

# Blurred Lines, Disruptions and the Future of Real Estate

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# Blurred Lines, Disruptions and the Future of Real Estate

This talk was first given in August of 2017 at MIT and since then, in several other forums from New Zealand to Canada. Feedback from colleagues has been incorporated in this on-going process of continuous re-thinking an important topic: how we will all live , work and play in the future?



Norm Miller is Professor Emeritus at the Burnham-Moores Center for Real Estate in the School of Business at the University of San Diego. Prior moving to San Diego he was a Professor and Founder of the Real Estate Program at the University of Cincinnati. He has worked extensively with office, industrial and multifamily trade groups and was head of analytics for CoStar, a national CRE data firm. He worked for many years with Collateral Analytics, now owned by ICE (owner of the NY Stock Exchange) in a research capacity developing AVMs. He is the Vice President of the Homer Hoyt Institute, a think tank for real estate based in N. Palm Beach, FL. See [www.hoyt.org](http://www.hoyt.org) He founded the Journal of Sustainable Real Estate, see [www.josre.org](http://www.josre.org) and his personal website is [www.normmiller.net](http://www.normmiller.net)

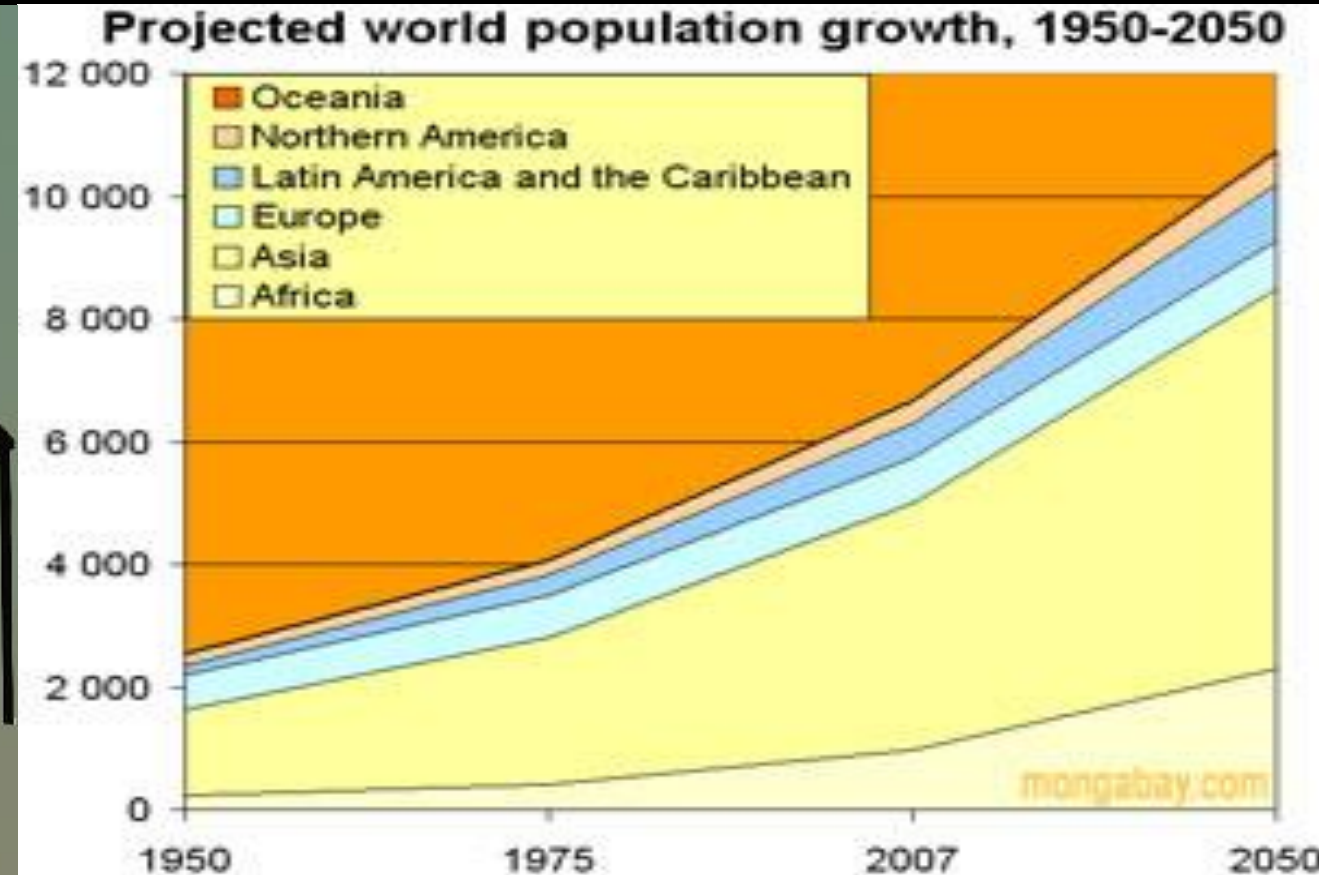
# Part 1: Inevitable Trends

Welcome to the  
predictable  
future

# Part 1: Inevitable Trends

## 1. Longer Life Spans based on DNA Sequencing of Cancer Cells and data mining , continuous body monitoring and new medicines

