



Carbon Reduction Challenge: "EMISSION DEMOLITION"

Adrianna Fu



Overview

Recommendations & savings

- Add “most sustainable” notation to UPS.com ground shipping options
- Implement 4 days/week work-from-home (WFH) policy after COVID-19 for 3,350 Atlanta employees



Carbon Reduction
34,180,000 lbs. annually

Work From Home: 9,280,000 lbs.
“Most Sustainable” Option: 24,900,000 lbs.



Cost Savings
\$1,183,000 annually

Gas savings for ATL UPSers
working from home 4 days/week

Background

Summer 2020 intern with
UPS Healthcare IT



Challenge prompt– work with Georgia
Tech professors to help UPS create a
more sustainable "business-as-usual"

UPS is committed to sustainable
solutions and growth for customers
and employees



Motivation

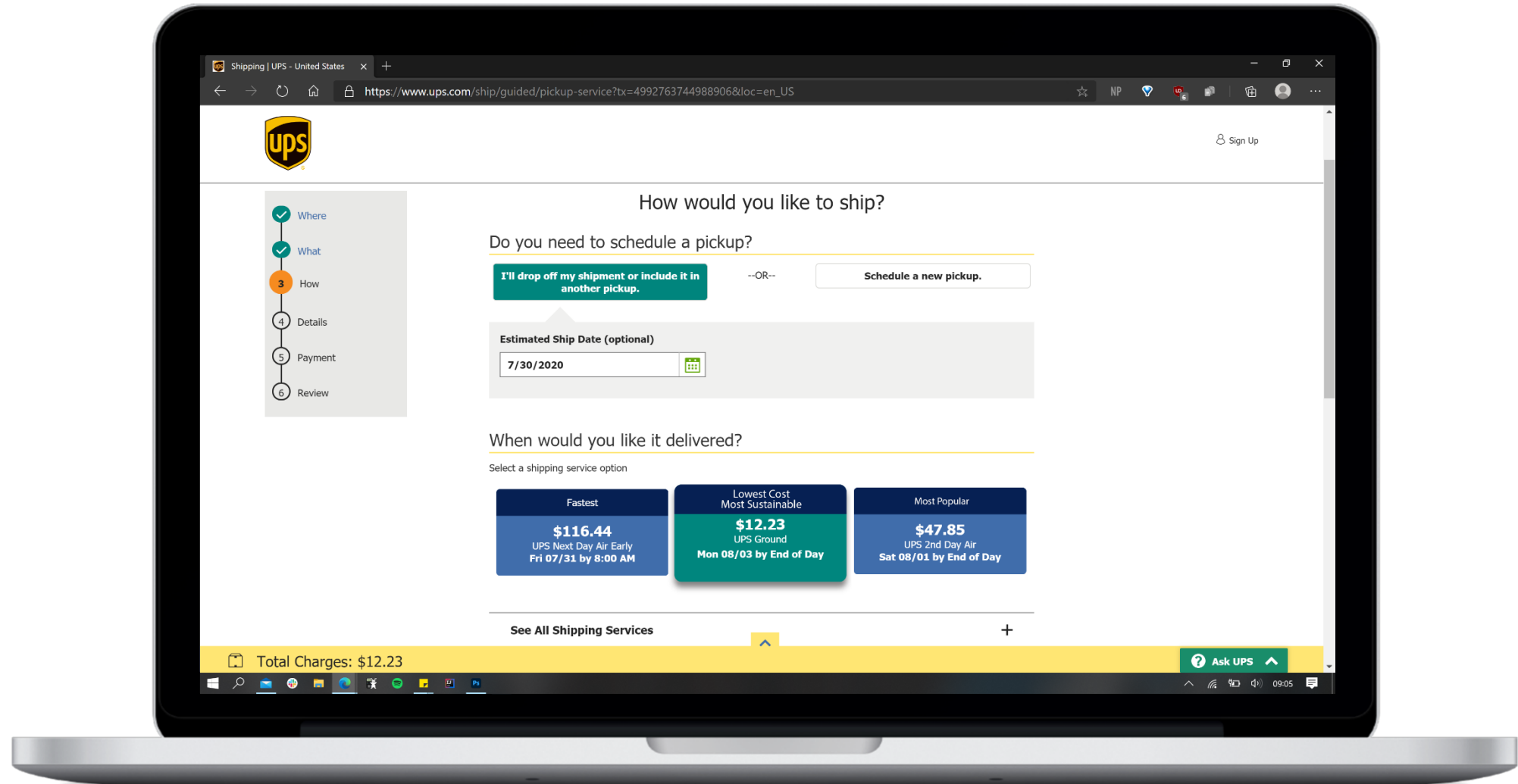


Identify savings since COVID-19
from working from home

UPS.com recommends air as the
default delivery option. What if it
was ground instead?



