Impacts of the COVID-19 Shutdown on BU Energy Use

How Covid-19 Has Changed The Way Americans Use Energy

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Energy
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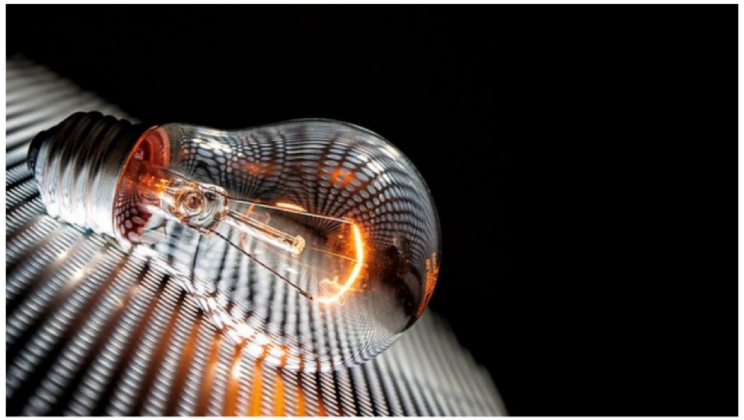
COVID-19: America hasn't used this little energy in 16 years

14 Apr 2020

Scott DiSavino
Reporter, Thomson Reuters

COVID-19 is changing residential electricity demand

By **Scott Hinson** - 4.9.2020

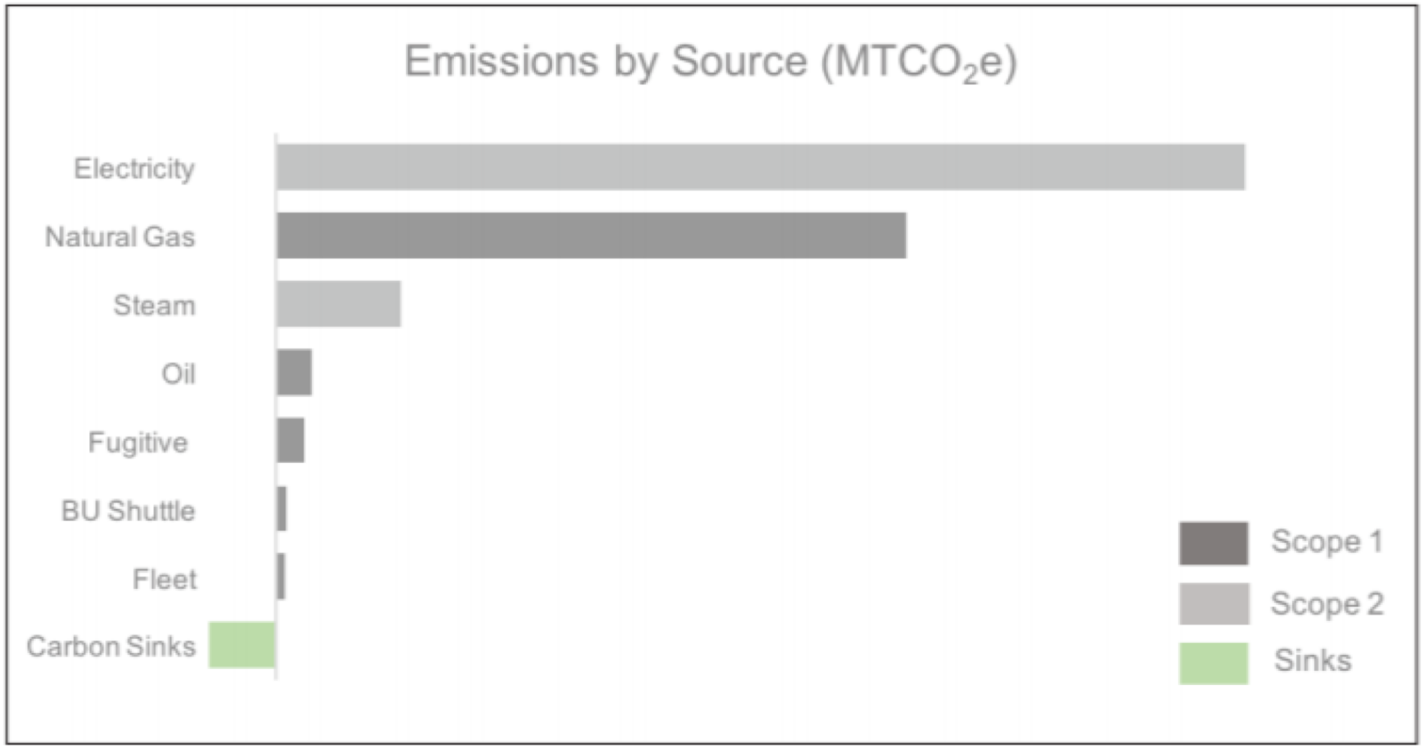


BU energy use sources

- **Problem:** emissions of greenhouse gases are causing climate change and a large portion of these emissions come from our energy usage

- **Goal:** establish ways to decrease energy use by determining how our behaviors affect electricity and gas use

