

ft3

Architecture
Landscape
Interior Design

BOMA
Manitoba

Workplace Wellness: Healthy Workplaces - Trends and Myths

November 2, 2017

Many of us spend the majority of our waking hours working in an office. Some of these experiences are healthy and productive but many are not. Some of these office buildings are healthy and sustainable but many are not.

This BOMA presentation by **ft3 Architecture Landscape Interior Design** describes where we've been, where we are today, and where we hopefully are headed with the assistance of science and observation.

Healthy Workplaces: Trends and Myths

Topics:

- Historic perspective
- Case study: our office
- Importance of science & measurement
- Workplace trends and myths
- Questions / discussion

Presenters:

Marten Duhoux

Jennifer Atherton

Shiona Green



Historic Perspective

Healthy workplaces:

- Health impacts of more energy efficient building construction
- Codes and regulations
- Improve worker performance and productivity



Sick Building = Sick People



Historic Perspective

Healthy workplaces:

- Value of 3rd party certification



Case Study:



ft3 office at The Strand on Waterfront Drive

- Living lab for sustainable strategies
- Healthy, energy efficient, durable
- Open-concept office

Case Study:



ft3 office at The Strand on Waterfront Drive

- Development Density, Alternative Transportation and Innovative Transportation Strategy
- Over 20 Winnipeg Transit routes, subsidized bus passes, bike path, shared office bicycle, bike courier policy, hybrid taxis, office hour car sharing program, central meetings.



Case Study:



ft3 office at The Strand on Waterfront Drive

- 48.75% Water Use Reduction over the baseline
- dual-flush WCs, a waterless urinal, low-flow sensor activated lavatories, low-flow kitchen faucet, and a low-flow showerhead using only 4.7 LPM.

Case Study:



ft3 office at The Strand on Waterfront Drive

- Lighting power density is 32% below ASHRAE 90.1-2004 baseline.
- 3rd party commissioning of lighting controls, HVAC controls, and HRV that was installed as part of the office fit-up.

Case Study:



ft3 office at The Strand on Waterfront Drive

- 97.8% of construction waste diverted.
- Overall recycled content of 33.6%.
- Regionally Manufactured materials accounted for 21.2% (millwork, concrete, gypcrete, gypsum, DIRTT moveable wall, etc.).

Case Study:



ft3 office at The Strand on Waterfront Drive

- Task light at each workstation, shared spaces have controls to suit needs.
- 94% daylight area.
- Open office plan, low-profile workstations.
- Exterior views for 98.1% of seated spaces.

Case Study:

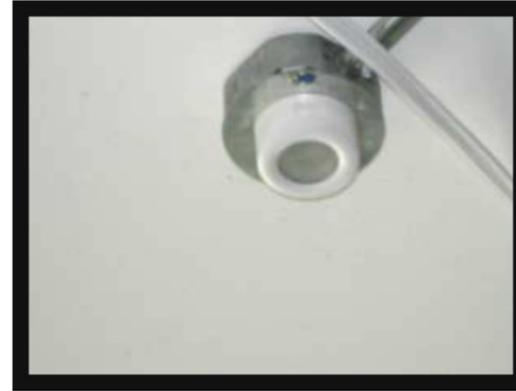


ft3 office at The Strand on Waterfront Drive

- Low-Emitting Paints & Coatings, Carpet Systems, Furniture & Seating, No smoking policy
- Operable windows
- Mechanical ventilation rate is 30% above ASHRAE 62.1-2004



Case Study:



ft3 office at The Strand

What wasn't achieved/pursued:

- Nearly all adhesive & sealants and composite wood products complied with low emissions requirements.
- Construction IAQ Management
- Indoor Chemical & Pollutant Source Control
- Controllability of Systems - Temperature and Ventilation
- Thermal Comfort Credit
- Outdoor Air Delivery Monitoring, CO₂ sensors

Case Study:



ft3 office at The Strand

What wasn't achieved/pursued:

- Rapidly Renewable Materials, Certified Wood
- On-site Composting - automatic mechanical composter
- Optimized Energy Performance Equipment & Appliances, Daylighting Controls Credit)
- LEED Certified base building
- Transportation Strategy incentive employee active transportation



Science and Measurement

The Big Question:

How can we be sure that our workplaces perform as intended?

