

Health,



CENTER FOR  
REAL ESTATE



Automation,

**Sustainable and Autonomous Cities**

Climate Change

**Dr. Andrea Chegut**

Inequality...

SYSTEMICALLY  
RELEVANT . . .

**By 2050, 150 million people in major cities around the world will be living on land that will be below the high-tide line by midcentury. Impacting an estimated \$100trln in real estate.**

-Nature Communications (2019)

AND ECONOMICALLY  
INEFFICIENT . . .

**Climate change is getting costly for society, \$2.5 tln in hazard insurance premiums since 2000, or \$340bln in 2017 alone and \$117 bln for insurance in chronic floods.**

# Climate Change Will Cost Us Even More Than We Think



Economists greatly underestimate the price tag on harsher weather and higher seas. Why is that?

**By Naomi Oreskes and Nicholas Stern**

Dr. Oreskes is a professor of the history of science at Harvard. Professor Stern is chair of the Grantham Research Institute on Climate Change and the Environment.

“A set of assumptions and practices in economics has led economists both to underestimate the economic impact of many climate risks and to miss some of them entirely...Typically, our estimates of the value or cost of something, whether it is a pair of shoes, a loaf of bread or the impact of a hurricane, are based on experience. Statisticians call this “stationarity.” But when conditions change so much that experience is no longer a reliable guide to the future – when stationarity no longer applies – then estimates become more and more uncertain.” - By Naomi Oreskes and Nicholas Stern

BOUNDARY BREAKING . . .

## Automation is expected to take up 35 - 50 percent of current job tasks by 2035.

The growth in automation is constant. Natural Language Processing and Image Recognition are being incorporated across the global economy to tackle routine cognitive and manual tasks.

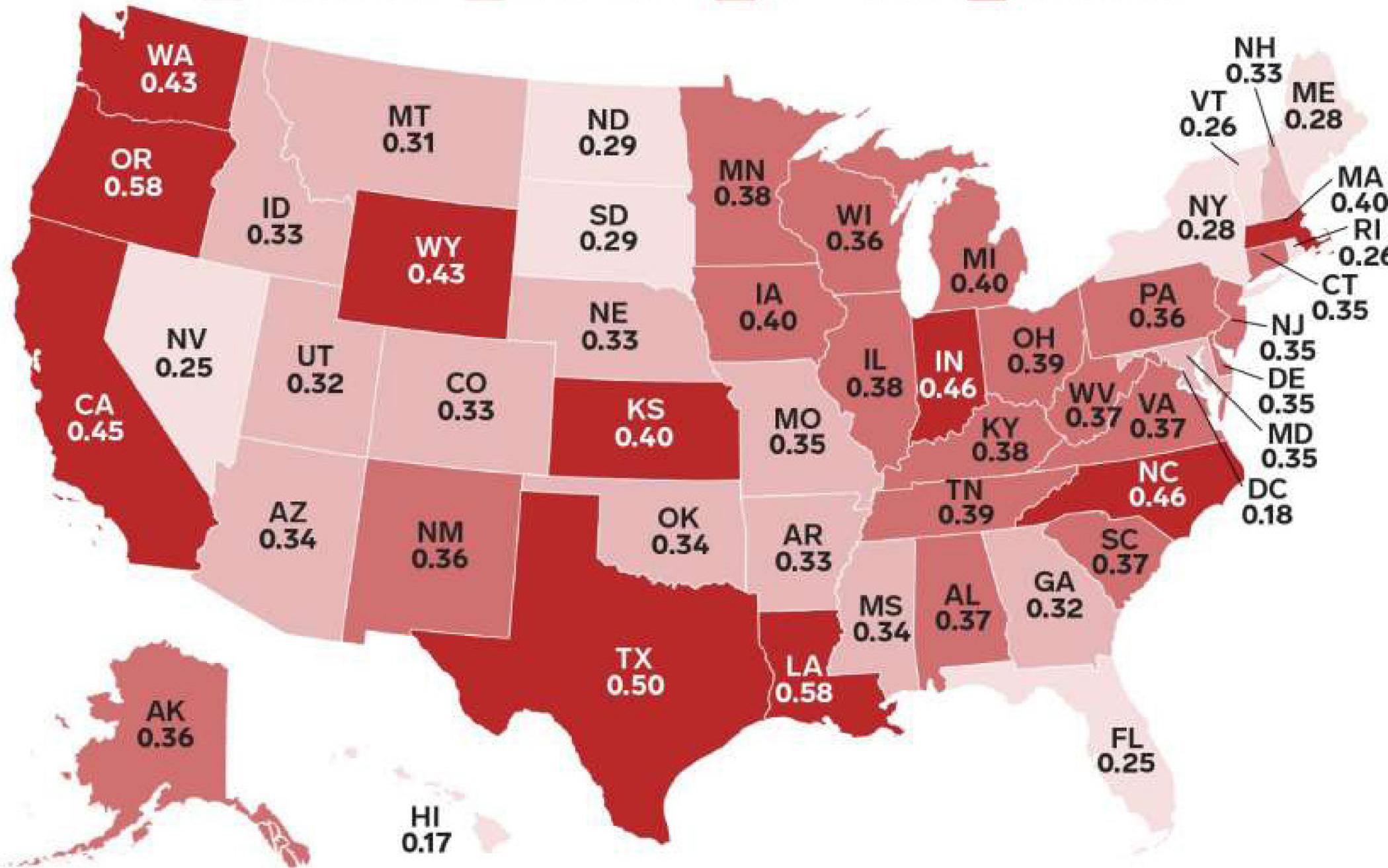
The built environment is catching on by transforming valuation, accounting, legal and networking tasks into digital scripts.

-Institute for Spatial Economic Analysis (2017)



# Robot vulnerability index

Under 0.30   0.30–0.35   0.35–0.40   Over 0.40



## Will Automation Take our Jobs - Scientific American

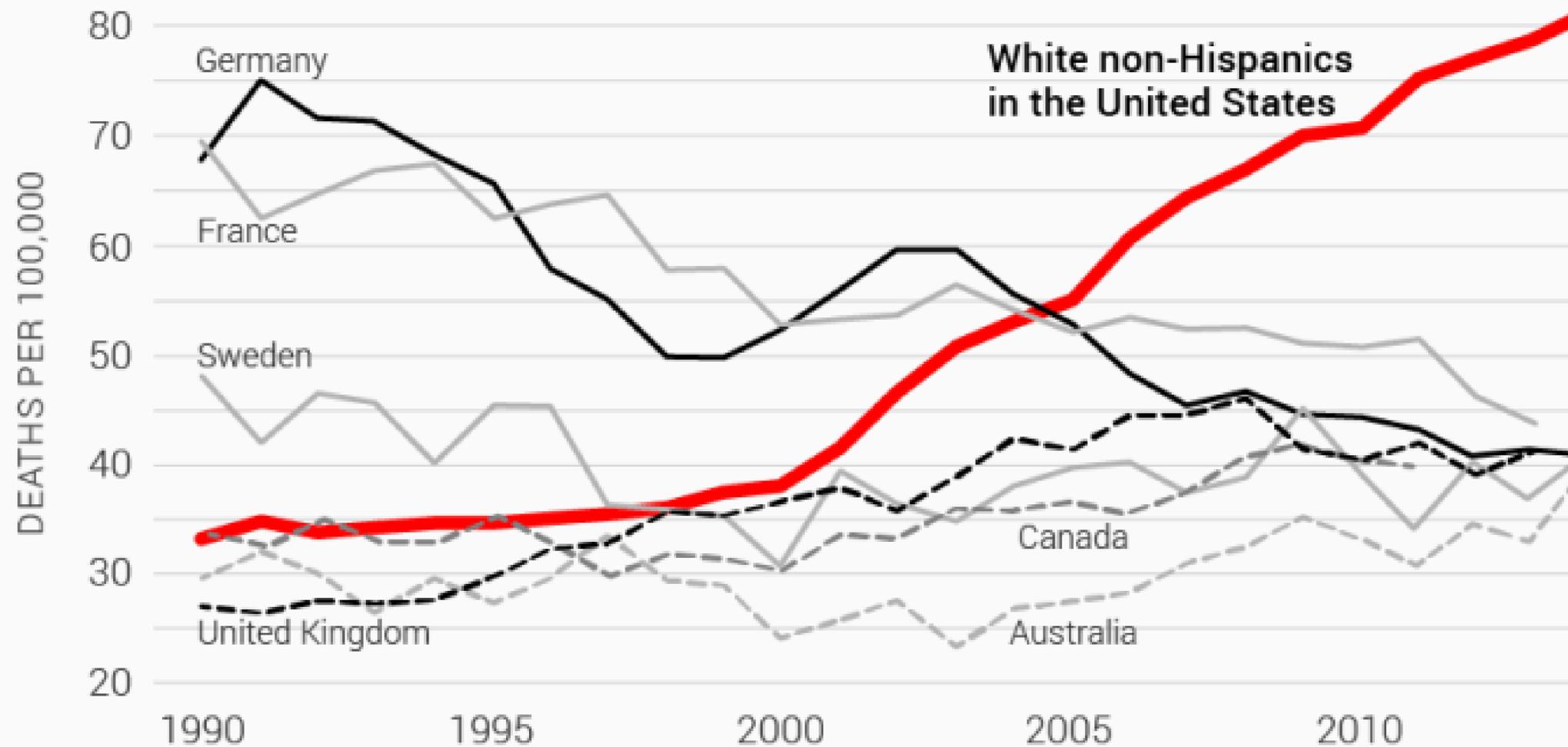
“The conventional economic wisdom has long been that as long as productivity is increasing, all is well. They cite research showing that so-called routine jobs (bank teller, machine operator, dressmaker) began to fade in the 1980s, when computers first made their presence known, but that the rate has accelerated: between 2001 and 2011, 11 percent of routine jobs disappeared.”

-Brynjolfsson and McAfee

Note: Index is based on a combination of manufacturing employment, current use of manufacturing robots, and manufacturing productivity. Higher values indicate higher susceptibility to robotization of manufacturing jobs.

# Midlife mortality from “deaths of despair” across countries

Men and women ages 50-54, deaths by drugs, alcohol, and suicide



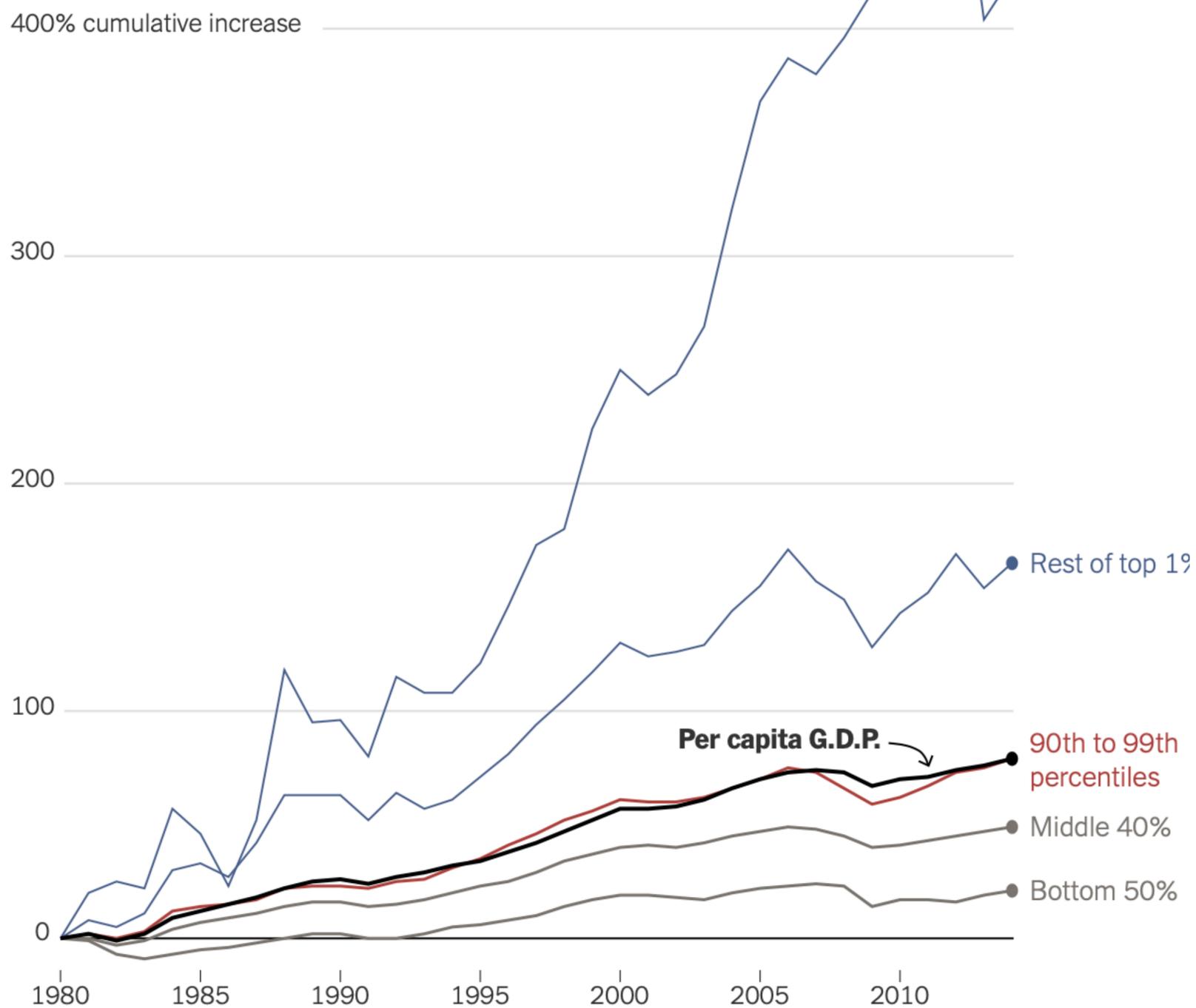
**“Deaths of Despair are at an all time highs in the US”**