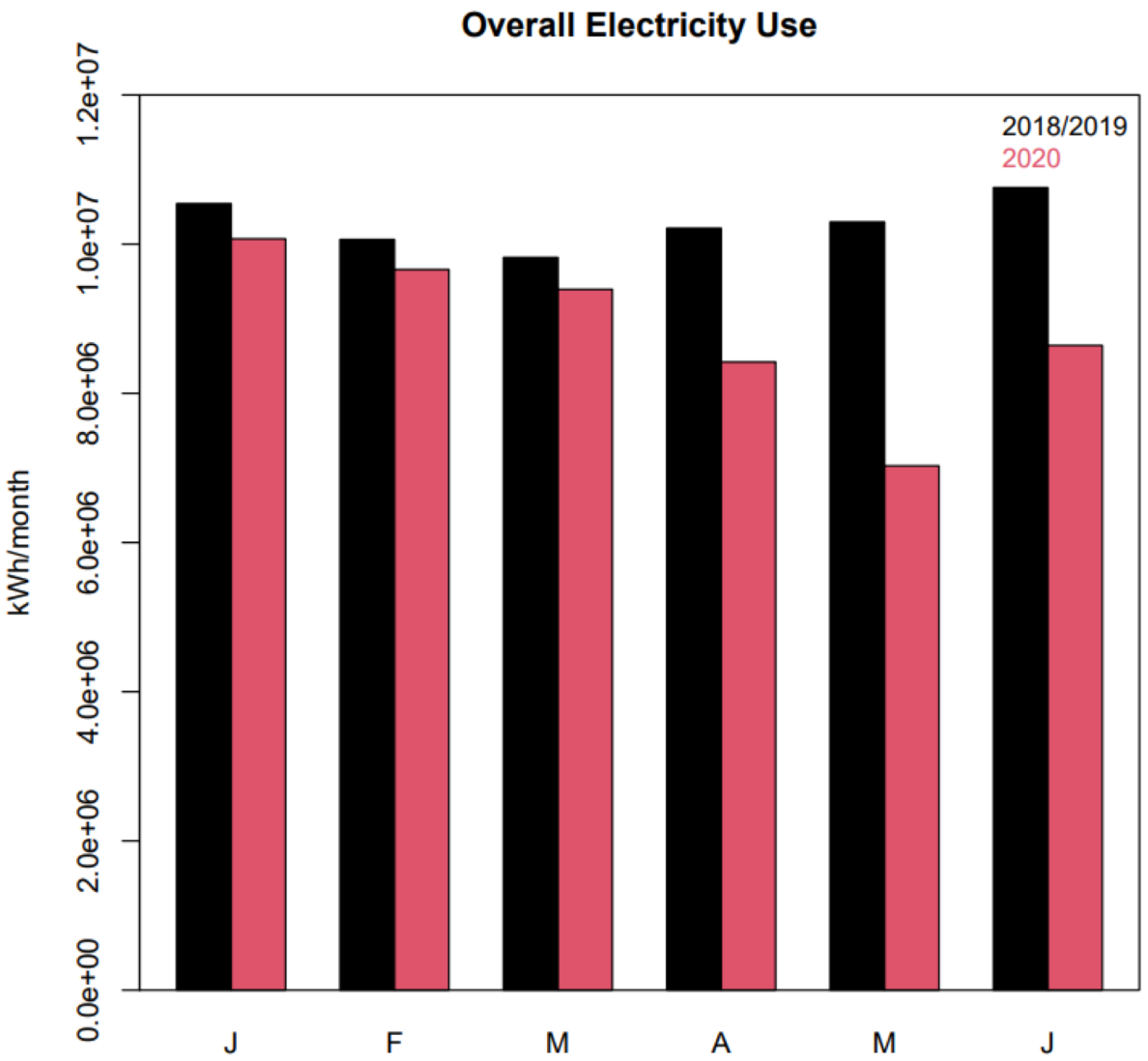
FIGURE 5: CURRENT BU EMISSIONS BY SOURCE



Boston University's Climate Action Plan

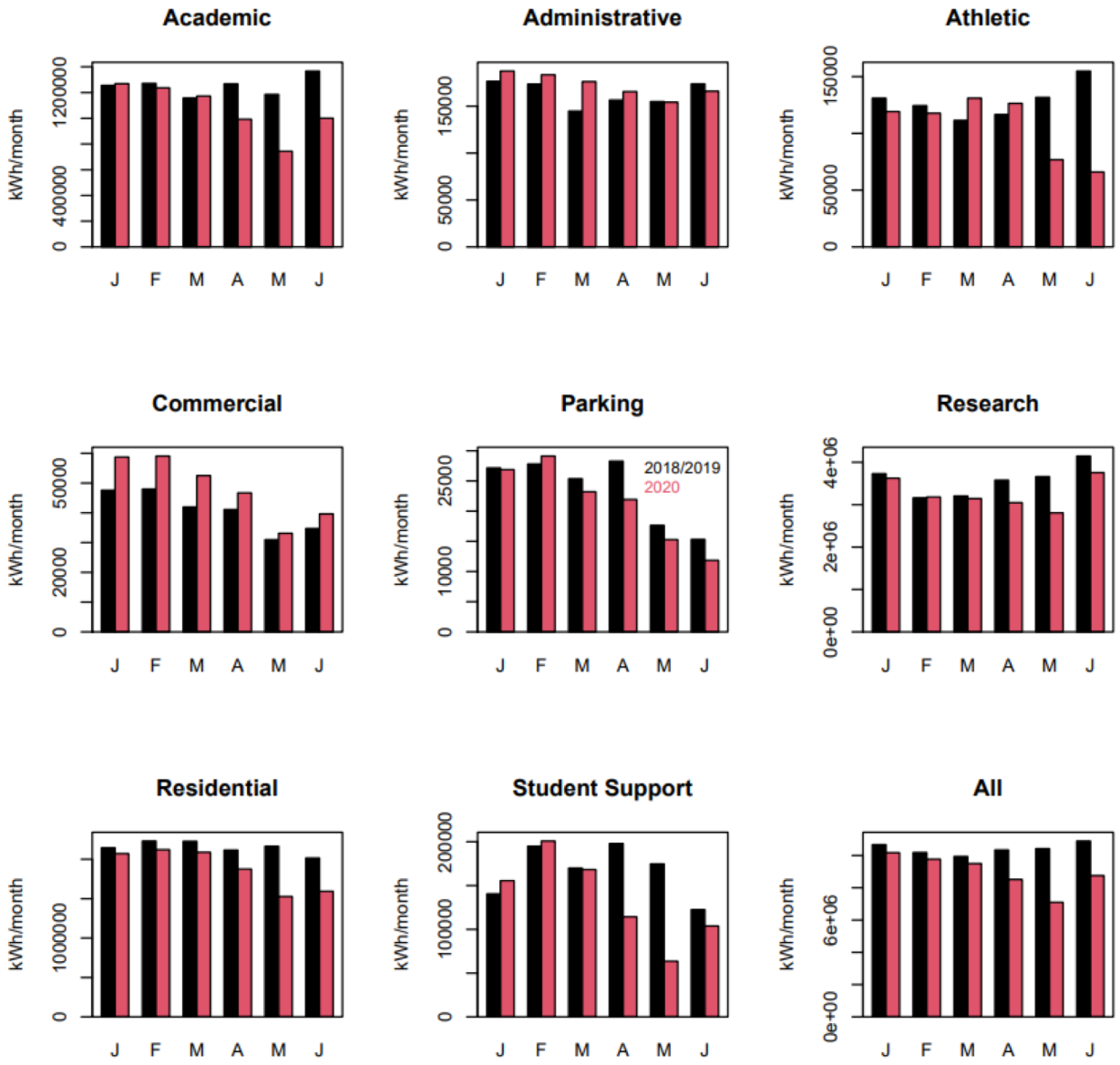
Electricity Use During COVID

- COVID-19 lockdown began March 24, 2020
- Research continued at BU in June
- January-March: -4.28%
- April-June: -22.99%