Implication: Strains on budget resources, pensions, etc. or working longer



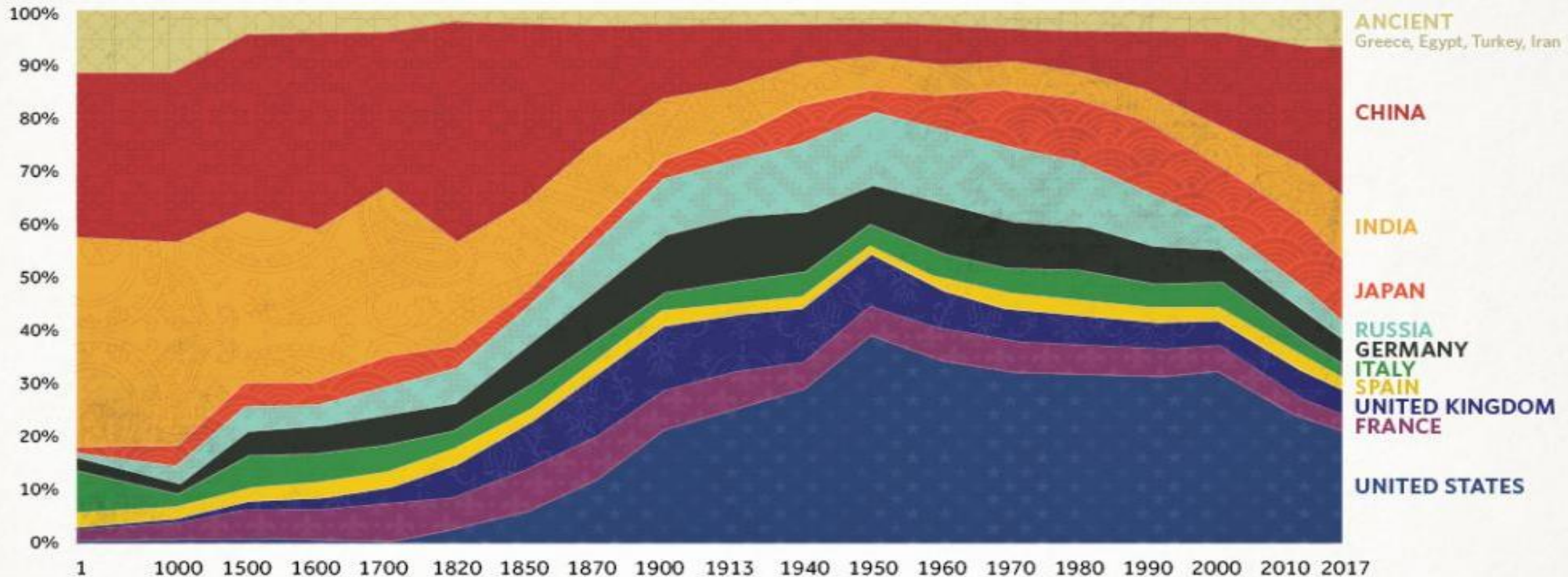


## 2. The decline of US Global Economic power, RMB possibly replacing the US Dollar as a global trading currency

## 2,000 YEARS OF ECONOMIC HISTORY IN ONE CHART

### All major powers compared by GDP from the year 1 AD

### SHARE OF GDP (WORLD POWERS)

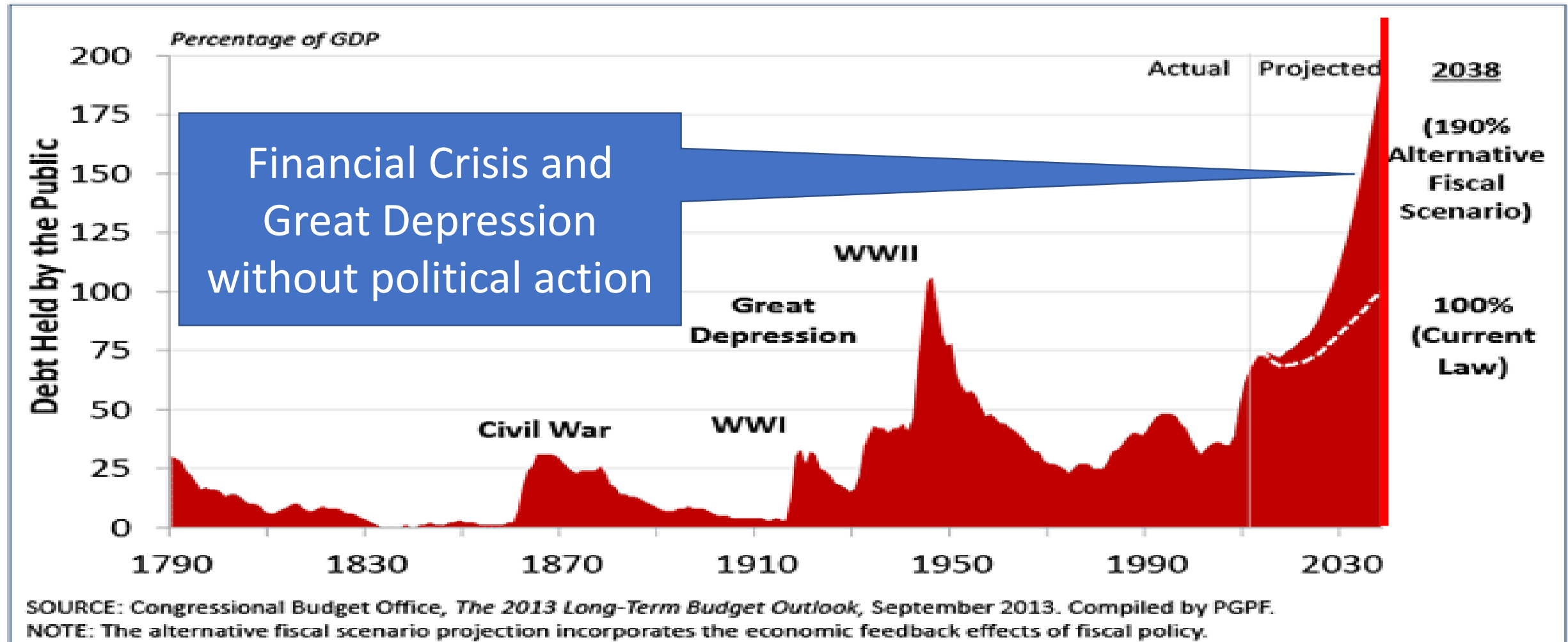


# 3. Fiscal Crisis and Political Pain



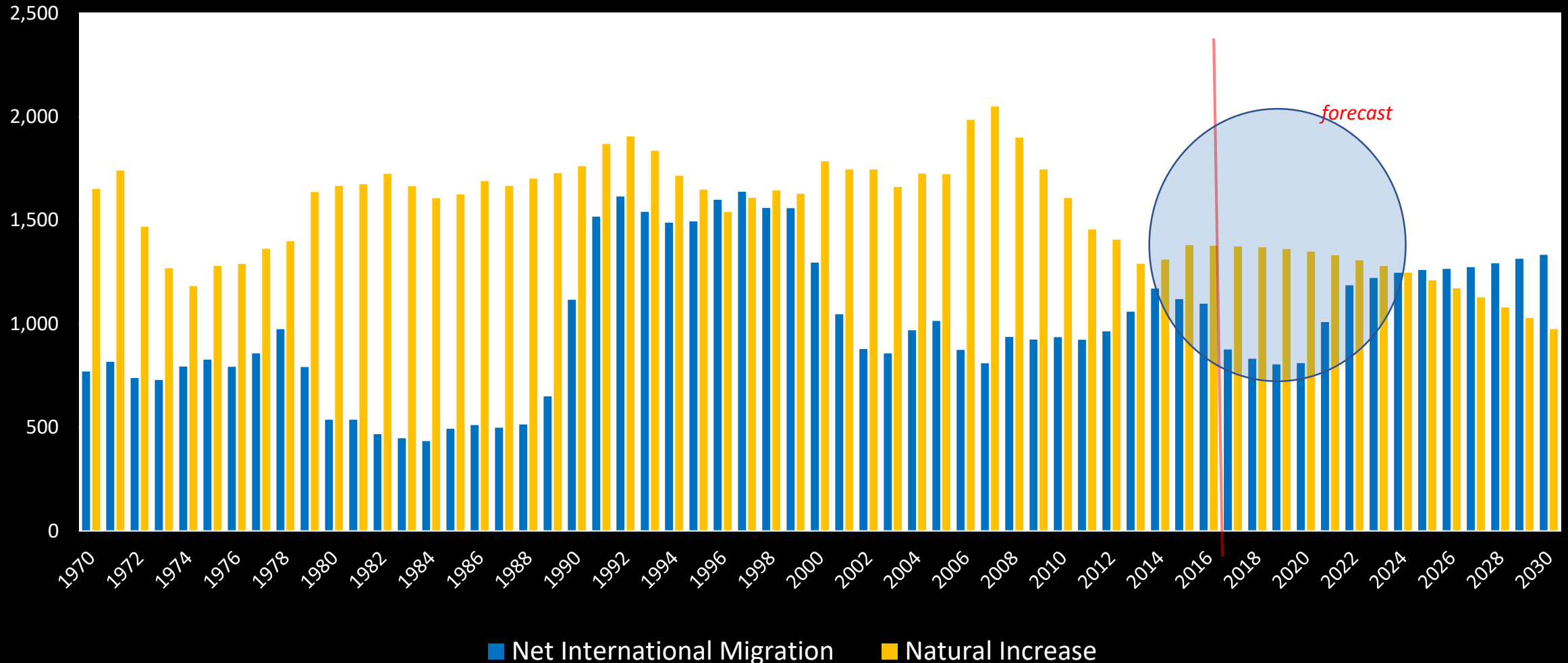
Peter G. Peterson  
Foundation  
Our America. Our Future.

U.S. debt held by the public is on an unsustainable path



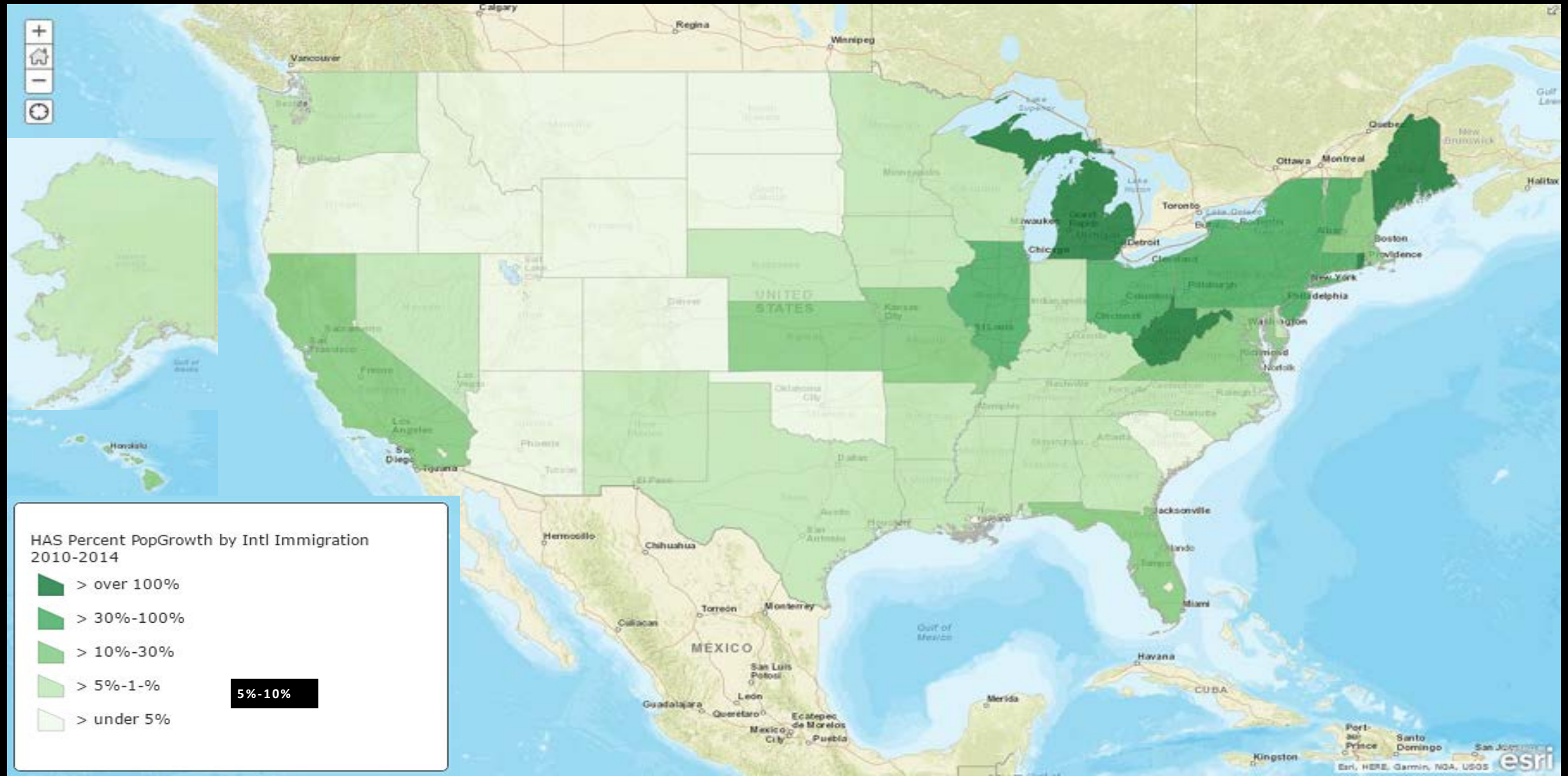
# Note the importance of immigration to countries like the US: Slowing Growth, More Dependent than ever on immigration

US Natural Internal Population Increase vs Immigration (000's)



Source: U.S. Census Bureau, Moody's, U.S. Dept. of Homeland Security, Hoyt Advisory Services

# Intl immigration creates more of the growth in slow-growth states





Note: Puerto Rico does not count as immigration but many have no place else to go after Maria which brings up climate change



## 4. Climate Change, global warming, increased weather, floods

Implications:

Positive for farmland in Canada  
and Russia

Floods and higher insurance  
costs

Higher cooling costs

And Less predictable weather





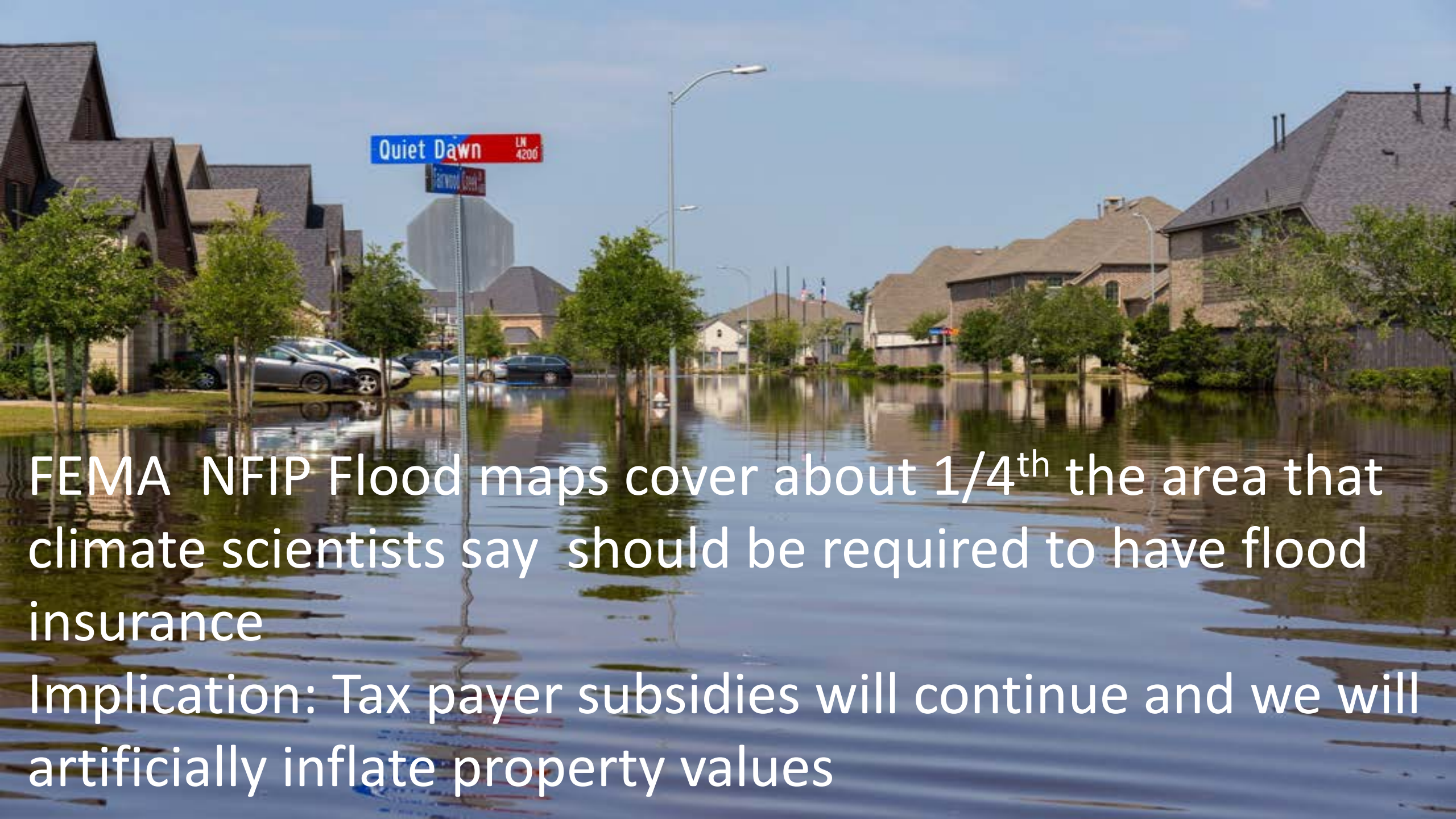
Texas Aug 28, 2017



Texas  
2017







FEMA NFIP Flood maps cover about 1/4<sup>th</sup> the area that climate scientists say should be required to have flood insurance

Implication: Tax payer subsidies will continue and we will artificially inflate property values





