

Reducing the Costs and Environmental Impacts of AI: The Potential for Information Disclosure

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AI energy consumption outpaces efficiency gains

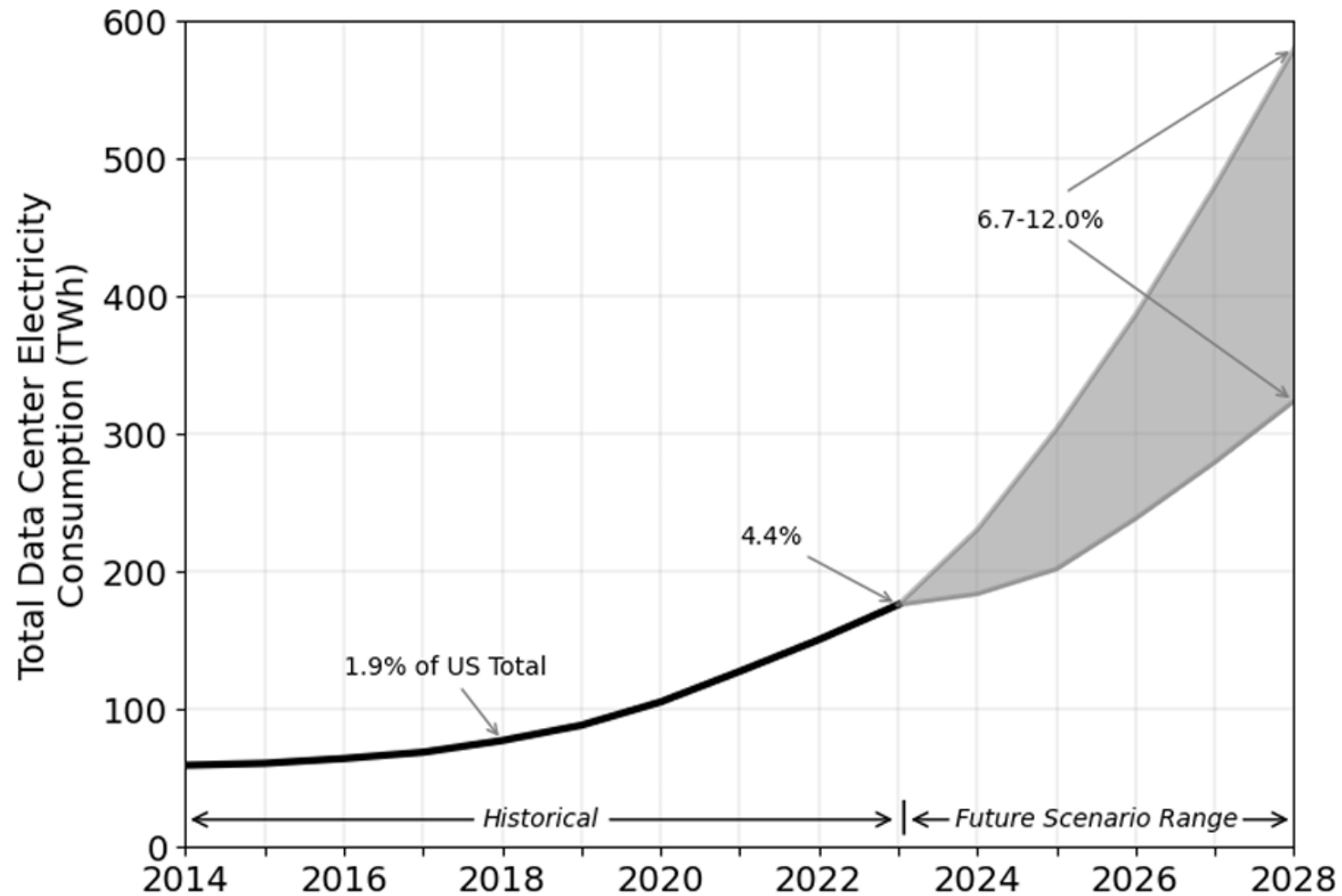


Figure ES-1. Total U.S. data center electricity use from 2014 through 2028.