— Anne Case and Sir Angus Deaton

The combined effect means that mortality rates of whites with no more than a high school degree, which were around 30 percent lower than mortality rates of blacks in 1999, grew to be 30 percent higher than blacks by 2015..

**Source:** “Mortality and morbidity in the 21st century” by Anne Case and Angus Deaton, Brookings Papers on Economic Activity, Spring 2017.

Since 1980, the incomes of the **very rich** have grown faster than the **economy**. The **upper middle class** has kept pace with the economy, while the **middle class and poor** have fallen behind.



Note: Incomes are after taxes and include government transfers. • Sources: Thomas Piketty, Emmanuel Saez and Gabriel Zucman (incomes); Bureau of Economic Analysis (G.D.P.) • By The New York Times

**“You need some inequality to grow... but extreme inequality is not only useless but can be harmful to growth because it reduces mobility and can lead to political capture of our democratic institutions.”**

— Thomas Piketty

The cumulative rate of income inequality between earners in the 90th to 99th income percentiles, and the US economies per capita G.D.P. has reached a whopping 300 percent. Historically, the outcomes of this has been global civil unrest, war, famine and disease.



# MIT Real Estate Innovation Lab

## ABOUT THE LAB

- We are a research lab.
- Our goal is to be an anchor for understanding technology and innovation for the built environment.
- Our R&D platform bridges disciplines to build agency between statistics and economics, design and planning and real estate and city making.
- We do so by identifying and measuring the impact of changes in design and technology interventions through financial and economic analysis with the aid of data science and machine learning.



**Dr. Andrea Chegut**  
Director | Financial Economist



**James Scott**  
Innovation & Tech Lead



**Quianhui Liang**  
Developer | Data Engineer



**Alina Nazmeeva**  
(un) Real Estate and Virtual Worlds



**Prof. David Geltner**  
Real Estate Finance Professor



**Kecheng Chang**  
Technology Analyst



**Tony Yang**  
Value of Design Analytics



**Kun Chang**  
Technology Analyst



**Erin Glennon**  
Lab Manager



**Prof. Dennis Frenchman**  
Urban Design Professor



**Sunnie Park**  
Technology Analyst



**Wendy Wu**  
Housing Innovation Analyst



**Gabby Finear**  
Research Analyst



**Helena Rong**  
Value of Design Lead



**Natasha Sadikin**  
Automation and Health Analytics



**Steve Weikal**  
Real Estate Technology Lead



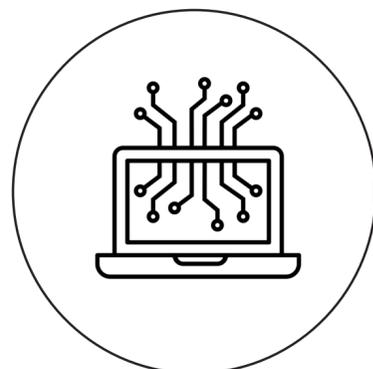
**Ziyu Ran**  
Technology Analyst



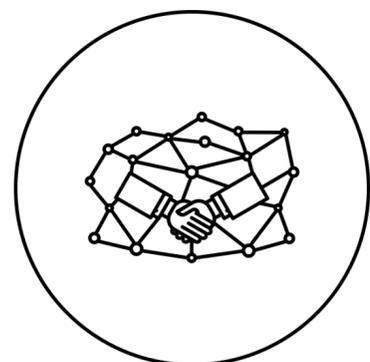
**Yuehan Wang**  
Technology Analyst

# RESEARCH FOCUS

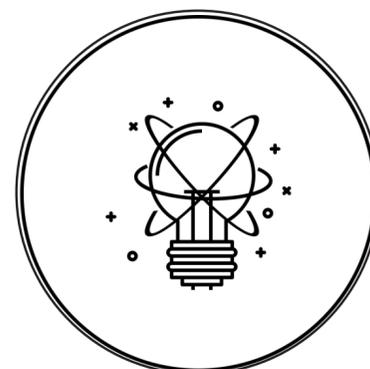
DATA SCIENCE  
AND  
MACHINE LEARNING



TECHNOLOGY  
FOR  
REAL ESTATE



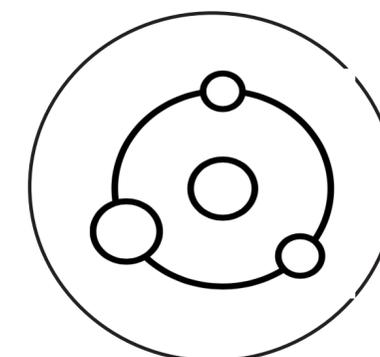
THE VALUE  
OF  
INNOVATION



THE VALUE  
OF  
DESIGN



REAL  
ESTATE  
INNOVATION



Listening

with

data science

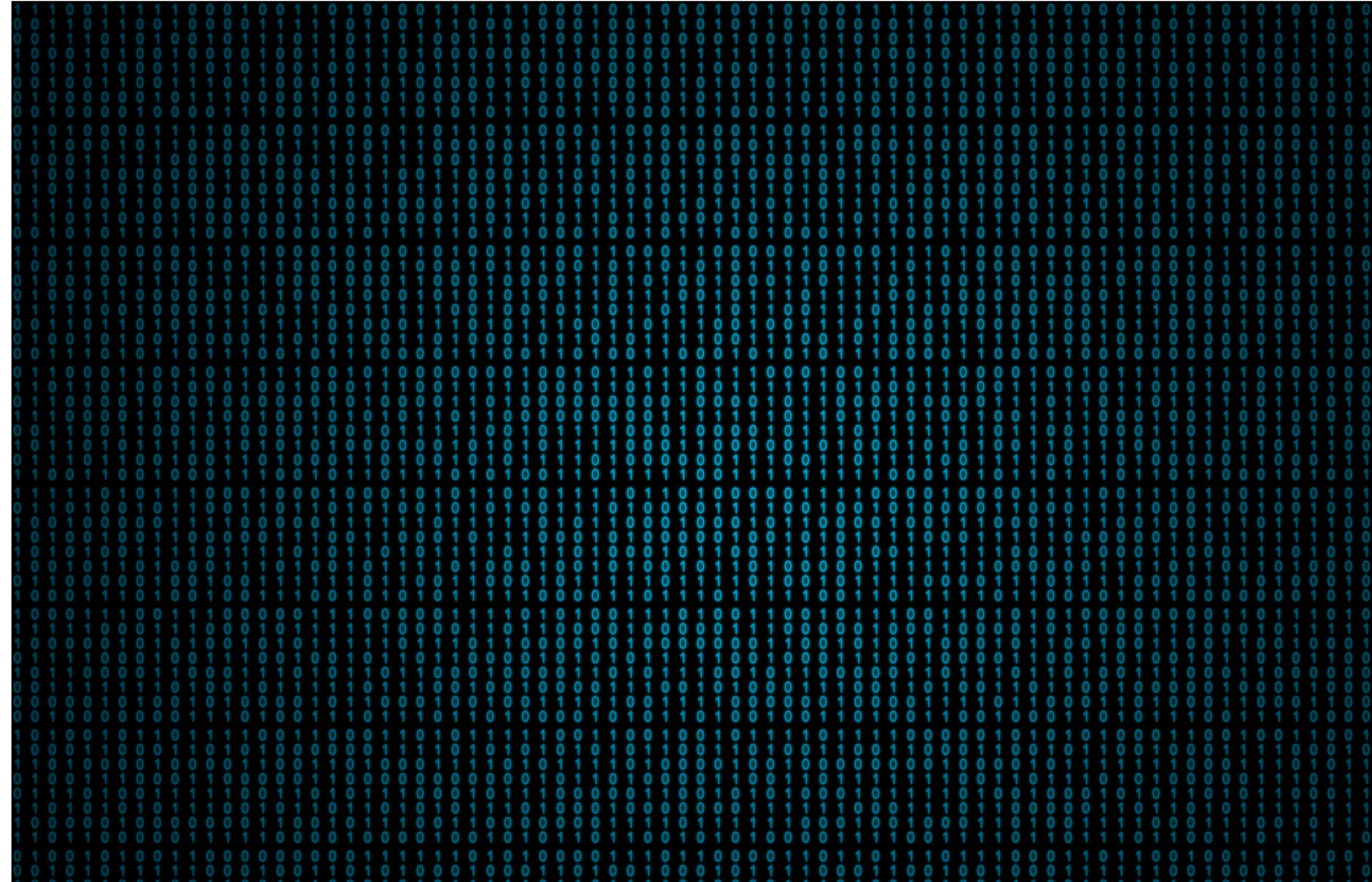
is it just a bunch of 1/0s?

# What is data?

Data has the unfortunate reputation for being something very intangible and abstract. Yes, it is a representative set of information that we use to signal that an event has occurred. But true statisticians economists, data scientists are always working to get at something more real.

We are all working to uncover something called the [true data generating process](#).

Source: MIT Real Estate Innovation Lab



our experience

# Data is about us.



In fact, data is really about us. It is about our human, emotional, mental, physical, connected and disconnected experiences.

Actually, it is our collective story - what is common and what is quirky and unique about all of us.

If data is really going to be representative of our data generating process then it has to be mindful of us.

Source: MIT Real Estate Innovation Lab



**data scientists must be great listeners**

So as data scientists, we are not all that different from an empathetic friend or psychologist.

We spend a lot of time listening and observing what the data has to tell us.

Great data scientists and modelers listen and when they get the story wrong, they go back to the data where people told their stories to try and get it right again.