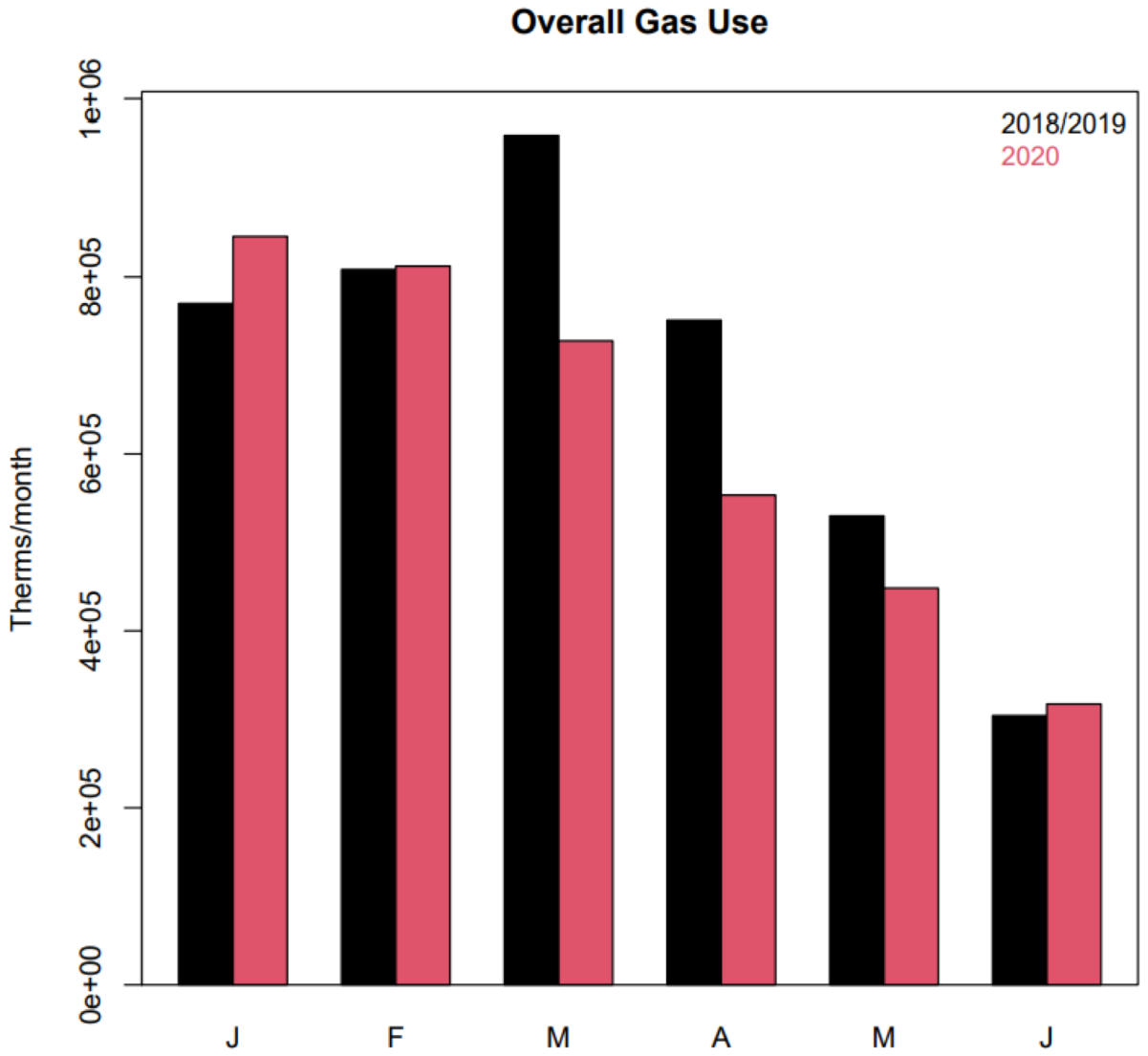
Electricity Use During COVID

- Student centric buildings saw the largest declines (April-June)
  - Student support: -40.35%
  - Athletic: -28.42%
- Buildings that had less of a shutdown had little to no decline (April-June)
  - Commercial: 11.59%
  - Administrative: 0.28%
