

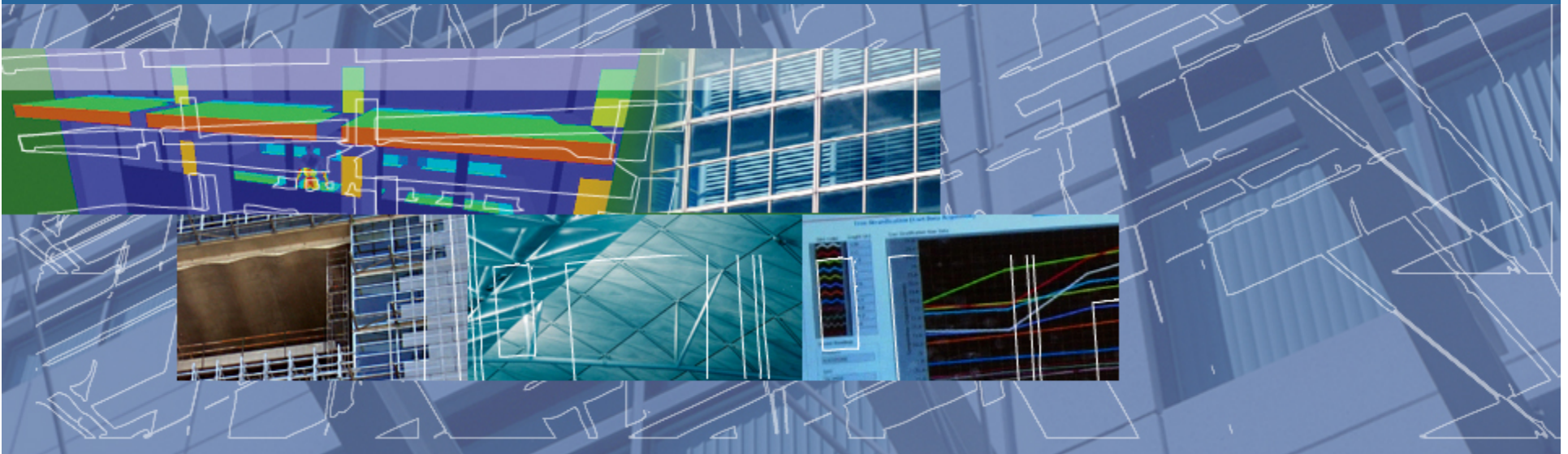
Using Segmentation Strategies to Create Targeted Climate Change Messaging for Office Workers

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Objectives and approach

Over-arching objective

- Test the ability for building information feedback (energy charts, goals and prompts) to reduce occupants' energy use and resulting greenhouse gas emissions

Research approach

- Conduct field study at three sites with ~250 subjects
- Install smart plug load monitors, and provide tablet computers with a tailored energy interface

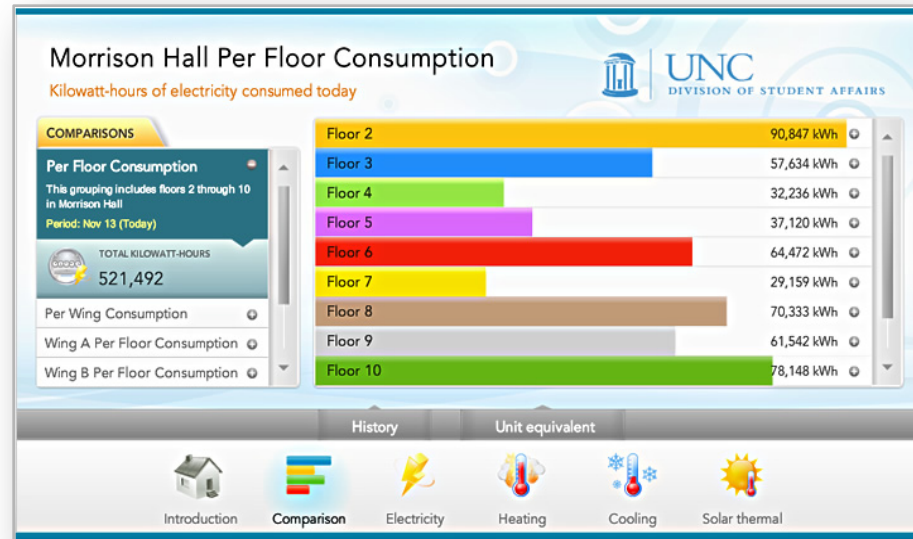
Funded by the California Air Resources Board (CARB)



Tablet feedback design: What to include?