Post-occupancy evaluation:

- How does the building perform compared to energy efficiency standards?
- How does the building perform in terms of occupant comfort and wellbeing?
- Do outcomes indicate strategies and additional investment was worthwhile?



"You can't manage what you don't measure."
Dr. Edwards Deming

Science and Measurement



Assessment and benchmarking:

- Allows for interesting comparisons / competition
- Reiterative process, follow up data collection/analysis
- Office foobot – nighttime temperature setback not happening
- Provide transparency and valuable data to improve design and construction practices, as well as ongoing building operations and maintenance
- Arc - Arc Skoru Inc.
- WELL
- Portfolio Manager
- GRESB



Science and Measurement



Science and Measurement

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Source EUI Report

Source energy use intensity (SEUI) is a unit of measurement that attributes a building's energy use relative to its size. "Source energy" is the total amount of energy that is required to operate the building, in addition to what the building consumes on-site. Source energy includes losses that take place during generation, transmission, and distribution of the energy, thereby ensuring a complete picture.

Read More about the Source EUI

Portfolio Average Source EUI

Change in Average Source EUI

122 | Current Average Source EUI

123 | Previous Average Source EUI

Your Properties Compared to the National Median Source EUI

Source EUI Equal to or Below the Median

Source EUI Above the Median

Source EUI by Group

Source EUI by Property Type

Raw Data for these Charts & Graphs

- Source EUI Averages by Group
- Source EUI Averages by Property Type
- Source EUI Averages by State
- Complete Reference Table

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Properties (5)

Add a Property

Notifications (0)

You have no new notifications.

Source EUI Trend

My Properties (5)

Filter by: View All Properties (5) Search

Create Group | Manage Groups

Name	Action
Federal Building	I want to...
Higher Campus	I want to...
Hill Store	I want to...
Insurance Office	I want to...
Summerville Elementary	I want to...

Page 1 of 1 | View 1 - 5 of 5

Download Entire Portfolio

Total GHG Emissions Trend

If you're a pro, you may want to [upload and/or update multiple properties](#) at once using an Excel spreadsheet. This can be done to create new properties, add use details, create meters and add meter consumption data.

