Lessons Learned Over 20 Years of the CBE Occupant Survey

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CBE

CENTER FOR THE BUILT ENVIRONMENT

Person-place relationship

Spaces have the potential to influence how a person thinks, feels, and behaves...but one space does not fit all.
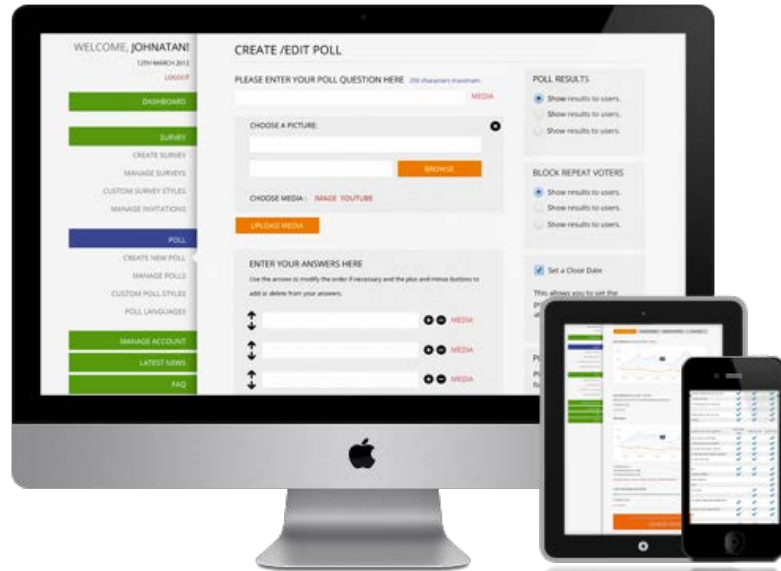
Measuring the person-place relationship

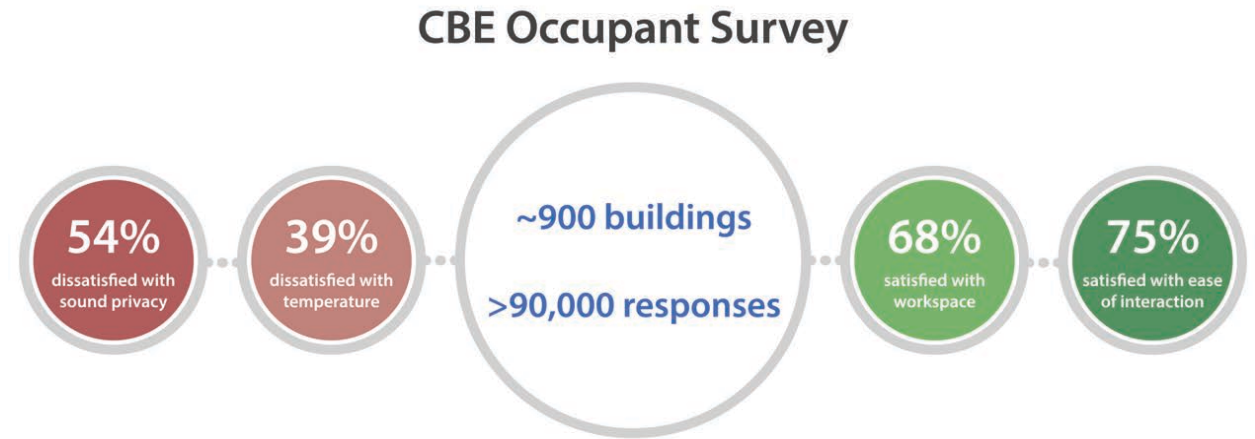Interviews

Focus groups

Observations

Why surveys?