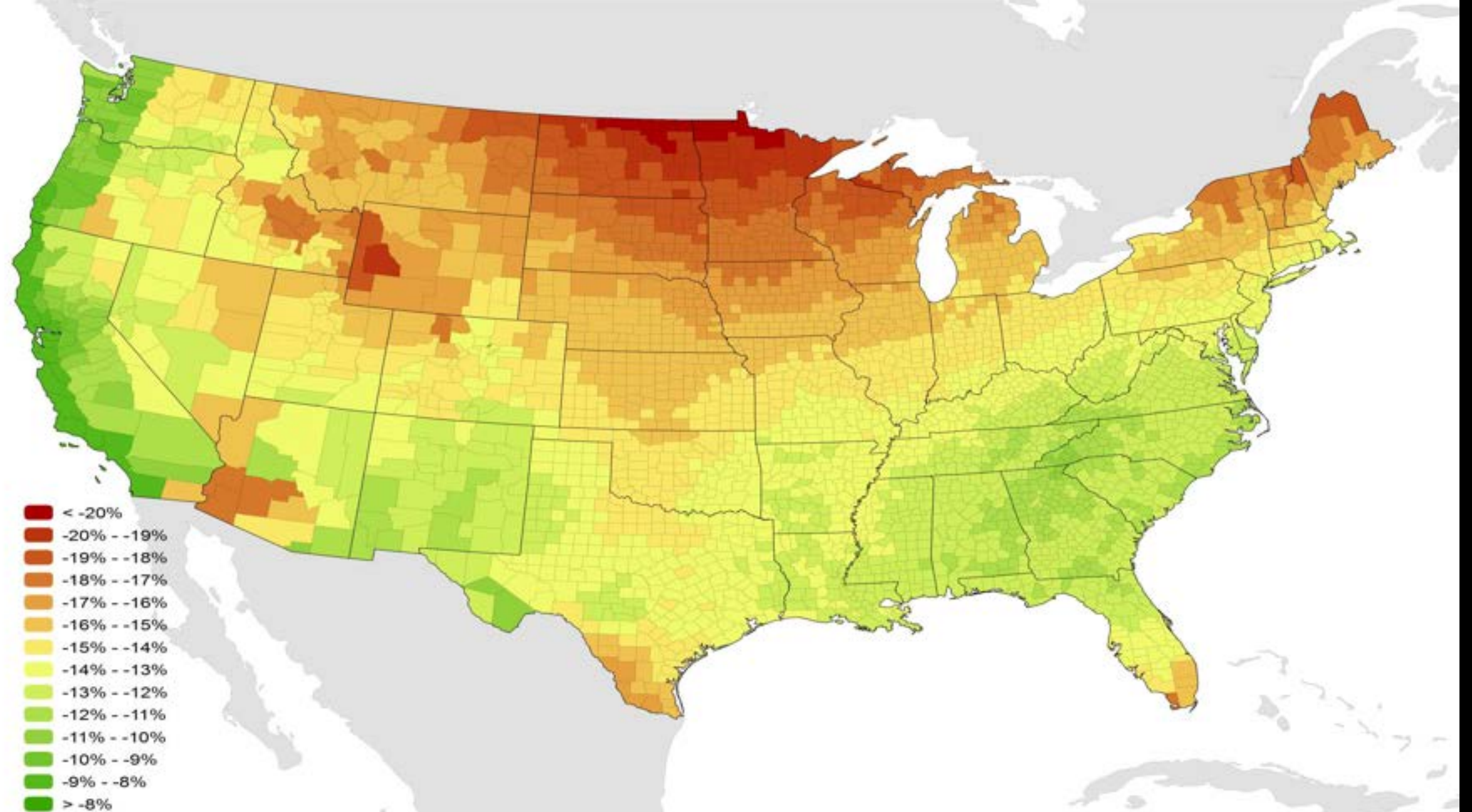
ATLANTIC CITY  
2017





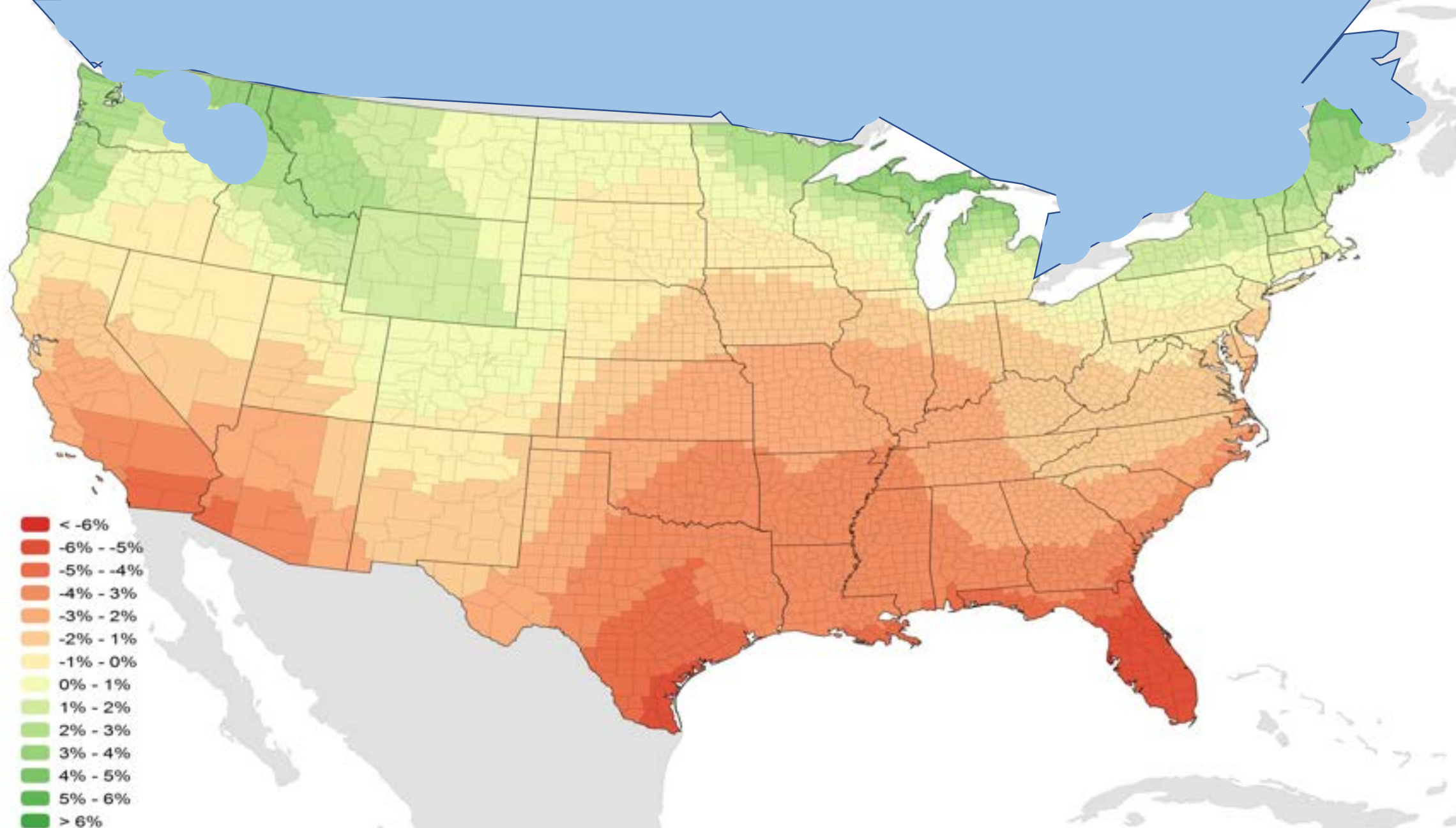
Hurricane Harvey 2017





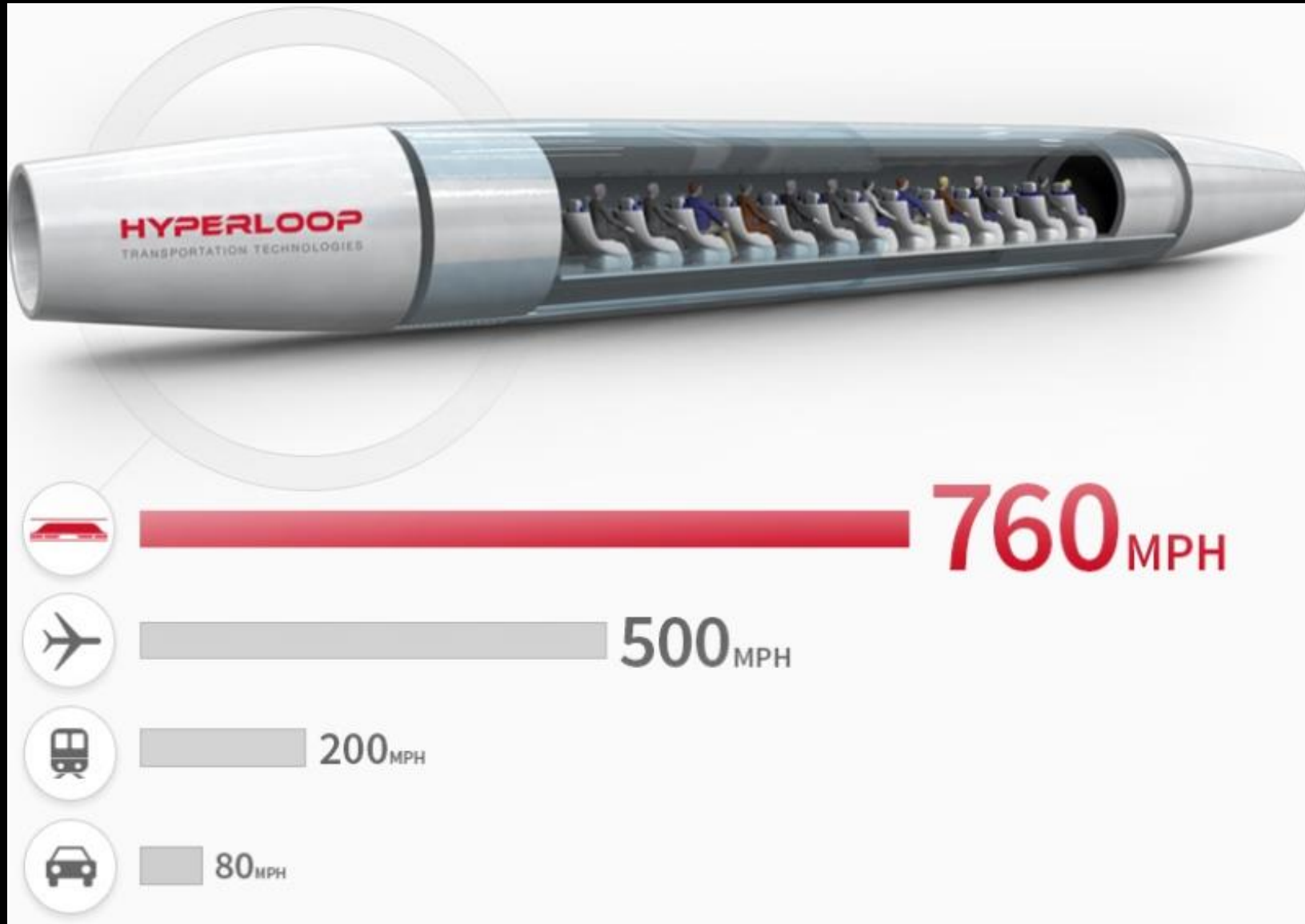
**Climate amenity value in 2000 (homog. HDD & CDD model, all controls + FE)**



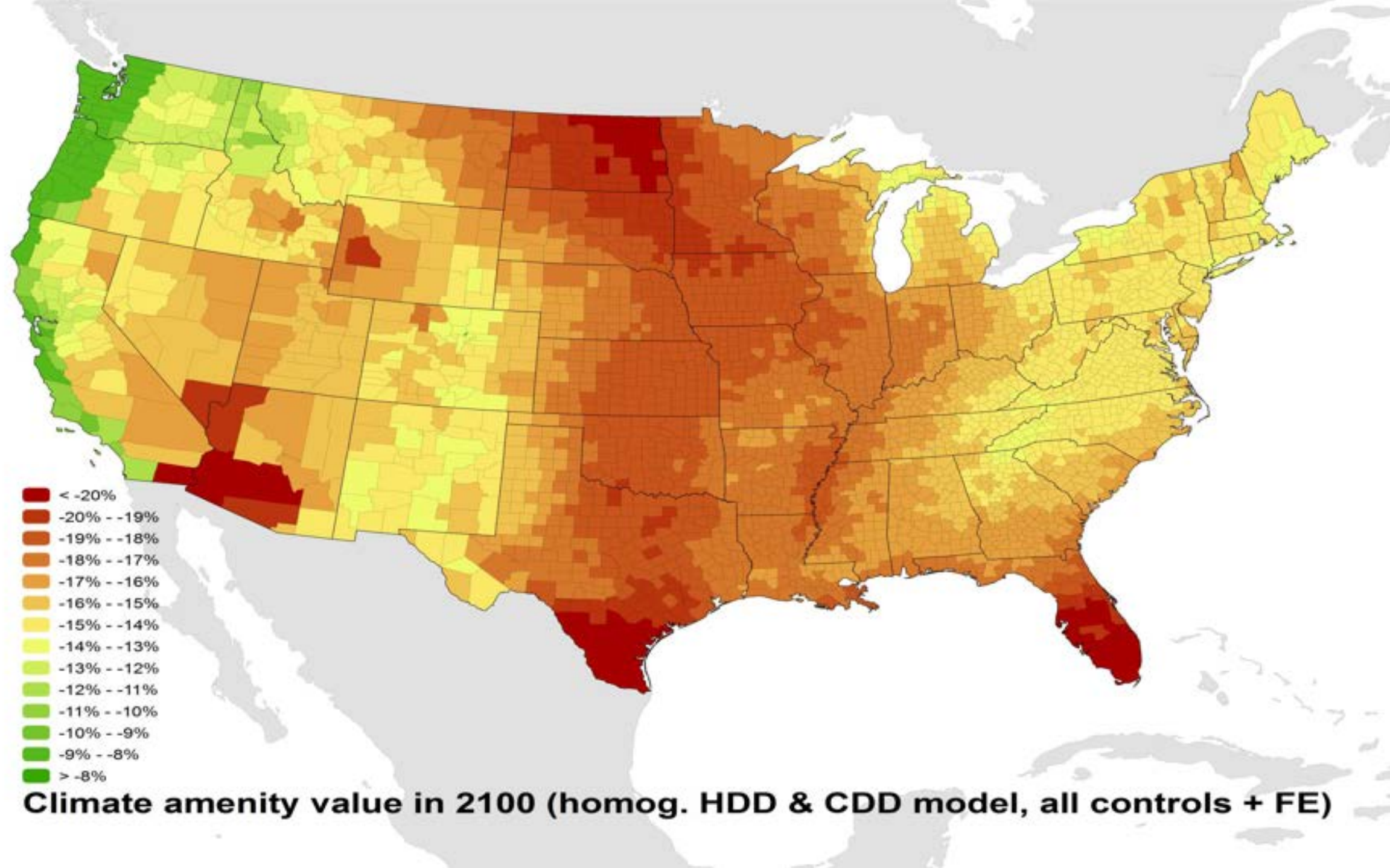


**Delta Welfare to 2100 (homogeneous HDD & CDD model, all controls + FE)**

Climate change  
also makes this  
more attractive  
Hyper Loop:  
Miami to Orlando  
in 26 minutes  
versus 4 hours +







Climate Change may also spur more of this and less in-person meetings?





## 5. Batteries, Energy Production + Lighter stronger composite materials and technology



New Research Suggests Current Batteries Redesigned could hold 5 times the energy and be faster to recharge. New models will not degrade.

Source: Stanford University Dr. Yi Cui

# Dubai July of 2017 Launch: Drone taxis



## Uber's Plan to Launch Flying Cars in LA by 2020 Really Could Take Off



At 300 kilometers in range this could dominate especially with vertical take off ability



## 6. 3D Printing with stronger composites equals a future of less standardized buildings

- Using structures that mimic the natural world of biology we should be able to build stronger much lighter buildings.
- 3D Printing can also be used for quick bespoke building part molds and this is the key.
- Implications:
  - 1) Less waste,
  - 2) Thinner floors = more floors or higher ceilings allows more natural light.
  - 3) Greater diversity of interesting designs, all customized.



