B3 Post-Occupancy Evaluation
Workplace Environment

MINNEAPOLIS AMERICAN INDIAN CENTER

Minneapolis, Minnesota

Image credit: Cuningham

August 2025

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SUMMARY

This report shares results from a June 2025 survey of 29 employees working in the Minneapolis American Indian Center (MAIC), which found that respondents are generally satisfied with the overall facility, with their primary workspace, and with most elements of the indoor environmental quality (IEQ).

5.86

SATISFACTION

Employees are **satisfied** with the physical environment of their primary workspace. This Indoor Environmental Quality Satisfaction Score is the average of the IEQ category ratings shown in Figure 1.

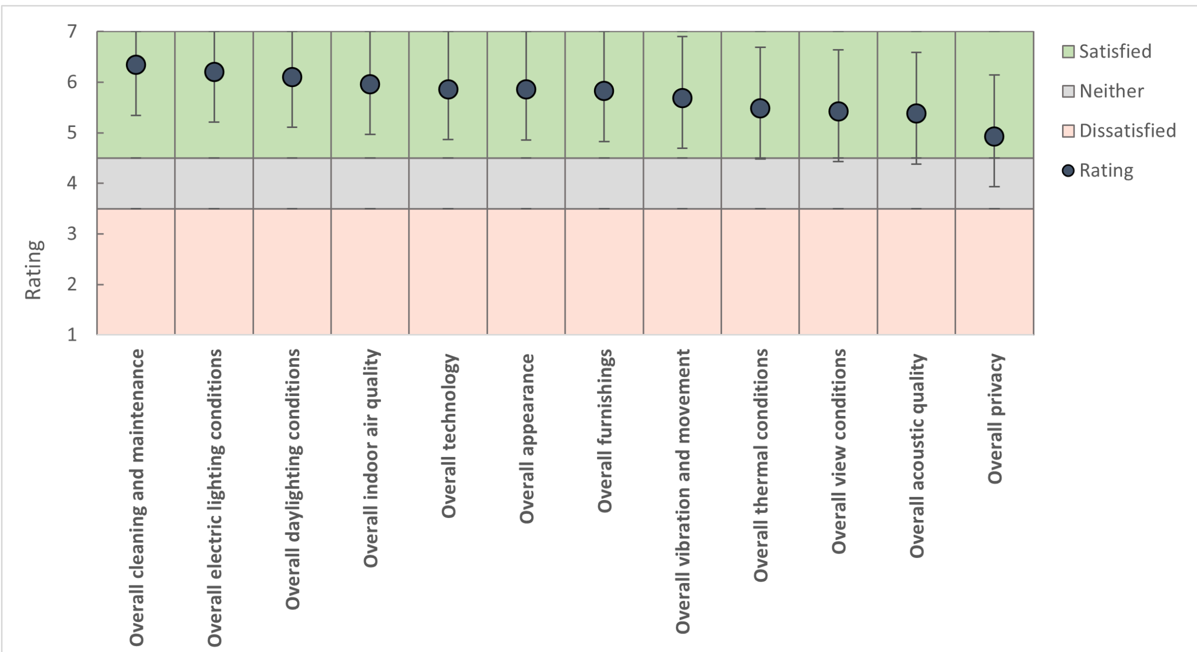

Figure 1 – MAIC average ratings for each indoor environmental quality category

5.90

PERFORMANCE

Employees reported their primary workspace **enhances** their work performance.

5.97

HEALTH

Employees reported their primary workspace **enhances** their health.

4.89 **COMMUTING**
The location of the facility **enhances** employees' ability to commute to work in alternative ways (walk, bicycle, public transit, van or carpool, etc.)

6.50 **PHYSICAL ACTIVITY**
Employees reported the facility **enhances** their physical activity.

Open Ended-Responses

In their open-ended responses, employees provided specific feedback on their experiences in the building. The full list of employee comments is provided in Appendix A. The relatively few open-ended responses provided for the MAIC discuss specific issues related to the following topics:

- Amount and control of light
- Acoustic conditions

Opportunities

The results from this survey can be used as a diagnostic tool to improve conditions for employees and to set benchmarks for the future. While employees of the Minneapolis American Indian Center were generally satisfied with their physical environment, there are still opportunities for improvement.

It may be worthwhile to explore areas where there is a lot of variation in employee responses, which – in addition to representing differences between individuals – may indicate variability across the indoor environment that could be addressed.