Aspect

Weight in GRESB

Score

This Entity

Peer Group

GRESB



Management
8.7%

96 ⁺¹³

PEER
96 ⁺⁹
AVERAGE



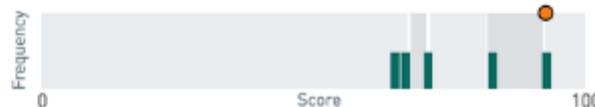
GLOBAL
77 ⁺⁸
AVERAGE



Policy & Disclosure
10.1%

93 ⁺¹¹

PEER
80 ⁺⁸
AVERAGE



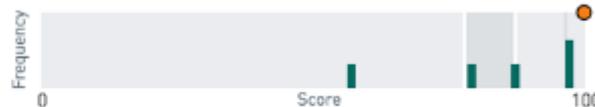
GLOBAL
66 ⁺⁹
AVERAGE



Risks & Opportunities
11.6%

100 ⁺²⁷

PEER
86 ⁺¹¹
AVERAGE



GLOBAL
67 ⁺⁷
AVERAGE



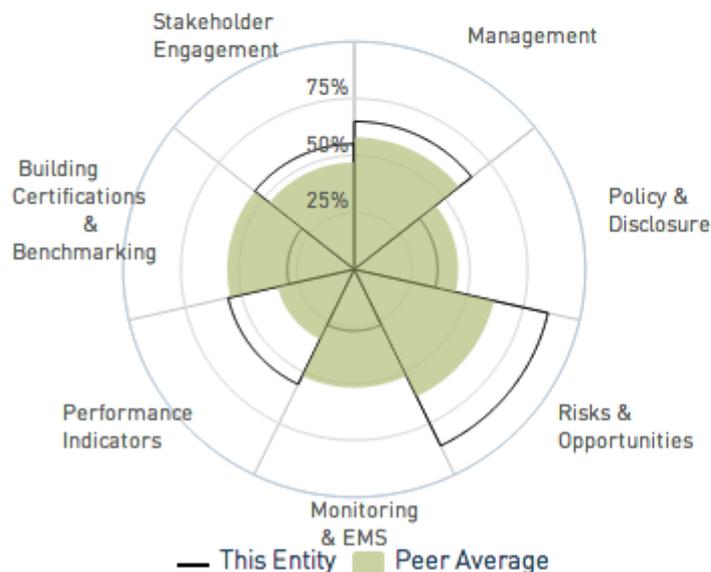
Monitoring & EMS
9.4%

50 ⁺⁴

PEER
69 ⁺⁸
AVERAGE



GLOBAL
59 ⁺⁶
AVERAGE



The graph includes all of GRESB's seven sustainability aspects.

It excludes the New Construction & Major Renovations aspect as this is scored separately.

All aspects provide important contributions to strong sustainability performance, beyond efficient use of energy and water and the reduction of greenhouse gas emission and waste.

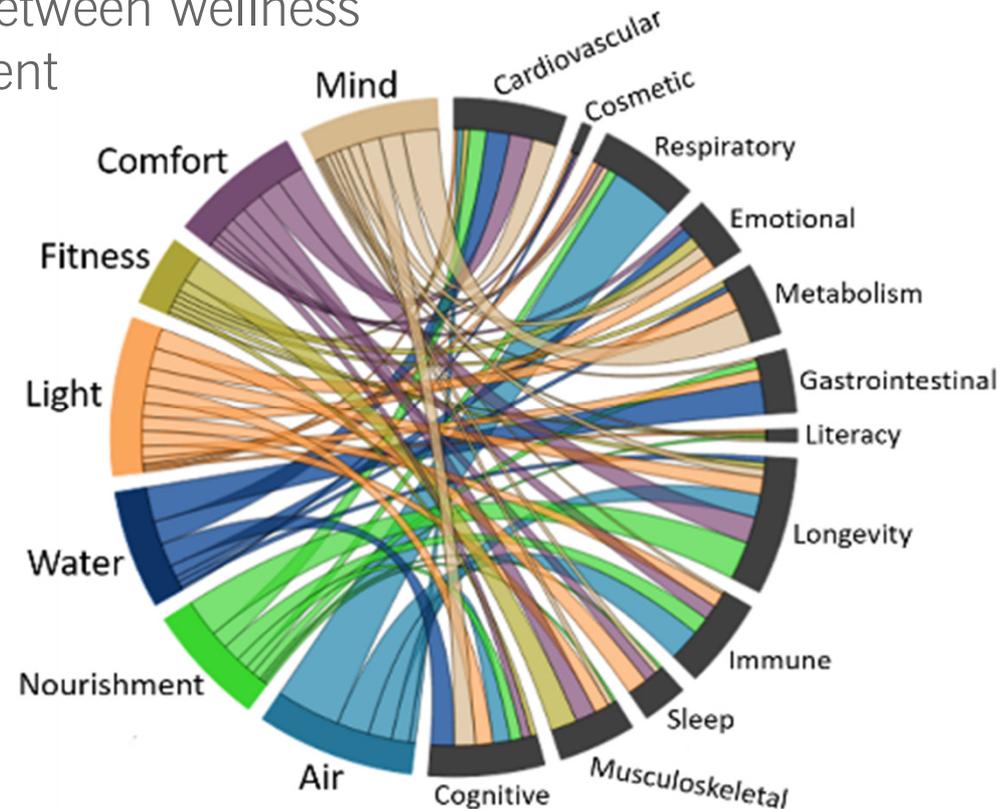
It shows the scores per aspect for this entity compared to the peer group average and visualises the breakdown of the score per aspect.



Science and Measurement

- Determine health impacts and solutions for improvement
- Complex relationship between wellness and the built environment

This diagram—a representation of the Delos Real Estate wellness database—shows the complex interactions between human health and the built environment, according to creators of the WELL Building Standard.