# How Biomimicry Enhances Creativity in Architecture

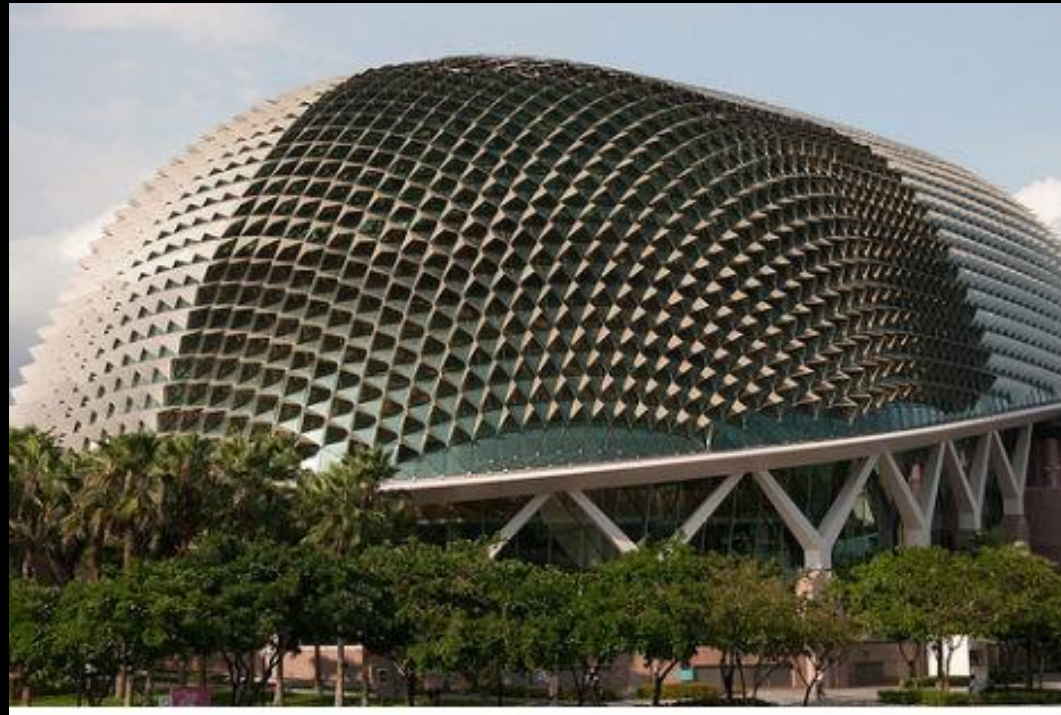


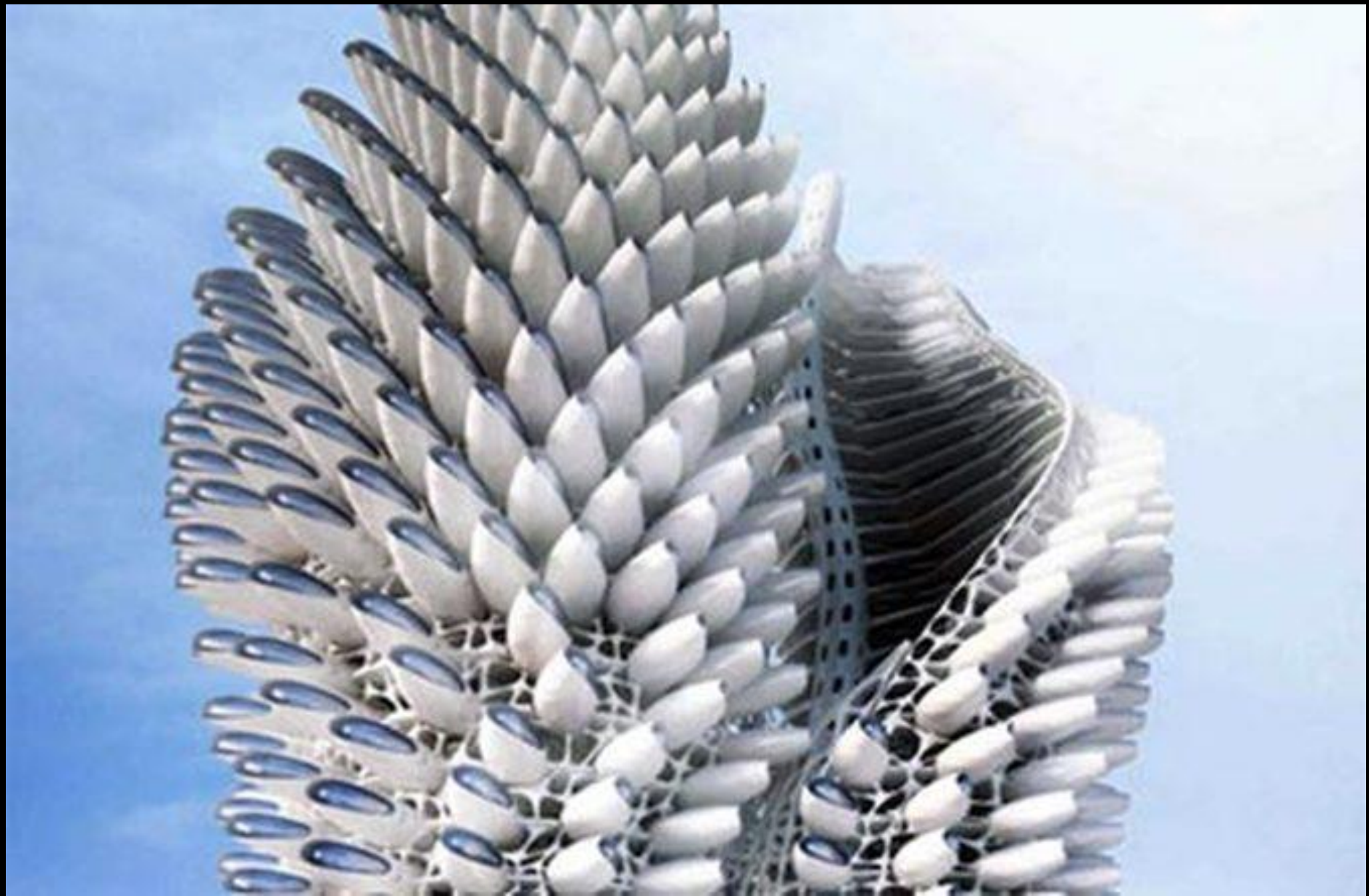
# Using designs from nature





Bio-mimicry is  
extremely  
hard without  
3 D printing













# Bio-Mimicry



# Zaha Hadid designs for Australia























# 7. Autonomous Cars and Trucks

Implications?

Disruptive and positive for  
all transit industries

Changes in building designs

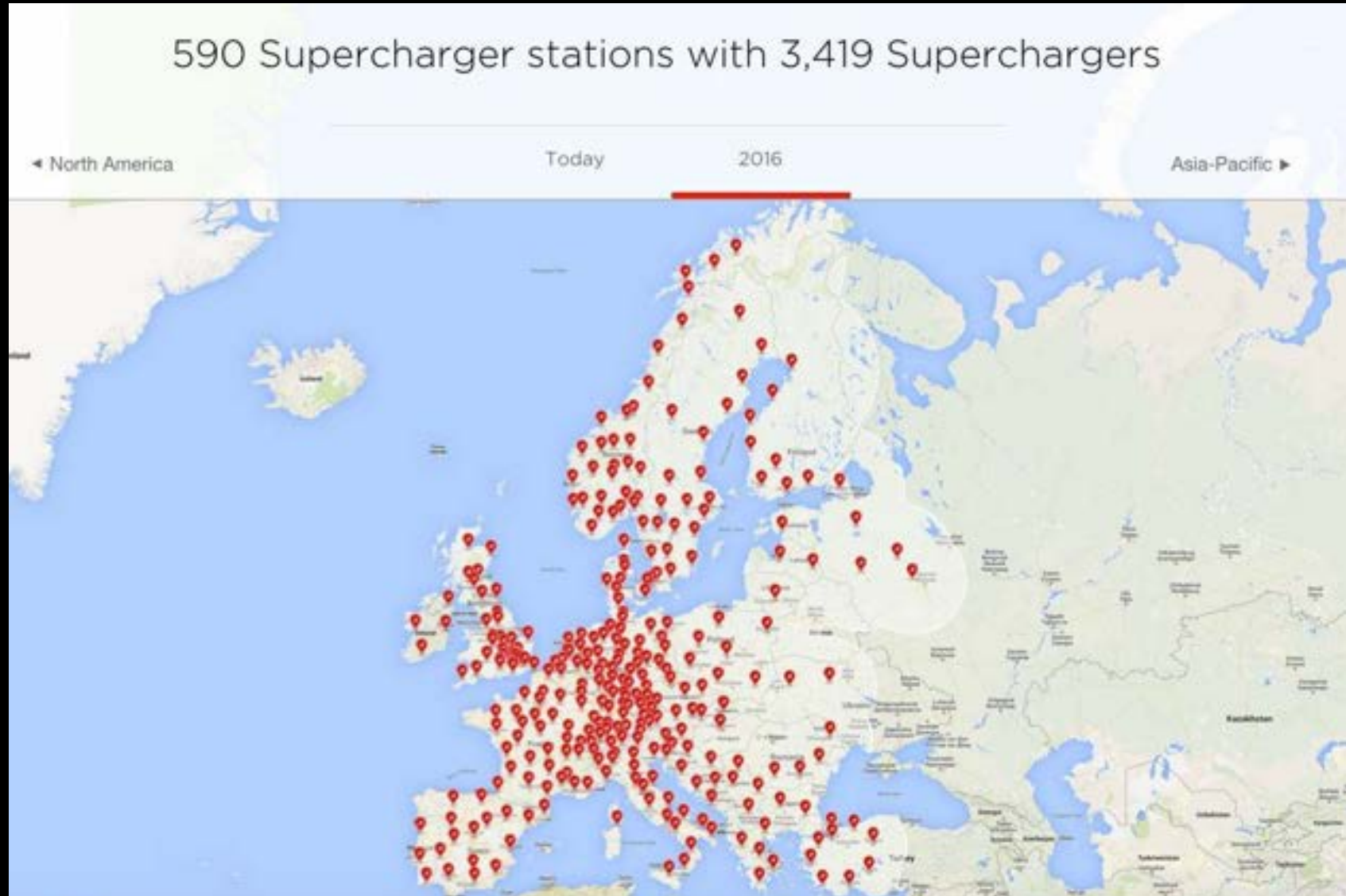
Changes in parking costs

More urban street demand?