Approaches identified in literature as useful for behavior change

1. Energy feedback
(direct and/or ambient)
2. Influencers
(goals, commitments, rewards, peer effects)
3. Specific, actionable and/or tailored information
(prompts)

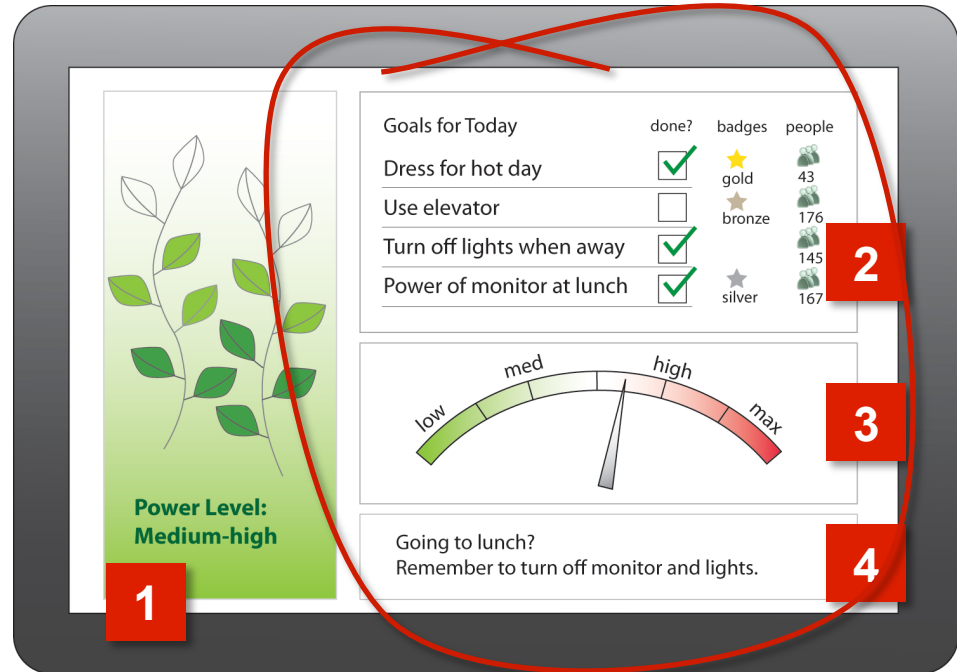


Dorm energy competition from Lucid

Tablet feedback interface

Design concept

1. Ambient energy feedback, shows current power use
2. Energy saving goals that are shared (goals, personal commitment)
3. Energy charts, various views
4. Prompts

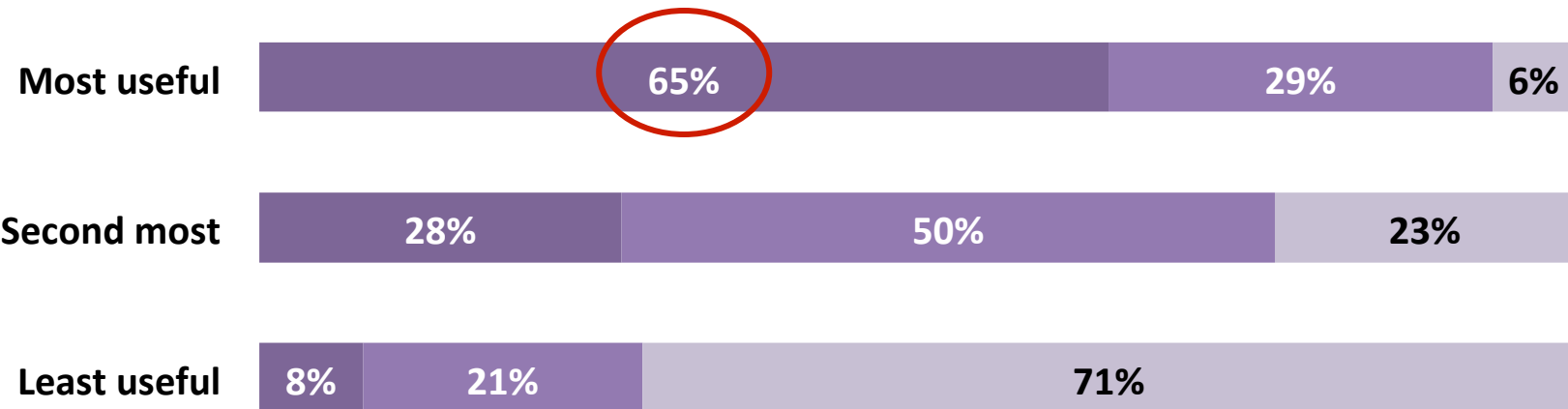


How do we tailor feedback to the users (subjects)?