Source: MIT Real Estate Innovation Lab



**MIT  
Real Estate  
Innovation  
Lab**

# Data must mindfully and ethically listen.



our why

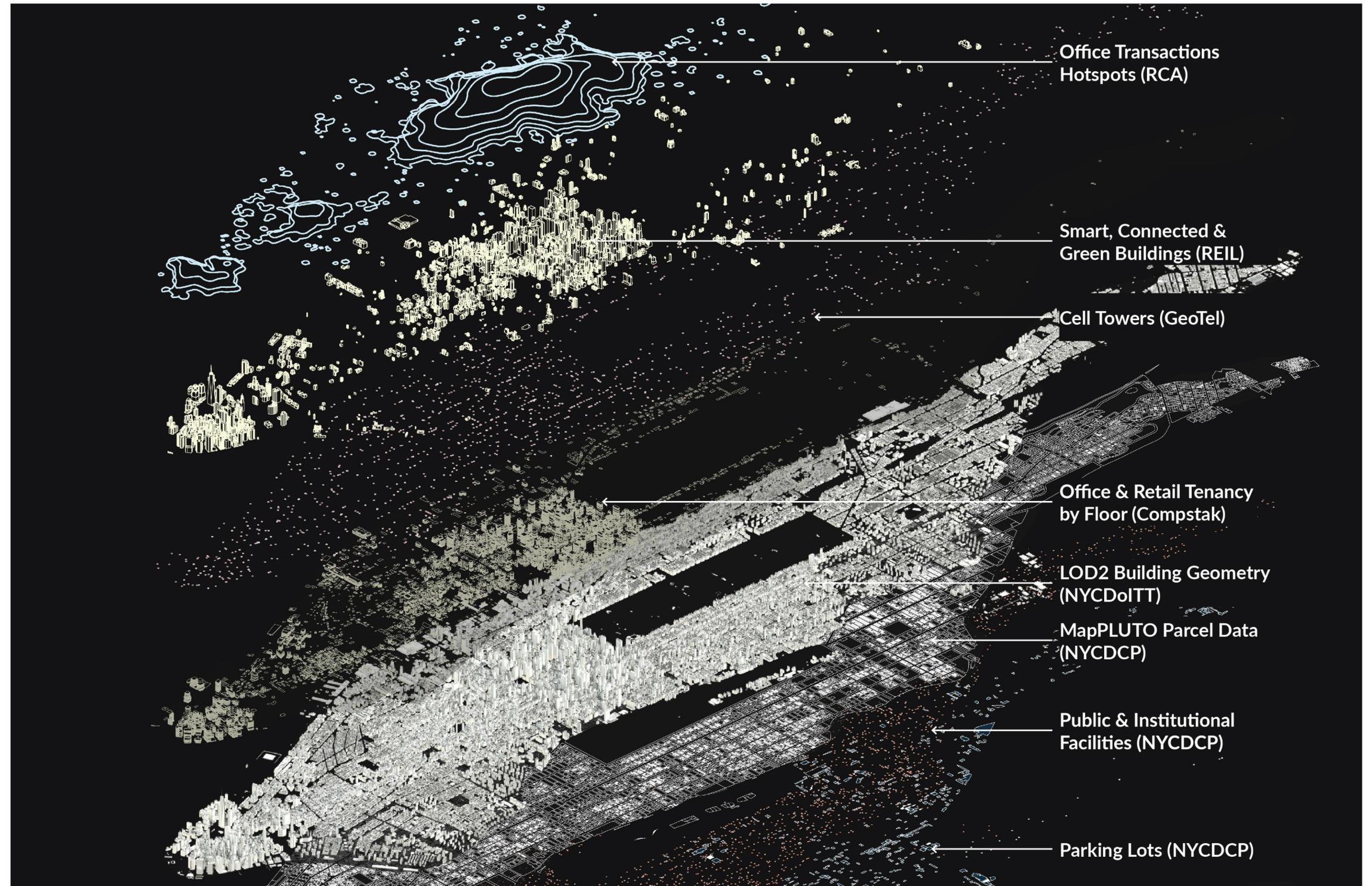
# Wide Data - A Geometric, Geospatial Relational Database of NYC

The MIT Real Estate Innovation Lab is working with public and private data providers to create a wide data approach for linking design and innovation to financial performance in the built environment.

In this R&D project we are exploring the data science that connect design to the capital stack. This means combining geometry, to geospatial and relational database structures to create insights about the value of innovation in the built environment.

The data spans over 15 years with over 3,000 variables across 200 datasets and 18 data providers. Our lab approaches financial performance and economic growth questions from an interdisciplinary analysis approach, where design and planning metrics carry just as much weight as financial and economic performance.

Source: MIT Real Estate Innovation Lab



# Real Estate Analytics for 21st Century Cities

The real estate asset class is deeply physical and also contextual. Understanding supply, demand and pricing characteristics relies on understanding the physical nature of the building, its relationship to other characteristics of the city and the abstract elements of supply and demand of its stakeholders.

Data has become more relevant than ever to deconstruct what we can and cannot measure.

Source: MIT Real Estate Innovation Lab



the larger economy is at work  
in the automation economy

# Where are we headed?



WE are about 65 years into a larger technological process where humans are busy with augmenting our tasks with data and algorithms.

We could do a whole class on automation and technological change, but keep in mind our data science work is a part of a larger shared cultural phenomena of automation.

## Stages of Automation

### Recognition

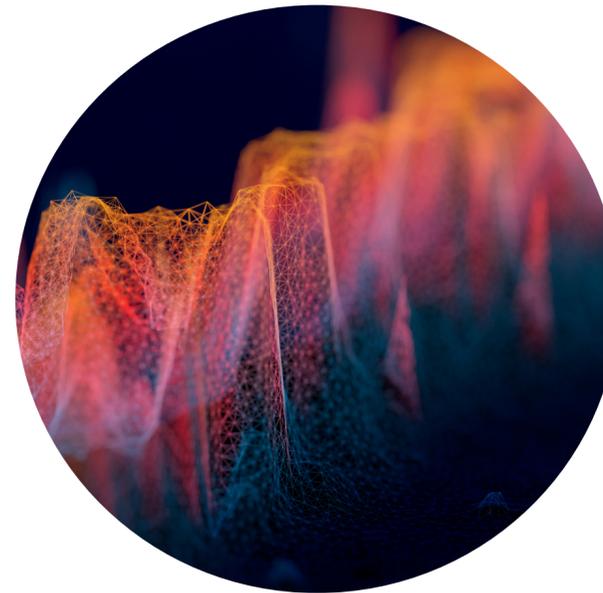
Stage 1



- Information Collection
- Data Gathering
- Image tagging
- Word finding

### Sorting

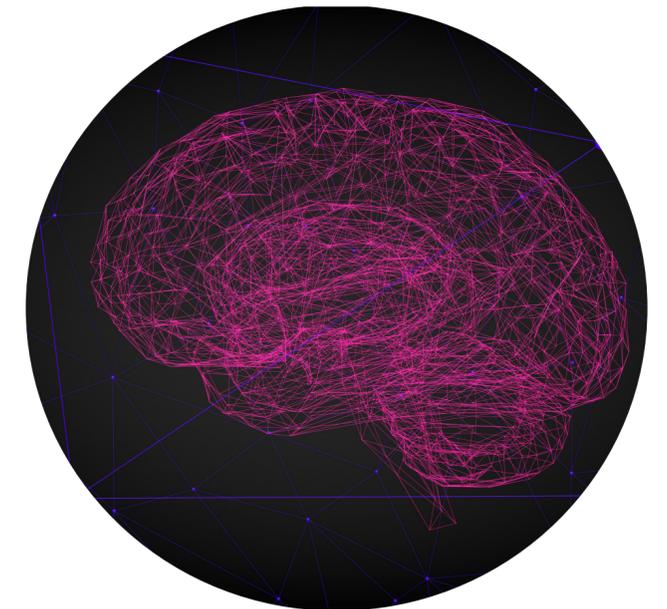
Stage 2



- Machine learning
- Deep learning
- Robotics
- Ethics

### Intelligence

Stage 3



- Unsupervised deep learning
- Artificial intelligence
- Quantum intelligence
- Nanomaterials and structures

**We are very much an experience based culture. We love stories, but we do not codify.**

The real estate sector is chocked full of human and physical experiences.

Humans spend 90 percent of their time indoors, do you think we don 't have data.

Historical approaches have kept us from considering the human experience within the city and building.

This is being augmented as we move from basic data collection to data integration.

# Where is real estate in this process?

## Recognition

Stage 1

**From** Basic Data

- Core financial data
- Business operations
- Back office organization



**Towards**



Data Integration

- Across systems
- Between stakeholder tasks
- Towards customer awareness

data science is upon us.

# The change is here.

The real estate sector is now entering upon the automation economy.

We are growing firms across the recognition, sorting and intelligence stages and the next decade will require that we can listen to the data, tell our collective story and make lesser and lesser unbiased decisions about our collective wellbeing.

## AI and Real Estate some market context...

### DATA SCIENCE

THERE ARE **150 DATA COMPANIES** FOCUSED ON NEW DATA SOURCES FOR REAL ESTATE.

SOURCE: REI LAB REAL ESTATE TECH DATABASE

### LETS INTEGRATE

JUST UNDER **20 COMPANIES** FOCUSED ON HAVING THE DATA TALK TO EACH OTHER TO MAKE A DATA LAKE, I.E., **DATA INTEGRATION**.

SOURCE: CRUNCHBASE AND CB INSIGHTS 2019

### AI FOCUSED

**130 COMPANIES ARE FOCUSED ON AI** (MACHINE LEARNING, DEEP LEARNING, IMAGE RECOGNITION, LANGUAGE PROCESSING).

SOURCE: CONWAY (2018) AND CRUNCHBASE (2019)

### ROBOTS!

JUST UNDER **90 COMPANIES WITH A ROBOTICS FOCUS** THAT WORK IN DEMOLITION, CONSTRUCTION, SECURITY.

SOURCE: CONWAY (2018) AND CRUNCHBASE (2019)

MIT  
Real Estate  
Innovation  
Lab



CENTER FOR  
REAL ESTATE

# DATA SCIENCE *and* MACHINE LEARNING *for* REAL ESTATE

11.321

SP 2020

Core skills for development, design and planning are shifting to encompass analytics in data science and machine learning. This seven week mini-course aims to introduce you to the principles of data science and machine learning that are impacting the domain of real estate today. In the course, we will hear from data scientists across technology companies, learn core data science in R, and produce predictive analytics using machine learning techniques. The class is intended for students with some knowledge of data science, but are seeking to learn more. Core knowledge of R is welcome

# World Real Estate Forum 14-16 July 2020

**Discount code: MITDSRWRWF10**

**(10% discount code, valid from 14 July -18 Aug 2020)**

- **Harness data to make better investment decisions and discover new real estate opportunities.**
- **Update your skill set to perform statistical analyses and modeling using interactive software applications.**
- **Gain insight into the real-world use of data from esteemed MIT faculty and industry experts in the real estate, finance, and data science fields.**



SA+P

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

## **DATA SCIENCE IN REAL ESTATE**

ONLINE SHORT COURSE

Make more informed, data-driven real estate investment decisions.



Center for Real Estate



MIT  
Real Estate  
Innovation  
Lab

Technology

for

Real Estate



MIT  
TECH  
TRACKER

BETA

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MIT REI LAB

VIEW

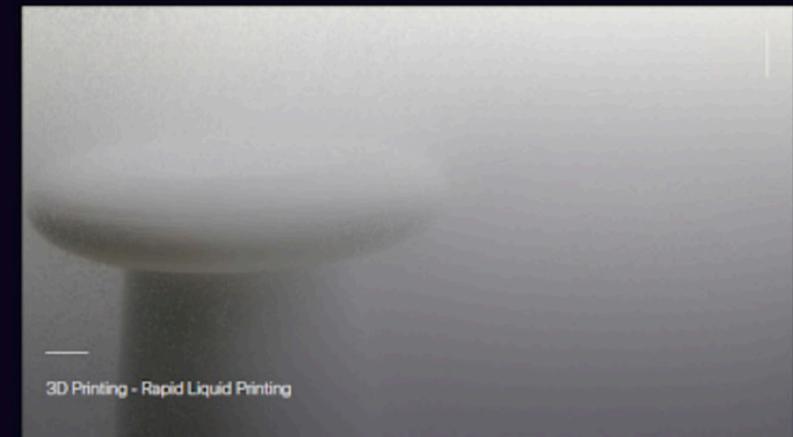
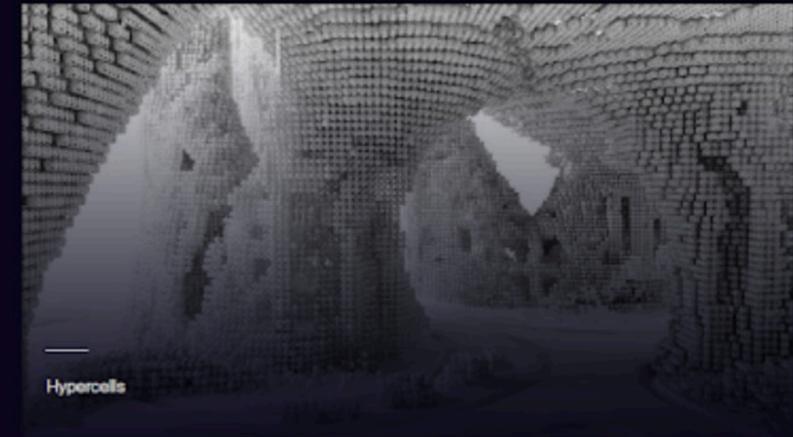
- Technology Awareness
- Top Technologies
- All Technologies

APPLIED FILTERS

- By **A-Z**
- Type **All**
- Development **All**

ABOUT

- Guide
- Search



1

we find where  
technologies  
come from ...