- Residential buildings shutdown but only had a -20.57% decline (April-June)



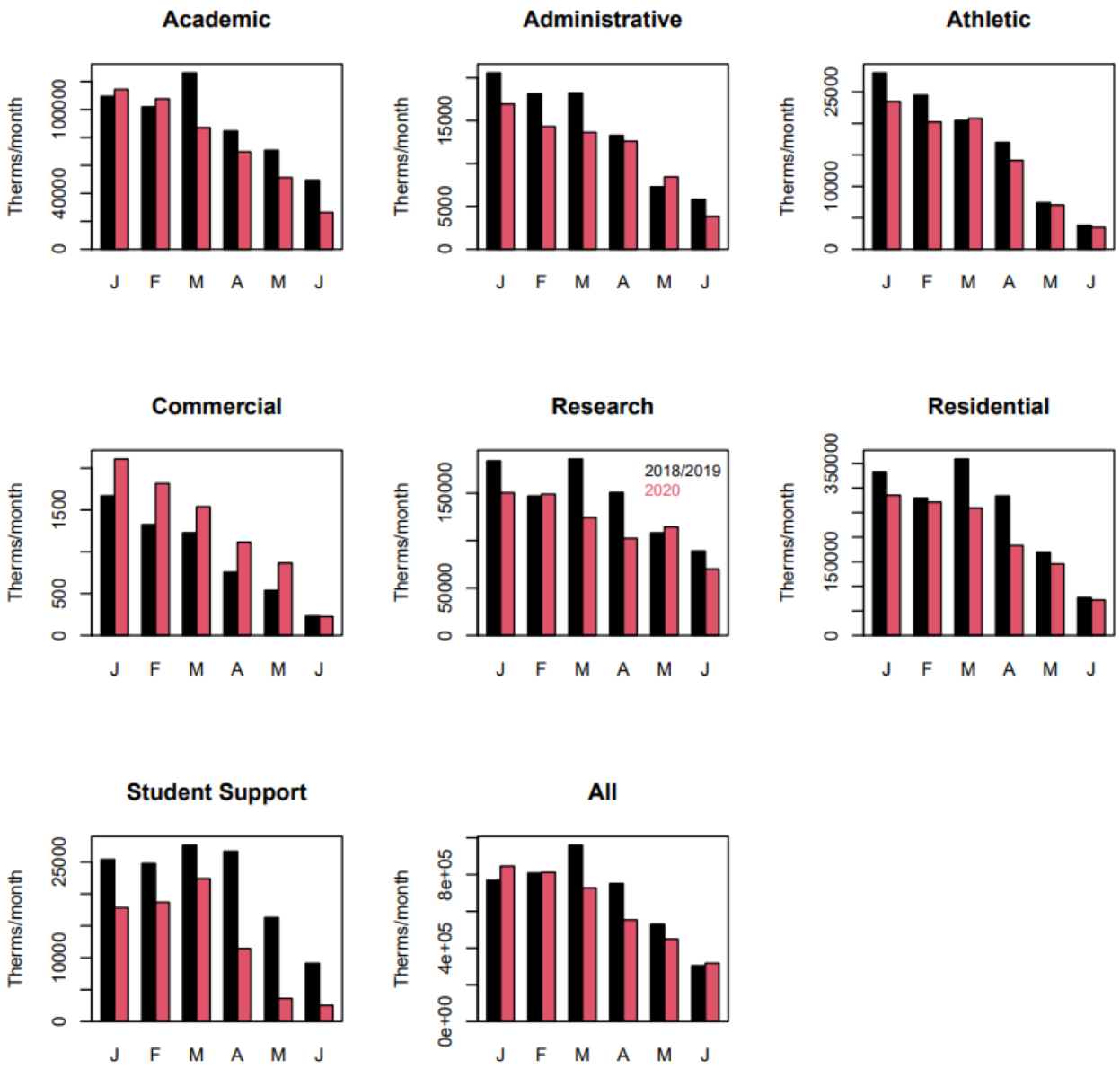
Gas Use During COVID

- COVID-19 lockdown began March 24, 2020
- Research continued at BU in June
- January-March: -4.62%
- April-June: -12.48%
- This is a smaller decline than seen in electricity
  - Gas use is largely controlled by thermostats rather than electronics