Related research: Granularity of energy feedback

Stated preference for more personalized energy info, at the level of individual workstation or office (65% ranked as most useful)

Please rank these energy charts in terms of their usefulness, from 1 most useful, to 3 least useful.



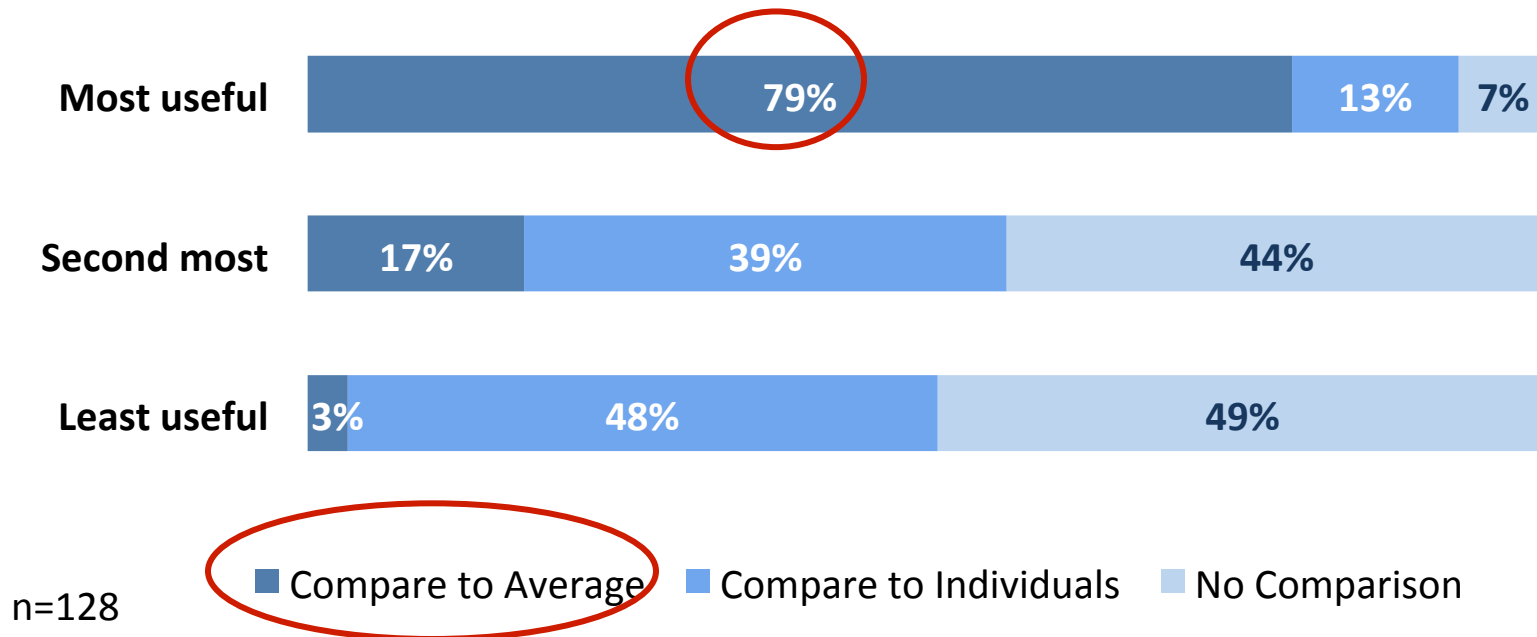
■ My Energy Charts ■ Group Energy Charts ■ Building Energy Charts
n=128

Lehrer, D., et. al. 2013. "Evaluation of a social media application for commercial building energy and operations." In press.

Related research: Energy comparison

Strong stated preference for comparison to average user
(79% ranked as first choice)

Please rank these energy charts in terms of their usefulness, from 1 most useful, to 3 least useful.

