

# TEAM MUSTARD

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# Hypothesis

## HYPOTHESIS

**It is more comfortable in summer in the offices on the south than in those on the northwest.**

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# Task Breakout Description

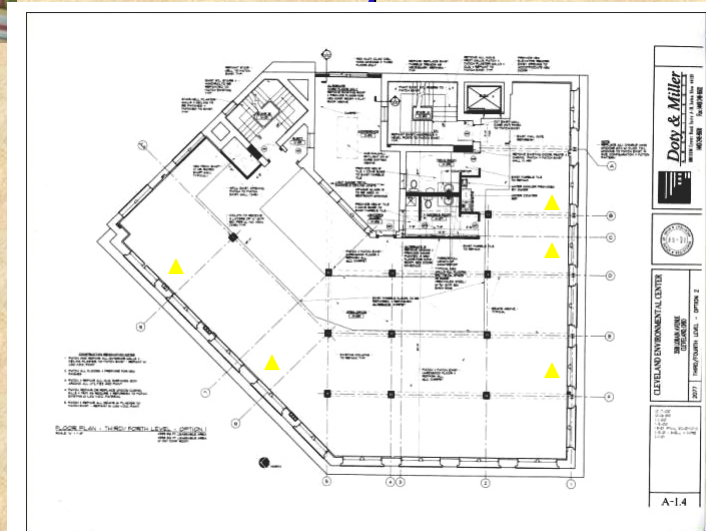
- Teams were created to complete:
  - Hobo temperature recording
    - South wall 2x(3), Northwest 2x(2),
  - Resident questionnaire forms
    - 11 questions on comfort
  - Create Hobo data chart/s
  - Questionnaire data Table/Chart
  - Pictures/Powerpoint