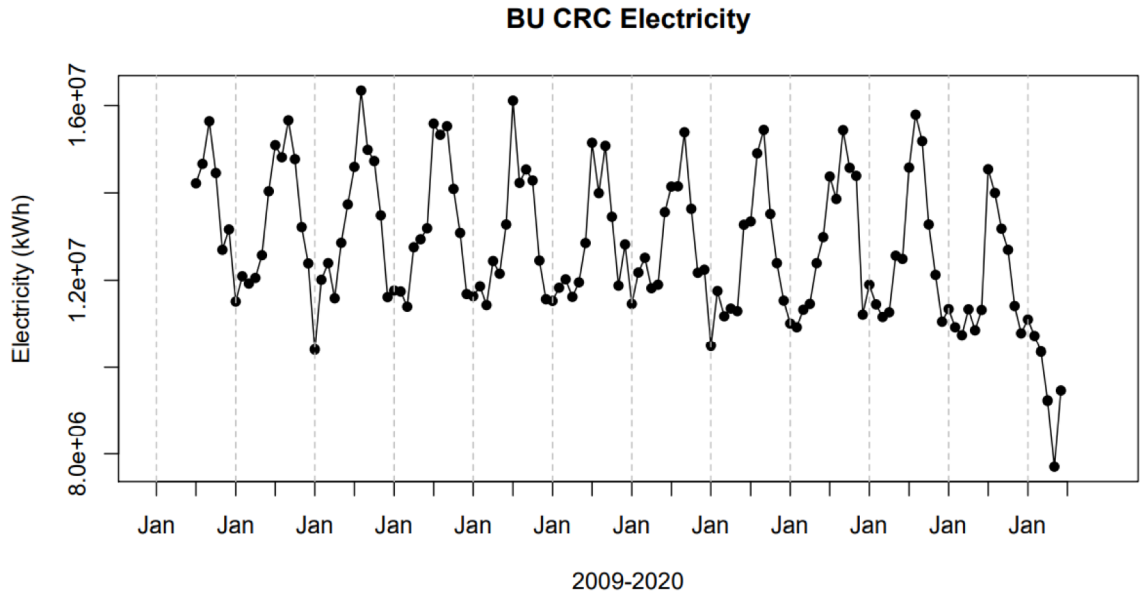
Gas Use During COVID

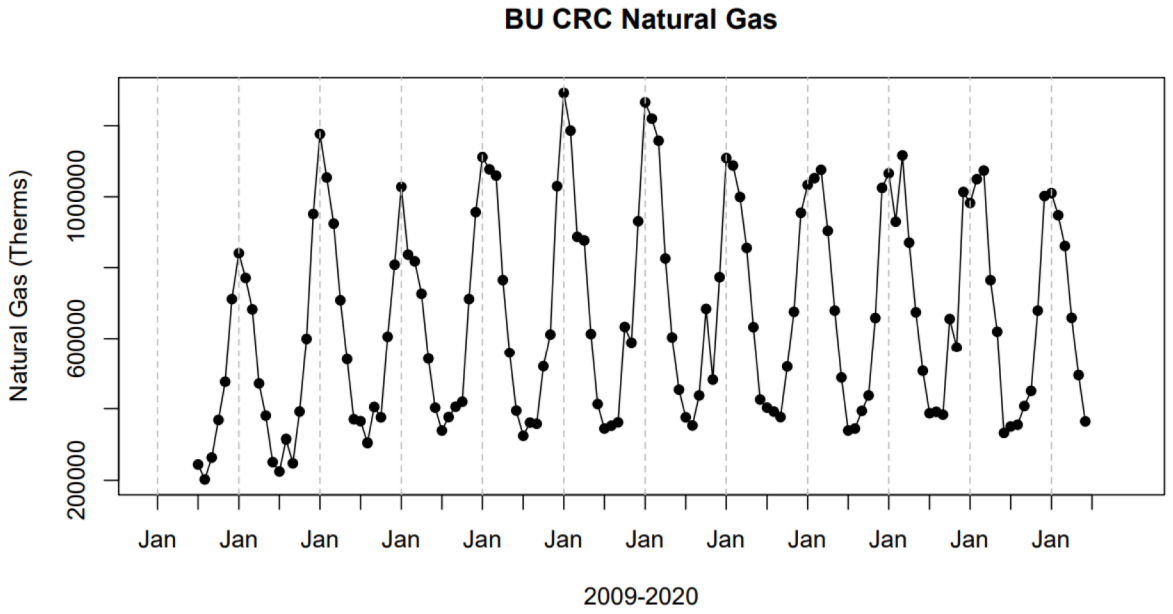
- Student centric buildings saw the largest declines (April-June)
  - Student support: -68.95%
  - Athletic: -10.21%
- Buildings that had less of a shutdown had little to no decline (April-June)
  - Commercial: 35.02%
  - Administrative: -7.91%
- Residential buildings shutdown but only had a -18.64% decline (April-June)