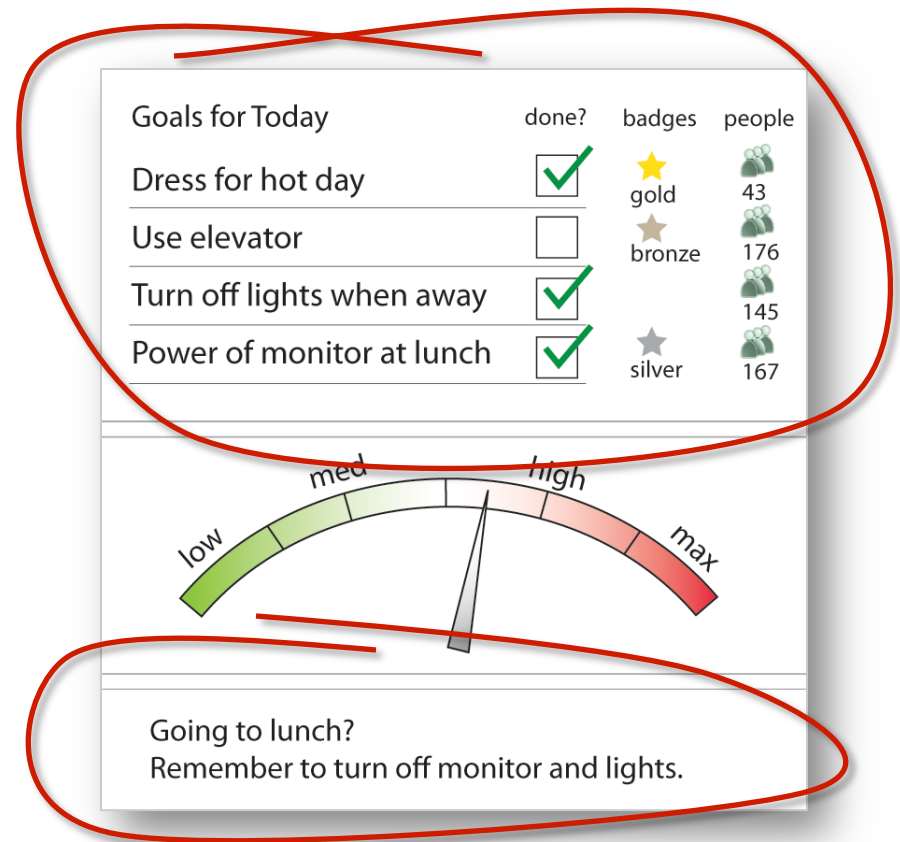


Lehrer, D., et. al. 2013. "Evaluation of a social media application for commercial building energy and operations." In press.

