Assumptions/Methods:

Choose 2013 MacBook vs 2019 Macbook due to students being less likely to update computers

Users didn't shut down laptop completely after use in order to keep programs running

During in person instruction 40% of kids used laptop computer for notes in class, 40% wrote notes by hand, and 20% are not taking any form of notes

Main equation:

$$E_c = \sum \left(P_{c,i} \times t_{c,i} \times d_{mth} \right)$$

Results/Conclusion:

27.52 kg CO_2e per month per student during online instruction

23.91 kg CO2e/ month per student during in person instruction

Surprisingly online instructions produced more CO2 emissions than the in-person instruction

Online courses can create around **120g of CO$_2$** emissions from laptop computer use at home **per day** per student

Supplemental Information

Carbon footprint for online vs in-person instruction.

C. Cortes, E. Spaletta, L. Sullivan, S. Rocklin, T. Elenberger, & V. Kizirian

Motivation:

COVID19 pandemic has moved all in-person instruction to online instruction

To compare the emissions between online and in-person instructions

Analyze the change in laptop usage and the effects it has on Climate Change

Look at the Positive vs Negative implications in switching to online instruction