Seasonality and Temperature Influence on Energy Use

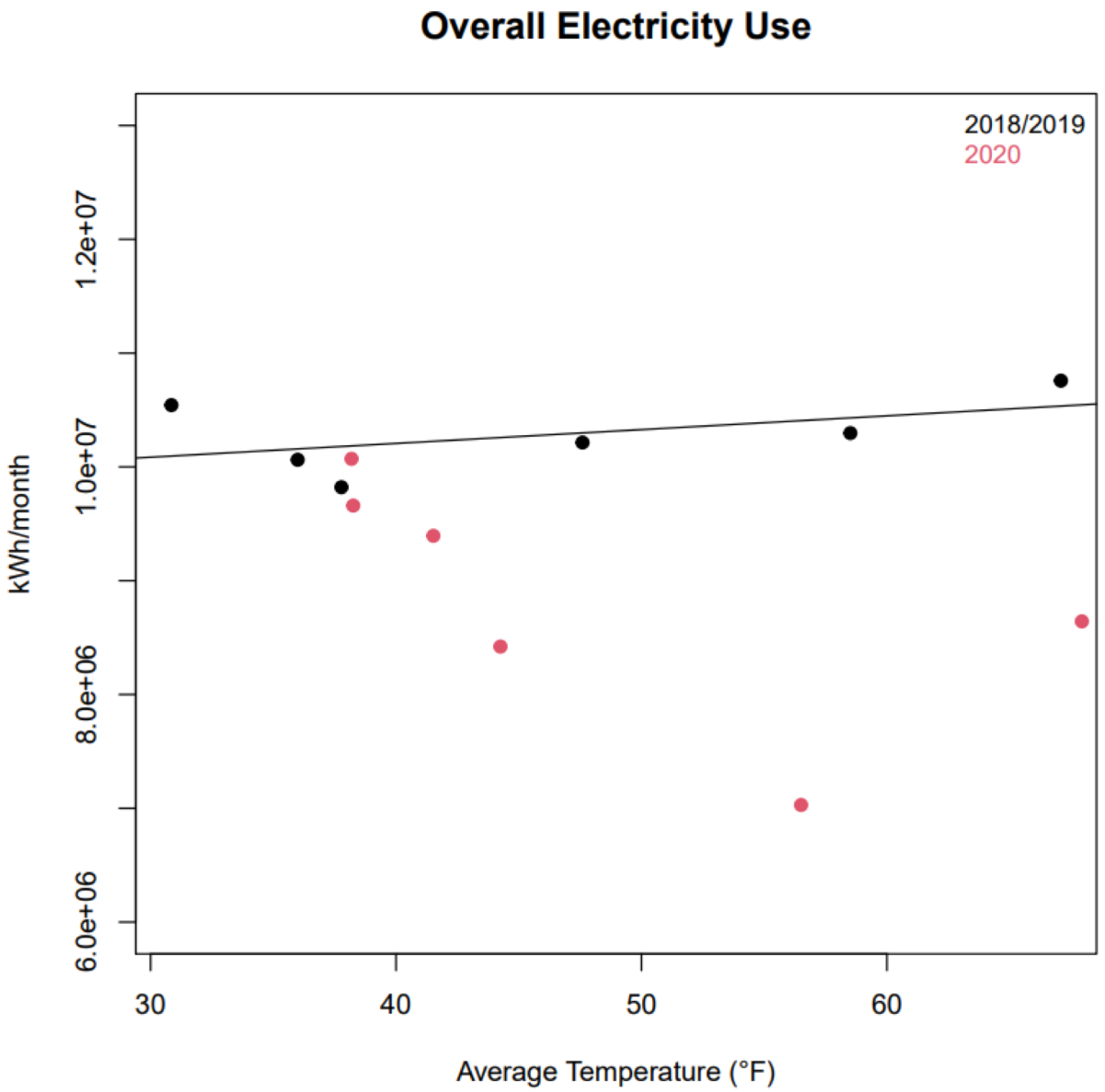
- Both electricity and gas use contain seasonal cycles related to temperature and human behavior
- Gas use is highest in the winter primarily due to heating
- Electricity use is highest in the summer primarily due to air conditioning