Tailoring goals and prompts: phone survey

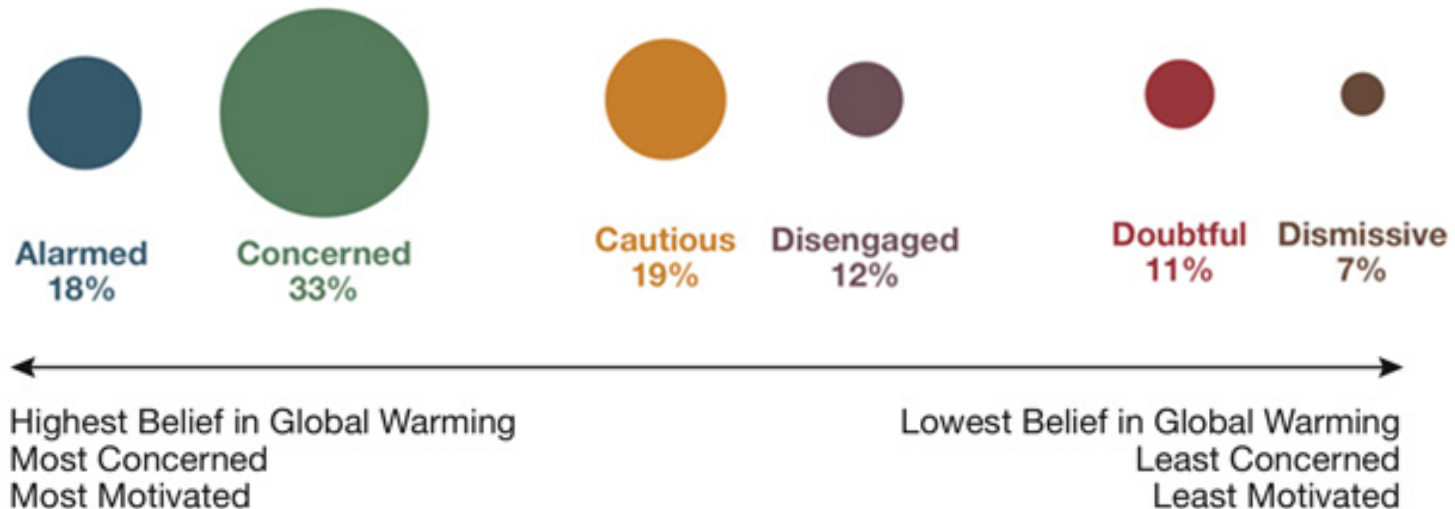
Segmentation survey

- Automated phone survey of randomly selected numbers
- 1,018 complete responses
- Office workers only
- “Six Americas” segmentation questions
- What they interact with in the office
- Information messaging preferences



Phone survey segmentation

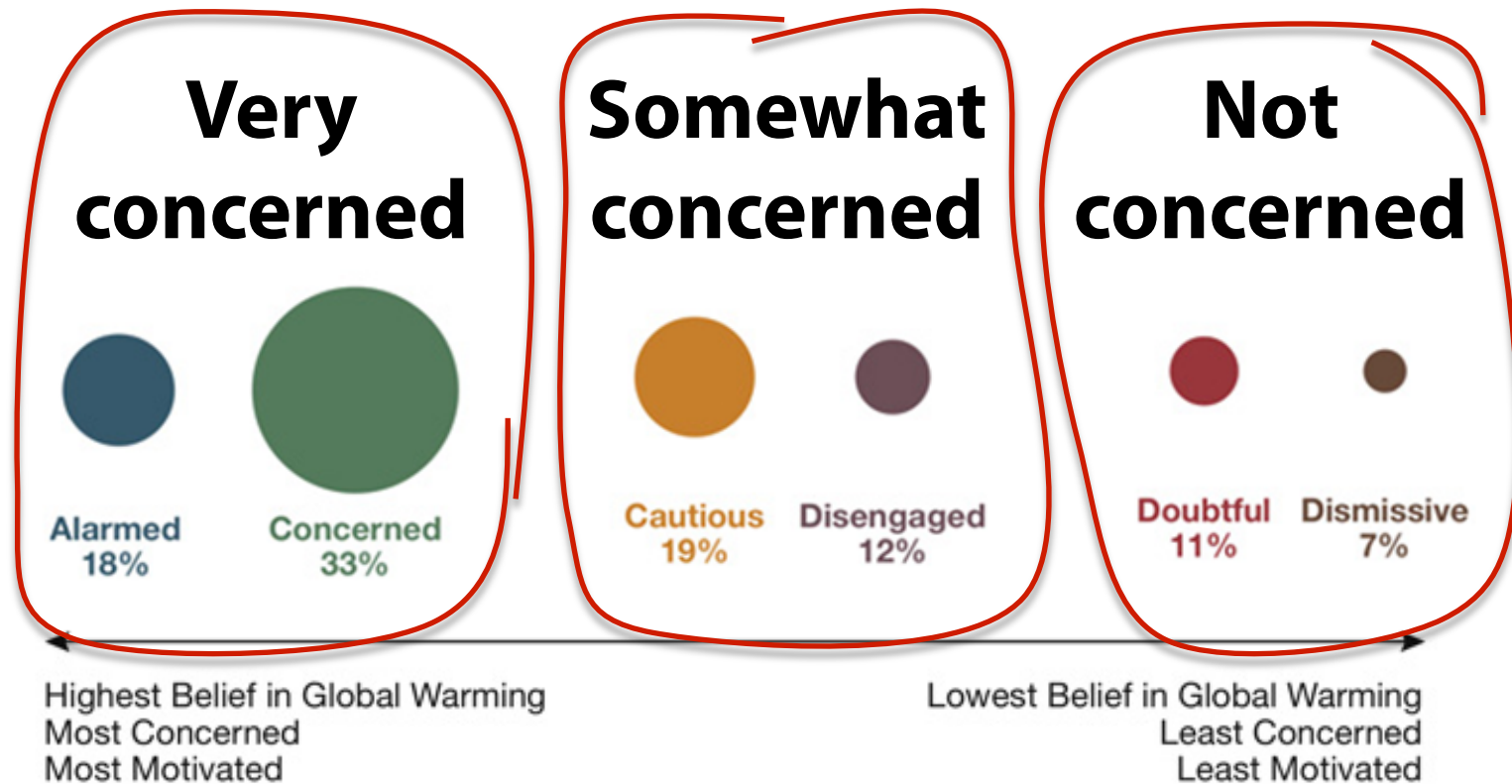
Global Warming's Six Americas: An Audience Segmentation



<http://www.americanprogress.org/issues/green/report/2009/05/19/6042/global-warmings-six-americas/>

Phone survey segmentation

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Sample phone questions: use or interaction

In your office, how often do you adjust the lighting?