- Allows for large sample sizes

- Quick to implement

- Cost-effective

- Can be implemented virtually or in a hands-off way

- Access to internal thoughts, attitudes, & hard to detect behaviors
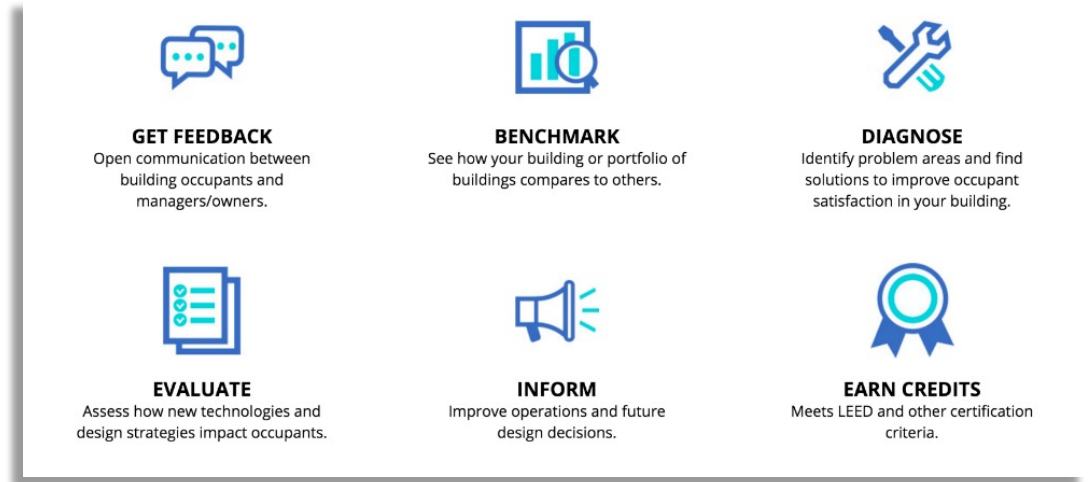
- Easy and fast to analyze

Background

- Powerful occupant survey analytics platform

- Developed in 1999 based on industry need

- One of the largest databases in the world: over 1,200 buildings

- Tools include multiple building types and a range of options for add-on topics to investigate

- Created benchmark for comparison

- Undergone many iterations

CBE Occupant Survey

54% dissatisfied with sound privacy

39% dissatisfied with temperature

~900 buildings

>90,000 responses

68% satisfied with workspace

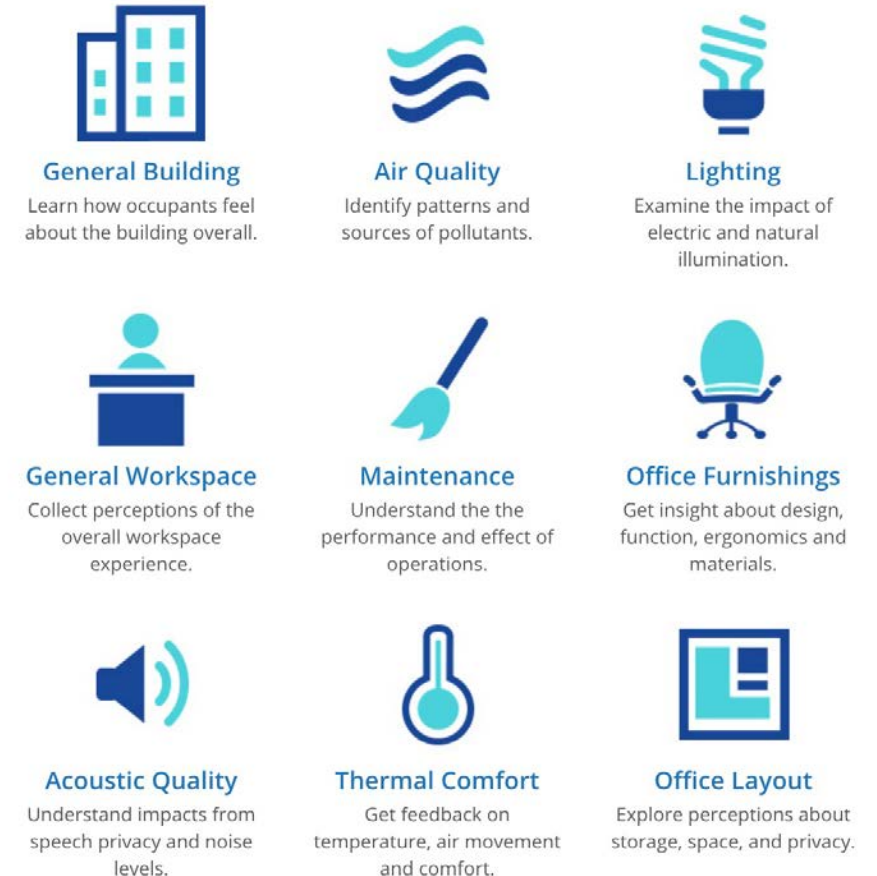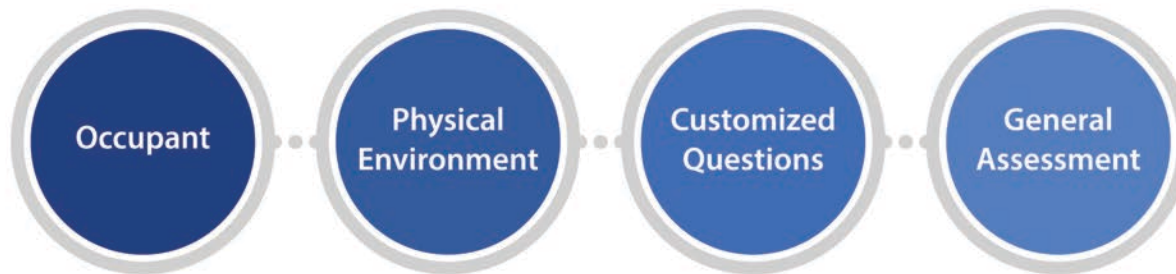**75%** satisfied with ease of interaction