3  
...and forecast when  
technologies become  
available in the  
market...

2

...and track how  
technologies move from  
being inventions in  
the lab...

4

...to discover how  
technologies  
become a part  
of our life.

TTT



to understand technologies  
with data, not gut

and to create strategies and  
products for better real estate

With a dynamic set of  
200\* technologies—  
out of 728  
discovered so far

\* A proper analysis takes about 10 hours per technology. In other words,  
+1300 hours have been poured into the making of TTT so far.

...to know the time till

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11.0      YRS      Lab - Inception to R&D

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07.3      YRS      Market - R&D to Market

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21.5      YRS      Life - Market to Standards

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The

Innovation

Frontier

# Automation in Real Estate

## Cutting Through the Hype



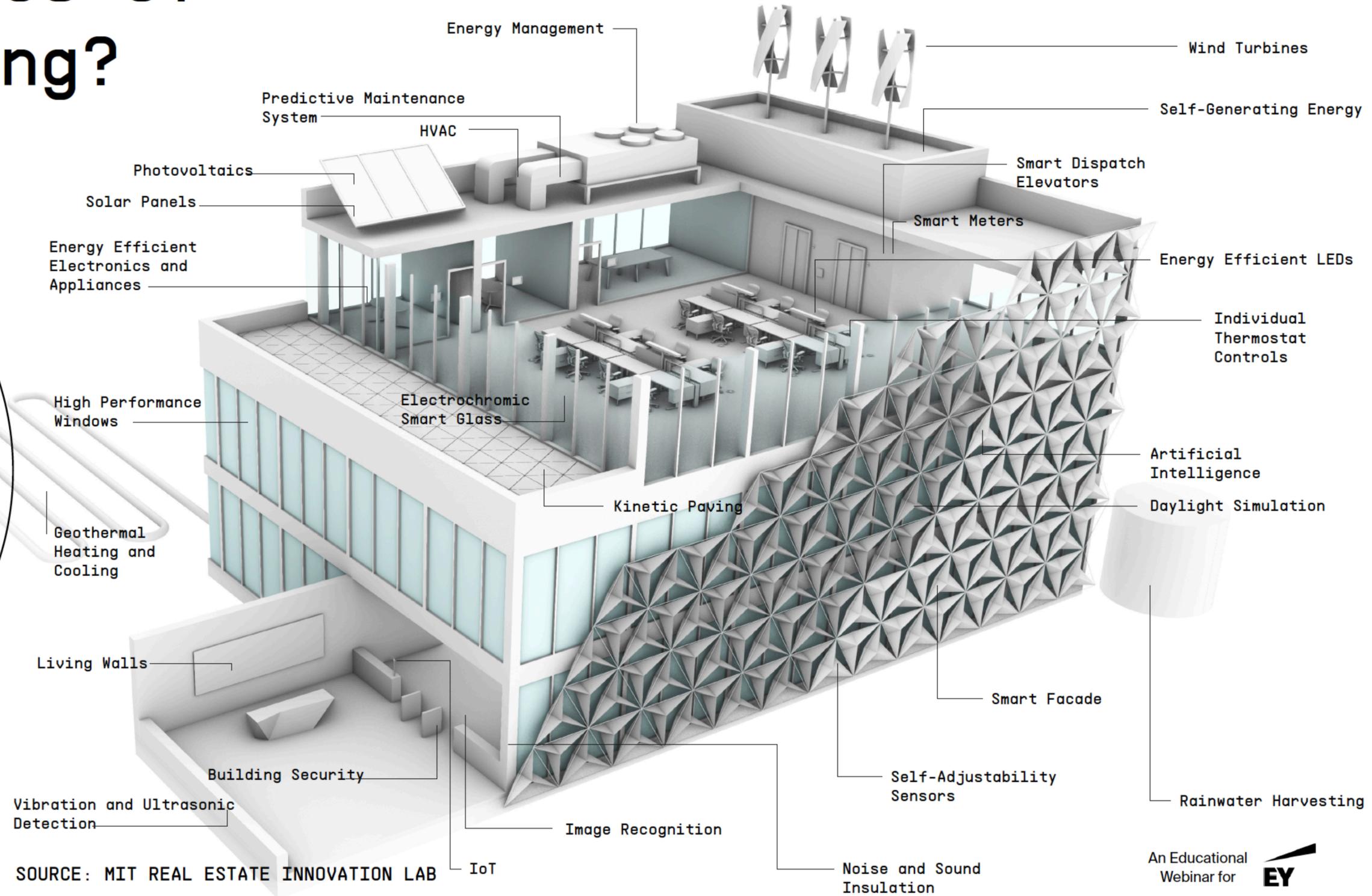
The  
Real Estate  
Innovation  
Lab

An Educational  
Webinar for



# What are the current features of a smart building?

A Smart Building or an Intelligent building is one where the combination of technologies and interconnected systems support the use of the building's users, enables a more efficient operation of the building and enables reconfiguration of the space in response to changing use. Intelligent buildings are often referred to as smart buildings.

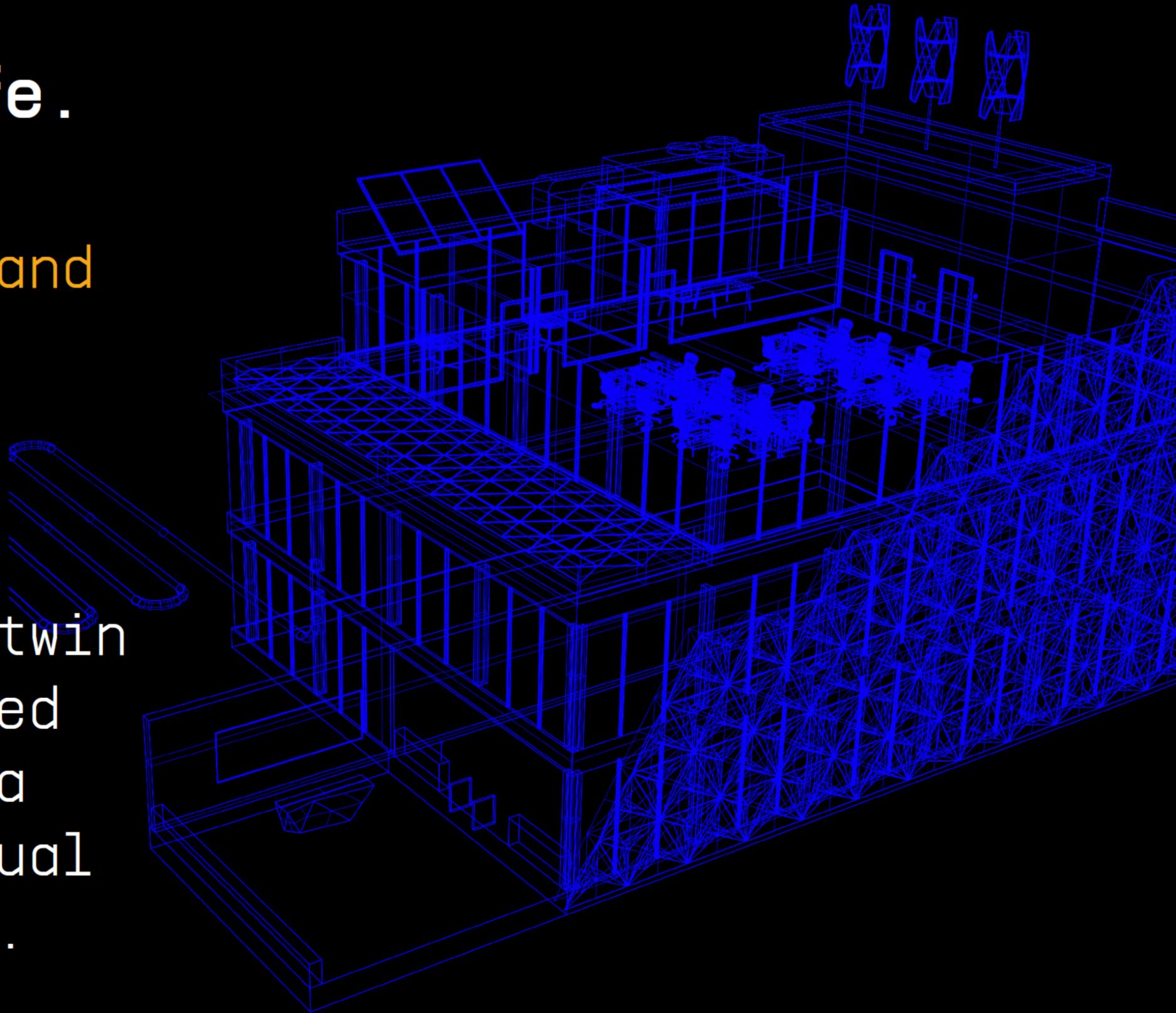


SOURCE: MIT REAL ESTATE INNOVATION LAB

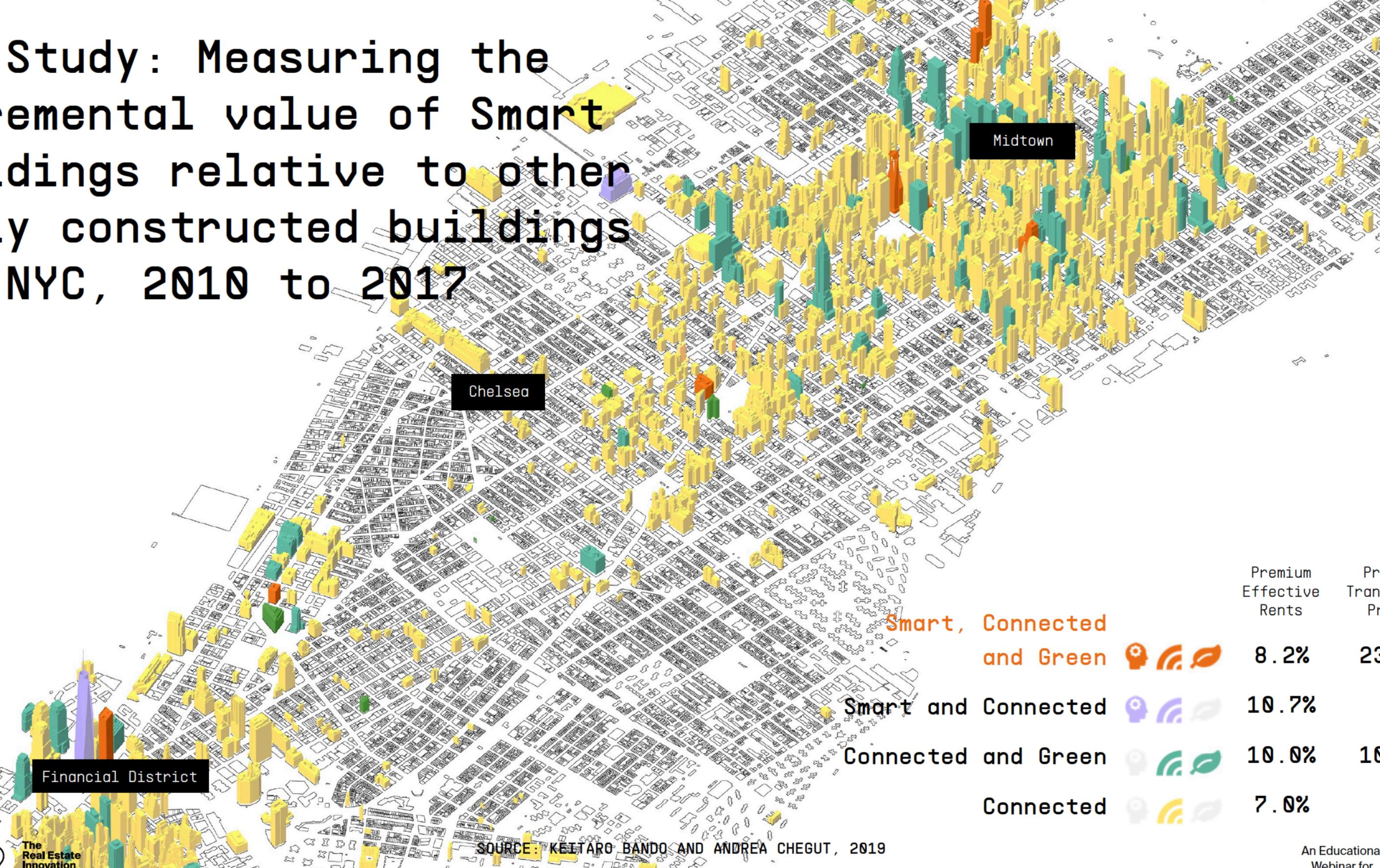
# Digital Twins bring Smart Buildings to Life.