Most solutions have focused on the supply side, but there is potential for low-cost, low-intrusive interventions focusing on demand

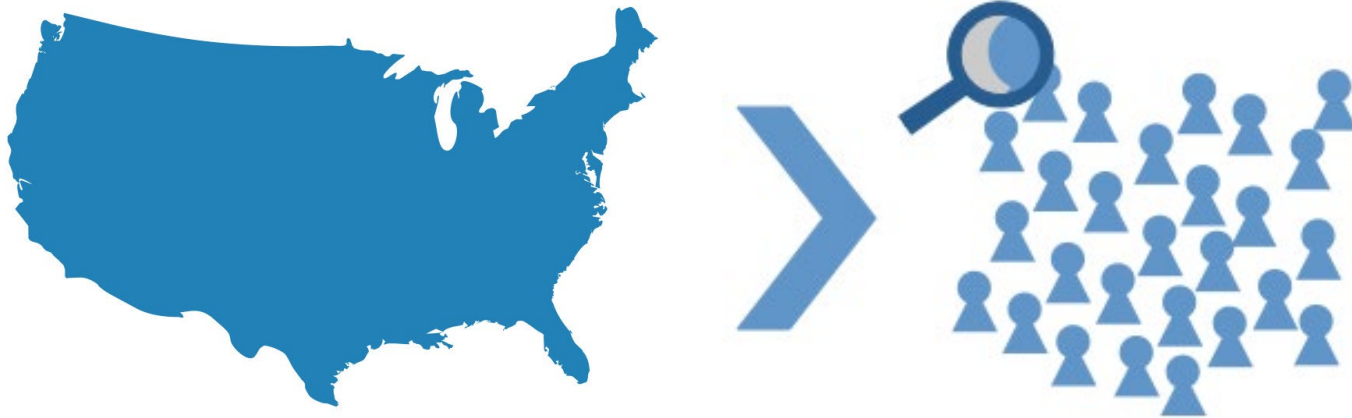


Supply



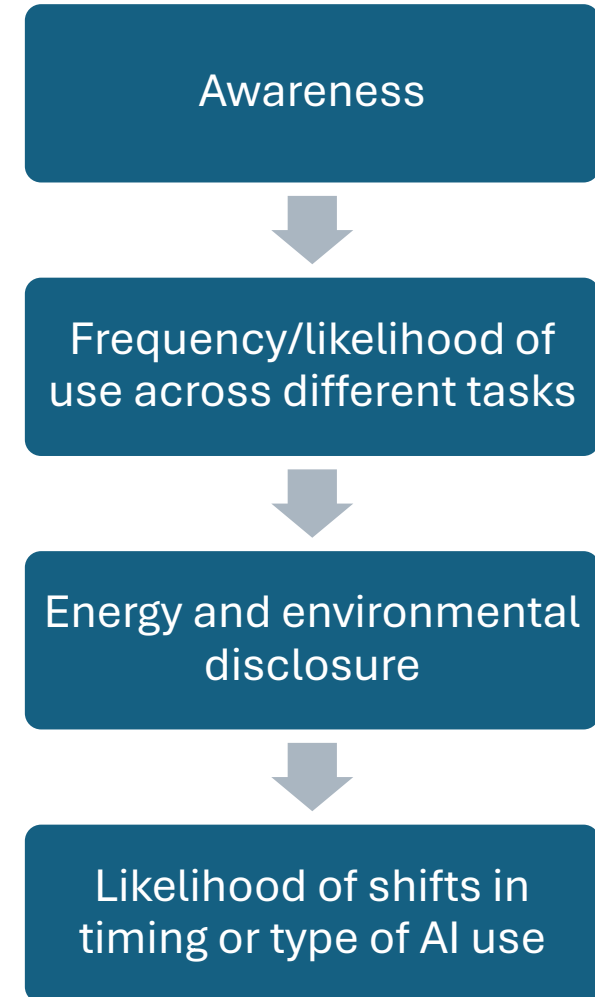
Demand

Frequency of use, state of public knowledge, and potential for behavioral plasticity



$N = 3043$

Nationally representative sample



There is widespread use of Generative AI among the general public

88% reported using some type of generative AI in the past month

75% reported weekly use for at least one type of task

No overly interesting demographic differences

$M = 3.28, SD = 1.51$

$M = 2.52, SD = 1.44$

$M = 2.65, SD = 1.57$

$N = 3063$

$M = 2.50, SD = 1.46$

$M = 2.48, SD = 1.46$

$M = 2.56, SD = 1.47$

$M = 2.76, SD = 1.51$

Potential avenues for social/behavioral research

- Energy and environmental disclosures can provide information about:
 - Use of appropriate models
 - Times of day with less demand on data centers
 - Token-efficient interactions
- However, must examine several factors about environmental disclosures themselves:
 - Concrete information about impacts
 - Timing/repetition of disclosure
 - Framing of information

Key Takeaways

1. There is widespread use of generative AI but also a widespread lack of knowledge about the resulting energy and environmental impacts
2. There is opportunity for low-cost, low-intrusive information interventions on the demand side for day-to-day casual users
3. Social and behavioral scientists can help reduce costs and stress on the electric system and environmental impacts by assisting AI firms in creating and communicating the most effective energy and environmental disclosures