Benefits to using the survey

- Can help diagnose what's going well in a space, as well as where future investment should be made

- Allows you to benchmark and put into context problem areas

- Works towards certification

- Provides evidence and tangible value of your space to employees and tenants

- Fully confidential and rigorous data protection

GET FEEDBACK
Open communication between building occupants and managers/owners.

BENCHMARK
See how your building or portfolio of buildings compares to others.

DIAGNOSE
Identify problem areas and find solutions to improve occupant satisfaction in your building.

EVALUATE
Assess how new technologies and design strategies impact occupants.

INFORM
Improve operations and future design decisions.

EARN CREDITS
Meets LEED and other certification criteria.

Survey flow

- Distributed online

- Takes approximately 8-12 minutes to complete

- Core questions + optional modules

- Questions on a 7-point Likert scale:
  - Satisfaction
    1 = strongly agree, 7 =strongly disagree
  - Environment influences productivity
    1 = strongly enhances, 7 = strongly interferes

- Hones in on sources of dissatisfaction

Occupant ⟶ Physical Environment ⟶ Customized Questions ⟶ General Assessment

General Building
Learn how occupants feel about the building overall.

Air Quality
Identify patterns and sources of pollutants.

Lighting
Examine the impact of electric and natural illumination.

General Workspace
Collect perceptions of the overall workspace experience.

Maintenance
Understand the the performance and effect of operations.

Office Furnishings
Get insight about design, function, ergonomics and materials.

Acoustic Quality
Understand impacts from speech privacy and noise levels.

Thermal Comfort
Get feedback on temperature, air movement and comfort.

Office Layout
Explore perceptions about storage, space, and privacy.

Survey expansion

- Can be used in multiple building types

- Versions that cover WELL v1 and v2 requirements

- Have add-on modules that cover a variety of topics (some examples below)