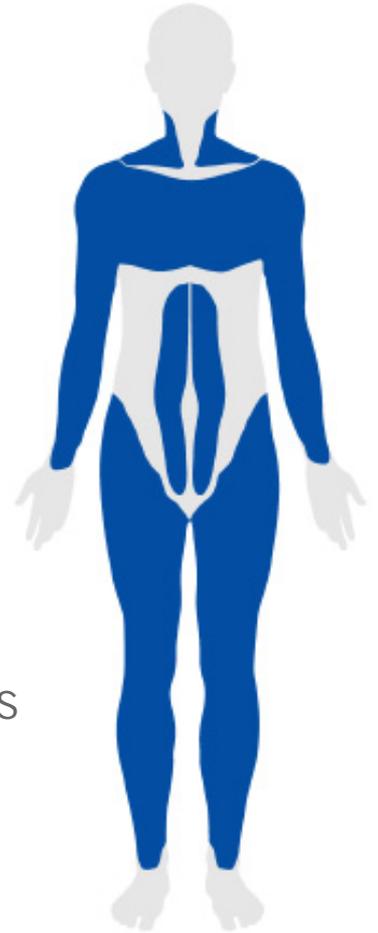


Human Body Systems & Wellness

Workplaces can enhance or harm:

Muscular System Health

- enhance opportunities for safe physical activity
- promote an active lifestyle
- reduce sedentariness
- ergonomic designs intended to reduce the likelihood of ligament strain and muscular injuries
- active furnishings
- design principles that encourage physical activity throughout the day

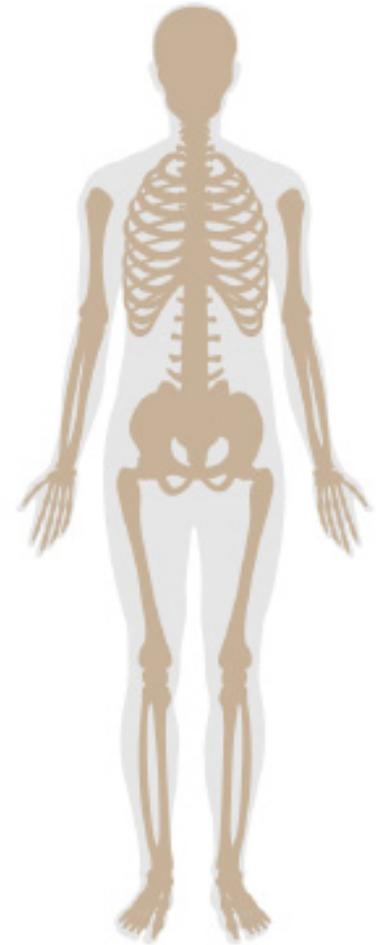


Human Body Systems & Wellness

Reference latest research findings for:

Skeletal System Health

- universal design
- ergonomics
- improve posture and alignment
- limiting physical stress
- fitness and nutrition guidelines to support optimal health and function