Table 1 - Potential opportunities for further exploration and improvements

	Low satisfaction scores [1]	High variability [2]
Overall privacy (sound and visual privacy) conditions		X
Ability to limit undesired sounds in your primary workspace		X
Overall acoustic quality		X
Overall view conditions		X
Ability to hear desired sounds in your primary workspace		X
Humidity		X
Access to electric outlets		X
Overall vibration and movement		X
Air velocity		X

Function of your furnishings	X
Adjustability of your furnishings	X
Overall appearance (aesthetics)	X
Overall technology	X
Adjustability of your task lighting	X
Overall indoor air quality	X

1 Areas with an average rating of 'neither dissatisfied nor satisfied'

2 Areas with a standard deviation above 1.50

The recommendations provided in Appendix C can kickstart action – both in these areas and for other common areas of concern. Multiple research studies show that the physical environment impacts not only satisfaction, but also work performance and health. Since employee-related expenses tend to far outweigh the cost of building improvements and maintenance, investing in improvements to the indoor environment can result in numerous benefits.

BACKGROUND

The State of Minnesota leads the B3 Guidelines program – a set of sustainable building guidelines required for certain new construction and renovations projects in Minnesota. In addition to addressing sustainability within categories like site and water, energy and atmosphere, and materials and waste, the B3 Guidelines also promote occupant well-being and productivity through a set of requirements for high-quality indoor environmental conditions. The B3 Sustainable Post-Occupancy Evaluation Survey (SPOES) was developed to evaluate occupant satisfaction with B3 projects, providing valuable feedback for building owners and operators, project teams, and the B3 Guidelines program as a whole.

This report shares results from a survey that evaluated employee satisfaction with their workplace in the Minneapolis American Indian Center renovation and expansion, conducted about 14 months after the building was occupied.

PROJECT DESCRIPTION

The MAIC is one of the oldest urban Native American centers in the country and welcomes over 25,000 visitors annually while providing educational, health, employment, and social services for more than 4400 American Indians from 43 tribes. The workplace includes office and conference space, support areas, and storage. Primary workspaces include private offices; enclosed shared offices; workstations (cubicles) with low partitions or workstations with high partitions, and desk(s) in an open area.

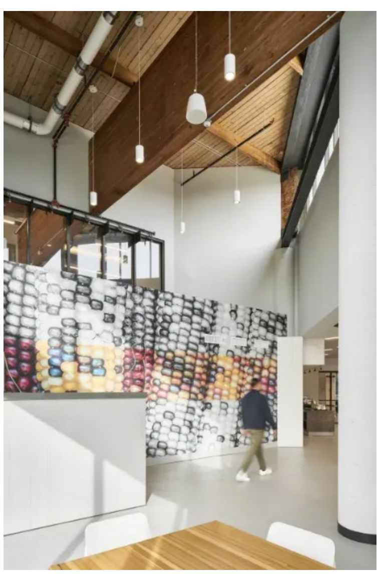

Photo courtesy of Cuningham Group

Location: 1530 East Franklin Ave, Minneapolis MN
Construction Type: Renovation and Expansion
Building Type: Community Center
Organization: Minneapolis American Indian Center
Building Area: 74,000 square feet (46,000 remodel, 28,000 addition)
Number of Stories: 3
Occupancy Date: April 2024
B3 Guidelines Version: v3.0

PROJECT TEAM
Owner: MAIC
Architect, Interiors, Landscape: Cuningham Group
Mechanical/Electrical Engineer, Commissioning: Emanuelson-Podas Inc.
General Contractor: Loeffler Construction

SURVEY DESCRIPTION

Figure 2 – IEQ impacts on occupants

SPOES is an online questionnaire that has been tested for validity (measures what it is intended to measure) and reliability (repeatability of findings). Employees rate their satisfaction on a scale from **1 (very dissatisfied) to 7 (very satisfied)** for the facility as a whole, for their primary workspace, and for specific elements of the indoor environment (called IEQ criteria). They rate how their physical environment impacts their work performance, health, physical activity, and commuting practices on a scale from **1 (hinders) to 7 (enhances)**. Ratings between 3.51 and 4.50 indicate that employees are neither dissatisfied (or hindered) nor satisfied (or enhanced).

There are two levels of IEQ criteria: categories and attributes. The list below shows all of the criteria, organized by the 12 categories (in bold).

Overall Acoustic Quality
- Ability to hear desired sounds
- Ability to limit undesired sounds

Overall Appearance (aesthetics)

Overall Cleaning and Maintenance

Overall Daylighting Conditions
- Amount of daylighting
- Adjustability of day lighting

Overall Electric Lighting Conditions
- Amount of electric lighting
- Adjustability of task lighting

Overall Indoor Air Quality

Overall Furnishings
- Function of furnishings
- Adjustability of furnishings

Overall Technology
- Access to electric outlets

Overall Thermal Conditions
- Adjustability of thermal conditions
- Air velocity (drafty/stagnant)
- Humidity
- Temperature

Overall Vibration and Movement

Overall View Conditions

Limitations

Participation in the survey is voluntary, and responses are self-reported. As is true with all survey research, the responses indicate respondents' perceptions. No physical measurements – such as temperature, humidity, or lighting levels – were taken within the environment.

