



# Designing for Workplace Health and Well-being and Workplace Analytics

NEOCON 2017

Session: W307

## Speakers

- Young Lee, Ph.D. LEED AP, CIDQ  
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- James Brewer  
Workspace Consultant, Steelcase
- Matthew Schottenfeld  
Associate Director, Innovative Workplace Institute

## Session Description

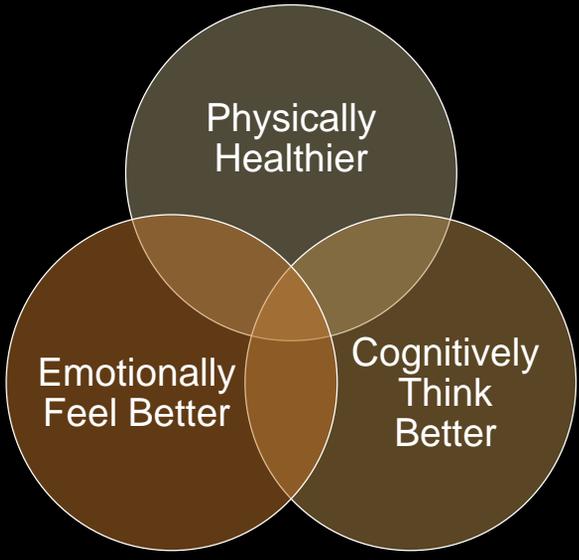
- Healthier and happier workers are proven to be more engaged and productive at work. This session discusses key indicators of workplace design for health and well-being and how to measure workspace performance in relation to them. CAPTIW<sup>®</sup> is workspace performance analytics developed with over 40 industry and academic partners. It encompasses a comprehensive list of workplace health and well-being indicators, and provides practitioners with free comprehensive analyses to promote evidence-based practice. The session showcases a case study from Steelcase WorkLife Center, NYC, highlighting a comprehensive assessment of health and well-being attributes and strategies to promote innovation and well-being at work.

## Business Case of H&W

# Benefits of healthy workplaces

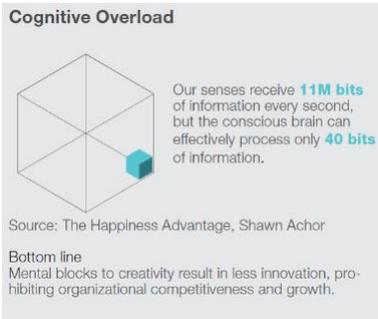
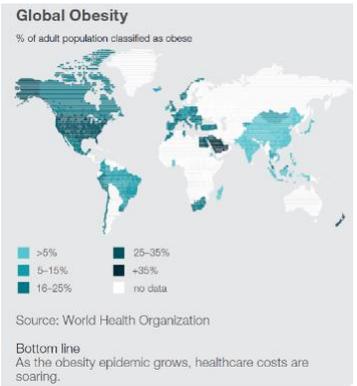
## Benefits of healthy workplaces

Health & Wellbeing Defined for Business Case



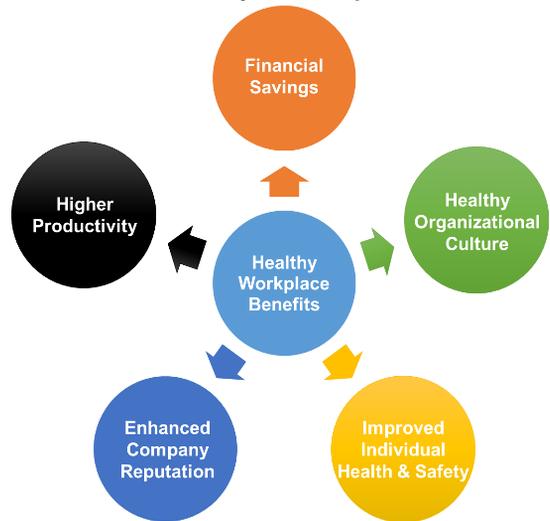
# Benefits of healthy workplaces

- Contemporary Workplace, H&W, and Bottom Line



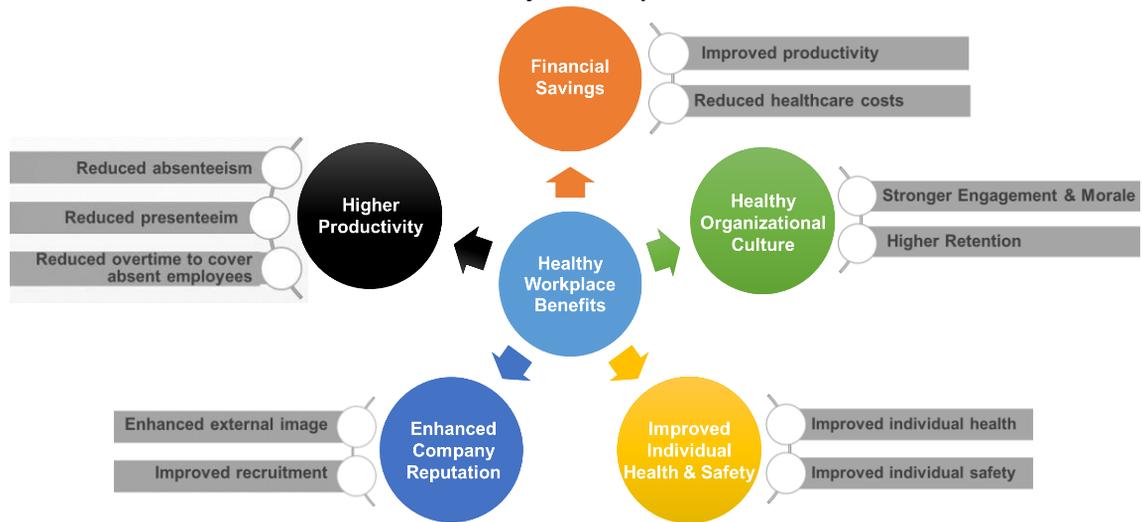
# Benefits of healthy workplaces

- Positive Outcomes of Healthy Workplaces



# Benefits of healthy workplaces

- Positive Outcomes of Healthy Workplaces



## CAPTIV<sup>©</sup> Workplace Analytics and H&W Indicators



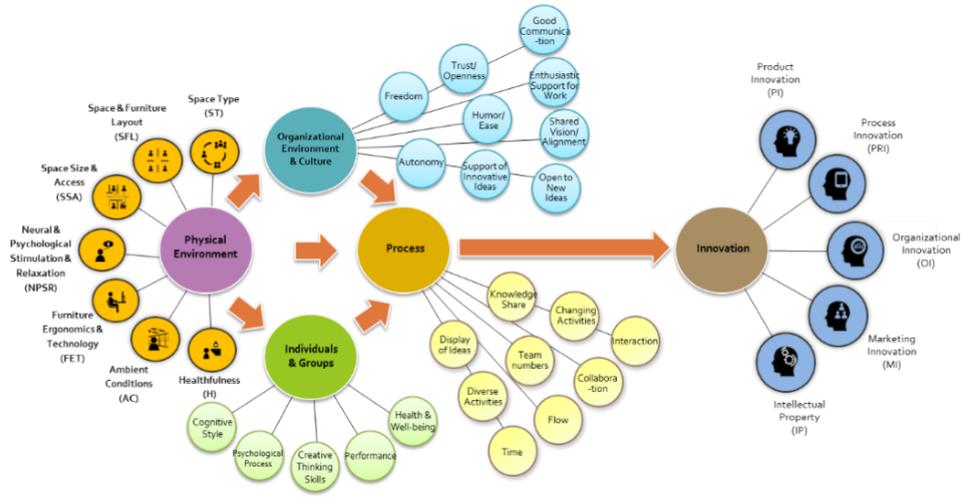
# CAPTIV<sup>®</sup> Workplace Analytics and H&W Indicators