UPS.com Shipping Options Mockup





Call out UPS Ground as most sustainable and make it the default.



Call out UPS Ground as most sustainable.

Carbon Reduction & Cost Savings

UPS.com Shipping Options - assumptions and calculation

Assumptions

- 2% of total package volume is from UPS.com
- Implemented change will result in 5% increase of customers choosing ground over air transport
- Average distance package travels = 601 miles

Calculation

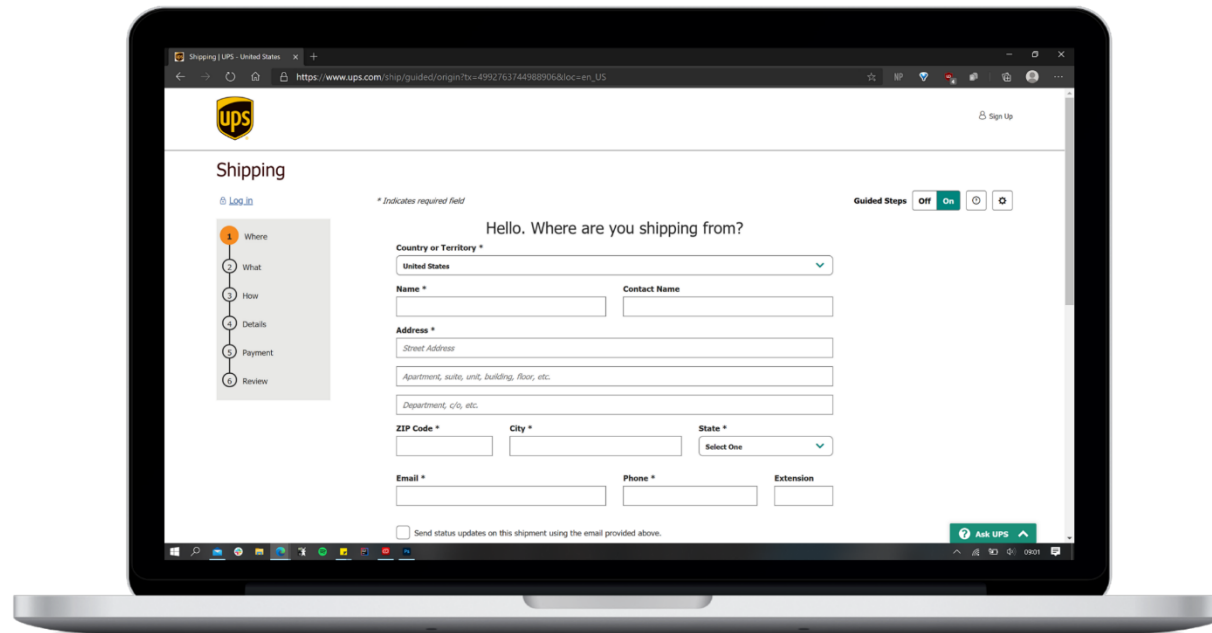
$$\begin{aligned} CO_2e \text{ emissions from transportation} &= \text{mass (tons)} * \text{distance travelled (miles)} * \\ &\quad \text{emission factor of transport mode (kgCO}_2\text{e/ton - mile)} \end{aligned}$$

$$\begin{aligned} &5.5 \text{ bil packages} * 0.02 * 0.05 * \left(\frac{2.789 \text{ lb CO}_2\text{e}}{\text{ton - mile}} * \frac{0.00367 \text{ tons} * 601 \text{ mi}}{\text{package}} - \frac{0.456 \text{ lb CO}_2\text{e}}{\text{ton - mile}} * \frac{0.00596 \text{ tons} * 601 \text{ mi}}{\text{package}} \right) \\ &= 24,850,319.29 \text{ lb CO}_2\text{e} \end{aligned}$$

Next Steps

UPS.com Shipping Options - roadblocks, current status, and future work

- Potential revenue impact from recommending air over ground transport
- Awaiting approval, hopefully can undergo A/B testing
- Idea could be tested in low-risk (international) markets, where customers may also be interested in more sustainable solutions