Description of the Respondents

This survey was sent to **29 employees** with workspace in the facility during June 2025, and the response rate was **approximately 100%.** Of those responding, 79% were female, 18% were male, 4% preferred not to disclose gender. Respondents ages range from 21 to 70+, as shown in Figure 3.

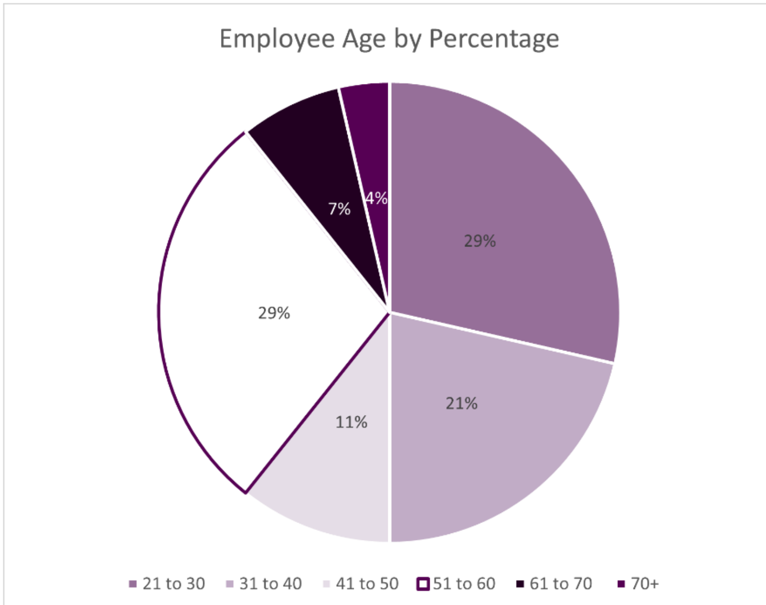

Figure 3 – Employee Age Ranges by Percentage

The following figures show, by percentage, the amount of time employees have worked at the MAIC (Figure 4), how many hours per week they work (Figure 5), and how much time they spend in their primary workspace (Figure 6). This context is important for interpreting the overall facility scores, the primary workstation scores, and open-ended comments.