# A TESLA real estate decision that might make a difference







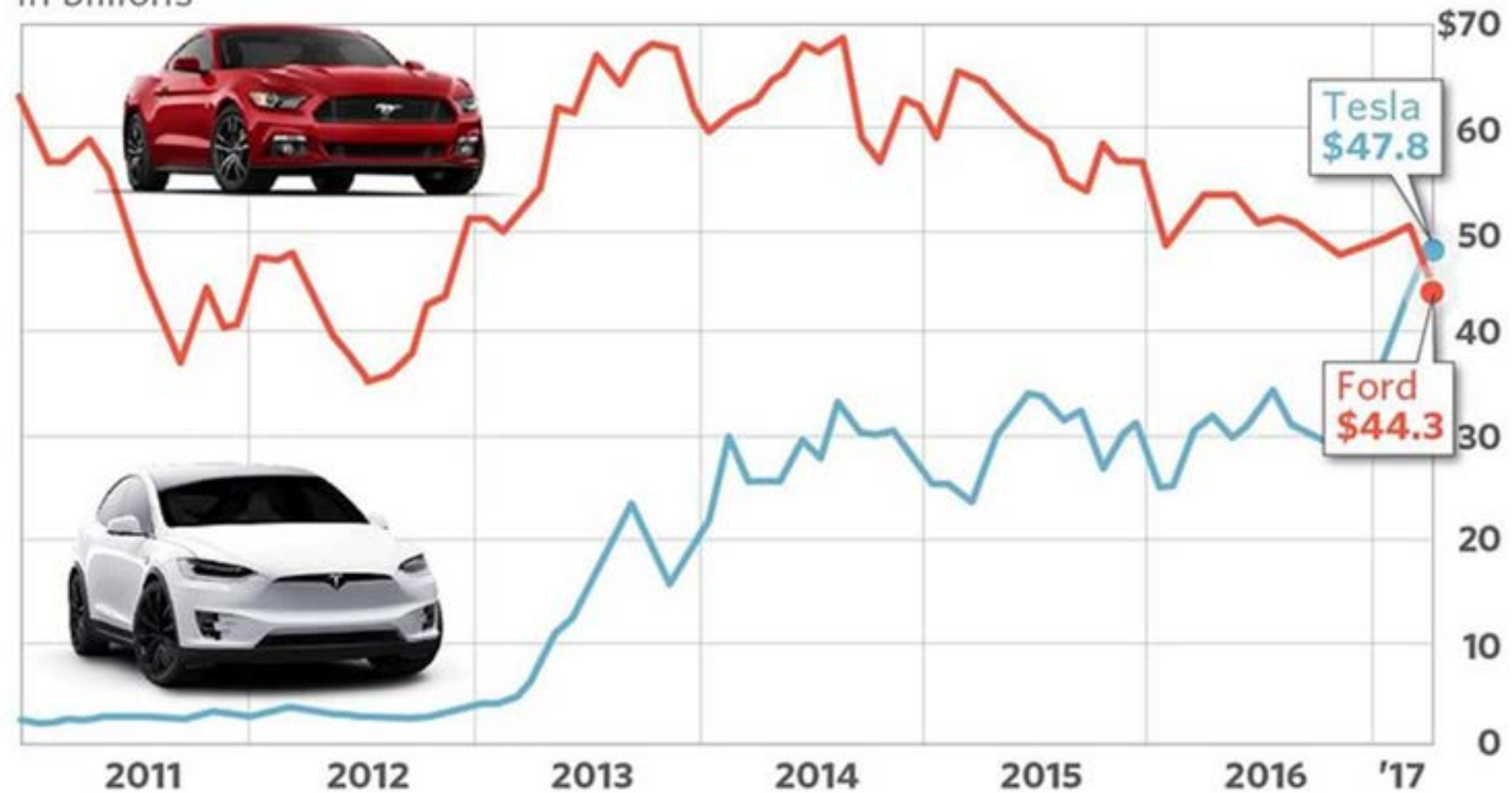
# Goldman Sachs: Self driving trucks will kill 300,000 jobs per year (Nov 15, 2017)



Employees stand next to self-driving, big-rig trucks during a demonstration at the Otto headquarters, in San Francisco. AP Photo/Tony Avelar

# Tesla's market cap overtakes Ford's

In billions



Source: FactSet



# Autonomous Cars: which scenario?

- Slow increments without us realizing it.
  - Staying in lanes, maintaining distances, automated braking and parking
- The Full Monty
  - Total autonomous driving within 5 to 10 years
  - An Uber car will pick me up and there will be no driver!
  - Semi-truck use on highways starts within a few years

# 8. Urban Factory Farming

Highly efficient farming and  
synthetic food  
production





# 9. Automation and Machines with Artificial Intelligence or Machine learning

AI enables the amplification of human abilities.

Ex.

- Facial recognition for security

- Voice recognition for searches and maps

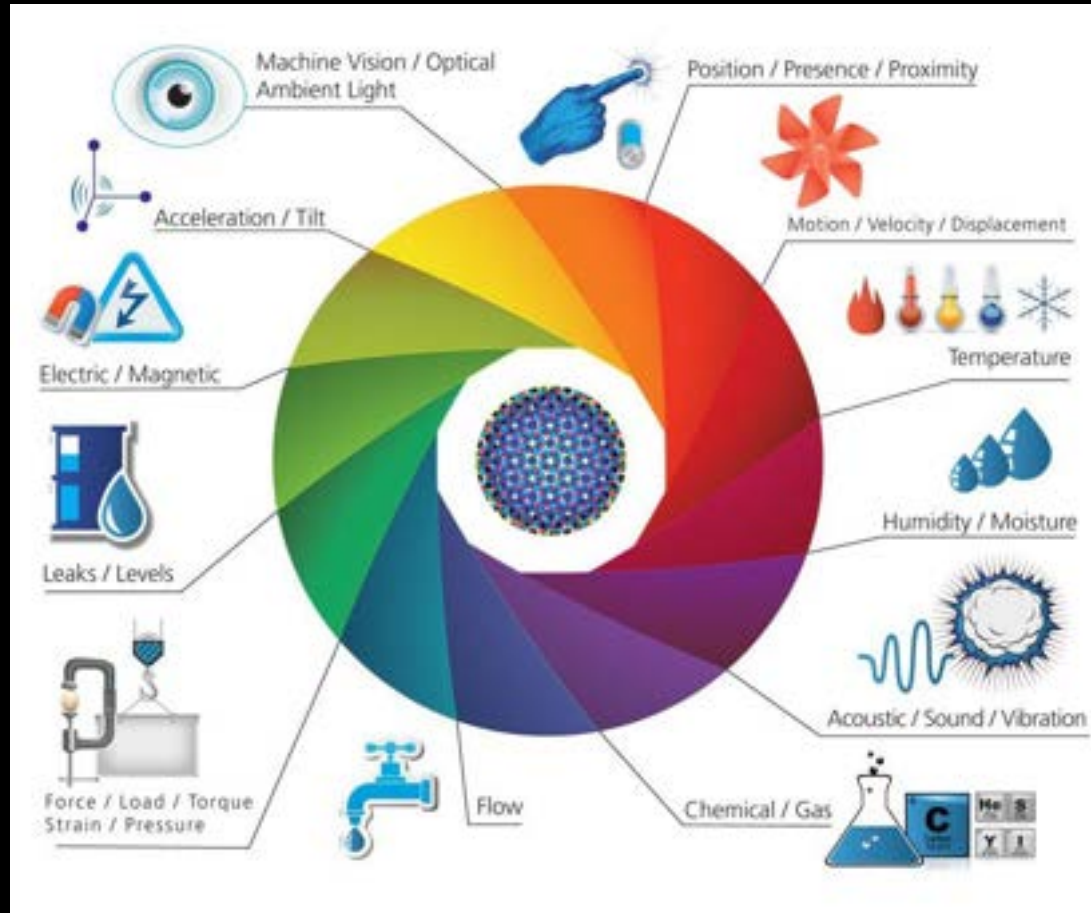
- Google language translation

- Reading EKGs and mammograms faster and better

Low skilled dirty dull jobs will disappear



# Add inexpensive sensors to machines and buildings, attach them everywhere





Security Robots by Knightscope.com that augment sensing and can see through smoke and sense heat or metal or chemicals



<https://youtu.be/eZILNVmaPbM>





This is a robot that can interact by voice

500 humanoid robot built from scratch in Hong Kong



Even close up she seems pretty real and has facial expressions.





Getting more lifelike all the time



What skills do humans need when their colleagues are robots?



# 10. Education for Critical Thinking and Persuasion Not Information or Data Retention

**Future jobs will all use augmented  
decision making**

**Current educational systems are archaic**

**Universities should provide flexible adaptable  
modules of work/study industry integrated programs  
with problem solving curriculums of various time  
blocks**



# Which jobs are most susceptible to automation, robots and machine learning?

- Senior Care?
- Child care?
- Bank Security
- Dishwasher?
- Court Clerk?
- Toll collector?
- Telemarketer?
- Data researcher?
- Teacher?
- Valet Parker?
- Surgeon?
- Professor?



# Who is safest?

- Jobs requiring persuasion or negotiation.
- Jobs requiring creativity and innovation.
- Jobs requiring extreme hand dexterity
- .....Any Others?

# Implication of AI and Robotics

- Shorter work day/week and/or fewer people working?





# Part 1: Inevitable Trends

## 11. Virtual Reality



# Being There: Seeing There: Virtual Realities



[HOLO](#) [CREATE](#) [CAREERS](#) [ABOUT](#)

## Make virtual reality human

A truly immersive experience, volumetric VR teleports you to another place and gives you the freedom to move around human holograms as if you were in the same room, opening up worlds of possibilities.





## Part 2: Real Estate Implications of Inevitable Trends



## Part 2: We have had these traditional forms of real estate



Single  
Family

Office

Retail

Multi-  
family

Lodging

Industrial



# Single Family and New Tech Apps: Care to Share?



[Dreamapartments.com](https://www.dreamapartments.com)

Combines sharing with  
landlord managed  
assistance to lower rent  
payments and increase  
NOI

# WeWork's Multifamily Concept "WeLive" is Like a high end communal apartments

- Each unit has a bedroom, bathroom, basic kitchen but all other amenities like TV rooms, mailroom/bar, rooftop decks, game rooms, high end kitchen are shared.
- Units come furnished completely.
- As inventory grows you will be able to move from city to city with a membership.
- See <https://www.welive.com/>
- Implications?

Will this drive down home ownership or be a new form of timeshare?



# Single Family: Cheaper Than Land? Portland, Seattle, Vancouver, ...



# Single Family: More Modular and More 3D printed

- See Weberhaus for inspiration

## WeberHaus prefabricated homes

They're everything you imagine

WeberHaus makes building your dream home everything we believe it should be. From the first time you get in touch with our team to those first wonderful moments in your beautifully finished self-build home, the process will be a memorable and rewarding experience for you and your family.



to top

Day 1  
Site  
Prep,  
electric  
installing  
and  
damp  
proofing





# Crane and Trucks (Lorries) Arrive on Site



# Ground Flooring and Walls are Installed









Day 2: Stairs,  
more walls  
and interior  
components



Day 3: Roof and Interior Touch Up: Home is weather tight and finished in 3 days









# Single Family: More density is essential in the future



Converted Parking Garage in NYC



Stockholm

# Modern Multifamily: More amenities and more work spaces combined





# Office: Evolving rapidly but clashing with culture



Google Zurich

# Office Today: Collaboration and Connected





This is Office Space?