- Several times a day, press 1.
- Daily, press 2
- Weekly, press 3
- Less than weekly, press 4

Adjust the heating?

Adjust window blinds or shades?

Use portable heaters to warm yourself?

Turn off or unplug a cell phone?

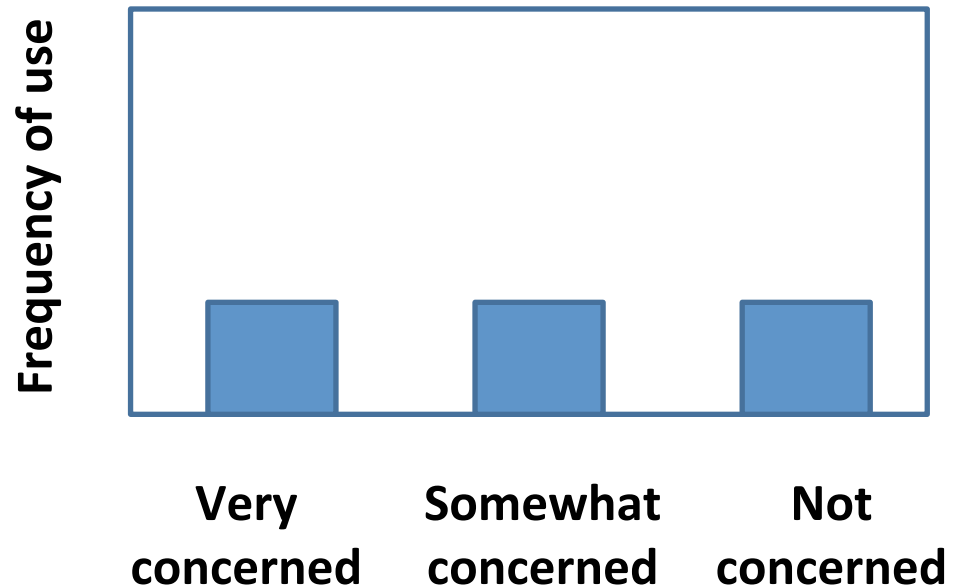
Turn off or unplug a computer?



What people don't interact with at work

Among three groups, similar and infrequent interaction with:

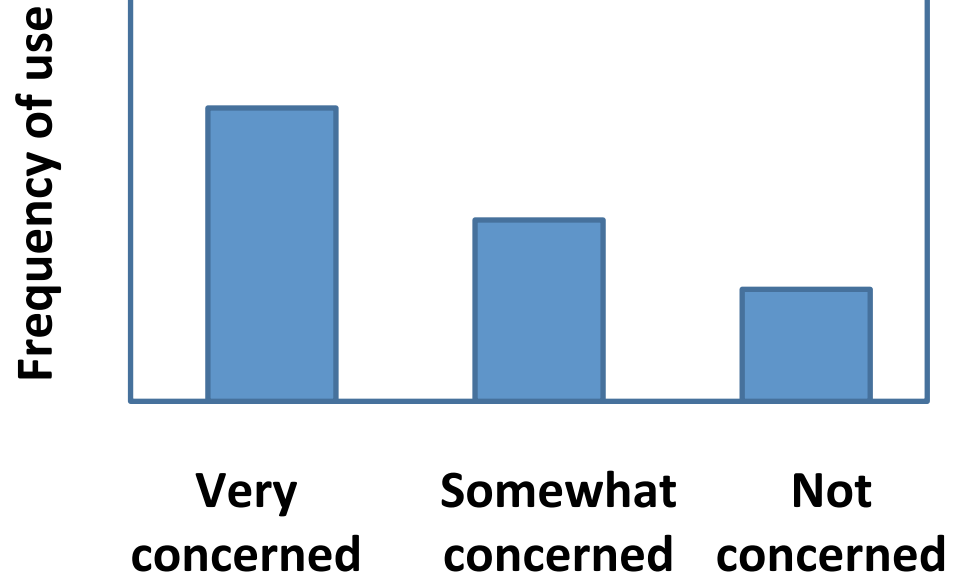
1. Adjust heating
2. Adjust cooling
3. Adjust air vents
4. Adjust blinds/shades
5. Use windows for cooling
6. Use a fan for cooling
7. Use portable heater
8. Turn off/unplug copier
9. Turn off/unplug printers
10. Use efficiency settings on computer