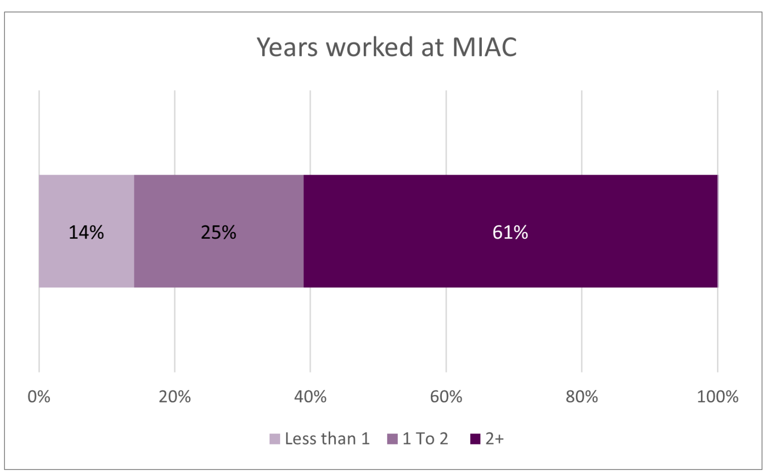

Figure 4 - Number of Years Worked at MAIC

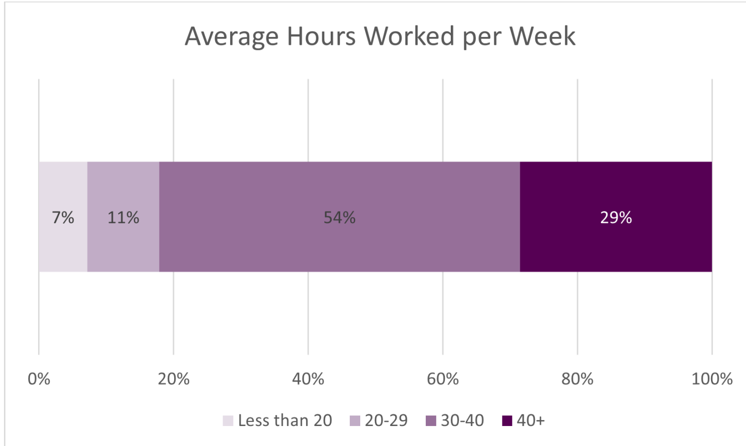

Figure 5 - Average Hours Worked per Week

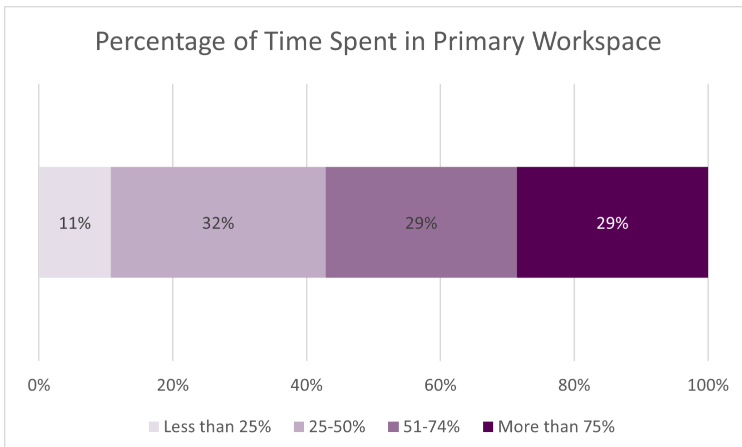

Figure 6 - Percentage of Time Spent in Primary Workspace

Nearly 75% of employees indicated that their primary workspaces were located within 15 feet of an exterior window, nearly 11% of the employees were not within 15 feet of an exterior window, and 14% were not sure how far they were from an exterior window.

29 employees responded to the survey – with significantly more females than males or other genders. Most have worked in the building for more than 2 years, work 30 to 40 hours there in a typical week, spend at least half their time in their primary workspace, and have an exterior window within 15 feet of their primary workspace.

PRIMARY WORKSPACE RESULTS

Overall Perceptions

Employees answered several questions about their overall perceptions of their primary workspace (such as a private office, workstation, or another primary workspace).

Table 2 – Average (mean) employee satisfaction with their primary workspace and perceptions of how the space impacts their work performance and health. Standard deviations represent how widely responses varied among different employees.

	Rating (Scale: 1-7)	Standard Deviation	# of Responses	Interpretation
Satisfaction	5.86	1.52	29	Satisfied
Work Performance	5.90	1.52	29	Enhanced
Health	5.97	1.33	29	Enhanced

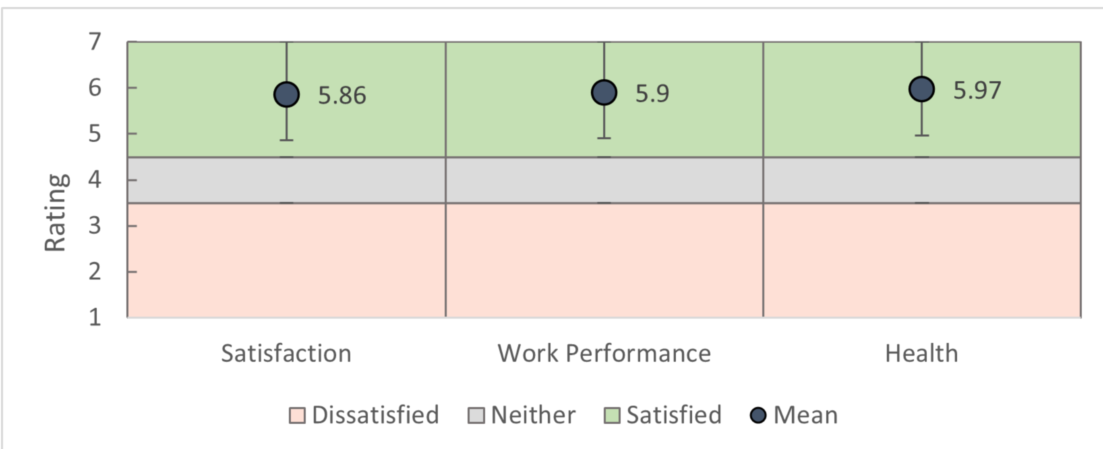

Figure 7 – Average (mean) employee satisfaction with their primary workspace and perceptions of how the space impacts their work performance and health. Standard deviations are shown as error bars and represent how widely responses varied among different employees.

Employees report being satisfied with the physical environment of their primary workspace, that it enhances their work performance, and that it enhances their health.

IEQ Criteria

Employees answered questions about their satisfaction with specific indoor environmental conditions in their primary workspace.

Table 3 - Average (mean) employee satisfaction with the indoor environmental quality (IEQ) of different aspects of their primary workspace, ranked from highest to lowest satisfaction. Standard deviations represent how widely responses varied among different employees.