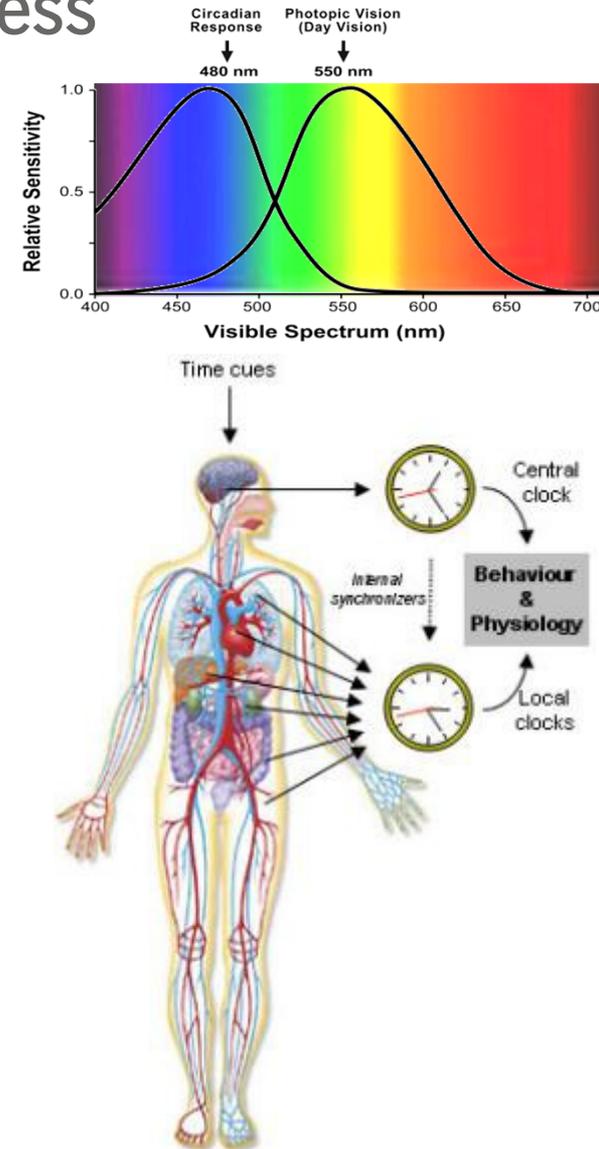


Human Body Systems & Wellness

Latest research findings for:

Circadian System Health

- internal clock on a 24-hour cycle
- Light exposure (amount, time of day)
- Light colour (wavelength)
- improve sleep
- properly synchronize circadian rhythms
- guidelines to support optimal health and function

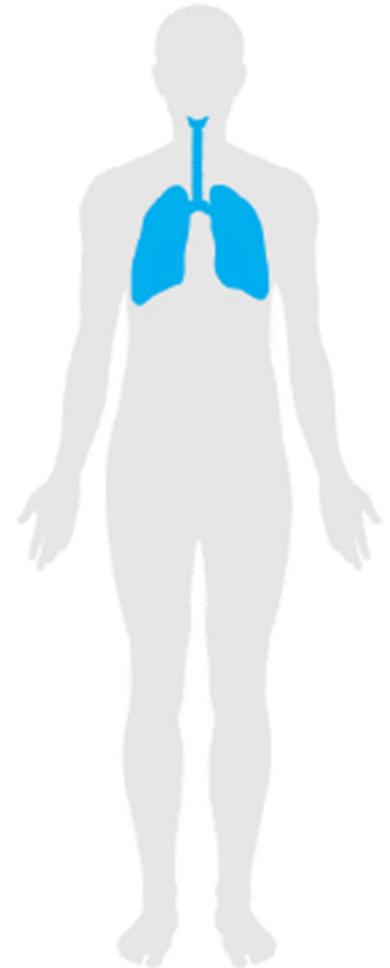


Human Body Systems & Wellness

Workplaces should aim to provide occupants:

Respiratory System Health

- optimal indoor air quality
- reduced microbe/mould exposure
- low VOCs and particulates
- more opportunities for better fitness and lung function
- reduced incidence of infections and allergic reactions

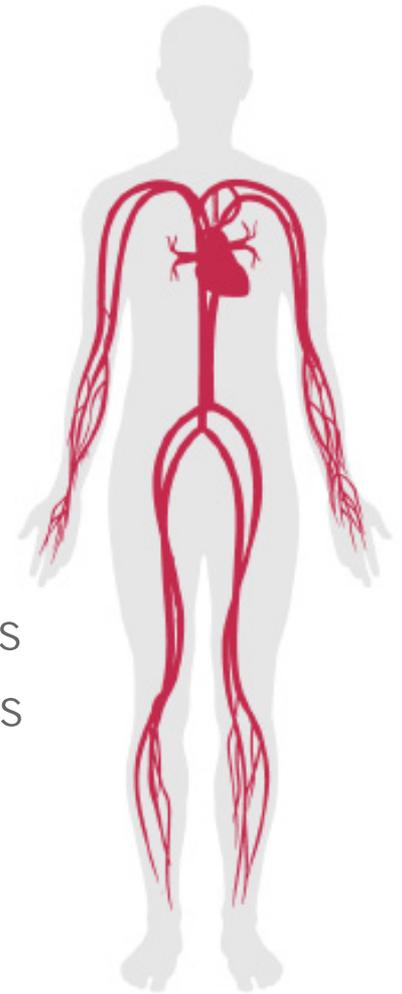


Human Body Systems & Wellness

Many workplace factors play a vital role:

Cardiovascular System Health

- stress, nutrition, fitness, environmental pollutants
- eliminate environmental pollutants in air, such as tobacco and VOCs
- healthy diets and active lifestyles control body weight and strengthen the heart muscle
- Comfort features mitigate stress and help to maintain hormonal balance in the body for optimal cardiovascular health

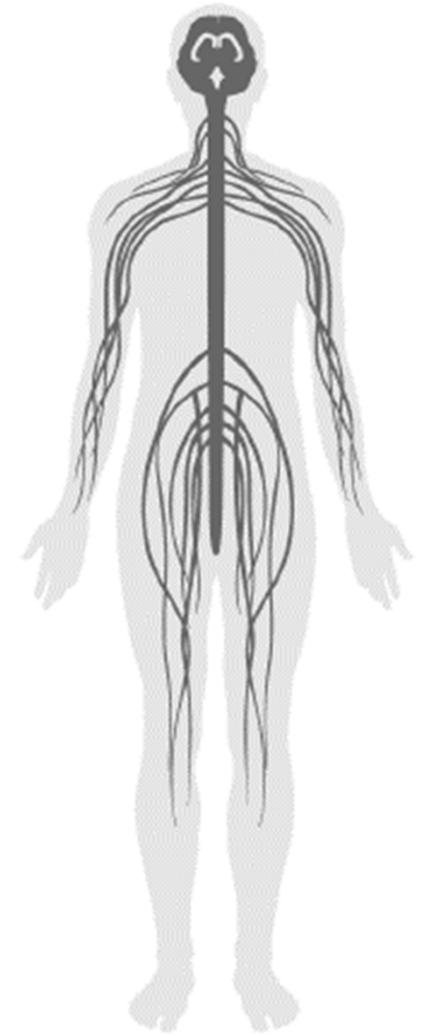


Human Body Systems & Wellness

Wellness places high importance on supporting neurologic and cognitive function:

Nervous System Health

- limit exposure to environmental toxins in air and water
- encourage balanced diets
- optimal levels of physical activity
- enhance sleep quality
- mitigate stress by implementing of a variety of comfort measures

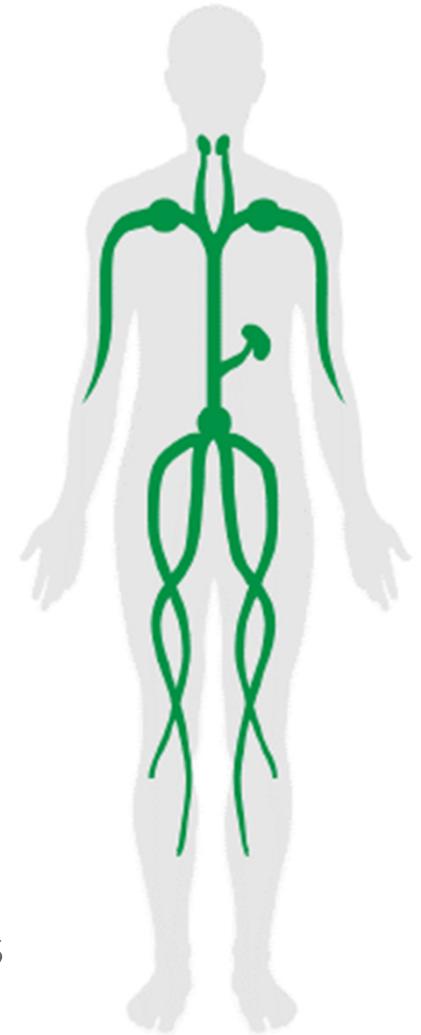


Human Body Systems & Wellness

Workplaces impact the health of:

Immune System

- reduce cumulative effect of toxins, poor sleep, nutrition and excessive stress
- use non-toxic materials to limit exposure to chemicals that weaken immune function
- water and air filtration systems limit the incidence of infections by bacterial and viral pathogens
- reduce stress and improve nutrition and fitness to help strengthen the immune system



Human Body Systems & Wellness

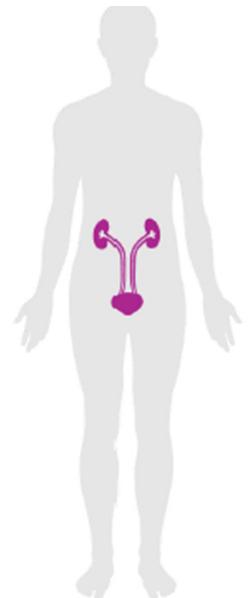
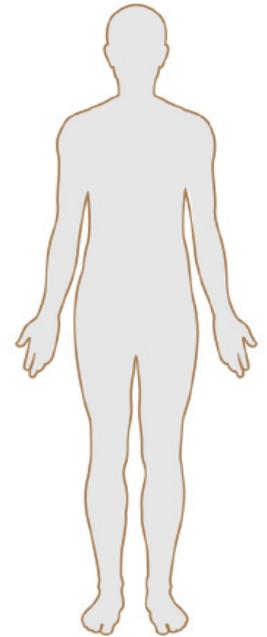
Workplaces impact the health of:

Integumentary System

- reduce building materials containing harmful toxins that could be absorbed through the skin

Urinary System

- limit exposure to toxins that can damage kidneys
- strategies to minimize infection-causing pathogens
- stress, chronic high blood pressure and hormone levels can negatively affect urinary function (improve Comfort features)



Human Body Systems & Wellness

Workplaces impact the health of:

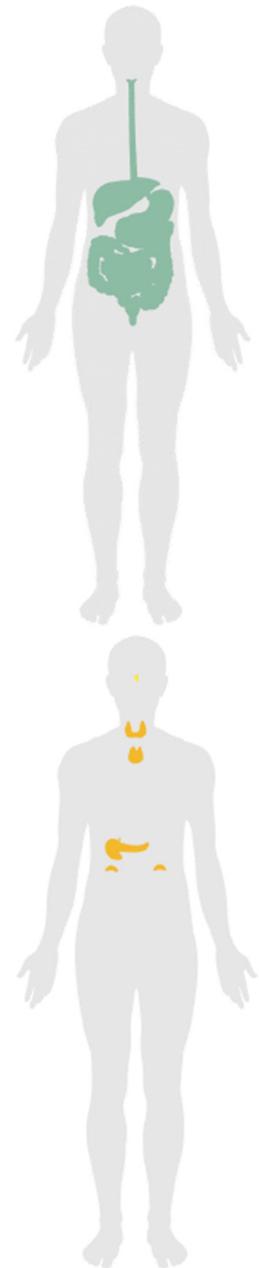
Digestive System

- support proper diet, easy access to healthy foods
- surface treatments to stop microbes and toxins

Endocrine System

- mitigate/eliminate exposure to potentially harmful endocrine system disruptor compounds that mimic hormones and disrupt proper endocrine regulation

Comfort features mitigate stress-related chronic health conditions and function of the digestive system microbiome



Trends

What worked:

- Building amenities:
 - fitness
 - Restaurant options
 - parking / transportation / bike storage
- Floor:
 - Useable floor footprints
 - Sunshine / Views
- Workstation:
 - Ergonomics
 - Privacy
 - Collaboration / Flexibility
 - Personalization / Customization



Trends



What would we change?

- Support the open office with more meeting rooms, private areas
- Investigate workstations for better flexibility and personalization
- Under floor system for personal controls
- More extensive workout facilities
- More washrooms / showers & storage
- More daylight / exterior views

Future

The future office. How we work is changing.

- Technology
- Co-working, home working, satellite offices
- Freelancers
- Ongoing measurement and tracking



Discussion and Questions?

