We can think of this as a difference in difference design across ADM2s, where COVID is the intervention, and we're identifying the causal effect of COVID on night lights. We specify COVID with an "after-March" variable. [*change this? as opposed to using COVID stringency indices, since COVID stringency indices would be associated with your country's level of development.]*

First, we take the difference between night lights / area in prior years (same month). Then, we compare those differences across years: (table below).

	Average of Differences in Log VIIRS (cleaned) / area (e.g. Jan 2020 minus Jan 2019)		
Year	Before March	After (and including) March	Difference in Before and After March
2015	0.3	-0.05	-0.35
2016	-0.48	-0.04	0.44
2017	0.5	0.61	0.11
2018	0.09	-0.03	-0.12
2019	-0.08	-0.03	0.05
2020	-0.03	0.15	0.18

We find that in 2020, COVID *increased* the post-March difference in night lights. This is evidence that night lights, without ADM2 fixed effects, is a poor indicator of growth.

Then, we regress these differenced logs at the ADM2 level, with ADM2 fixed effects (excuse my poor econometrics), year dummies, and after-March dummies.

VARIABLES	(1) Diff. Log VIIRS (cleaned) pixels / area
after March	-0.338***
	(0.002)
year 2016	-0.761***
	(0.005)
year 2017	0.223***
	(0.003)
year 2018	-0.212***
	(0.003)
year 2019	-0.382***
	(0.003)
year 2020	-0.325***
	(0.003)
2015: after March	0.000
	(0.000)
2016: after March	0.766***
	(0.005)

2017: after March	0.431***
	(0.004)
2018: after March	0.220***
	(0.003)
2019: after March	0.388***
	(0.003)
2020: after March	0.510***
	(0.003)
Constant	0.295***
	(0.002)
Observations	3,135,361
ADM2 Regions	46119
Adjusted Within R-squared	0.140

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Again, we find that after March in 2020 had a *larger* difference compared to 2019, etc., even with ADM2 fixed effects, and allowing for differences in levels across years. This indicates that night lights are once again a poor indicator of growth.