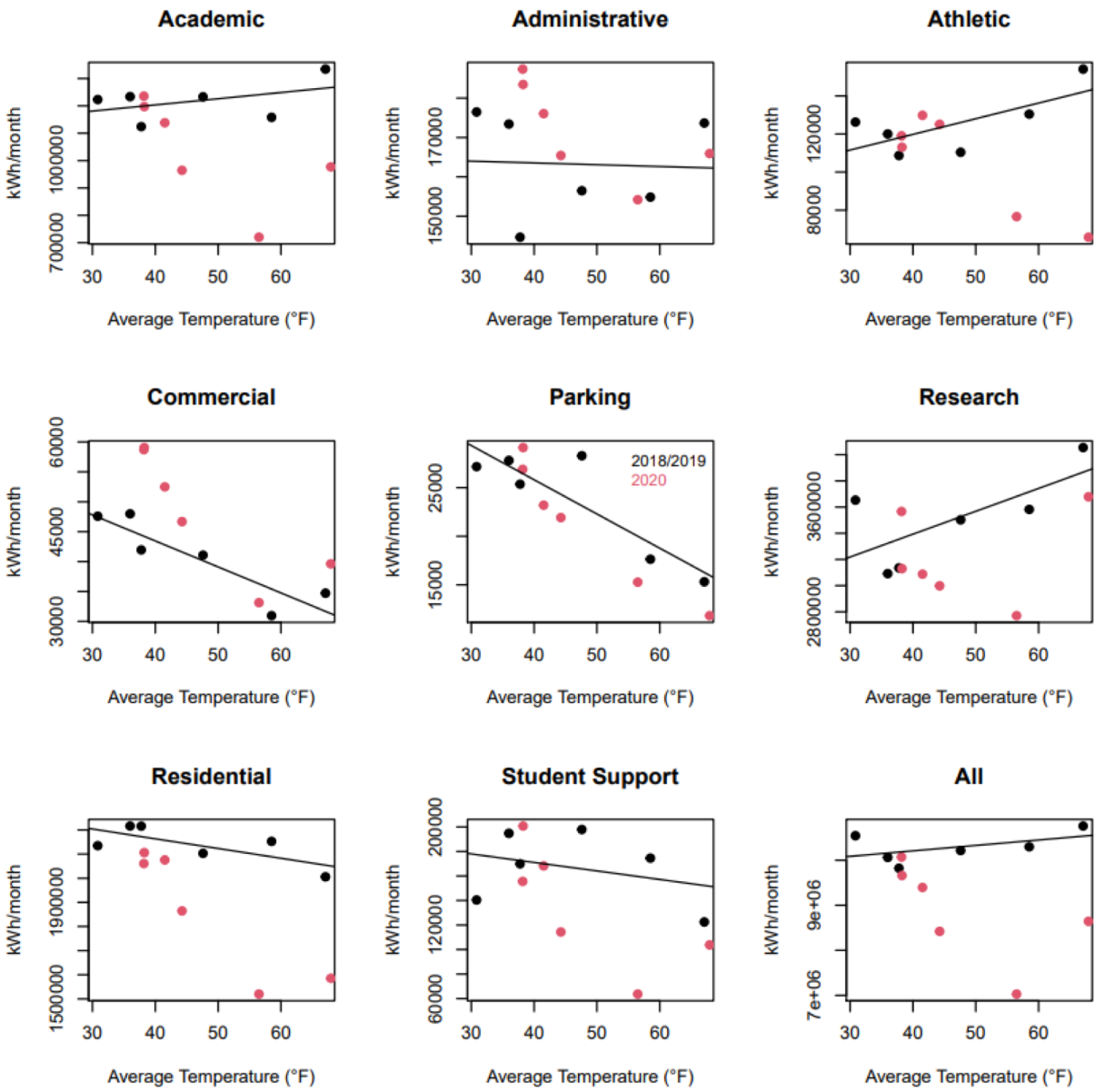
Electricity Use and Temperature

- The trend in electricity was largely unaffected by temperature



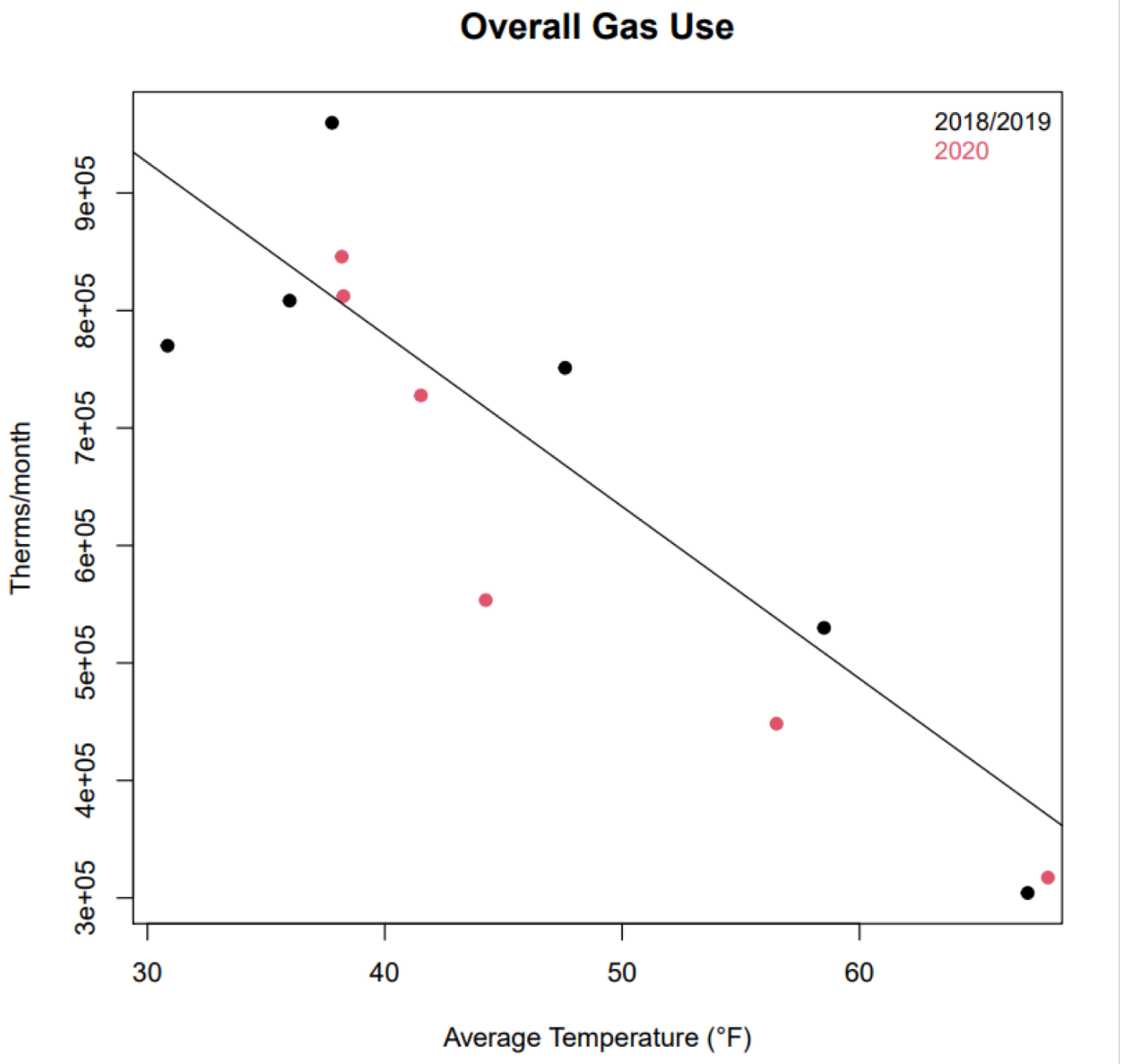
Electricity Use and Temperature

- Student centric buildings saw the largest declines
  - Student support
  - Athletic
- Buildings that had less of a shutdown had little to no decline
  - Commercial
  - Administrative



