To simplify the problem, we make the following basic assumptions, each of which is properly justified.

Assumption 1: We assume all the light pollution is from night-time light, so we just need to consider night-time light intensity. [[1]](#endnote-0)

Justification: According to the Wikipedia, the definition of light pollution is the presence of [anthropogenic](https://en.wikipedia.org/wiki/Anthropogenic_hazard" \o "Anthropogenic hazard) artificial light in otherwise dark conditions.

Assumption 2: Citizens didn’t take deliberate action to reduce the light-pollution.

Justification: To simplify the problem, we didn’t take people’s awareness of light-pollution into account.

Assumption 3: Night-time light intensity is closely related with economics.

Justification: Fractional logit models show that, similar to other types of pollution, both population and GDP are significant explanatory variables.[[2]](#endnote-1)

Assumption 4: We ignored the differences of light colors.

Justification: It’s hard for us to get the using percentage of each light color.

1. https://en.wikipedia.org/w/index.php?title=Light\_pollution&oldid=1138318392 [↑](#endnote-ref-0)
2. https://www.sciencedirect.com/science/article/abs/pii/S0921800909004121 [↑](#endnote-ref-1)