Carbon Reduction & Cost Savings

WFH - assumptions and approach

Assumptions

- Cost of gas
 - In the short-term, gas prices will reflect the average price of gas in Atlanta from April to July 2020 (\$2.17/gallon)
 - In the long-term, gas prices will reflect the average price of gas in Atlanta from the past 10 years (\$2.50/gallon)
- 50 work weeks in a year

Approach

- Survey UPSers in ATL area to collect:
 - Car year/make/model
 - Daily commute mileage on highway & city roads
- Calculate saved gallons per worker per year for 3, 4, and 5 days/week WFH models

$$\frac{\text{work days}}{\text{year}} * \left(\frac{\text{commute}_{\text{hwy}}}{\text{mpg}_{\text{hwy}}} + \frac{\text{commute}_{\text{city}}}{\text{mpg}_{\text{city}}} \right) = \text{gallons used per worker per year}$$

Carbon Reduction & Cost Savings

WFH - annual savings per individual and combined savings for ATL offices

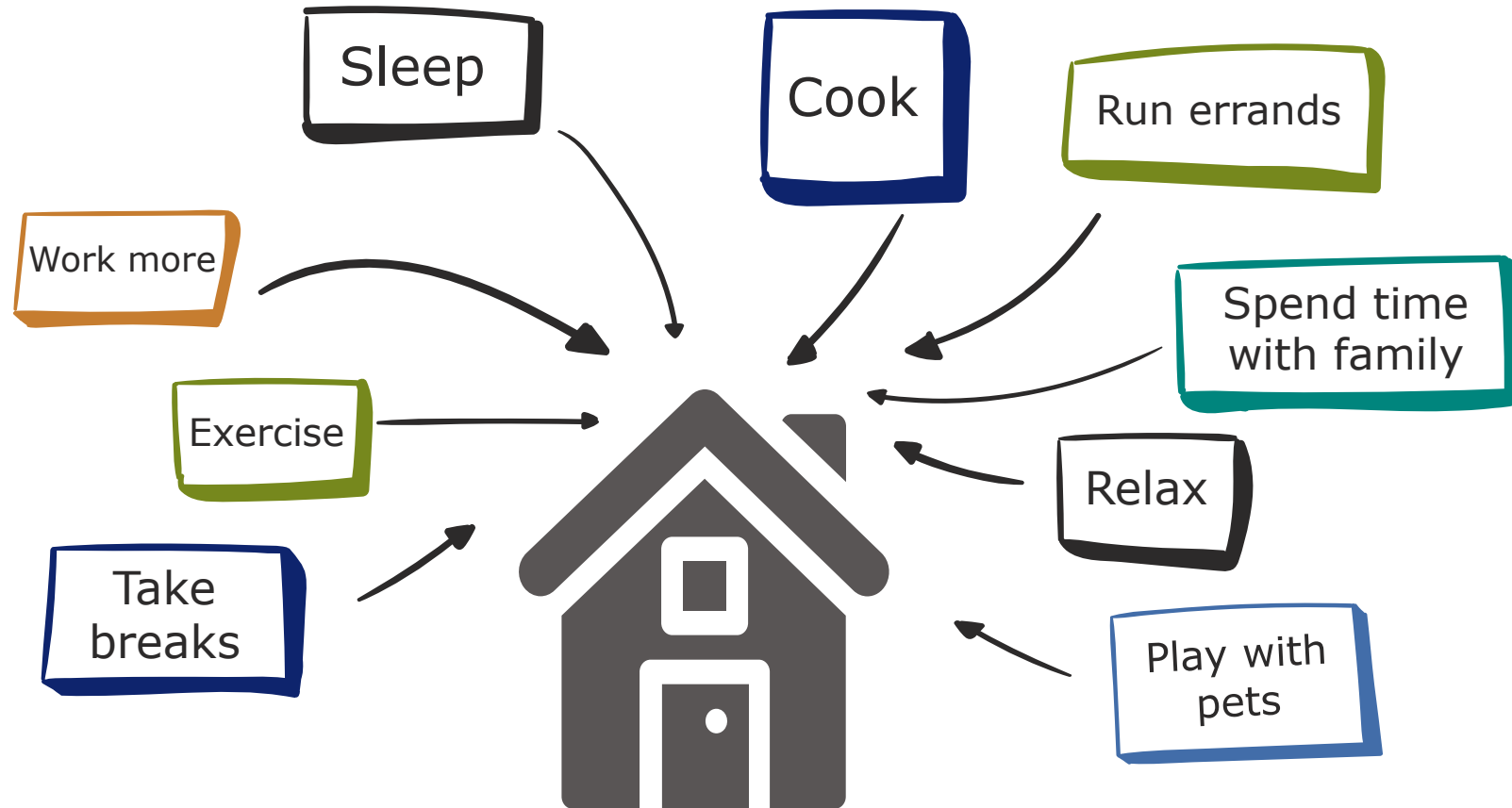
	WFH 3 days/wk	Proposed Change WFH 4 days/wk	Current WFH 5 days/wk
Average Carbon Reduction (lb CO₂)	1,830	2,770	3,674
Average Cost Savings (\$) [Short-Term]	\$202.59	\$306.64	\$406.71
Average Cost Savings (\$) [Long-Term]	\$233.40	\$353.27	\$468.56
Total Carbon Reduction (lb)	6,129,968	9,278,371	12,306,286
Total Cost Savings (\$) [Short-Term]	\$678,680	\$1,027,200	\$1,362,500
Total Cost Savings (\$) [Long-Term]	\$781,880	\$1,183,500	\$1,569,700