Gas Use and Temperature

- The trend in gas was affected by temperature
- Gas use is largely controlled by thermostats



Gas Use and Temperature

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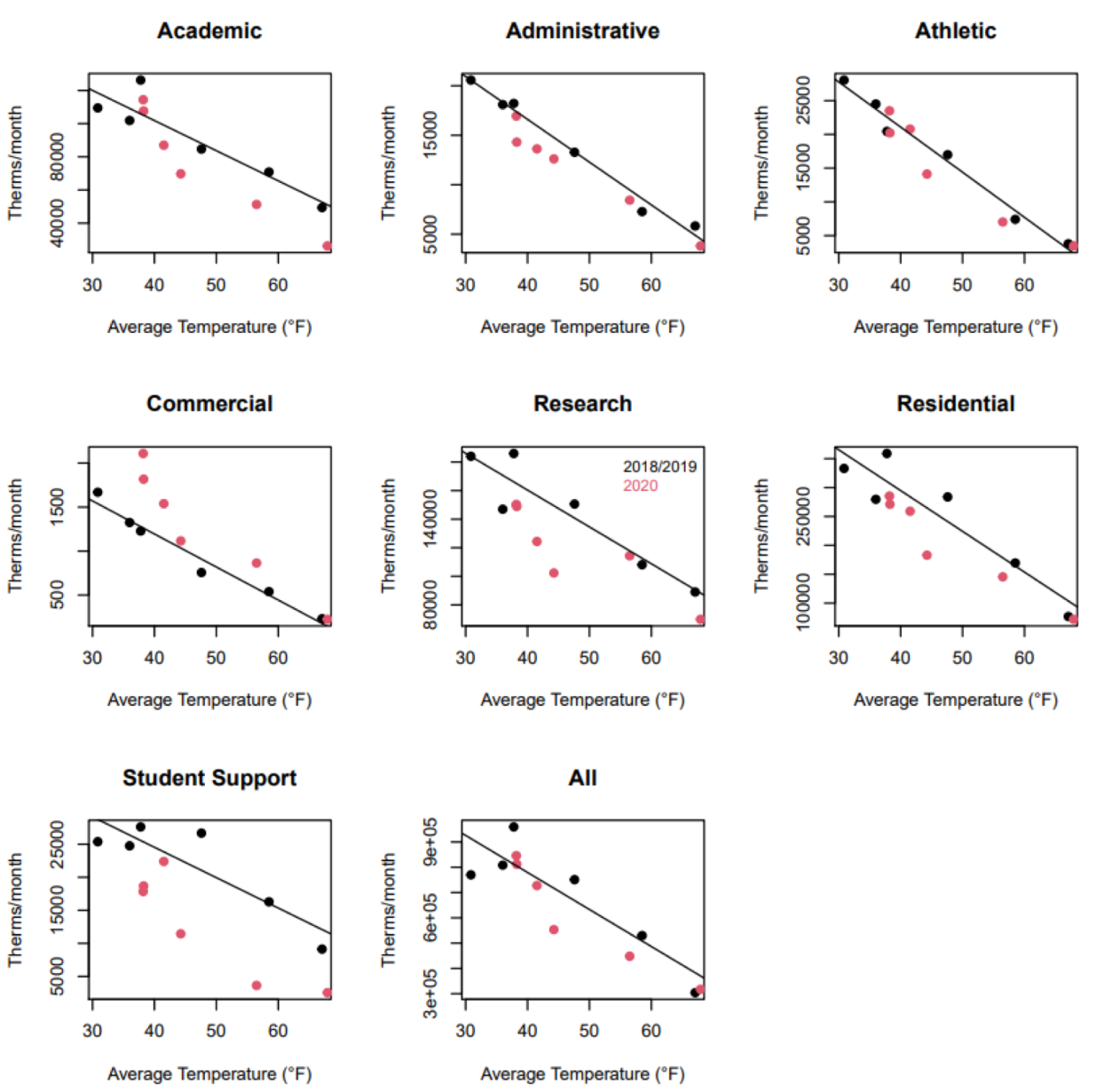

Lessons Learned & Next Steps

"For the University to reduce emissions over the long term, **it is necessary to reduce demand** while sourcing energy through clean renewable resources. While reducing the energy demand of 15 million square feet will take time and **require a continuous effort**, it is critical to begin to address the source of our energy as soon as possible."

- Learned from COVID about how our actions influence energy use
  - Globally only a 7% decrease in GHG emissions

  (University of East Anglia, University of Exeter, and the Global Carbon Project)

- Challenges and opportunities for emissions reduction during moments of lower occupancy

- Next steps: Extend the energy use analysis through 2020 and 2021, taking changes to HVAC systems into account