#	IEQ Criteria (Category level criteria are bold)	Rating (Scale: 1-7)	Standard Deviation	# of Responses	Interpretation
1	**Overall privacy (sound and visual privacy) conditions**	**4.93**	**2.13**	**29**	**Satisfied**
2	Ability to limit undesired sounds in your primary workspace	5.00	1.80	29	Satisfied
3	**Overall acoustic quality (ability to hear desired sounds and limit undesired sounds)**	**5.38**	**1.69**	**29**	**Satisfied**
4	**Overall view conditions (outdoor or distant interior views)**	**5.43**	**1.88**	**28**	**Satisfied**
5	**Overall thermal conditions [temperature (hot or cold), air velocity (drafty or stagnant), and humidity (dry or moist)]**	**5.48**	**1.33**	**29**	**Satisfied**
6	Temperature (hot or cold)	5.50	1.43	28	Satisfied
7	Adjustability of the thermal conditions	5.52	1.35	29	Satisfied
8	Ability to hear desired sounds in your primary workspace	5.61	1.52	28	Satisfied
9	Humidity (dry or moist)	5.64	1.74	28	Satisfied
10	Access to electric outlets	5.68	1.60	28	Satisfied
11	**Overall vibration and movement**	**5.69**	**1.70**	**29**	**Satisfied**
12	Air velocity (drafty or stagnant)	5.76	1.61	29	Satisfied
13	Function of your furnishings	5.79	1.67	29	Satisfied
14	**Overall furnishings**	**5.83**	**1.46**	**29**	**Satisfied**
15	Adjustability of your furnishings	5.86	1.73	28	Satisfied
16	**Overall appearance (aesthetics)**	**5.86**	**1.64**	**28**	**Satisfied**
17	**Overall technology (e.g., computer, telephone, etc.)**	**5.86**	**1.50**	**29**	**Satisfied**
18	Adjustability of the daylighting	5.89	1.42	28	Satisfied
19	Adjustability of your task lighting	5.89	1.61	28	Satisfied
20	**Overall indoor air quality (free of odors, staleness, chemicals or irritants)**	**5.96**	**1.55**	**28**	**Satisfied**
21	**Overall daylighting conditions**	**6.11**	**1.35**	**28**	**Satisfied**
22	Amount of electric light	6.11	1.37	28	Satisfied
23	Amount of daylighting	6.17	1.26	29	Satisfied

24	Adjustability of the electric lighting	6.17	1.18	29	Satisfied
25	**Overall electric lighting conditions**	**6.21**	**1.21**	**29**	**Satisfied**
26	**Overall cleaning and maintenance**	**6.34**	**1.35**	**29**	**Satisfied**

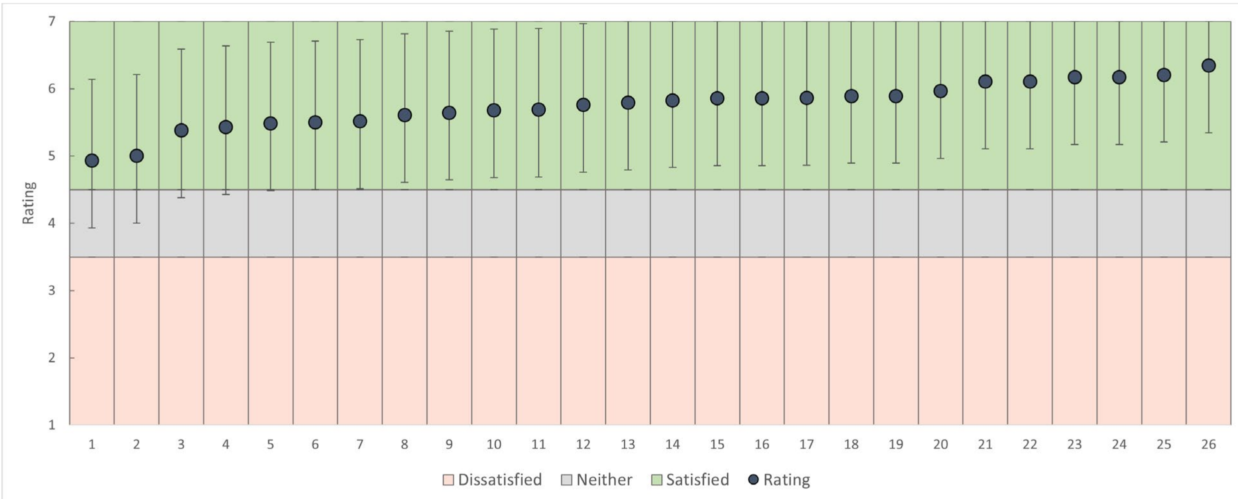

Figure 8 – Average (mean) employee satisfaction with the indoor environmental quality (IEQ) of different aspects of their primary workspace, ranked from highest to lowest satisfaction (see Table 3). Standard deviations are shown as error bars and represent how widely responses varied among different employees.

Employees are satisfied with all 26 of the 26 IEQ criteria in their primary workspace. The mean satisfaction scores ranged from 4.93 (overall privacy) to 6.34 (overall cleaning and maintenance).

IEQ Scorecard

The IEQ Satisfaction Score is the average (mean) of the 12 'Overall' category-level IEQ criteria. This score represents employees' overall satisfaction with their primary workspace and can serve as a benchmark for tracking progress in future surveys.