What people do interact with at work

Among three groups, different frequencies for interaction with:

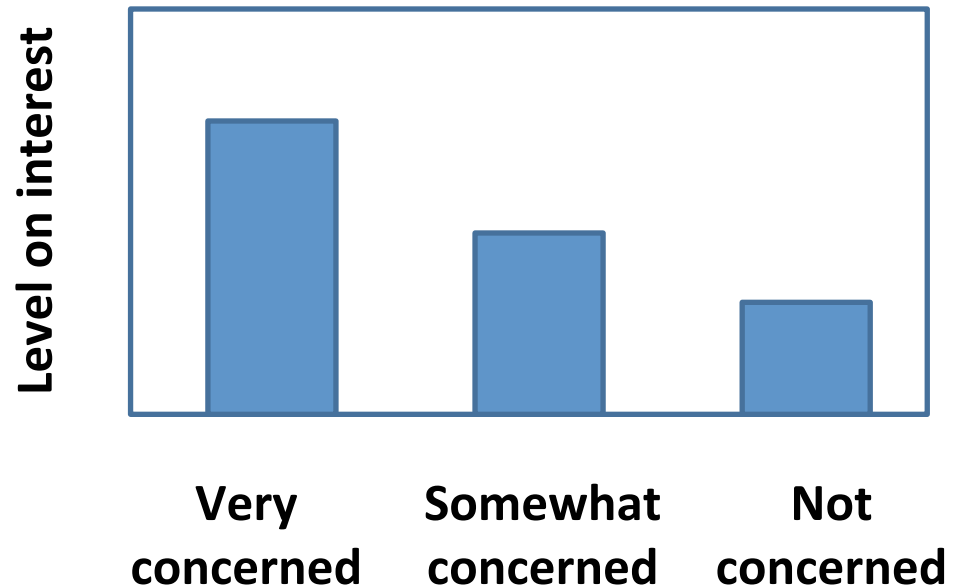
1. Turn off/unplug computers
2. Turn off/unplug monitors
3. Turn off/unplug cell phone
4. Move/walk for warmth
5. Adjust lighting



Level of interest in message type and content

Among three groups, different levels of interest in:

1. Verbal reminders
2. Visual reminders
3. Setting a personal goal
4. My friends support it
5. People I admire support it
6. Managers support it



Focus group to refine messaging (goals and prompts)

- Conducted focus group study with three groups (grouped using short screening survey)
 - Very concerned (5 subjects)
 - Somewhat concerned (9)
 - Not concerned (7)
- On-line survey, discussion, and written comments on goals and prompts
- Asked about content, format and tone



Focus group findings: key points

Similar among all groups

- Groups showed similar level of interest in goals and prompts in general
- Preference for goals and prompts to do easy things (e.g., turning off lights, monitors and computers)
- Prefer positive messaging

Differences between groups

- “Very concerned” group was more interested in competition, and creating community around the energy goals, such as group energy targets
- Also more interested in social aspects, “seeing other people do things helps us achieve goals”

Messaging summary (in progress)

Message type	Very concerned	Concerned	Not concerned
Verbal reminders	Y	Y	N
Visual reminders	Y	Y	N
Setting personal goals	Y	N	N
Influencers			
Friend support it	Y	N	N
People I admire support it	Y	N	N
Managers support it	Y	N	N
Actions			
Cool beverages	Y	Y	Y
Hot beverages	Y	Y	Y
Computers	Y	Y	N
Monitors	Y	Y	N
Cell phones	Y	Y	N
Move/walk	Y	Y	N
Lighting	Y	Y	N

Conclusions

Applying the “Six Americas segmentation” to office workers shows that:

- Many “low interaction” behaviors that impact energy are similar among all segments
- Several “high interaction” behaviors are more frequent among people that are somewhat or very concerned with global warming
- Segments showed similar level of information in goals and prompts tested
- More concerned individuals are more likely to prefer community or competition aspects of messaging

Acknowledgements

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