| $x1$ |
| $y_1$ |
| $x2$ |
| $y_2$ |
| . |
| . |
| $x_N$ |
| $y_N$ |

*Prior* state vector

Observe Truth Data and Run Probabilistic Model

| $x1$ |
| $y_1$ |
| $x2$ |
| $y_2$ |
| . |
| . |
| $x_N$ |
| $y_N$ |

*Posterior* state vector

Pedestrian Model

| $x1$ |
| $y_1$ |
| $x2$ |
| $y_2$ |
| . |
| . |
| $x_N$ |
| $y_N$ |

Forecast

t-1

t

t+1

Previous time period

Current time period

Forecasts