  - Accessibility

  - Wayfinding

  - Ease of interaction

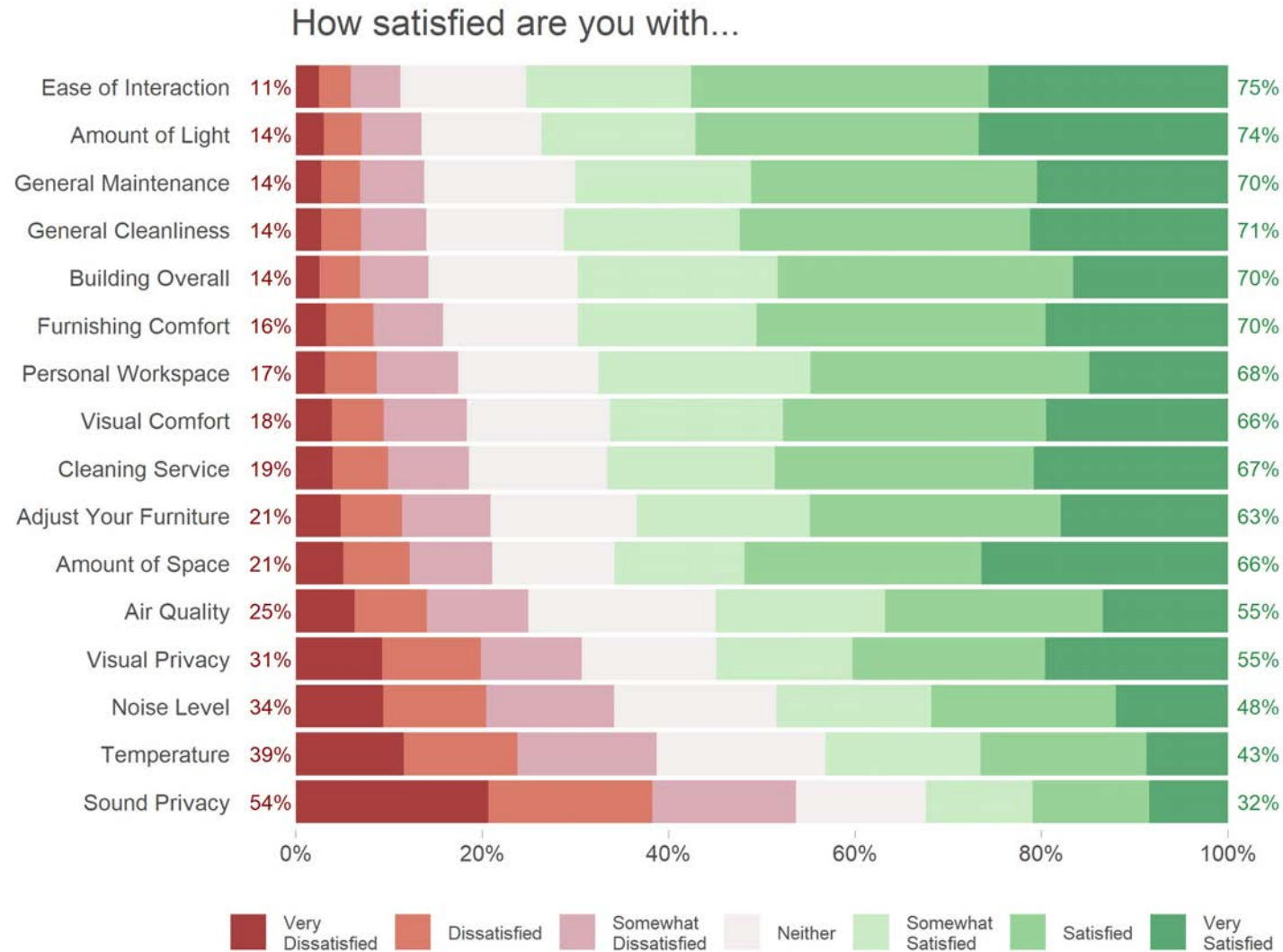 - Commute

  - Biophilia
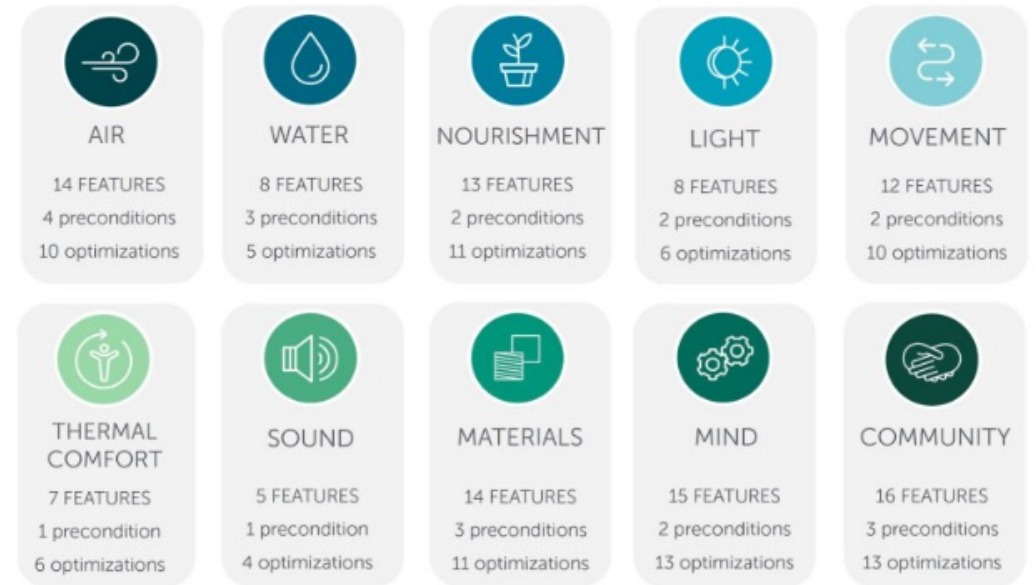
WELL v.2 overview

Benchmarking database characteristics

- As of January 2020:
  - 897 buildings
  - 93,662 occupant responses

- Building types:
  - 692 Offices
  - 109 K-12 education spaces
  - 38 laboratories
  - 30 healthcare workspaces
  - 18 higher education spaces
  - 10 multi-family residential/dormitories

- **For the following analysis we have focused only on office spaces.**

Boch & Fernsh, source: http://officesnapshots.com/

Occupant satisfaction with IEQ

How satisfied are you with...