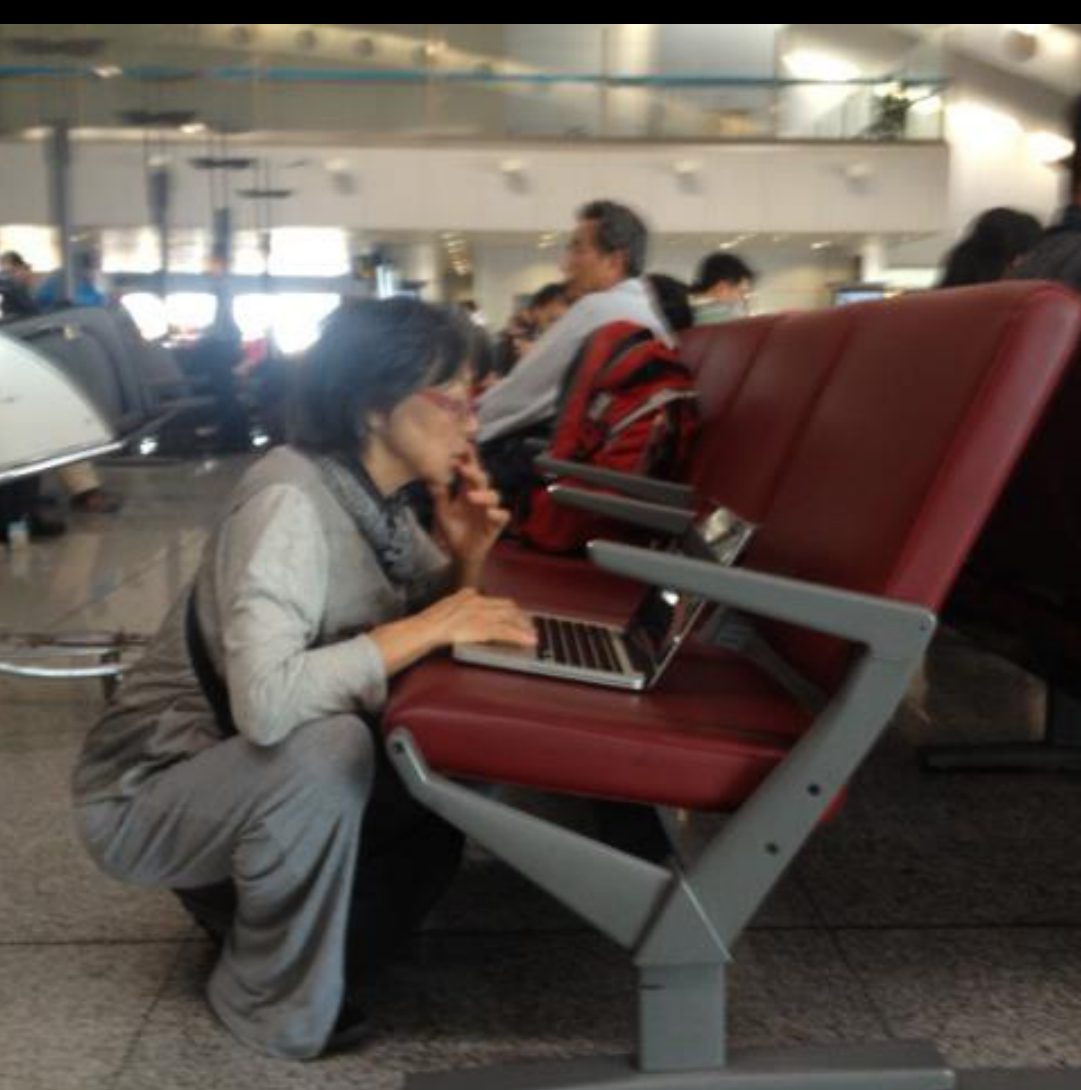


Hang outs with food, alcoholic beverages and more...to compete with home and third places





Not to mention working anywhere...continues



1000 LAWYERS 150+ JURISDICTIONS 26 OFFICES 140 YEARS

## RECENT

10 Must Reads for the CPE Industry

New  
opportunities  
for branding  
and cross  
selling?



## OFFICE

## Verizon Dials into Co-Working to Make Use of Obsolete Space

In a pilot program anchored by co-working spaces, Verizon already has transformed four of its urban "telco" buildings.

John Egan | Jul 24, 2017



# Office Parking Garages Will Need to be Convertible:

This new Seattle building at Columbia & 4<sup>th</sup> by [LMN Architects](#) features car elevators and residential on the same floor with easy conversion. Floors are flat. There are no ramps.