- Open Source Online Workspace Analytics
- Funded by the American Society of Interior Designers
- A collective effort with over 40 industry and academic partners
- Key performance indicators (KPIs) of the physical workspaces supporting the organizational performance in innovation and innovation strategies
- Alternative workplace performance metrics encompassing productivity, health, & wellbeing beyond the conventional metrics of cost per SF



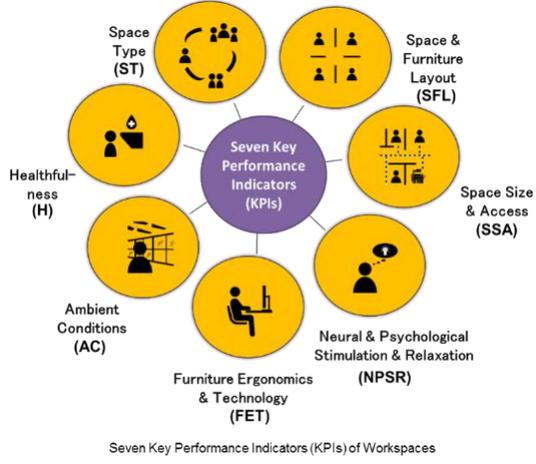
## UNIQUE FUNCTIONS OF CAPTIW<sup>®</sup>

### 1. MOST COMPREHENSIVE WORKPLACE MODEL



# UNIQUE FUNCTIONS OF CAPTIW<sup>®</sup>

## 2. MOST COMPREHENSIVE KEY PERFORMANCE INDICATORS (KPIs) OF WORKSPACES



# UNIQUE FUNCTIONS OF CAPTIW<sup>®</sup>

## 3. PERFORMANCE-BASED ASSESSMENT OBJECTIVE AND PRESCRIPTIVE MEASURES

CAPTIW <sup>®</sup> SCORECARD	
Key Performance Indicators of the Physical Work Environment	
Instruction: Type the number minus 1 corresponding to the order of the answers. e.g. 0 for the first answer, 1 for the second answer, & 6 for the seventh answer.	
<b>SPACE (ST)</b>	
ST1-1	Choice of Work Spaces: Focus (head-down) Spaces
ST1-2	Choice of Work Spaces: Collaboration Spaces
ST1-3	Choice of Work Spaces: Socialization Spaces
ST1-5	Level of Ratio Balance
ST2-1	Interaction-Collaboration Work Spaces: Formal Meeting Spaces
ST2-2	Interaction-Collaboration Work Spaces: Informal Meeting Spaces
ST2-3	Interaction-Collaboration Work Spaces: Impromptu Meeting Spaces
ST2-5	Level of Ratio Balance
ST3-1	Recharge Spaces: Play Spaces or Spaces with Features for Playing
ST3-2	Recharge Spaces: Solitude Spaces or Spaces with Features for Solitude Activities
ST3-3	Recharge Spaces: Fitness Spaces or Spaces with Features for Fitness
ST3-4	Recharge Spaces: Social Spaces or Spaces with Features for Socialization
ST3-6	Recharge Spaces: Outdoor Recharge Spaces
ST3-7	Level of Ratio Balance
AC4-6	Indoor Air Quality: Low screening rates and runtimes
AC4-6	Indoor Air Quality: Occupant Control of Indoor Air Quality
AC4-7	Indoor Air Quality: Use & Compliance of Indoor Air Quality Guidelines/Standards
	0
<b>HEALTHFULNESS</b>	
H1-1	Healthfulness: Cleaning Materials and Products
H1-2	Healthfulness: Cleanliness & Maintenance of the Usable Spaces
H1-3	Healthfulness: Access to Fresh Drinking Water
	0
<b>TOTAL</b>	<b>0</b>