	Negative	Positive
Ease of Interaction	11%	75%
Amount of Light	14%	74%
General Maintenance	14%	70%
General Cleanliness	14%	71%
Building Overall	14%	70%
Furnishing Comfort	16%	70%
Personal Workspace	17%	68%
Visual Comfort	18%	66%
Cleaning Service	19%	67%
Adjust Your Furniture	21%	63%
Amount of Space	21%	66%
Air Quality	25%	55%
Visual Privacy	31%	55%
Noise Level	34%	48%
Temperature	39%	43%
Sound Privacy	54%	32%

Legend: Very Dissatisfied, Dissatisfied, Somewhat Dissatisfied, Neither, Somewhat Satisfied, Satisfied, Very Satisfied

- Most satisfied with:
  - Ease of interaction (75%)
  - Amount of light (74%)
  - General cleanliness (71%)

- Least satisfied with:
  - Sound privacy (54%)
  - Temperature (39%)
  - Noise level (34%)

Environmental impact on productivity

Perceived productivity most impacted by acoustics, least impacted by cleanliness and maintenance.

Does...enhance or interefere with your ability to get your job done?

Category	Interferes	Enhances
Cleanliness & Maintenance	11%	62%
Furnishings	13%	54%
Lighting Quality	16%	60%
Air Quality	20%	47%
Office Layout	23%	54%
Temperature	35%	40%
Acoustical Quality	39%	35%

Legend: Significantly Interferes | Interferes | Somewhat Interferes | Neither | Somewhat Enhances | Enhances | Significantly Enhances

Highlights

- ~66% are satisfied with their personal workspace.

- ~40% believe acoustics and thermal comfort are most responsible for their lack of productivity.

- ~25% believe the office layout contributes to a lack of productivity.

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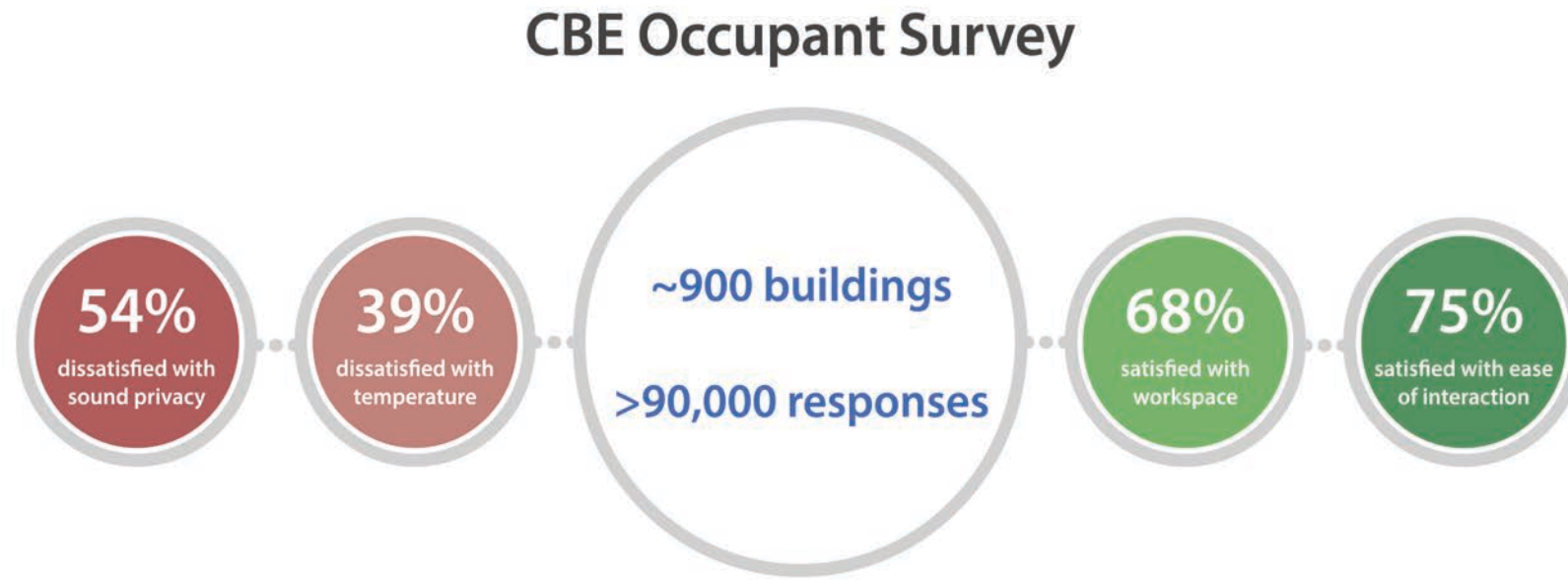
Analysis of survey structure: Clusters