Figure 9 - IEQ Satisfaction Score (primary workspace)

Employees are satisfied with the indoor environmental quality of their primary workspace, with an IEQ Satisfaction Score of 5.76.

OVERALL FACILITY RESULTS

Overall Perceptions

Employees answered several questions about the overall MAIC facility, which includes the site, the building, and the interior space.

Table 4 – Average (mean) employee satisfaction with the overall facility and perceptions of how the facility impacts their work performance and health. Standard deviations represent how widely responses varied among different employees.

	Rating (Scale: 1-7)	Standard Deviation	# of Responses	Interpretation
Satisfaction	6.17	1.36	30	Satisfied
Work Performance	5.87	1.35	30	Enhanced
Health	6.03	1.40	30	Enhanced

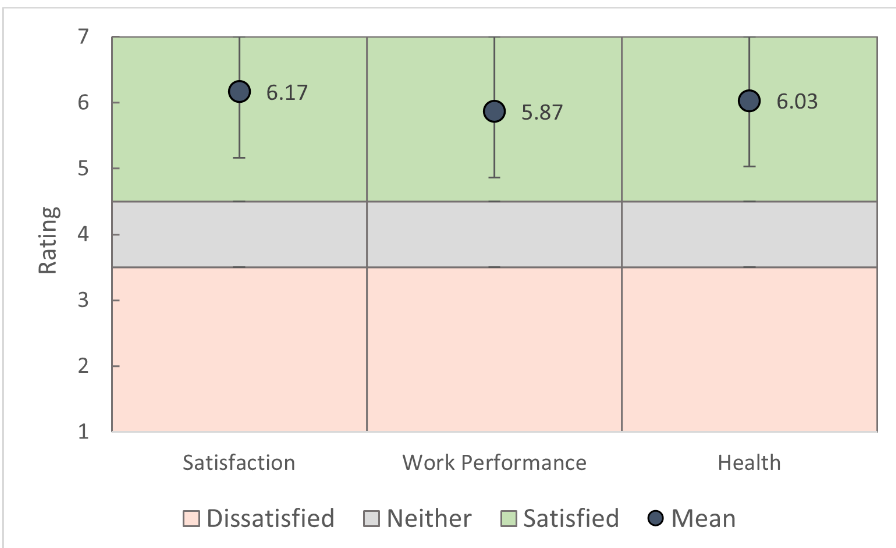

Figure 10 – Average (mean) employee satisfaction with the overall facility and perceptions of how the facility impacts their work performance and health. Standard deviations are shown as error bars and represent how widely responses varied among different employees.

Employees report being satisfied with the physical environment of the overall facility, that it enhances their work performance, and that it enhances their health.

Commuting Practices

Employees answered questions about their primary mode of transportation, commute distances, and their ability to commute using an alternative to driving alone (walk, public transit, bike, van, carpool, etc.).

The MAIC is located on Franklin Avenue between Hiawatha Avenue and 15th Avenue S. This location is served by several bus routes and is a ten-minute walk from the Blue Line LRT line. There is on-site parking and bike storage.

Table 5 – Primary modes of transportation for employee commutes to the facility (22 responses)

	Percentage
Drive Alone	86%
Carpool	11%
Use Public Transit	4%

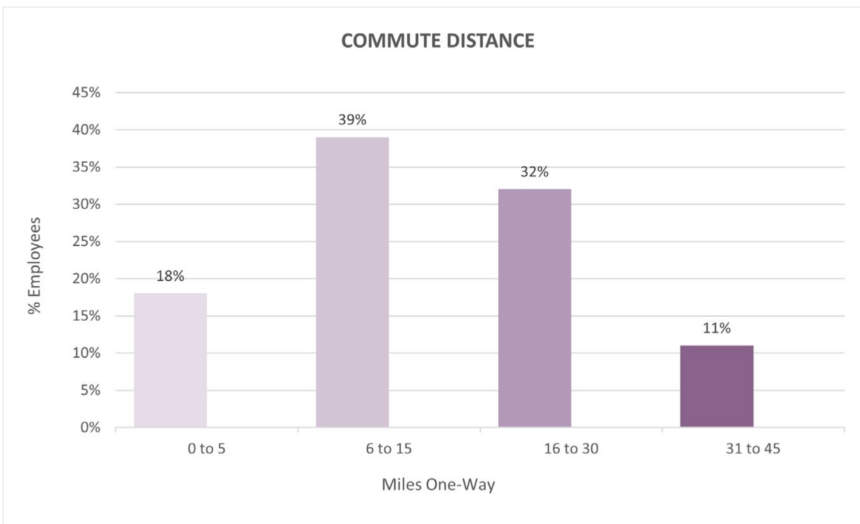

Figure 11 – Employee commute distance to the facility (28 responses)

Table 6 – Average (mean) employee perception of how the facility location impacts their ability to commute in ways other than driving alone

	Rating (Scale: 1-7)	Standard Deviation	# of Responses	Interpretation
Ability to commute in alternative ways	4.89	1.59	27	Enhanced

Although the primary way all respondents get to work is by driving alone, they did report that the location of the building enhances the ability to commute in alternative ways. Most employees travel 15 miles or less to get to the building.