CAPTIW<sup>®</sup> Scorecard with a Set of Objective and Prescriptive Measures

# UNIQUE FUNCTIONS OF CAPTIW<sup>®</sup>

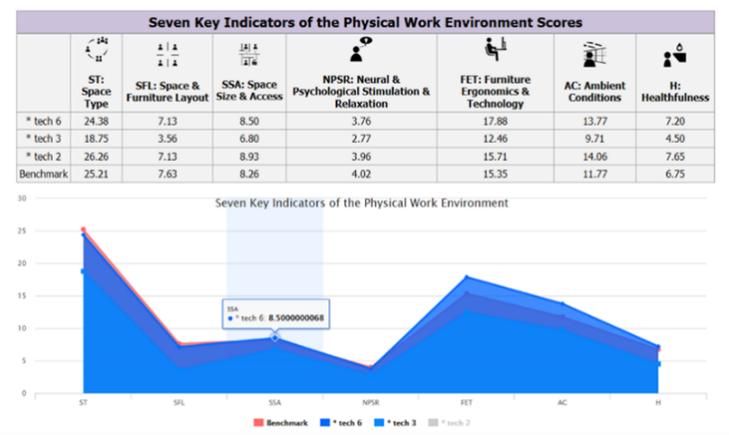
## 4. BENCHMARK FUNCTION



CAPTIW<sup>®</sup> Analysis against the Benchmark

# UNIQUE FUNCTIONS OF CAPTIW<sup>®</sup>

## 5. COMPARATIVE ASSESSMENT BETWEEN MULTIPLE PROJECTS



CAPTIW<sup>®</sup> Analysis of Comparative Assessment between Multiple Projects

# UNIQUE FUNCTIONS OF CAPTIW<sup>©</sup>

## 6. ENCOMPASSING PRODUCTIVITY, HEALTH & WELLBEING INDICATORS

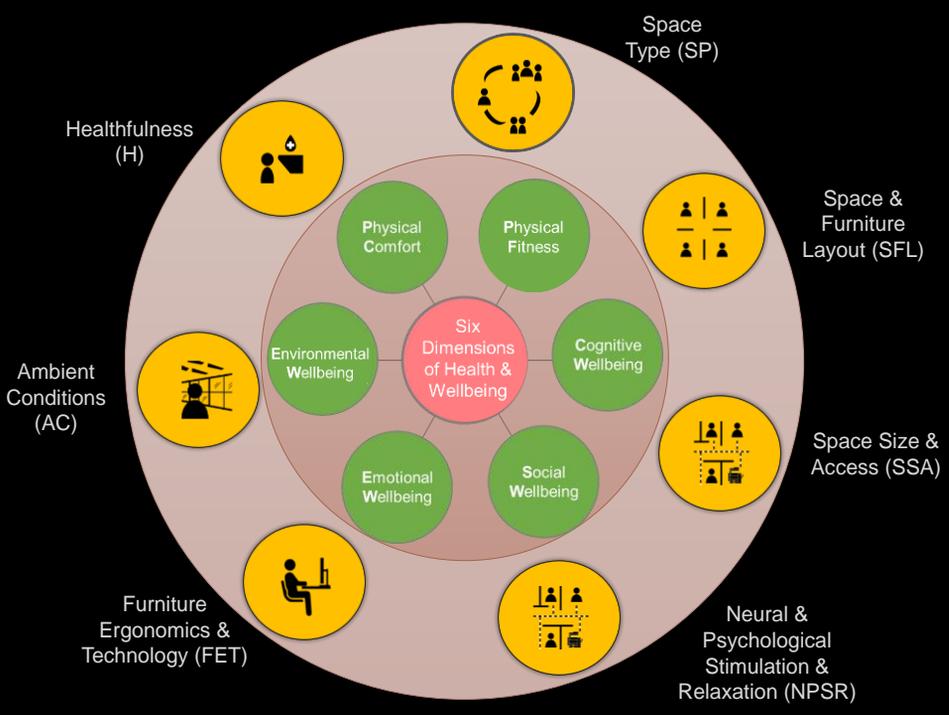


## H & W Indicators of CAPTIW<sup>©</sup>

Cognitive & Psychological Function Factors	KPI	Physical Health, Fitness & Comfort Factors
ST 1. Choice of Work Spaces ST 2. Interaction – Collaboration Work Spaces ST 3. Recharge Spaces	ST	ST 3. Recharge Spaces
SFL 1. Flexibility SFL 2. Flow and connectivity	SFL	
	SSA	SSA 1. Amount of Spaces SSA2. Access to Equipment
NPSR 1. Unique/ Fun Atmosphere NPSR 2. Stimulation of Senses NPSR 3. Relaxing Environment	NPSR	
	FET	FET 1. Furniture Ergonomics FET 2. Technology
AC 1. Acoustics AC 2. Visual Comfort AC 3. Thermal Comfort AC 4. Indoor Air Quality	AC	AC 1. Acoustics AC 2. Visual Comfort AC 3. Thermal Comfort AC 4. Indoor Air Quality
	H	H 1. Healthfulness

CAPTIW<sup>©</sup> Measures Encompassing Productivity, Health, and Well-being

# H & W Indicators of CAPTIW<sup>©</sup>



# CAPTIW<sup>®</sup> User Interface www.inno-wp.com

**Welcome to Innovative Workplace Institute and CAPTIW**

When creativity and innovation are critical to the performance of a knowledge workplace, an environment conducive to these is a must. Innovative Workplace Institute operates and manages *the most comprehensive analytics and diagnostic tool – CAPTIW* (pronounced captive) to provide organizations to assess the performance of their workplaces in relation to the organizational performance in innovation and bottom line. CAPTIW (Comparative Assessment and Performance Tool for Innovative Workplace) is a *free tool* developed for practitioners by a collaborative efforts between industry and academic partners to offer an analytic platform for the systematic assessment of workspace performance.

CAPTIW acts as a *comprehensive evaluation and benchmark tool* that measures and analyzes the performance of the physical work environment of workplaces. In addition, it examines the relationships of the workspace performance to *innovation performance and innovation strategies* of a company. The performance analysis yields data that help support overall innovation performance of the knowledge workplace. The evaluation focuses on *seven key performance indicators (KPIs)* of the physical work environment of the creative and high-performing knowledge workplace, which are known to affect three components essential to the organizational creativity and innovation: creative people, creative process, and creative organizational culture.

CAPTIW integrates an *automated analyses system* that displays the results in a visually enhanced format using a combinations of charts, tables, and text for easy understanding. Upon completion of an assessment for a workplace, users are able to not only look at the individual

**WP 74**

**To begin CAPTIW assessments**  
Create Account

**To continue CAPTIW assessments and view results**  
Sign In

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**General Instructions for Using the CAPTIW Online Benchmark Tool**

[Begin Assessment](#) [Download Worksheet](#)

**Purpose:**

Designed to be a comprehensive design benchmark tool for the knowledge workplace, the Comparative Assessment & Performance Tool for Innovative Workplace (CAPTIW) evaluates and analyzes the relationships between the performance of the physical work environment and how it affects a company's innovation performance and economic competitiveness.

Innovation in this context is defined as the design, invention, development and/or implementation of new or altered products, services, processes, systems, organizational structures, or business models with the express purpose of creating new value for customers as well as financial returns for the firm (1). Innovation is achieved by means of creativity. With the understanding that innovation is considered the fundament of the knowledge-intensive economy, the economic competitiveness of a company relies on it to grow outcomes beyond the growth of inputs. In order to enhance the innovation performance of knowledge-based companies, it is important to create an environment conducive to innovation. The literature suggests that certain attributes of the physical work environment enhance creative and innovative procedures of knowledge work (2) and, thus, it is crucial to identify which attributes and how these attribute affect the organizational innovation.

This tool employs key indicators of the physical work environment of the Creative and High-Performing Knowledge Workplace (CHPKW) to diagnose physical

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Instructions	Key Indicators of the Physical Work Environment	Company Information and Innovation Strategies	Innovation Performance of the Company			
Space Type Support	Space & Furniture Layout Support	Space Size & Access Support	Neural & Psychological Stimulation & Relaxation	Furniture Ergonomics & Technology Support	Ambient Conditions	Healthfulness

## SPACE TYPE SUPPORT (ST)

[Glossary](#)

\* Same spaces may be double counted for different questions depending on the purpose of the measurement.  
 \* A consultation with an appropriate party/personnel, e.g. designer(s), facility manager, furniture provider, etc. may be necessary to answer different sections of the form.

\* Usable space: Usable Area is a fully enclosed space in square feet available for tenant personnel, furnishings, fixtures and equipment (FF&E). This includes the aisles and walkways within tenant spaces for internal circulation on multi-tenant floors or, on single tenant floors, hallways and restrooms exclusively serving their floor(s).  
 \* Primary work spaces: Primary work spaces include spaces to focus, collaborate, and socialize in ST 1 Choice of Work Spaces.

ST 1. Choice of Work Spaces: A total amount of work spaces supporting critical work modes in knowledge workplace, measured in the amount of usable space. Count a space by its primary purpose/function.  
 ST 1-1. Focus (head-down) spaces  
  
 ST 1-2. Collaboration spaces

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Instructions	Key Indicators of the Physical Work Environment	Company Information and Innovation Strategies	Innovation Performance of the Company			
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## COMPANY INFORMATION AND INNOVATION STRATEGIES (IS)

[Glossary](#)

All questions are required as part of the critical analyses except the questions in grey. The questions in grey are voluntary. We recommend you fill out these questions to see further enhanced analyses against the benchmark.