- First, explored correlation between items.
    - Satisfaction and enhance/interfere questions highly correlated.
    - So removed to focus solely on satisfaction.
- Second, conducted Principal Components Analysis (PCA) to see how items are interrelated.
    - 7 themes emerged: *Air, Cleanliness, Layout, Interaction, Lighting, Furniture, Acoustics.*
    - Model accounted for 82% of the total variance.
- Third, used Hierarchical Cluster Analysis (HCA) to determine how themes and items fit together.
    - Clusters showed strong, logical alignment with PCA results.
    - Found 7 clusters: *Air, Cleanliness, Layout, Privacy, Lighting, Furniture, Acoustics* (see graphic).
- See our paper for complete details.

HCA Results: Items and Clusters

Updated benchmark scores based on findings
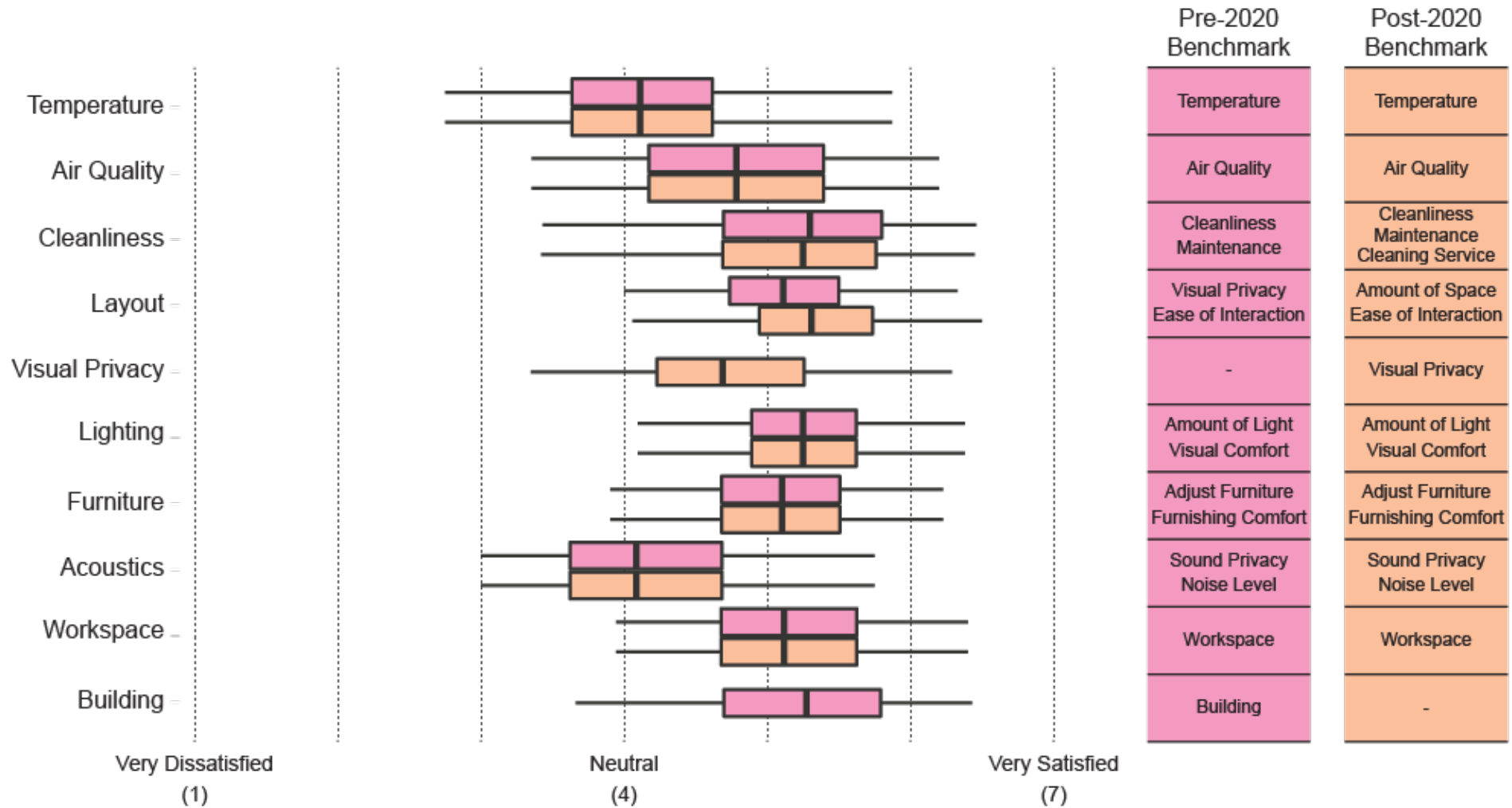
Where do we go now?