Physical Activity

Employees answered questions about how the facility impacts their overall physical activity while they are there. Site and building design can encourage physical activity such as walking and taking the stairs, which can contribute to healthier lifestyles.

Table 7 – Average (mean) employee perception of how the overall facility impacts their physical activity

	Rating (Scale: 1-7)	Standard Deviation	# of Responses	Interpretation
Physical activity (walking, stair use, etc.)	6.5	0.91	28	Enhanced

Employees report that the facility enhances their physical activity.

APPENDIX A – OPEN-ENDED RESPONSES

Employees had the opportunity to provide open-ended feedback on the overall facility and their primary workspaces. MAIC employees provided relatively few comments but did submit some positive feedback as well as raising a few specific concerns about the following themes: acoustics, amount and control of light, adjustability, and thermal conditions. While these qualitative responses indicate some employee dissatisfaction with specific features of the facility, they do not represent the overall sentiment from employees. However, the comments do give insight into specific issues that could be addressed by building management.

The comments from the employees are provided below.

Overall Positive

- I love the new building as a long time community member. MAIC has been a huge part of my life and family's life. I feel honored to work in the new building. They did a great job remodeling it while also keeping the old look.
- It’s a beautiful space and allows staff to run program smoothly a majority of the time.
- Everything is fine, it can always be better or improved if you have the funds

Cleaning and Maintenance

- Workplace is kept very clean
- Our cleaning team is amazing.

Acoustics

- The overhead noise is my complaint of sound. It tends to be an issue when on the phone with a client or a zoom meeting.
- The white noise machines to drown out the conversations to help privacy causes headaches and trouble to concentrate.
- HVAC and pipes loud and distracting in some rooms. Makes it difficult to maintain meetings/conversations in certain areas.

Daylighting, Lighting, and Controls

- The combination of sunlight and fluorescent lighting was a harsh adjustment at first and hindered my blue light intake.
- I like the big windows
- I love the amount of sunlight we get I just wish the desk were positioned where we can be comfortable where the sunlight shines in. I love the automatic timing but I wish we could individually adjust lighting- the natural light, fluorescent light and blue light is a

harsh maneuver and wish we could control some of the light we are receiving individually
- Motion lights often turn on without physical movement, pretty sure its catching reflections from people outside.
- We don’t have desk lighting.
- I have a big window in my office that overlooks the center's backyard. I've never had to turn my office light on during business hours because of the generous natural light.

Adjustability, Layout, and Space Use
- I am not able to adjust my workspace for comfort, I am right handed and I have a left handed area.
- The desk was difficult to work around when it came to changing the phone/outlet items positions.
- At times I wish the BGC program space was larger (ex: another room), due to the large number of youth we get sometimes (especially when all age groups are inside the club at once).
- The direction of our cubes would be better if we faced the windows as opposed to facing office doors and the walls
- Wish that my office had a window

Thermal Conditions
- For a new building - very prone to high humidity when the weather is bad/humid.

APPENDIX B – RECOMMENDATIONS

This appendix includes specific recommendations for the most common indoor environmental quality concerns found in a wide range of building types. Some of these recommendations may be useful even if occupants reported being satisfied in these areas – either to maintain satisfaction levels or improve them further.

Acoustic Conditions

- Identify acoustic criteria for overall requirements.
- Determine if any task areas differ now from their original spatial layout/use (i.e., collaborative work spaces now located adjacent to focused work areas, individual workstations).
- Develop specialized acoustical performance requirements to support functional programming employees' tasks (e.g., sources of recurrent noise that need to be controlled, special user populations that may have distinct auditory performance limitations, or multiple uses of building spaces that may have different acoustic criteria). Identify and apply appropriate acoustics modeling software for the project.
- Measure acoustic performance onsite with full building systems (heating, ventilation, and air conditioning) running.
- Identify employees' privacy concerns via focus groups and/or log complaints relative to acoustical conditions for further evaluation.
- Consider employees' tasks within shared spaces to determine if spatial layout changes can be made for increased acoustic control.

Lighting Conditions

- Identify employees' lighting performance criteria that are to be met to achieve goals by conducting onsite measurements of existing illumination and compare them to standards for employees' tasks as identified by the Illuminating Engineering Society (IES).
- Determine if any task areas differ now from original intent to be sure illumination level and quality of lighting are not impeded by physical changes to the space (i.e., walls, ceilings, furnishings, fixtures, or equipment).
- Develop additional quality lighting criteria as needed for special facility (e.g., influence of daylight quality or quantity) or employee (e.g., age, task duration) issues.
- Log complaints related to lighting conditions for further evaluation.