Project Information  
 Project Name:  
  
 Project Type:  
  
 Project/Facility Location:

1. Total sales and revenues during the last fiscal year from this location/facility:  
  
(Include: Sales and operating revenues from discontinued operations)

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Instructions | Key Indicators of the Physical Work Environment | Company Information and Innovation Strategies | Innovation Performance of the Company

Product (Goods or Service) Innovation | Process Innovation | Organizational Innovation | Marketing Innovation | Intellectual Property

## PRODUCT (GOOD OR SERVICE) INNOVATION (PI)

[Glossary](#)

A product innovation is the market introduction of a new or significantly improved good or service with respect to its capabilities, user friendliness, components, or sub-systems.

- Product innovations (new or improved) must be new to your company, but they do not need to be new to your market.
- Product innovations could have been originally developed by your company or by other companies.

A good is usually a tangible object such as a smart phone, furniture, or packaged software, but downloadable software, music and film are also goods. A service is usually intangible, such as retailing, insurance, educational courses, air travel, consulting, etc.

Not Applicable

PI 1. Does your company/branch of company produce:

PI 7. Products/Goods

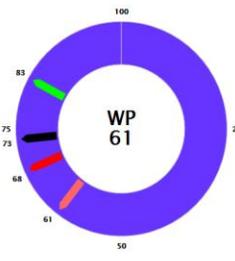
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Overview | **Workspace Performance & Innovation Performance** | Workspace Performance & Innovation Strategies | Innovation Strategies Summary

## Overview

### Workspace Performance

Please click a project name in the legend to display or hide the result/value of a particular project in the chart

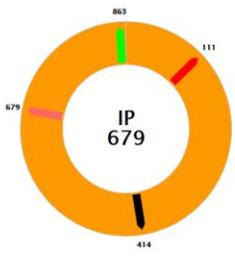


show/hide values by selecting items

- ◆ Benchmark
- ◆ Benchmark Min
- ◆ Benchmark Max
- ◆ Text 040316

### Innovation Performance

Please click a project name in the legend to display or hide the result/value of a particular project in the chart



show/hide values by selecting items

- ◆ Benchmark
- ◆ Benchmark Min
- ◆ Benchmark Max
- ◆ Text 040316

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Overview | Workspace Performance & Innovation Performance | **Workspace Performance & Innovation Strategies** | Innovation Strategies Summary

Performance by Key Indicators | Performance by 7 KPIs of WP

**Performance by Key Indicators**

**Total Score in Physical Work Environment: 60.53\***  
**Total Score in Innovation Performance: 679.26**

\* The total score is calculated based on the points earned out of a total of 10 points available in each of the seven key performance indicators (KPIs) which is, then weighted based on the impact/significance of each KPI in achieving creativity and innovation in a knowledge workplace.

**Summary**

**The Physical Work Environment and Innovation Performance of the Company**

The total score of the performance of your physical work environment in supporting creativity and innovation is 60.53, which is -19.17% lower than the benchmark. The highest performing key indicator of the physical work environment, compared to the benchmark, is SFL: Space & Furniture Layout (-57.02%) out of the seven key performance indicators of the physical work environment.

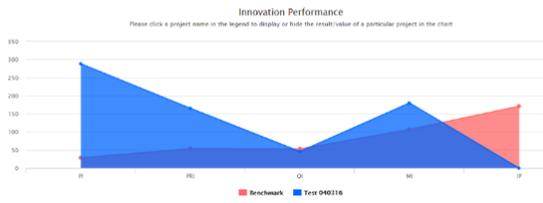
The total score for the Innovation performance of your company is 679.26, which is 48.64% higher than the benchmark. The highest performing innovation indicator, compared to the benchmark, is PI: Product Innovation (163.93%), and the lowest performing indicator is OI: Organizational Innovation (-14.39%) among the four innovation performance indicators.



	PI: Product Innovation	PEI: Process Innovation	OI: Organizational Innovation	MI: Marketing Innovation	IP: Intellectual Property
Current Project	288.15	165.19	45.93	180.00	0.00
Benchmark	28.56	53.70	53.05	106.94	171.18
Ratio	163.93%	101.75%	-14.39%	50.93%	0.00%

	ST: Space Type	SFL: Space & Furniture Layout	SSA: Space Size & Access	NPSR: Neural & Psychological Stimulation & Relaxation	FET: Furniture Ergonomics & Technology	AC: Ambient Conditions	H: Healthfulness
Current Project	16.88	4.53	7.65	3.56	10.84	9.42	7.65
Benchmark	19.69	8.15	8.22	4.09	15.35	11.04	6.83
Ratio	-15.38%	-57.02%	-7.14%	-13.79%	-34.48%	-15.82%	11.40%

Seven Key Indicators of the Physical Work Environment



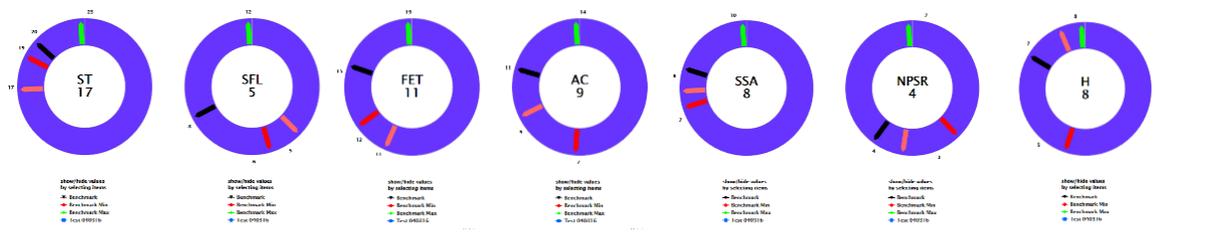
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## www.inno-wp.com

Overview | Workspace Performance & Innovation Performance | **Workspace Performance & Innovation Strategies** | Innovation Strategies Summary

Performance by Key Indicators | Performance by 7 KPIs of WP

**Space Type    Space & Furniture Layout    Furniture Ergonomics & Technology    Ambient Condition    Space Size & Access    Neural & Psychological Stimulation & Relaxation    Healthfulness**



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Overview	Workspace Performance & Innovation Performance	Workspace Performance & Innovation Strategies	Innovation Strategies Summary
Strengths & Opportunities	Opportunities by Organizational Attributes		

### Performance of the Physical Work Environment Supporting Organizational Creativity and Innovation

This section analyzes the performance of the critical key performance indicators (KPIs) of the physical work environment in supporting specific attributes of the three organizational constituents crucial to generating organizational creativity and innovation: organizational environment & culture, process, and people.

A set of specific sub key indicators of the Seven KPIs that are critical to achieving desirable outcomes of a certain attribute of the three organizational constituents are listed under each attribute of the three organizational constituents. The list shows only the attributes of the organizational constituents that are identified important by you/your team in the Question 11 of the Part1: Company Information and Innovation Strategies. A sub key indicator of the Seven KPIs is listed as strength when its score is above the benchmark, and as opportunity when its score is below the benchmark. By examining the scores, you can identify which key indicators to improve in order to support a specific attribute critical to enhancing creativity and innovation at the organizational level.

If you would like to view only the items scored below benchmark by the organizational attributes, please click Opportunities by Organizational Attributes.