Digital twin is a **virtual and digital copy** of a physical building.

Smart buildings can **enable and supercharge** a digital twin with their numerous embedded technologies that feed data into the digital twin virtual model and **bring it to life**.



# MIT Study: Measuring the incremental value of Smart Buildings relative to other newly constructed buildings for NYC, 2010 to 2017



	Premium Effective Rents	Premium Transaction Prices
Smart, Connected and Green	8.2%	23.7%
Smart and Connected	10.7%	-
Connected and Green	10.0%	10.7%
Connected	7.0%	-

SOURCE: KEIJIRO BANDO AND ANDREA CHEGUT, 2019

# The Financial Value of Healthy Buildings

## Rental Prices and Market Dynamics in Commercial Office Markets



Healthy Buildings are seen as the next level of Green Buildings - an emphasis not only on green building practices, but also integrates health, wellness, and human experience in buildings.



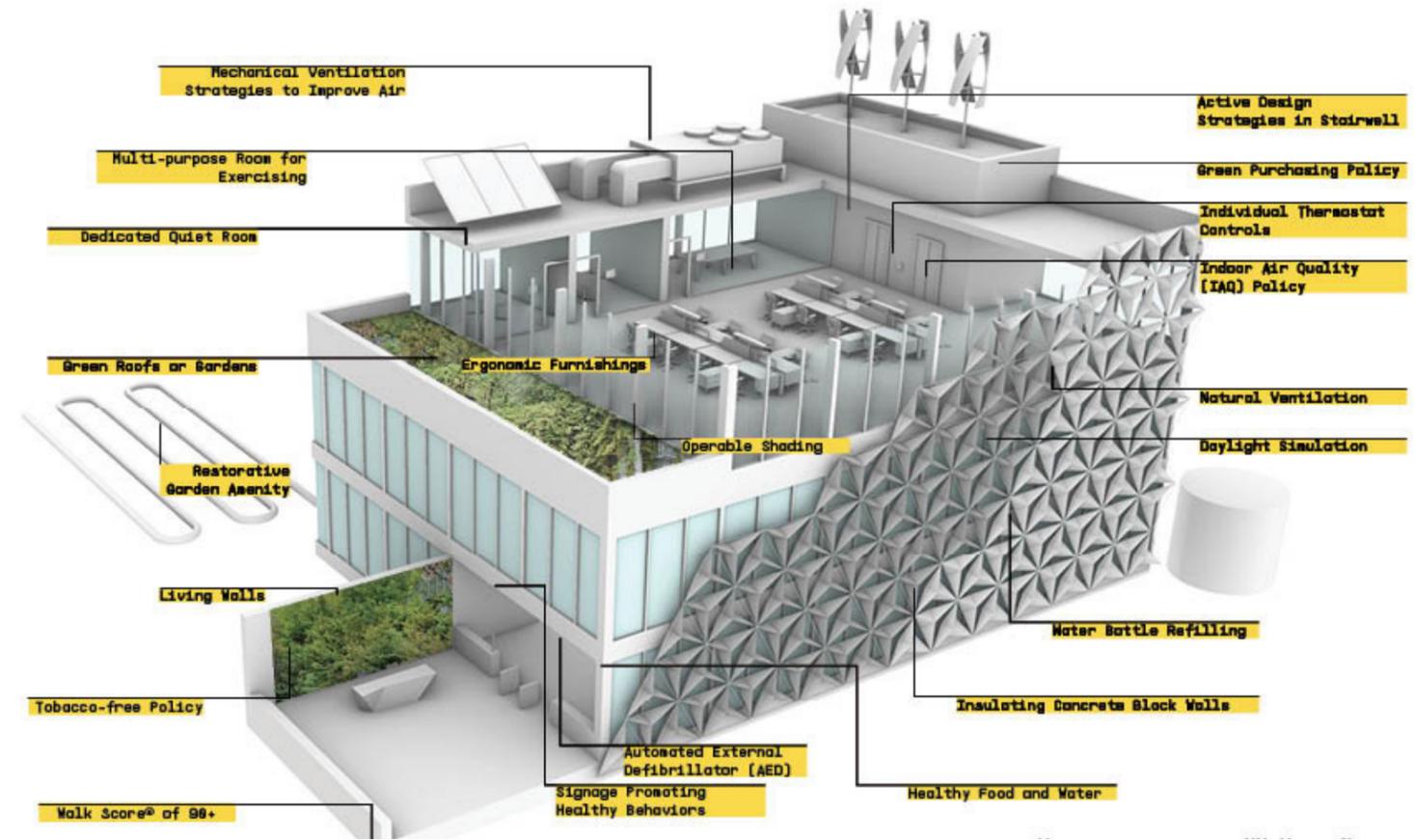
With 90% of Americans spending their time indoors, our indoor built environment represents a crucial opportunity to enhance factors that impact our health.



An emphasis on happy employees through providing healthier buildings can positively influence thinking, productivity, behavior, and health well being.

Health does not stop at the hospital, it starts in our homes, our work, and in our everyday life. While this holistic approach to real estate has been implemented in a wide range of design strategies and certifications, not much has been done in exploring the financial impacts. This project takes a first steps towards understanding the financial and economic impact of Healthy Buildings on achieving asset level parity and perhaps outstanding performance in key US markets.

### HEALTHY BUILDING EXAMPLE:



Source: James Peraino and Natasha Sadikin

## So, what is a Healthy Building?

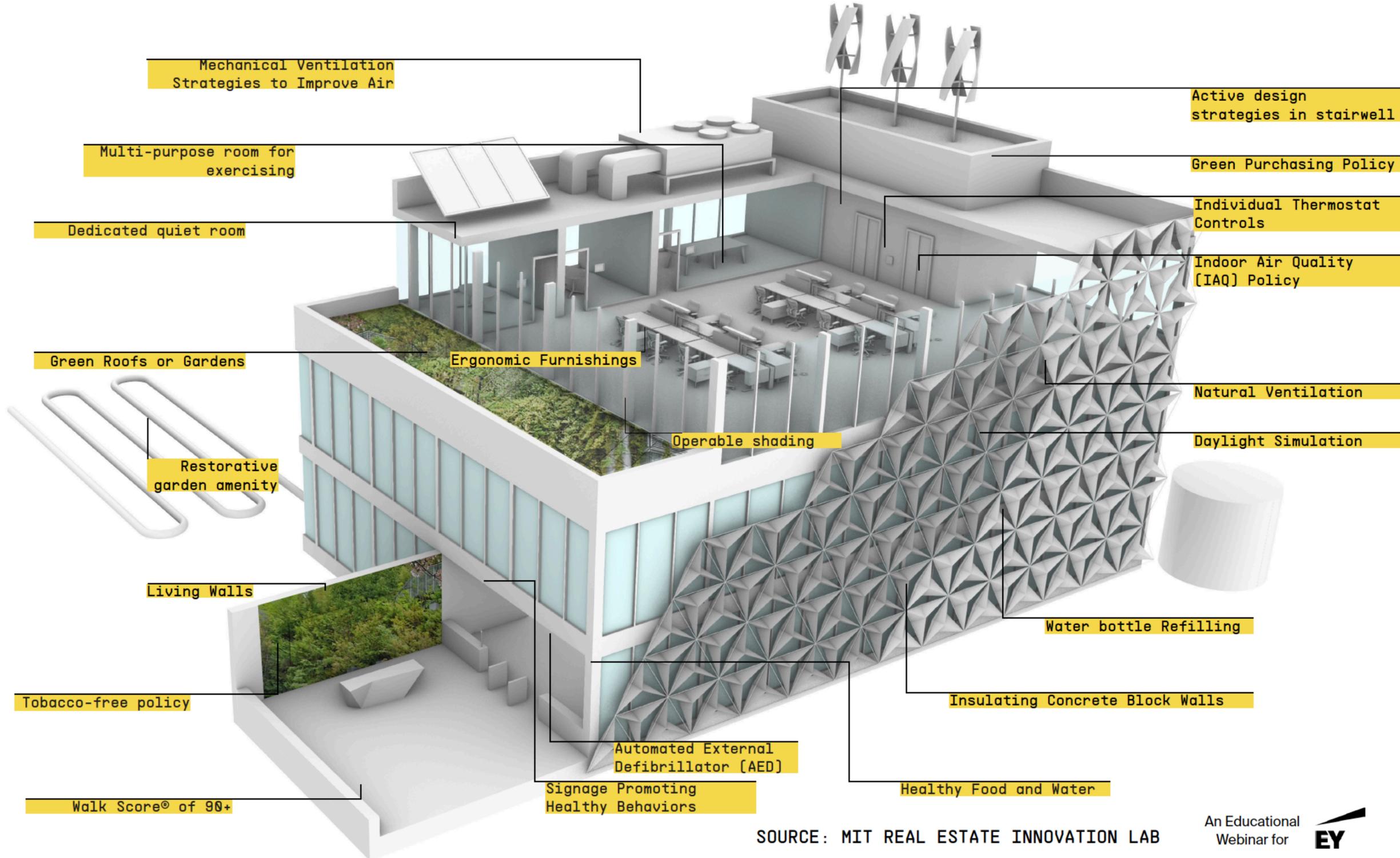
The World Health Organization (WHO) defines a healthy building as a space that supports the physical, psychological, and social health and well-being of people.

Some examples of certification features include active furnishings, operable shading, natural views, green purchasing policies, no asbestos, fitness rooms, no-smoking policies, natural daylight, ventilation, filtration, air quality, and even water treatment.