- Identify poor lighting conditions in the workspace caused by a lack of control over daylighting, which can cause glare and eyestrain.

Personal Adjustability

- Determine what adjustability issues arise with temperature, lighting, or furnishings via a focus group.
- Identify personal, individual problem areas and relate them to other IEQ issues via a log of complaints relative to adjustability.
- Provide education to employees about any existing/achievable adjustment options (e.g., furnishings, air diffusers, lighting, temperature control, etc.)

Privacy Conditions

- Identify employees' privacy concerns via focus groups or log complaints relative to privacy to determine if visual or audio privacy is most affected.
- Determine if any task areas or responsibilities differ from original intent and develop alternatives or modifications.
- Consider adding noise masking equipment and/or visual screening depending on the nature of the complaints.
- Document and compare acoustic privacy problem areas with acoustic measurements to pinpoint specific problem areas.

Thermal Conditions

- Measure thermal performance conditions on site.
- Log complaints related to thermal conditions for further evaluation.
- Determine special thermal comfort requirements or problems that may be encountered in the building due to physicality of work activities, duration of sitting, or design/layout considerations. Focus groups can be useful in identifying problem locations.
- Determine if any employees' task areas differ now from original layout to determine if air flow is meeting systems design intent.
- Review conditions that affect thermal comfort using the applicable version of ASHRAE Standard 55, or Human Factors Design Handbook (see B3 Guidelines). For additional information, consider reviewing Human Factors and Ergonomics Design Handbook, Third Edition (2016), by Barry Tillman, published by McGraw-Hill, NY.

APPENDIX C – METHODOLOGY

Background

The Sustainable Post-Occupancy Evaluation Survey (SPOES) was developed to assess human outcomes in workplace, classroom, and residence hall settings in compliance with the B3 Guidelines project tracking requirements. SPOES consists of a self-administered, Internet-based, questionnaire submitted to and completed by employees. The SPOES questionnaire has been tested for both validity and reliability.

- **Validity** is the extent to which an instrument or procedure measures what it is intended to measure (internal validity). The generalizability of results to another population (external validity).
- **Reliability** refers to the repeatability or replicability of findings – the extent to which the same results are produced each time. Instruments and procedures should produce the same results when applied to similar people in similar situations, or on a second occasion.

Category vs. Attribute

This SPOES report focuses on employees' satisfaction with the physical environment as related to 26 indoor environmental quality (IEQ) criteria in their primary workspaces. There are two levels of criteria: categories and attributes. A category is broader or more general such as Overall View Conditions or Overall Indoor Air Quality. Some categories have 'attributes' or 'attribute level' criteria that provide greater detail about the category. For example, Overall Thermal Conditions is a category level question, and there are four attribute level questions related to thermal conditions such as adjustability, air velocity (draft), humidity, and temperature. There are 12 category-level and 14 attribute level questions. Means are calculated and reported for all category and attribute-level criteria.

Interpreting Results

The report provides a descriptive summary of the results stated as the mean, standard deviations, and number of responses for each question analyzed.

- A **mean** is the average score of a set of data calculated by adding all scores together, then dividing by the number of scores.

- **Standard deviation** is a statistic used to measure the variability of a group of scores (how different scores are from each other and the mean). For example, if the range of scores is 1-7 and the mean (average) is 5.0 with a standard deviation of 1.0, then the scores are closely clustered around the mean, i.e., there is one unit of variation among all scores. If the mean was 5.0 and the standard deviation was 3.0, there is a broader range of variation among the scores. A smaller standard deviation means the scores are similar and the mean score is likely to be more accurate and more useful.

The midpoint of a 7-point scale is 4.00. Lower or higher values reflect stronger tendencies towards dissatisfaction/satisfaction and hinders/enhances. Means that are close to the center of the scale (4) are considered to be neither dissatisfied/hinders or satisfied/enhances.

When interpreting mean responses, the following labels are used:

- 1.00 - 3.50 dissatisfied (or hinders)
- 3.51 - 4.50 neither dissatisfied (or hinders) nor satisfied (or enhances)
- 4.51 - 7.00 satisfied (or enhances)

IEQ Satisfaction Score

An IEQ Satisfaction Score is calculated for employees' satisfaction with IEQ in their primary workspaces. This is a combination of the 12 category-level criteria only and results in a single, mean IEQ Satisfaction Score for all employees' satisfaction with the physical conditions of their primary workspaces. Attribute-level criteria are not included in the IEQ Score because unequal weight would be given to criteria that have both category and attribute-level questions.

At this time, criteria are weighted equally in this calculation as little evidence exists that provides rationale for weighting some criteria heavier than others. The IEQ mean is representative of a fair overall IEQ score and can serve as a benchmark of employees' satisfaction with the physical environment of their primary workspace.

APPENDIX D – ACKNOWLEDGMENTS

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