Average based on survey responses.

Total calculated based on HR estimate of 3,350 employees in Alpharetta & Sandy Springs offices.

Co-benefits

UPSers claim that with their saved commute time, they can...

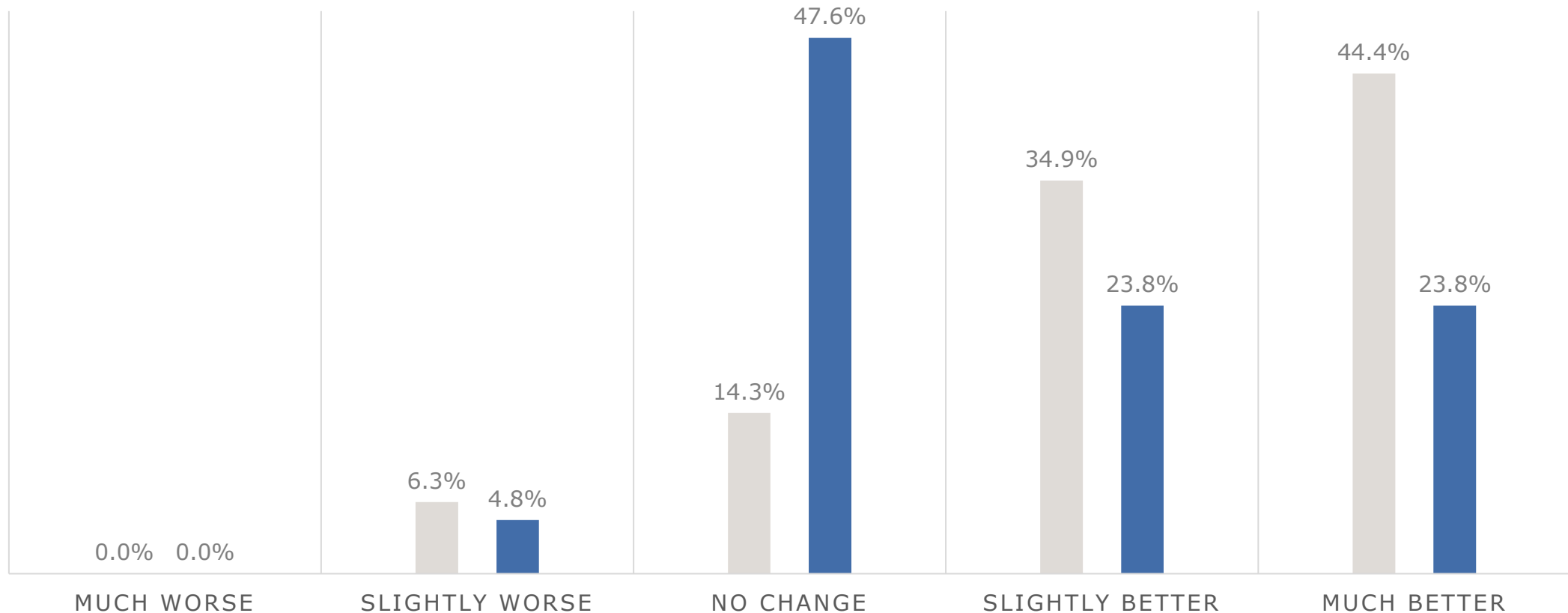


Co-benefits

Why else should we implement these ideas?

