Light pollution is affecting our environment, biodiversity, biological clock, etc. Regarding this issue, we mainly need to solve three problems in our paper: establish a model to measure the light pollution, propose policies to reduce light pollution and evaluate the effectiveness of our policies.

In order to build a model that can be applied to access the light pollution in all locations, we selected some indicators to reflect the night-light intensity to evaluate the light pollution. After determining the index system, we use the improved Entropy Weight Method(EWM) to calculate the weights of indicators. Then, we use Technique for Order of Preference by Similarity to Ideal Solution(TOPSIS) to calculate the score of night-light intensity. We apply our model to four types of locations: urban communities, suburban communities, rural communities and protected land locations. In the application to 12 selected states, results are all in line with the reality.

Then, we propose three types of policies to reduce light pollution and apply them to two selected locations: California and New York. Our strategies aim to adjust selected indicators data, so it’s operational and intuitive.

To evaluate the effectiveness of our policies, we select two positions: California and New York to implement our strategies. With our tailored strategy implementation, light pollution in both of them has been alleviated to some extend as shown in our model results.

Finally, we carry out a sensitivity analysis of the evaluation model, demonstrating the robustness of our models. We also evaluate and extend the model.