Organizational Environment and Culture				
Critical Key Indicators of the Physical Work Environment	Current Project Score	Benchmark Score	Strengths	Opportunities
<b>Time (Sufficient time to develop ideas/ to market)</b>				
Recharge Spaces (st_3_1)	0	1.50		✓
Expandability (sfl_1_1)	2	2.83		✓
Versatility (sfl_1_2)	3	3.17		✓
Convertibility (sfl_1_3)	3	2.83	✓	
Core Interaction Networks (sfl_2_2)	1	3.83		✓
Cross-Pollination (sfl_2_3)	1	4.00		✓
Easy Access to Equipment (ssa_2_1)	3	5.83		✓
Low-Tech Collaborative Tools (fet_2_1)	4	4.00		✓
High-Tech Collaborative Tools (fet_2_2)	4	5.73		✓

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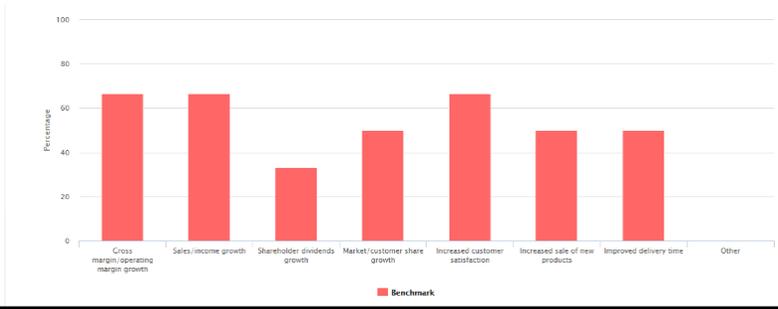
## www.inno-wp.com

Overview	Workspace Performance & Innovation Performance	Workspace Performance & Innovation Strategies	Innovation Strategies Summary
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### Innovation Strategies Summary

This summary is for the voluntary questions in the "Company Info & Innovation Strategies" section. If you have not filled out these voluntary questions, no analysis is provided. If you would like to obtain this summary, please make a copy of the project from the "Manage Account" and fill out these questions as a separate project.

- **Revenue Growth** from this location/facility of your company in the last three years is: %
- **Employment Growth** from this location/facility of your company in the last three years is: 2%
- **The most important long term strategy** to your company is:
- **Performance indicators** currently used to monitor the performance of the long term strategic objectives in your company are:



# Case Study: Steelcase Worklife Center, NYC

## Unique Qualities of Steelcase Worklife Center, NYC

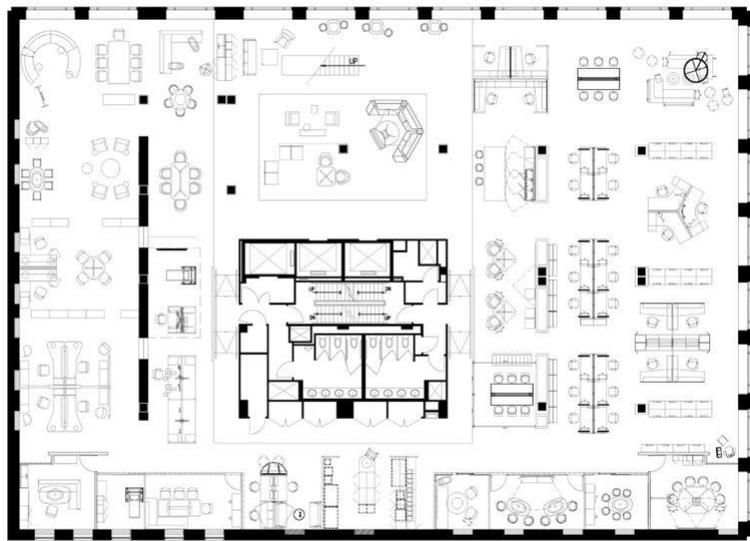
**Love how you work.**

At Steelcase we bring human insight to business by studying how people work, wherever they work. Those insights can help organizations achieve a higher level of performance, by creating places that unlock the promise of their people. Our goal is to help organizations create spaces that support how they work. Our passion is helping people love how they work.

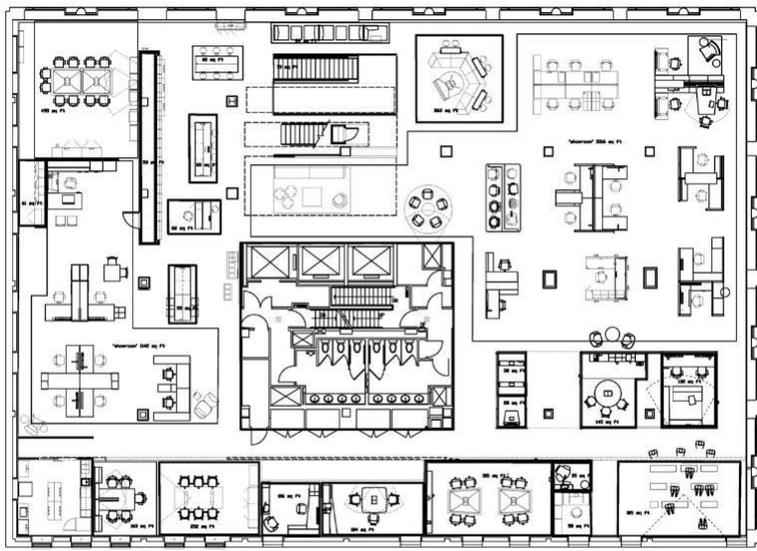
# Unique Qualities of Steelcase Worklife Center, NYC



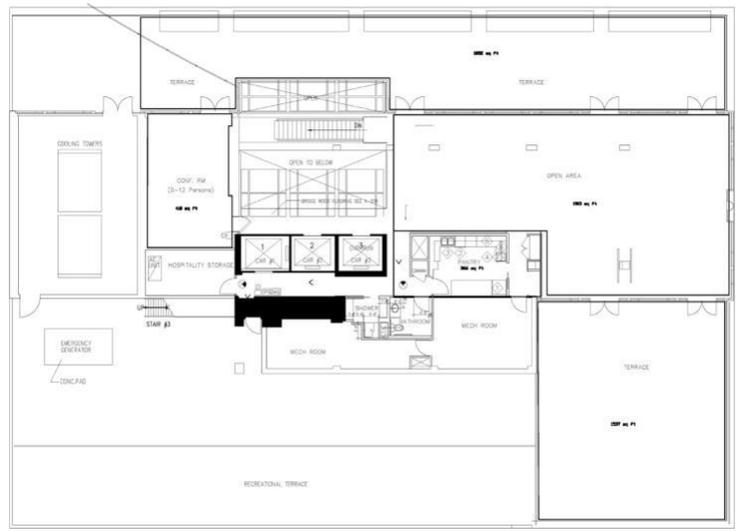
# Unique Qualities of Steelcase Worklife Center, NYC