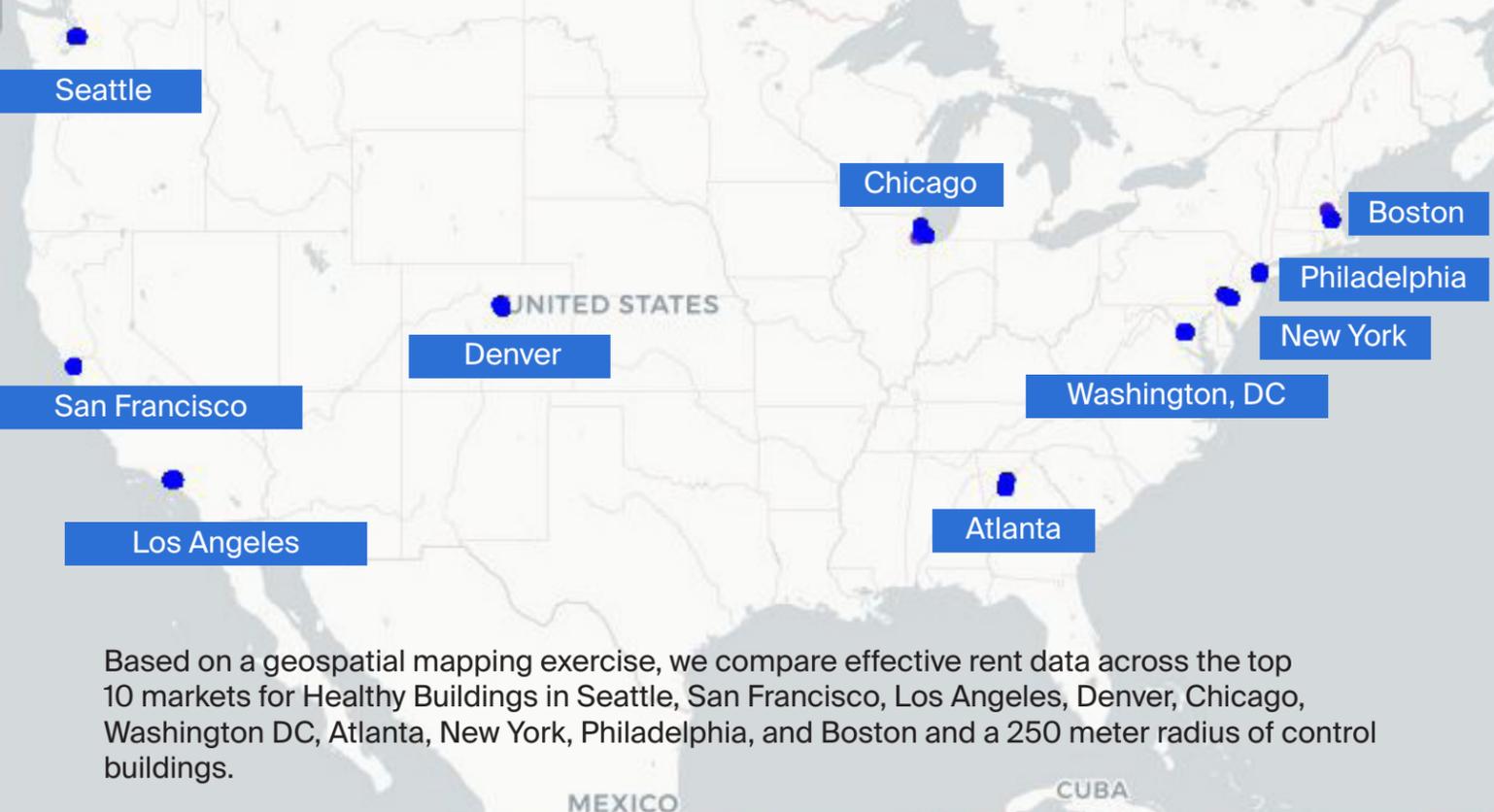
# Technology and Design Features of Healthy Buildings

## Best Practices Across Healthy Building Standards

- Ergonomic Furnishings
- Natural Daylight
- Operable Shading
- Natural Views
- Green Purchasing Policies
- No Asbestos
- Fitness Rooms
- Indoor Air Quality (IAQ)
- No Smoking Policy



Source: Fitwel, WELL



### Study Framework

**Question:** What is the relative financial impact of certified healthy buildings as measured by effective rents in US markets?

**Data Source and Observational Unit:**

CompStak (Private database)

WELL (Publically available data)

Fitwel (Publically available data)

**Data Time and Place:** Effective Rent Contracts from 2016 in top ten markets

**Model Explains/Predicts:** Explains

**Method:** Econometric Linear Regression

**Stakeholder Outcome:** Effective Rent per square foot differential

**Features to Measure and Control:**

Health Certification, Effective Rent (USD), Building Floors, Transaction Quarter, Commencement Date, Transaction Squarefootage, Year Built, Year Renovated, Building Class, Submarket, Execution Date Lease Term, Total Transaction Size Transaction Type, Free Rent, Work Value (USD)

**Effective Rent Contracts Quantity:**

Control Group:  
 Non-Health Certified: 14,329 Effective Rent Contracts  
 Treatment Group (250 meters away):  
 Health Certified: 2,380 Effective Rent Contracts

**OUTCOME INTERPRETATION:**

## What could a positive, negative or equal effective rents between certified and non-certified spaces mean?

**NO VALUE (EQUIVALENT)**

Result: equal

**Healthy Buildings are seen as equal to all other asset types in the market.**

This suggests that tenants do not ascribe economic value to occupying health certified space, or at least are not willing to adjust their rent in light of a certification.

**DELIVERY FAILURE (DOWNSIDE)**

Result: negative

**Healthy Buildings are not delivering what they promised.**

This would suggest that the spaces do not provide the benefits promised by the certification.

**HEALTHY EMPLOYEE (UPSIDE)**

Result: positive

**Healthy Buildings are seen as an asset for successful, happy companies.**

This would suggest that tenants see value in occupying healthy space and preserving their employees health and will pay a premium to do so.

### About the Researchers



Dr. Andrea Chegut Is the Director of the MIT Real Estate Innovation Lab. She holds a PhD in financial economics and studies how technology, design, and innovation impact the economic outcomes of the built environment.



Natasha Sadikin is a tech analyst for the MIT Real Estate Innovation Lab and MSRED candidate. She loves learning about the impacts of technology and automation on the built environment. For any questions, please reach out to nsadikin@mit.edu

Results expected Fall 2020



# The Value of Design

1. ICONICITY

520 W28 St, New York by Zaha Hadid Architects

2. CONSISTENCY AND VARIATION

Streets of Amsterdam

# MEASURING DESIGN . . .

# “To align incentives between the design, development and institutional finance realms we have created a catalogue of design metrics to evaluate what the

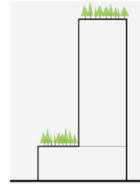
# financial performance is of design interventions.”

# is of design interventions.”

-Helena Rong,  
MIT Real Estate Innovation Lab

3. LITERAL GREENS

1000 Trees by Sou Fujimoto, Paris



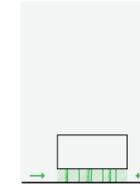
4. NON-90 DEGREE ANGLES

Jewish Museum by Daniel Libeskind, Berlin



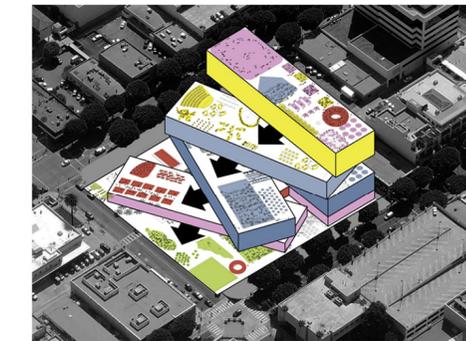
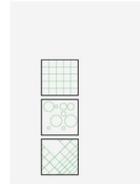
5. PUBLIC-TO-PRIVATE RATIO

Timmerhuis by OMA, Rotterdam



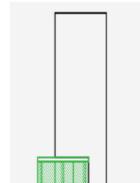
6. SPATIAL FLEXIBILITY

The Plaza at Santa Monica by OMA



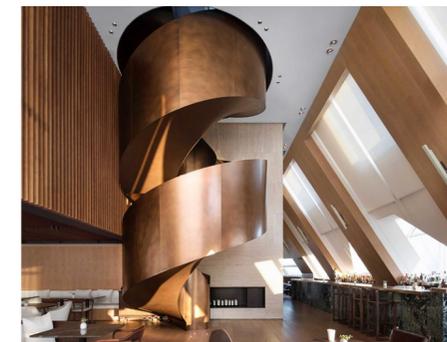
9. SIZE OF LOBBY

Trump Tower, New York City



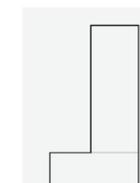
10. INTERIOR DESIGN

EDITION hotel by Neri+Hu, Shanghai



11. PODIUM EXTRUSION

1000 Trees by Sou Fujimoto, Paris



12. DOUBLE/TRIPLE HEIGHT SPACES

520 W28 St, New York by Zaha Hadid Architects



15. ADAPTIVE RE-USE BUILDINGS

Waterhouse by Neri+Hu, Shanghai



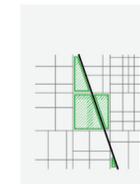
16. NUMBER OF STAIRCASES

New School by SOM, New York City



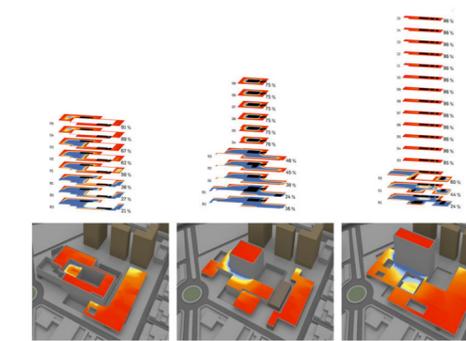
17. DIAGONAL VS. GRID

Flat Iron Building, New York City



18. DAYLIGHT

WSP Building Ecology



## DESIGN PERFORMANCE

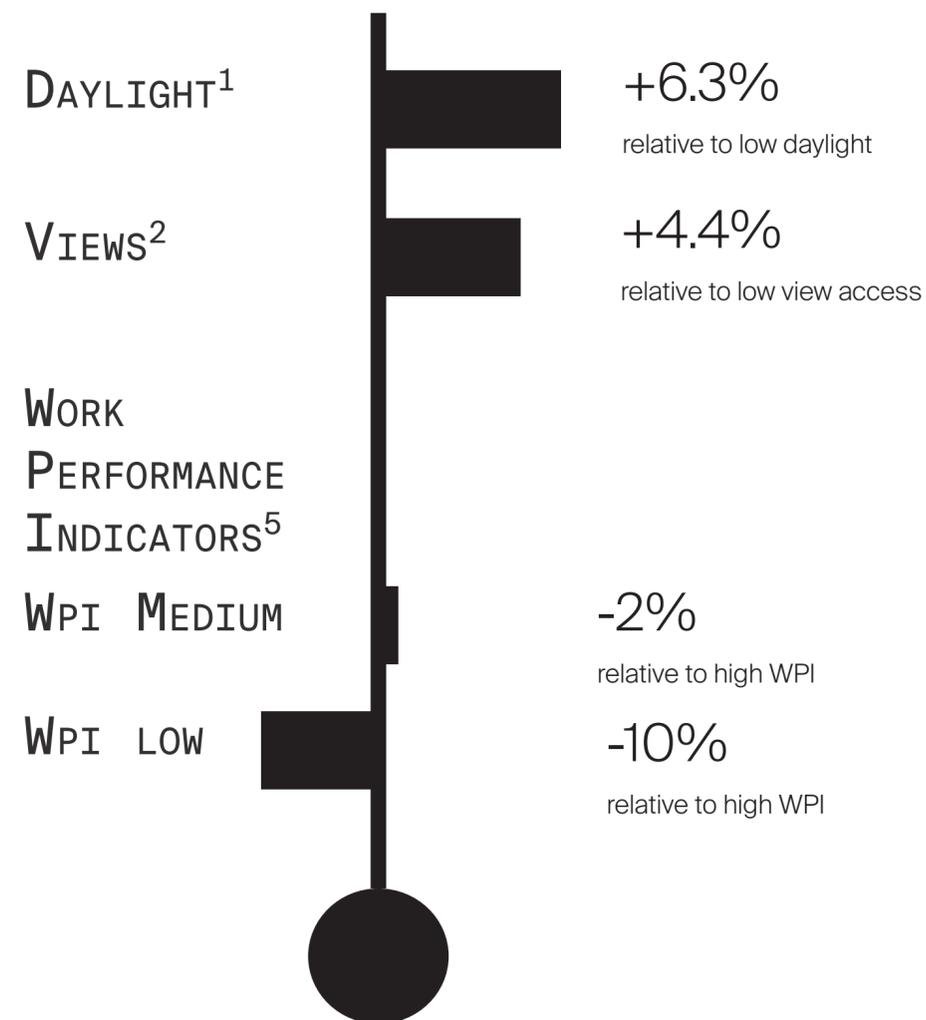
**“We’ve evaluated 8 out of the 25 design metrics. Consistently, there is evidence of a performance differential. This behooves architects and financiers to not dismiss relevant design without further research.”**