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# Hobo Temp Locations

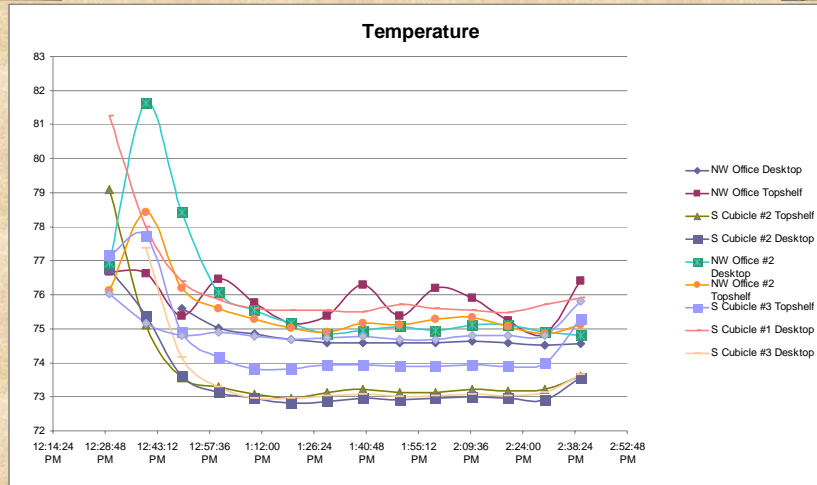


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# Temperature Results

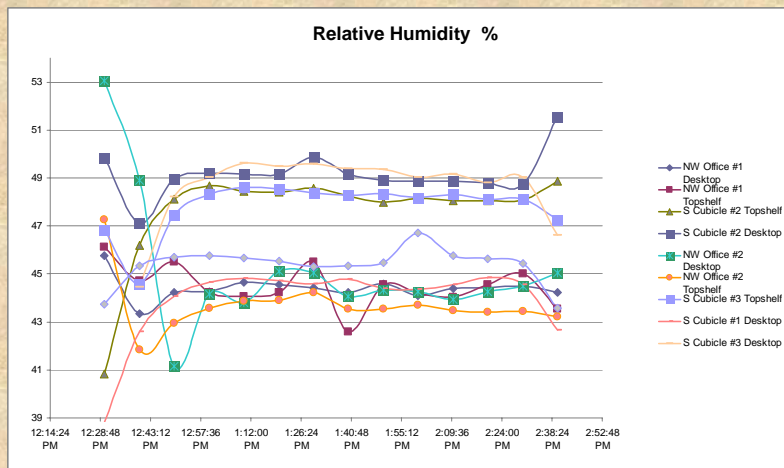


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# Relative Humidity Results



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# Questionnaire Form

Thermal Comfort Survey Sheet: Fifth Third Bank, 3500 Lorain Street, Cleveland Ohio

Age \_\_\_\_\_ Sex : Clothing Type: \_\_\_\_\_

How Long Have You Worked Here: \_\_\_\_\_ Activity Level: \_\_\_\_\_

1: What is your thermal comfort level when sitting at your desk? (Circle One)

Very Comfortable	Comfortable	Neither/Nor	Uncomfortable	Very Uncomfortable
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2: What is your thermal comfort level during the morning?

Very Comfortable	Comfortable	Neither/Nor	Uncomfortable	Very Uncomfortable
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3: What is your thermal comfort level in the afternoon?

Very Comfortable	Comfortable	Neither/Nor	Uncomfortable	Very Uncomfortable
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4: Right now, I feel

Cold	Cool	Neither/Nor	Warm	Hot
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5: I would rather feel

Warmer	Neither/Nor	Cooler		
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6: I open my windows, (dependant on weather):

Morning	Afternoon	All Day	Never	
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6: The office feels

Very Fresh	Fresh	Neither/Nor	Stuffy	Very Stuffy
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7: The office is

Very Bright	Bright	Neither/Nor	Dim	Very Dim
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8: I close the blinds:

Morning	Afternoon	All Day	Never	
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9: I have a lot of control over the climate in my office

Strongly Agree	Agree	Neither/Nor	Disagree	Strongly Disagree
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10: I usually have the lights on in the office:

Morning	Afternoon	All Day	Never	
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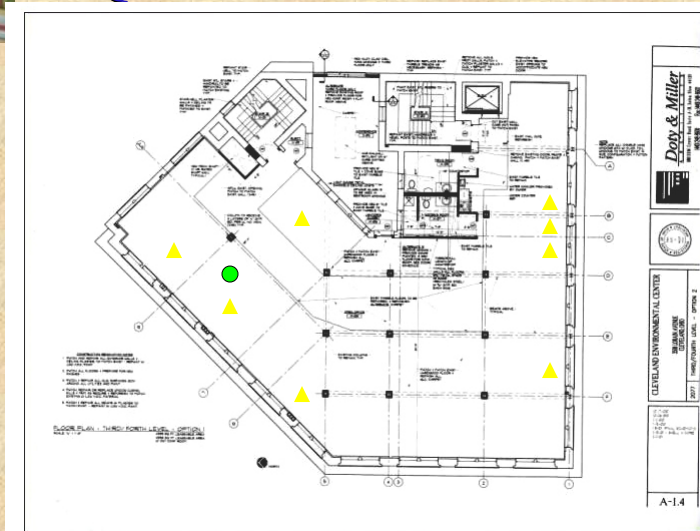
11: Other Comments:

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# Questionnaire Locations



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# South Wall

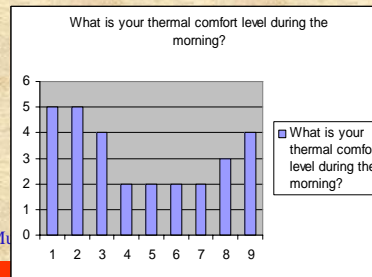
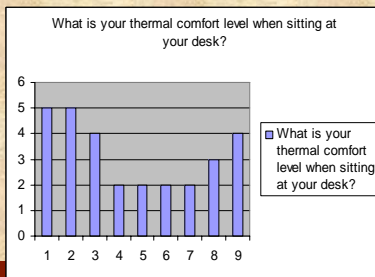
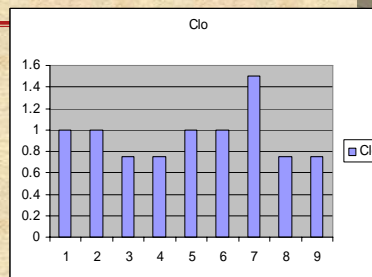
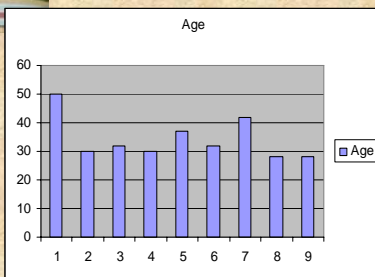


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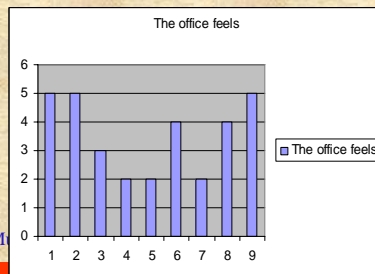
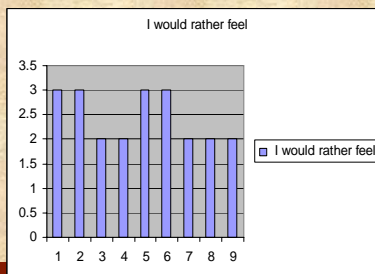
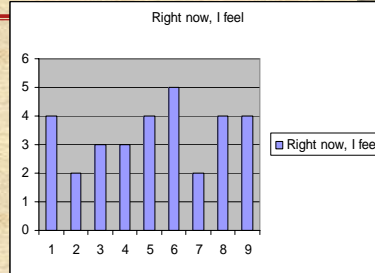
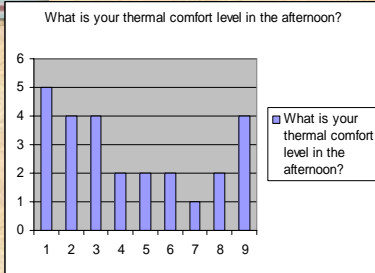
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# Questionnaire Result Table



# Questionnaire Result Table



# Questionnaire Summary

## Cleveland Green Building Coalition

One subject. Bi-floor airy office – ‘Green employees’ – use windows in spring and autumn – draughty windows

## 4<sup>th</sup> Floor

6 subjects. Very cold temperatures. 4 people have small heaters. Windows kept closed all year except when power fails (twice). Fairly high levels of discomfort. Dissatisfaction with the lighting motion sensors that turn off lights even when offices are being used. Complained to the engineer that it was far too cold but they said that they could not turn up the thermostat because it was necessary to keep the server cool enough.

Smell from basement. Ladies very sensitive to the smell here.

## Eco-city Cleveland

Two men – very green and aware of saving energy – come in and open windows in offices. If the afternoon is hot then the windows and blinds are closed. Complained that the thermostat is set far too low and they have cold discomfort from the A/C system.

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# Questionnaire Summary

## GENERAL

- Good level of satisfaction with the building
- High levels of dissatisfaction with the heating
- Lighting OK
- Moldy basement smells reach up to 4<sup>th</sup> floor
- Cooling distribution outlets a real problem on the 4th floor.
  
- South Cubicle 2 and 3 are significantly more humid than the other offices
- NW Office has a heart beat for humidity
- Desktop in cubicles much more humid that the higher levels despite
- South cubicles 2 and 3 are 1.5 degrees cooler than the others and 4.5% higher RH.

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# Hypothesis Evaluation

- **HYPOTHESIS**

**It is more comfortable in summer in the offices on the south than in those on the northwest.**

- **FINDINGS:**

**This is not true**

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Thank You



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