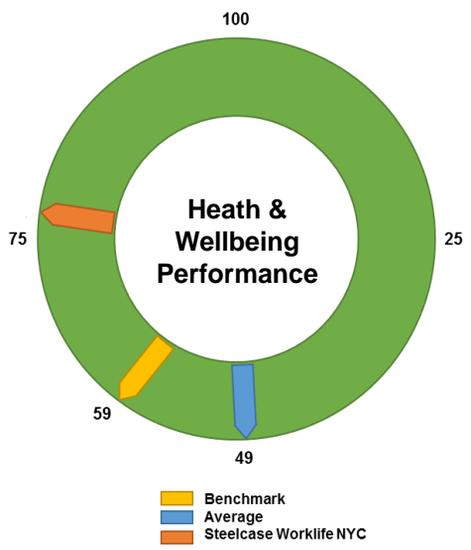
# Unique Qualities of Steelcase Worklife Center, NYC



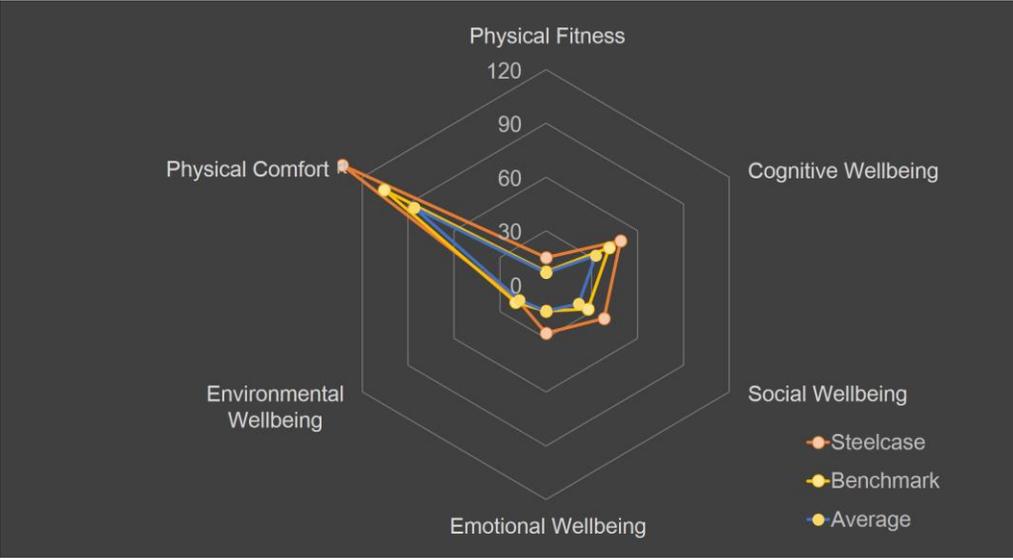
# Unique Qualities of Steelcase Worklife Center, NYC



# Health & Wellbeing Performance of SC Worklife Center, NYC



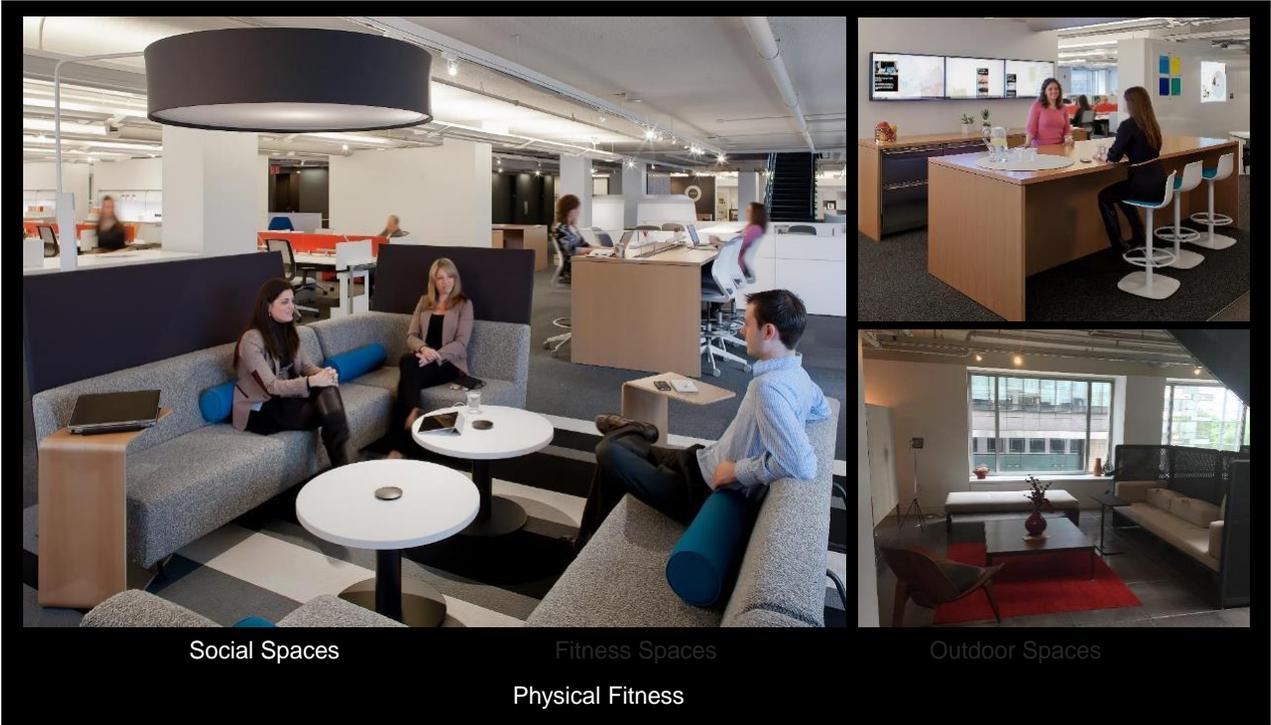
# Health & Wellbeing Performance of SC Worklife Center, NYC