-Dr. Andrea Chegut,

MIT Real Estate Innovation Lab

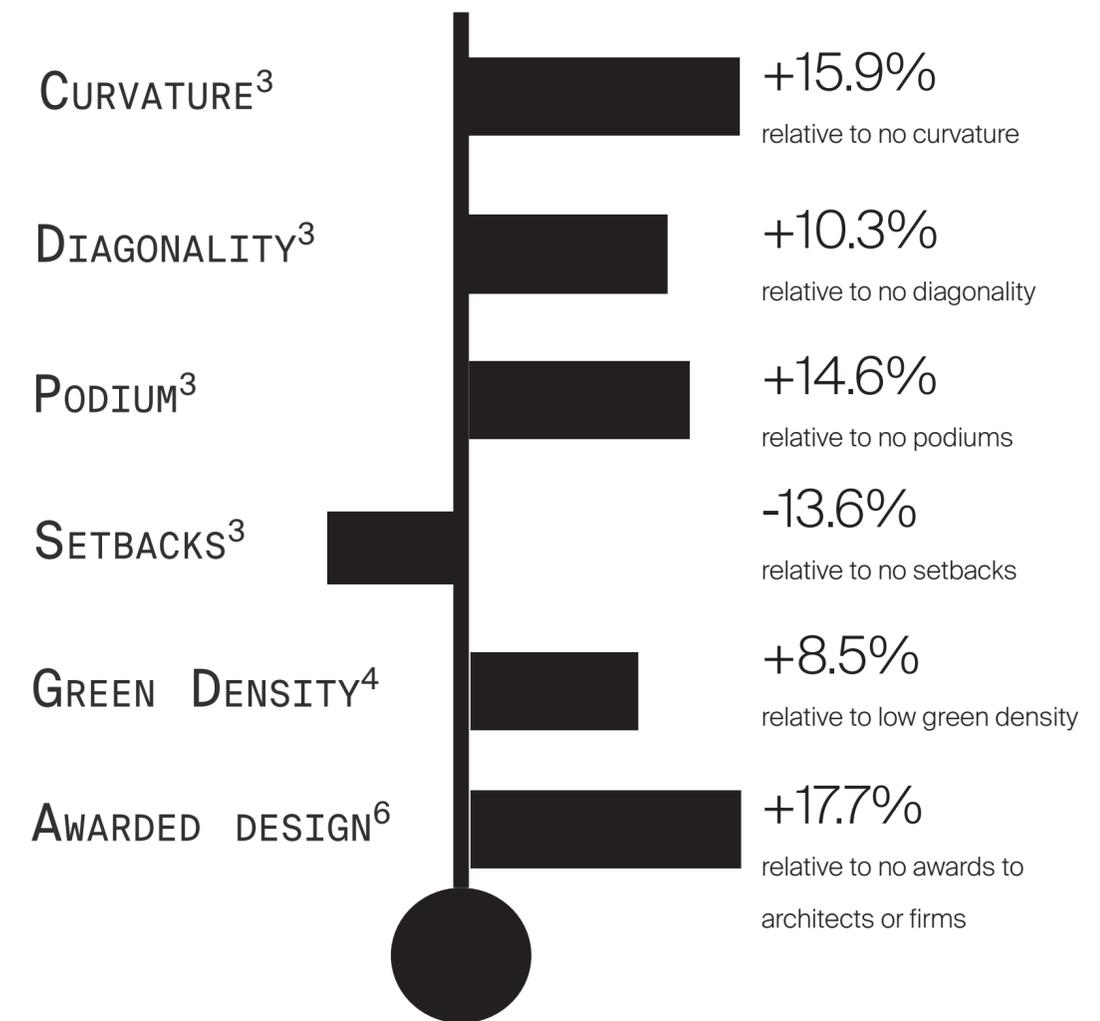
## DESIGN METRICS

### RENTAL VALUE



## DESIGN METRICS

### TRANSACTION VALUE



1. THE VALUE OF DAYLIGHT IN OFFICE SPACES, TURAN, FINK, REINHART AND CHEGUT, 2019

2. THE VALUE OF VIEWS IN OFFICE SPACES, TURAN, FINK, REINHART AND CHEGUT, 2020

3. THE VALUE OF DESIGN IN REAL ESTATE ASSET PRICING, YANG, RONG, KANG AND CHEGUT, 2020

4. THE FINANCIAL IMPACT OF STREET-LEVEL GREENERY ON NEW YORK COMMERCIAL REAL ESTATE, YANG, RONG, KANG, ZHANG, CHEGUT, 2019

5. LINKING WORKPLACE DESIGN TO FINANCE: THE FINANCIAL IMPACT OF WORKPLACE DESIGN PERFORMANCE, PURI, JOHN, CHEGUT, 2017

6. THE VALUE OF AWARDED DESIGN IN REAL ESTATE ASSET PRICING, KANG AND CHEGUT, 2018

\*ALL RESULTS ARE STATISTICALLY SIGNIFICANT AND ARE REPORTED AS CETERIS PARIBUS CONDITIONS

(un)

real

estate

**“IN WORLD OF 2.2 BLN GAMERS, WITH ANNUAL SPENDING OF 150BLN, ITS HARD TO IGNORE THE VIRTUAL ECONOMY.”**

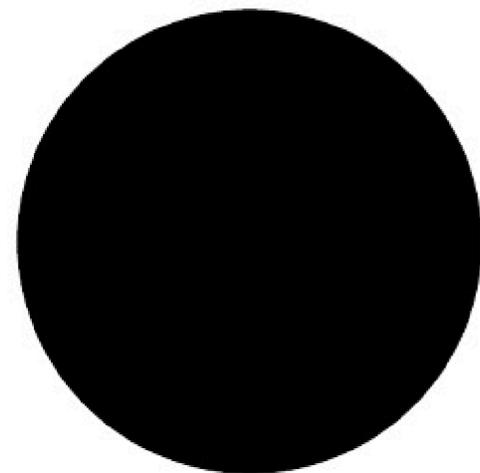
-ALINA NAZMEEVA



virtual worlds

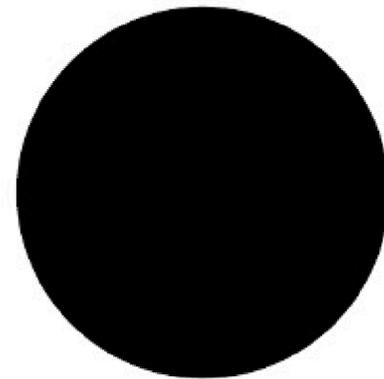


statistics



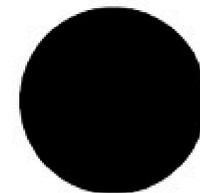
**USA**

325 million



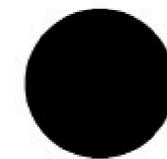
**Fortnite**

200 million  
of registered  
users



**Minecraft**

91 million of  
monthly players



**France**

67 million



**Second Life**

600 thousands  
residents

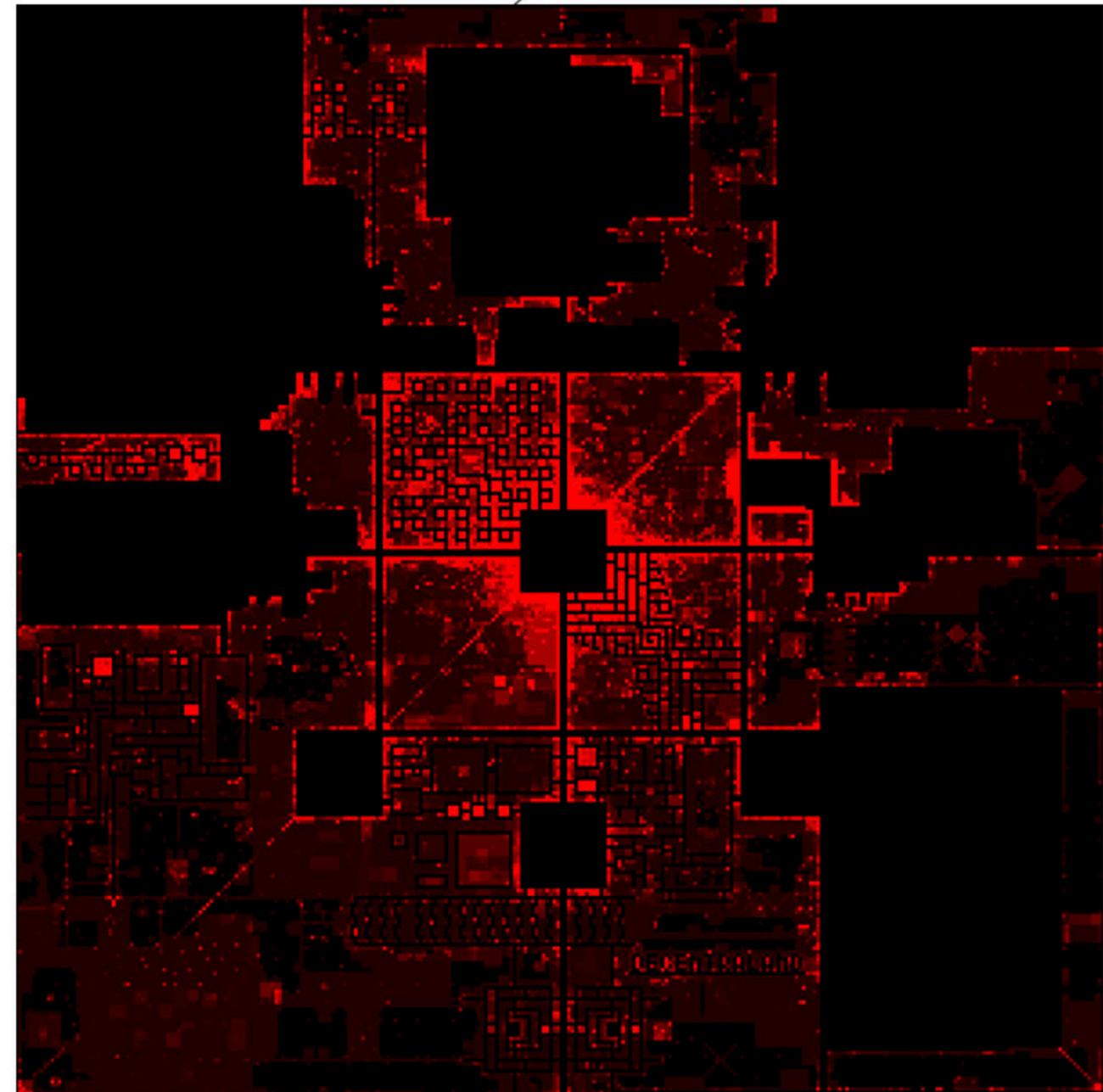
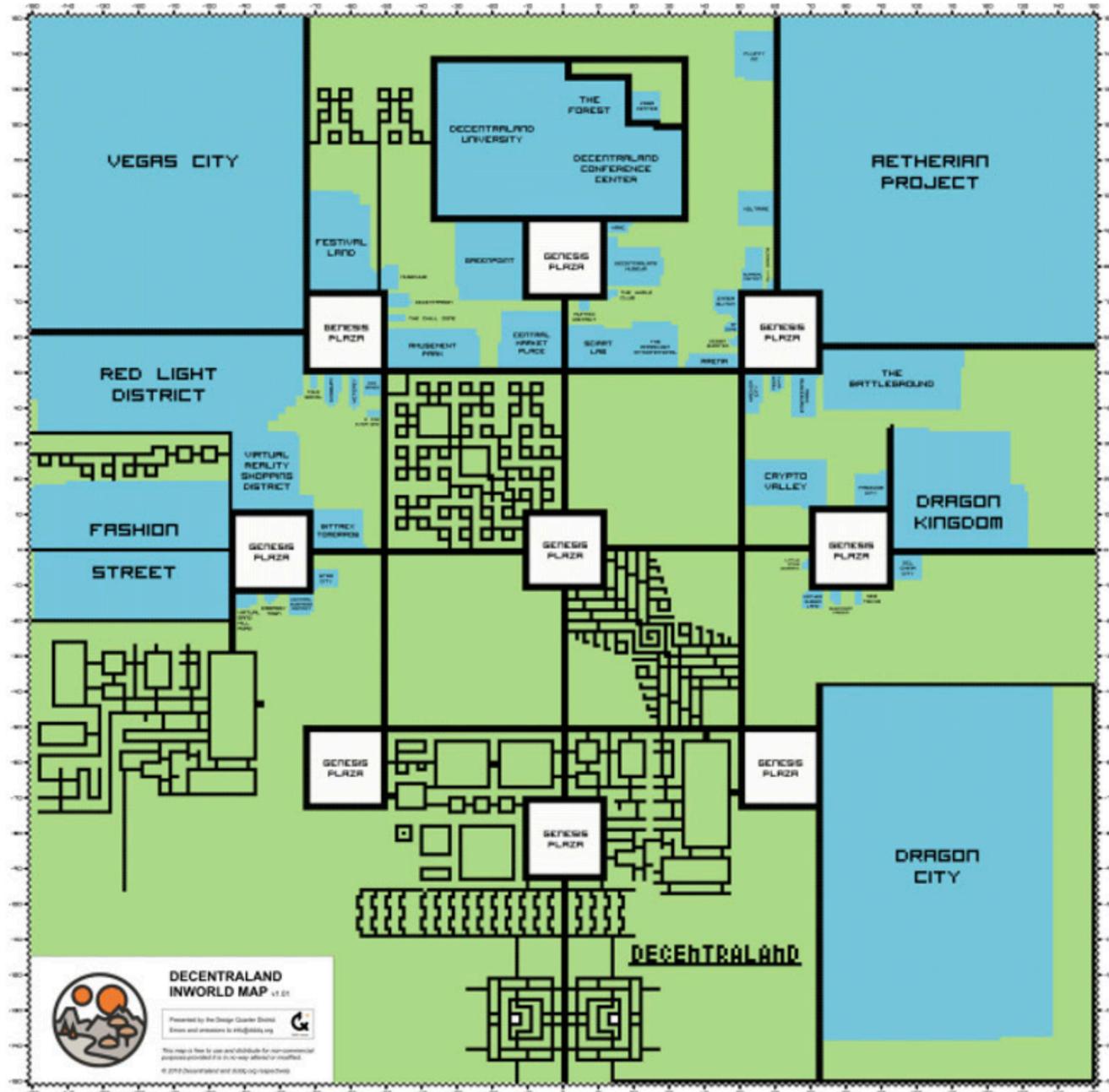