- Shifting from surviving to thriving... so we need to measure what it looks like to thrive.
    - What IS working in spaces?
    - What are occupants' preferences, emotions, and needs in spaces?
    - How do spaces support the activities they house?
- Spaces are evolving, so our measurement tools should too.
    - What makes a person select a space?
    - How does need for control, personalization, sensitivity influence environmental engagement?
    - Should we be measuring more frequently?

HOK, Toronto office

Interested in using the CBE Occupant Survey?

Offer our standard survey and custom builds.

Multiple languages available and possible to translate.

Offices, Education Spaces (Higher Ed and K-12), Laboratory, Healthcare, Multi-unit Residential.

Supports WELL v1 and v2, LEED, GreenMark and others.

Receive raw data and detailed report of findings.

Contact us at: cbesurvey@berkeley.edu

CBE Occupant Survey Reprot

Detailed breakdown of responses by question

Center for the Built Environment | November 2021
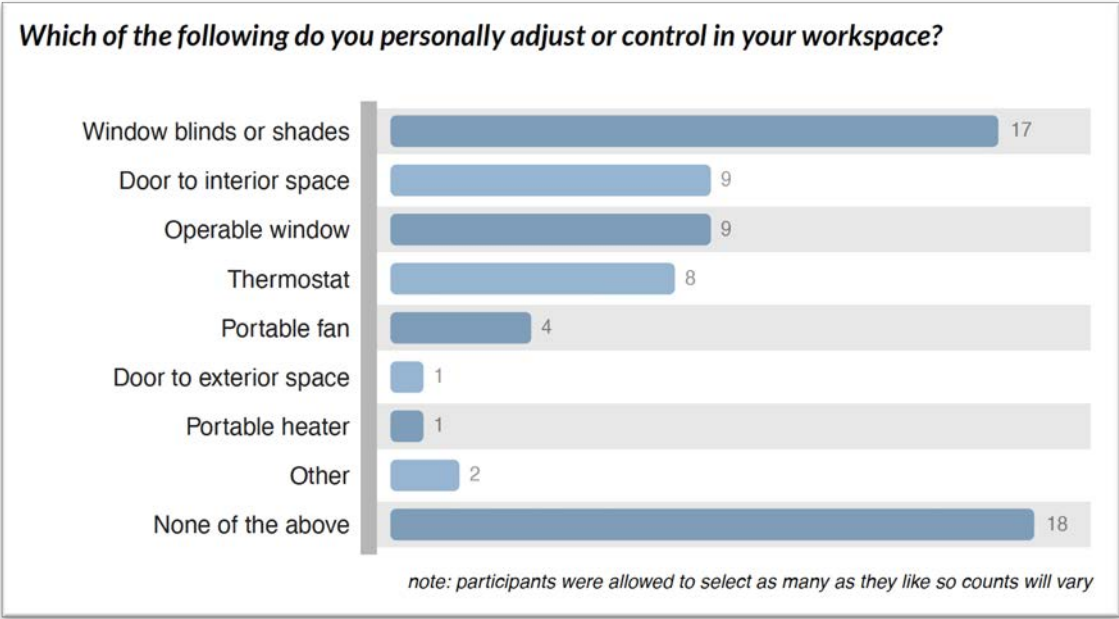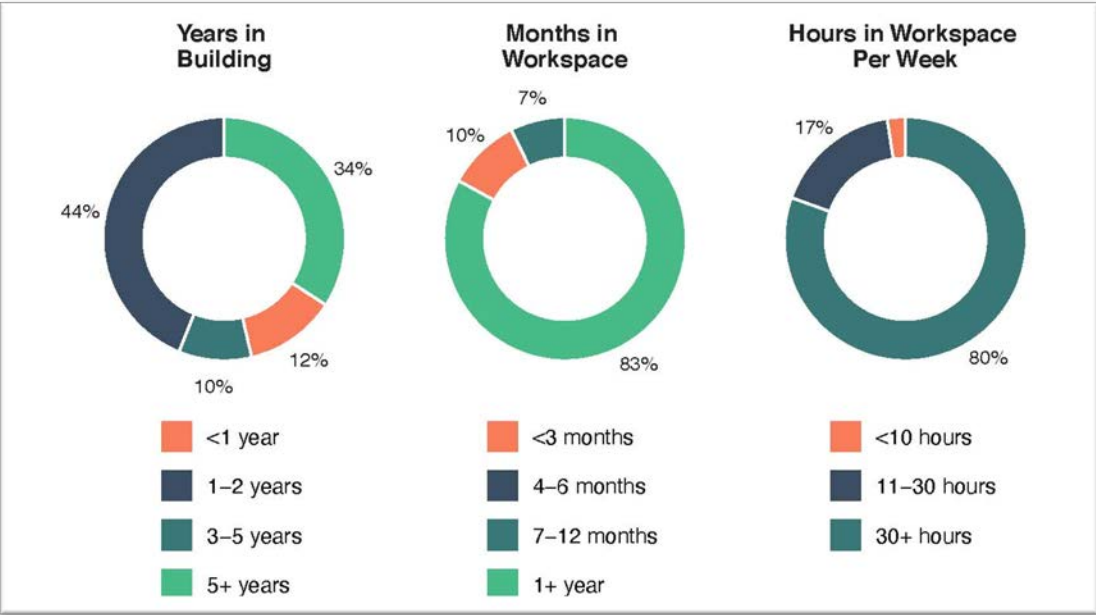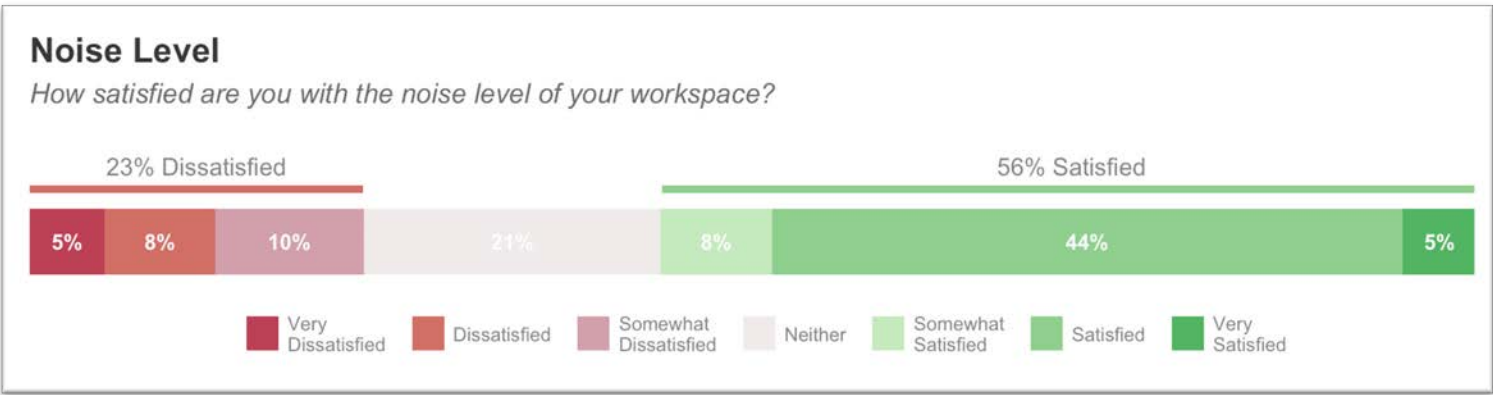
Questions?

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Want to set up a CBE Occupant Survey?
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