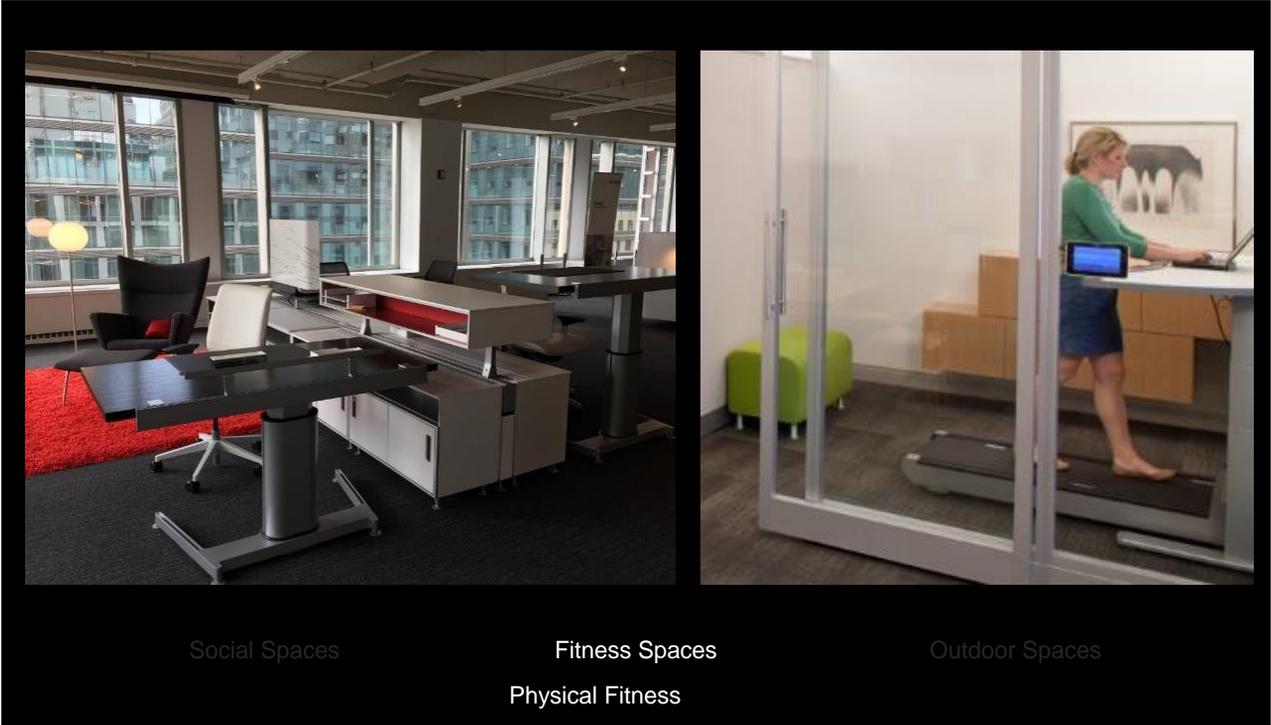


# Health & Wellbeing Performance of SC Worklife Center, NYC

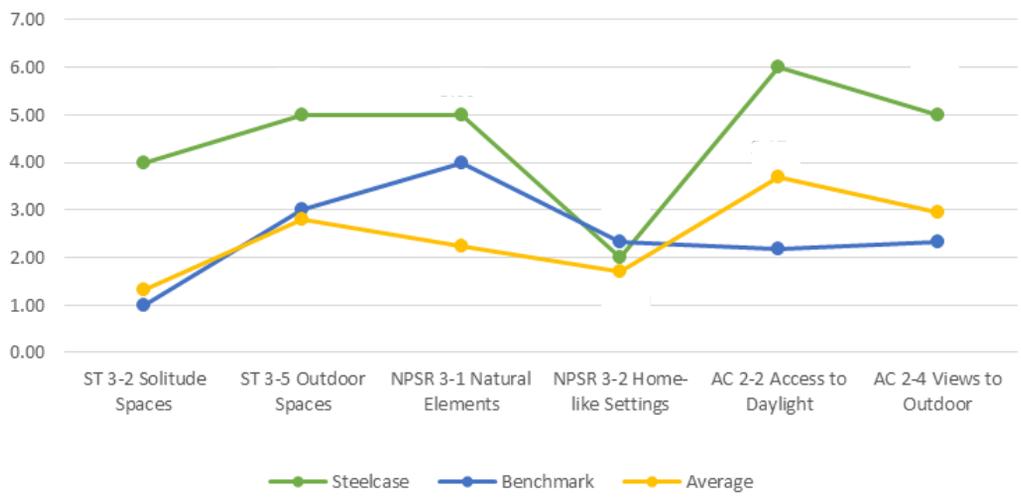


Physical Fitness





# Health & Wellbeing Performance of SC Worklife Center, NYC



Emotional Wellbeing



Solitude Spaces

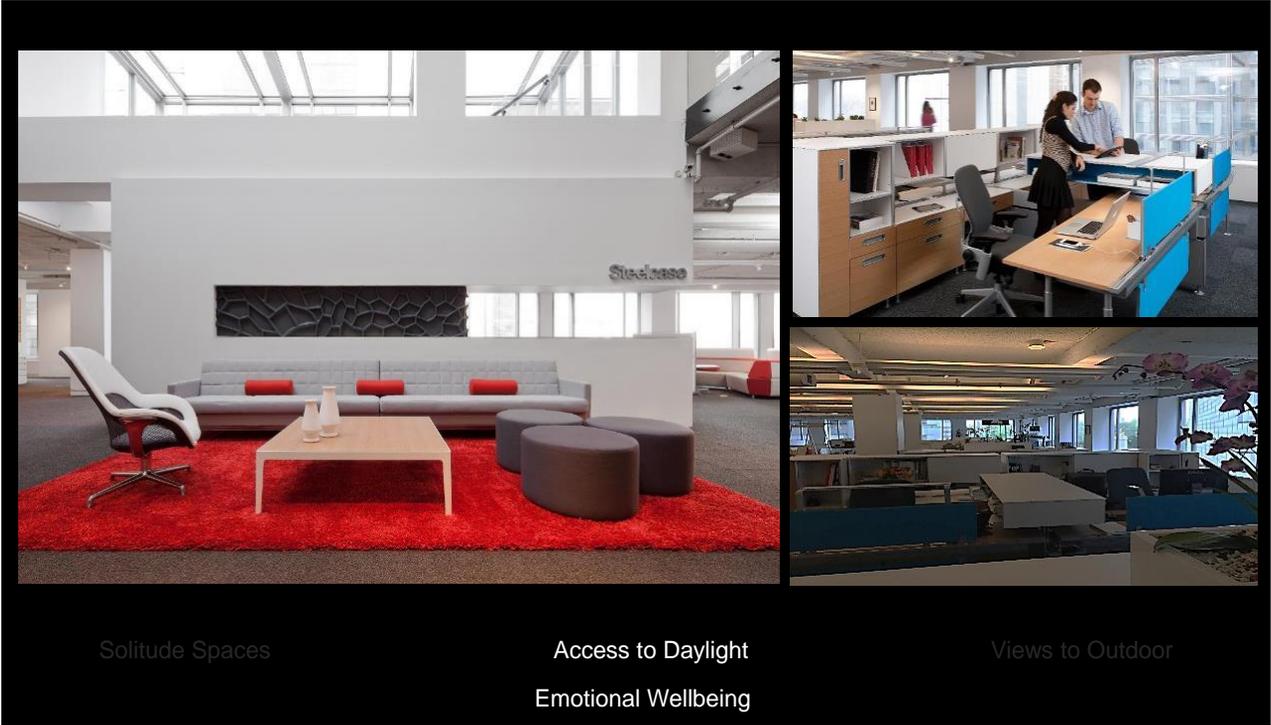


Access to Daylight

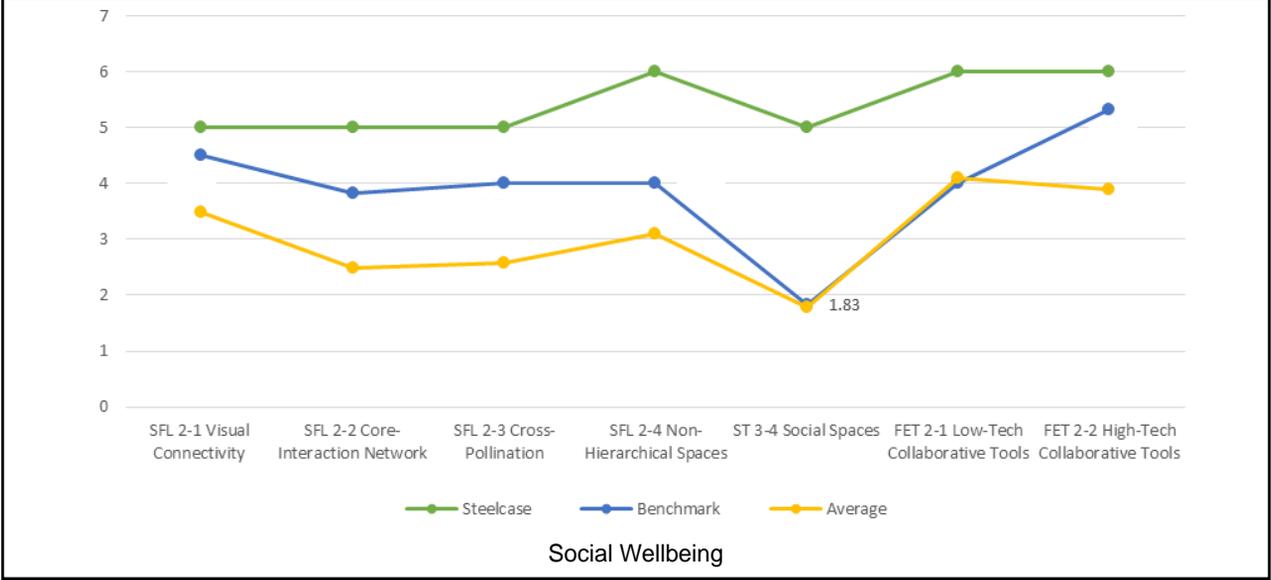


Views to Outdoor

Emotional Wellbeing



# Health & Wellbeing Performance of SC Worklife Center, NYC





Visual Connectivity

Core-Interaction Network  
Social Wellbeing



Cross-Pollination



Visual Connectivity

Core-Interaction Network  
Social Wellbeing



Cross-Pollination



Non-Hierarchical Spaces



High-Tech Collaborative Tools