**Boston**

600 thousands  
residents

virtual worlds

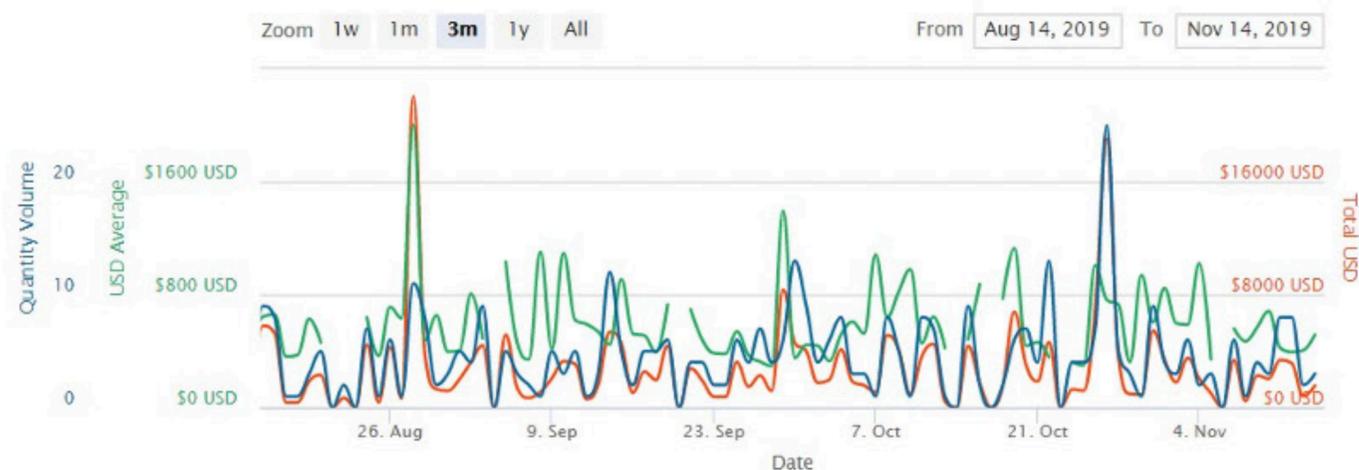
digital assets



virtual worlds

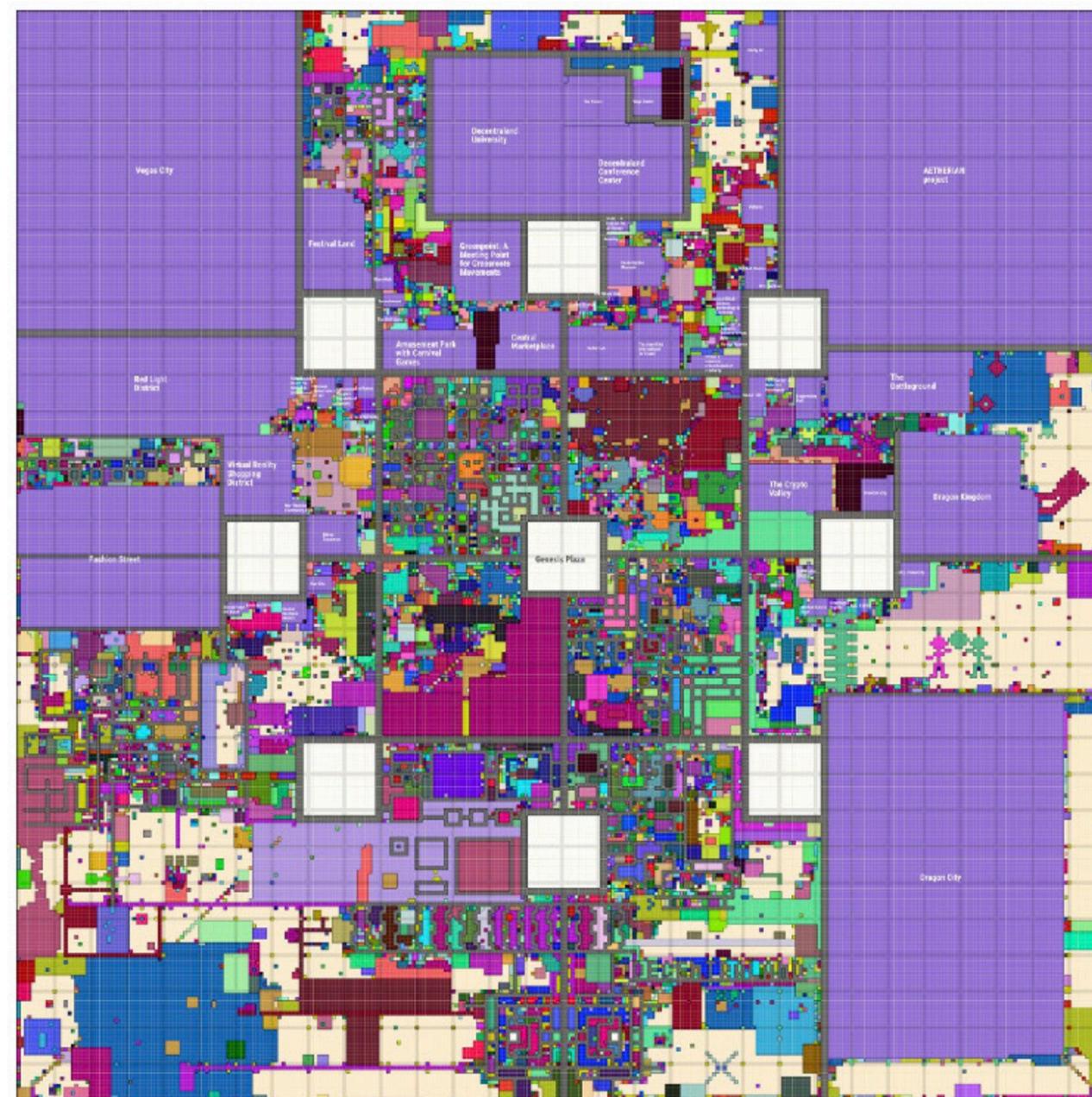
digital  
assets

DECENTRALAND (LAND) HISTORY CHART



### Timeline

- [2017.12] **Auction 1:** Decentraland completed their first auction, selling off 34,356 parcels of \$LAND (for ~\$16.63MM USD).
- [2018.03] **Marketplace:** Secondary trading of the previously auctioned \$LAND parcels.
- [2018.08] **Estates:** Connect multiple adjacent parcels of LAND to transfer, sell, buy, and dissolve in bulk.
- [2018.12] **Auction 2:** The remaining 9,331 \$LAND parcels were auctioned off (for ~\$2.99MM USD).



Housing

Affordability

& Equality

# HOUSING INNOVATION WORKSHOP

**DEVELOPING DIFFERENTLY:**

**SEPT 15** 2017  
**12PM - 6PM** BSA Space | 290 Congress St, Suite 200

Housing development is not meeting current demand. Roadblocks to development stem from the number of stakeholders, mixed-incentives for project formation and completion, as well as information incompleteness. Progress does arise, but with numerous kinks in the process. The City of Boston, MIT's Real Estate Innovation Lab and the Boston Society of Architects are engaging our community to workshop dynamic solutions that can come from deconstructing work patterns, pairing with experts across industries, and developing new relationships across expertise levels. From this, we aim to curate, prototype and distribute ideas that can make strides in developing differently.

- 12PM LUNCH + EXPLORE
- 1PM WORKSHOP BREAKDOWN
- 1:30PM OUTLINING THE ISSUE
- 2:30PM IDEA PRIMING
- 3PM BREAK + IDEA GALLERY
- 3:30PM DIGEST + IDEATE
- 4:30PM PROTOTYPE
- 5:30PM REFLECT + RELAX

**RSVP JULY 31**  
**MARCY OSTBERG:** [marcy.ostberg@boston.gov](mailto:marcy.ostberg@boston.gov)  
**ANDREA CHEGUT:** [achegut@mit.edu](mailto:achegut@mit.edu)



**THE MAYOR'S OFFICE OF NEW URBAN MECHANICS** | **THE HOUSING INNOVATION LAB** | **BSA** | **MIT** | **THE REAL ESTATE INNOVATION LAB**  
RESEARCH AND DEVELOPMENT FOR THE BUILT ENVIRONMENT

- Image: "House With A Missing Middle", Other Architects. [www.otherarchitects.com](http://www.otherarchitects.com)

2017

# Innovative Materials & Methods

*The 2<sup>nd</sup> Annual Housing Innovation Workshop*

**Outcomes & Ideas**

*A Collaboration from:*

- MIT Real Estate Innovation Lab
- Boston Society of Architects
- City of Boston Housing Innovation Lab



**MIT** | **BSA** | **HOUSING INNOVATION LAB**

2018

# Distributing Density

*Middle-Scale Housing for Sustainable Communities*

*The 3rd Annual HOUSING INNOVATION WORKSHOP | JUNE 10-11*

In recent years, cities throughout the country have begun to highlight and address the barriers to building what is often referred to as the missing middle: mid-scale neighborhood contextual housing types that are often a great challenge to build.

Participants from relevant industries and fields, including health, development, finance, and design will form groups that will help craft an Request for Ideas (RFI). Groups will submit innovative solutions on how to facilitate the production of this form of housing and provide guidance for Boston's future middle scale housing initiatives. This workshop aims to contribute to the community's knowledge base on housing development of this scale and build up ideas that can help create sustainable neighborhoods in the City.

*A Collaboration from:*

- MIT Real Estate Innovation Lab
- MIT Future Urban Collectives Lab
- Boston Society of Architects
- City of Boston Housing Innovation Lab



**THE MAYOR'S OFFICE OF NEW URBAN MECHANICS** | **THE HOUSING INNOVATION LAB** | **BSA** | **MIT** | **FUTURE URBAN COLLECTIVES** | **MIT Real Estate Innovation Lab**

- Image: Soft City: Building Density for Everyday Life, by David Sim. <https://www.amazon.com/Soft-City-Building-Density-Everyday-Life/dp/1642832798>

2019