CHANGES IN WORK

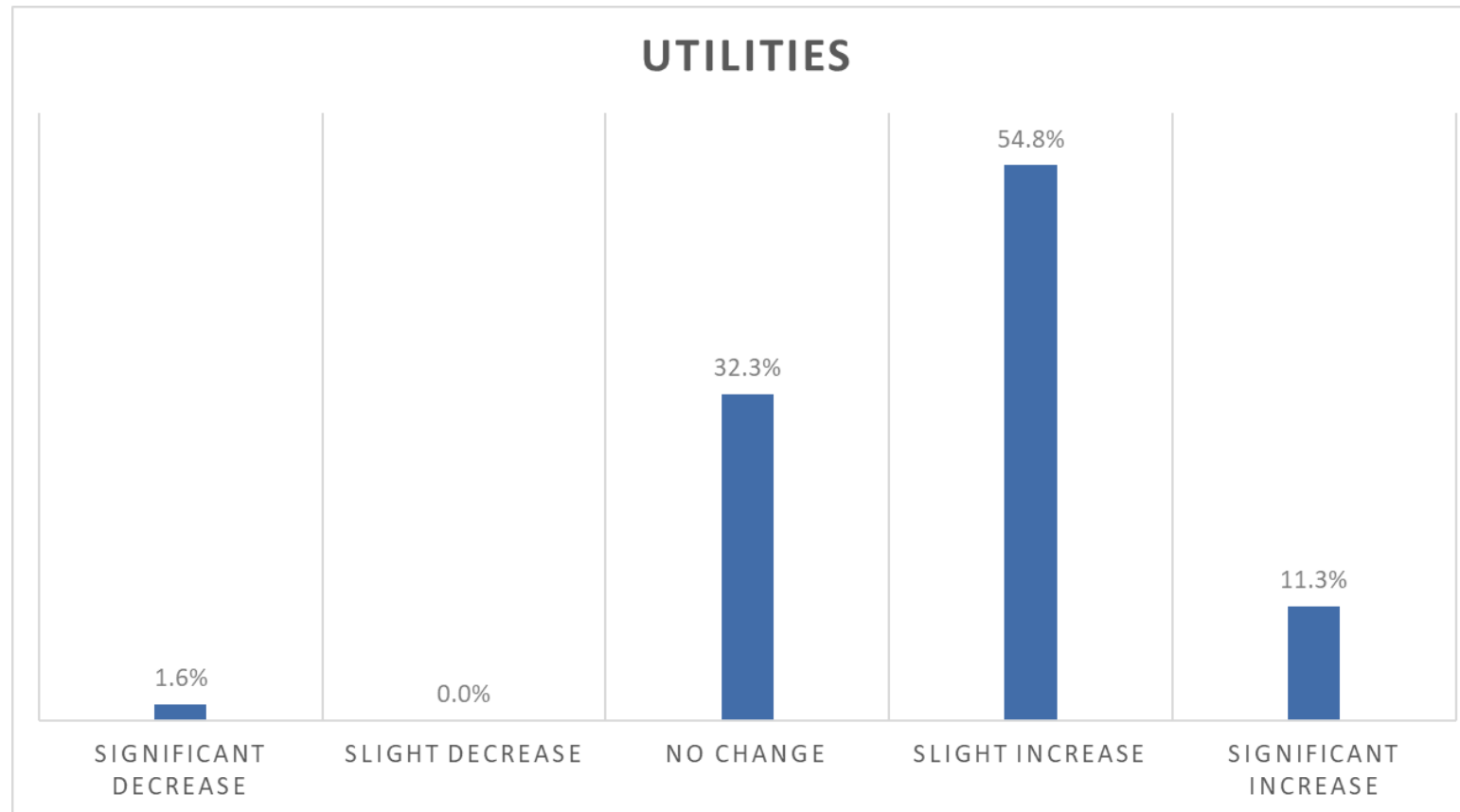
■ Productivity ■ Performance



Next Steps

WFH - roadblocks, current status, and future work

- UPSers may pay more in utilities by working from home but reap many other co-benefits
- HR sent a similar survey to all ATL employees, so I could improve my carbon and cost savings calculations





THANK YOU

**Georgia
Tech**