Low-Tech Collaborative Tools

Social Wellbeing



Non-Hierarchical Spaces

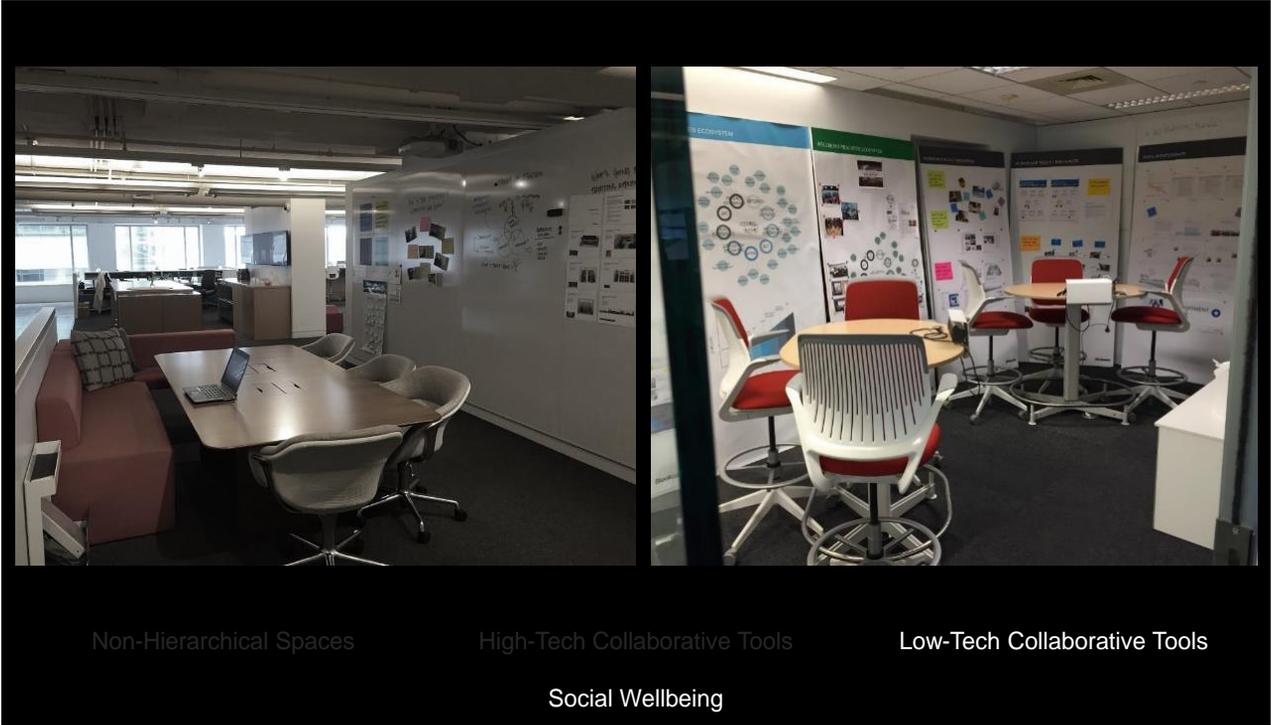


High-Tech Collaborative Tools



Low-Tech Collaborative Tools

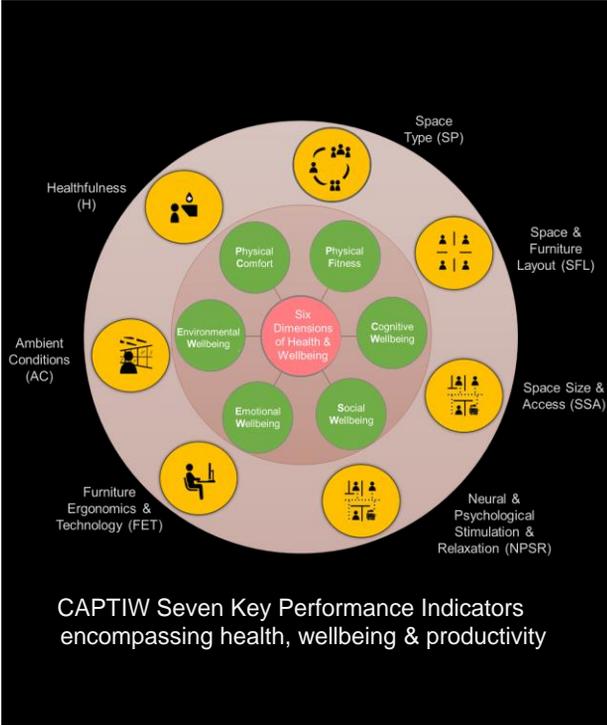
Social Wellbeing



# Implications



Health + Wellbeing + Productivity  
= Workplace Performance



# References

Steelcase (2016). Global report: Engagement and the global workplace. Steelcase 360 Magazine Report.  
 Steelcase (2015). Wellbeing: A bottom line issue. Steelcase 360 Magazine Issue 60.  
 British Heart Foundation (2015). Health at work infographics

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THANK YOU

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