# Shifting from parking on site to **drop offs** will require new access lanes.

See <http://www.designboom.com/design/audi-urban-future-initiative-11-20-2015/>



## ADVANCED ARRIVAL URBANIZING PARKING



### 1 DROP-OFF SERVICE

Instant access to urban life without any detours



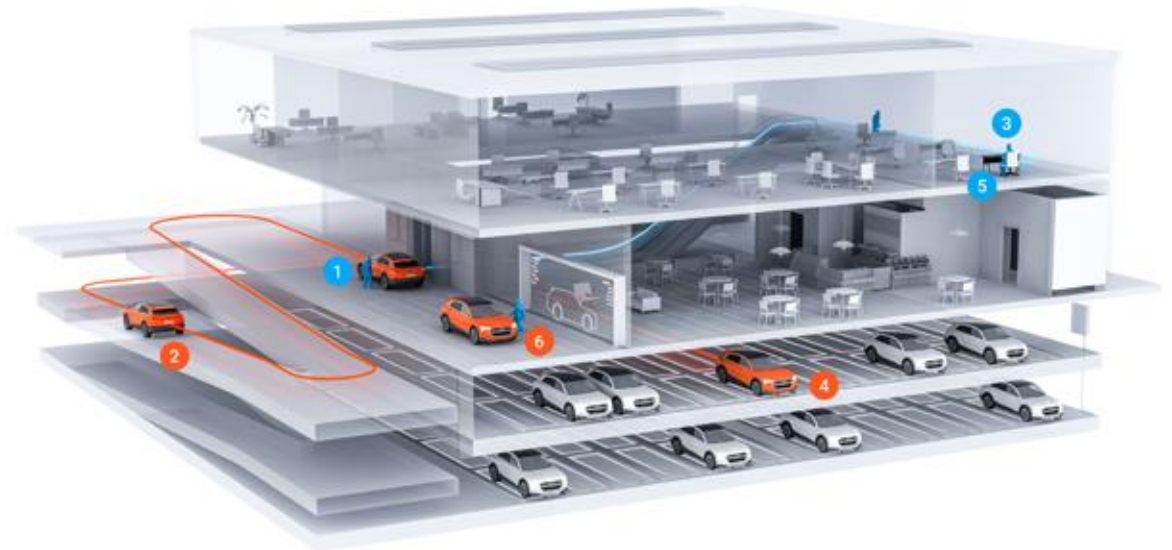
### 3 GAINING TIME

More time – less hassle circling. Piloted parking frees up valuable leisure time



### 5 CAR ON DEMAND

Providing individualized premium mobility via service app



### 2 CAR PARKS ITSELF

Efficient parking - Courtesy of piloted car technology



### 4 INDUCTIVE CHARGING

Charging the car while parking and always ready to go



### 6 PICK-UP SERVICE

Meet your car in a stress-free lounge atmosphere



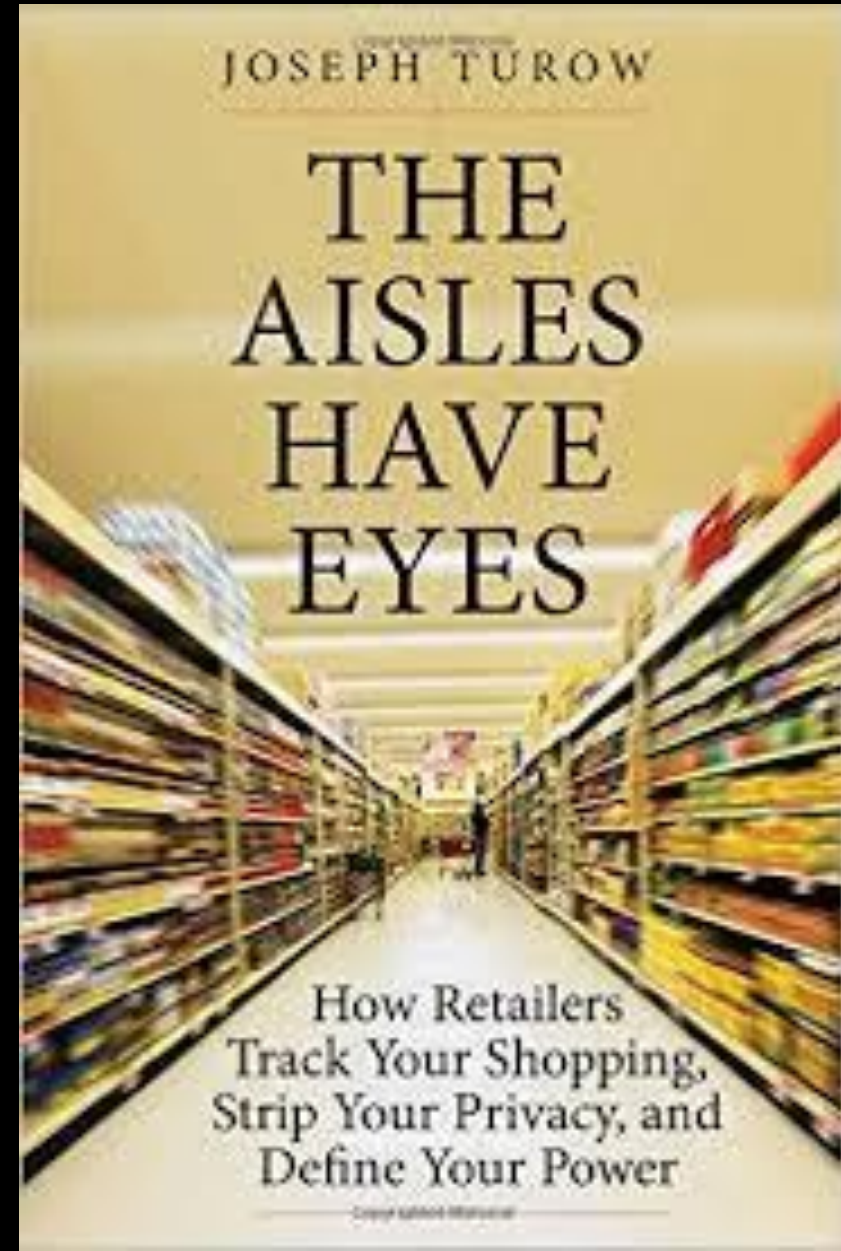


# Retail will be observational and interactive, (experiential)

Phone apps will guide me through store,  
show me sales

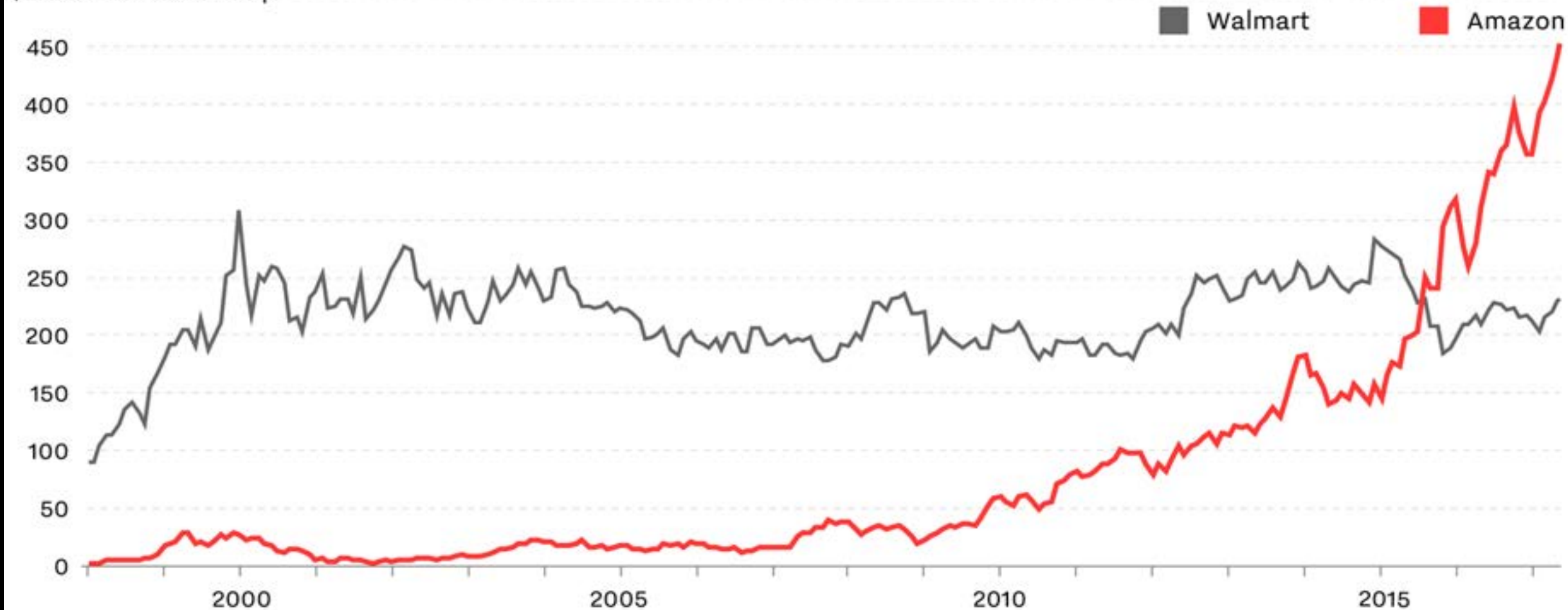
Grocers will teach cooking

Wine stores will have sommeliers giving tastings  
and advice



# Amazon became more valuable than Walmart in 2015

\$500 billion market cap



Source: FactSet

recode



## 2017 the year that Retail Died... Or transformed?

in memoriam;

J.C. Penney: closing 138 stores

Sears Holding: closing 108 Kmart and 42 Sears stores

Macy's: closing 68 stores

RadioShack: closing 187 stores

Abercrombie & Fitch: closing 60 stores

Guess: closing 60 store

Gap: closing 175 stores

Wet Seal: closing 171 stores

Crocs: closing 160 stores

The Limited: closing 250 stores

American Apparel: closing 110 stores

BCBG: closing 120 stores

Payless ShoeSource: closing 400 to 500 stores

GameStop: closing 150+ stores

RadioShack: closing 552 stores by 2020

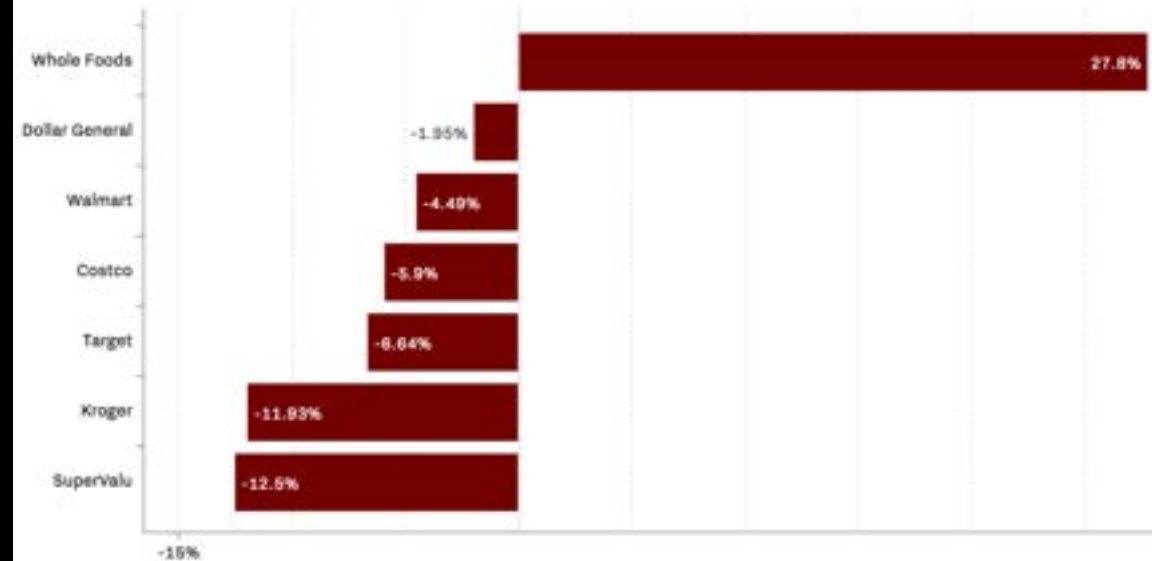
Staples: closing 70 stores

CVS: closing 70 stores

The Childrens Place: closing 300 stores by 2020



Grocery chain share price percentage change on Jun. 16



# One version of future retail





Shop in a Subway and  
Have it Delivered within 2  
hours at home

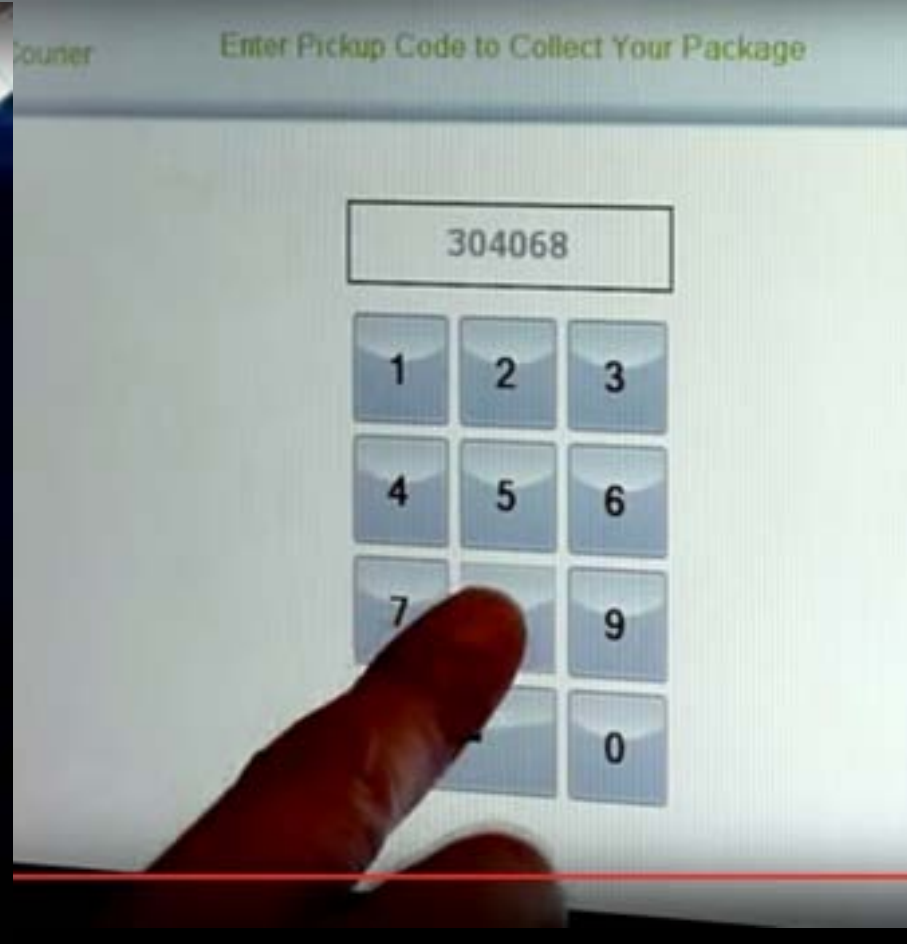
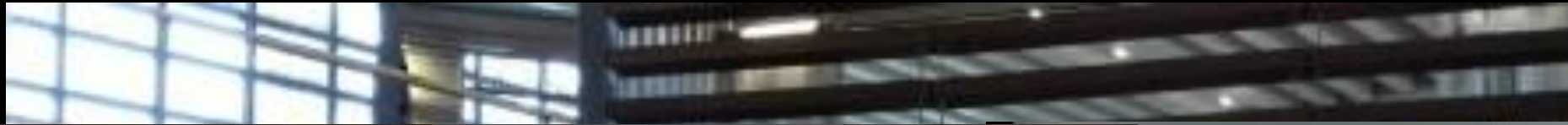


S. Korea

Or Shop in a Store with No  
Inventory by bar scanning



Is anyone designing buildings or homes for easy delivery and storage of your groceries or dinner?





Some multifamily buildings are catching on



# Hotels or Work Places Where You Sleep?







hotels

meeting rooms

groups

become a citizen

**citizenM says:** welcome to a new kind of hotel

[book a room](#)

everything you wanted  
to know about  
citizenM hotels



## SocietyM Meeting rooms

[book a meeting room](#)



It's time to put that Rotterdam mentality into practice. Big meetings rooms and big



If your ideal workspace looks like it should be featured in a magazine, feels as cosy as your





What is Hyatt Centric? >

Explore With Us

Locations

Special Offers

## MAKE A RESERVATION

Destination

City, attraction, address, or airport

Arrive

Depart

MMM/DD/YYYY

MMM/DD/YYYY

FIND HOTELS



WELCOME



ECLECTIC  
ACCOMMODATIONS



THE CORNER



LOCAL BAR &  
RESTAURANT



THE HEALTH  
STUDIO



CREATIVE EVENTS  
& MEETING SPACES

Hotel Cars: Autonomous Sleeper Cars ? Timed to deliver you just in time? Fewer airport hotels?





# Real Estate We Don't Need as Much of per Capita as before...

- Libraries, except as gathering places
- Gas Stations
- Banks
- Retail
- Office
- Home garages
- Traditional Schools
- Landfills
- Traditional farms
- Bus Stations
- In building parking
- ....

# Real Estate we will need more of....?

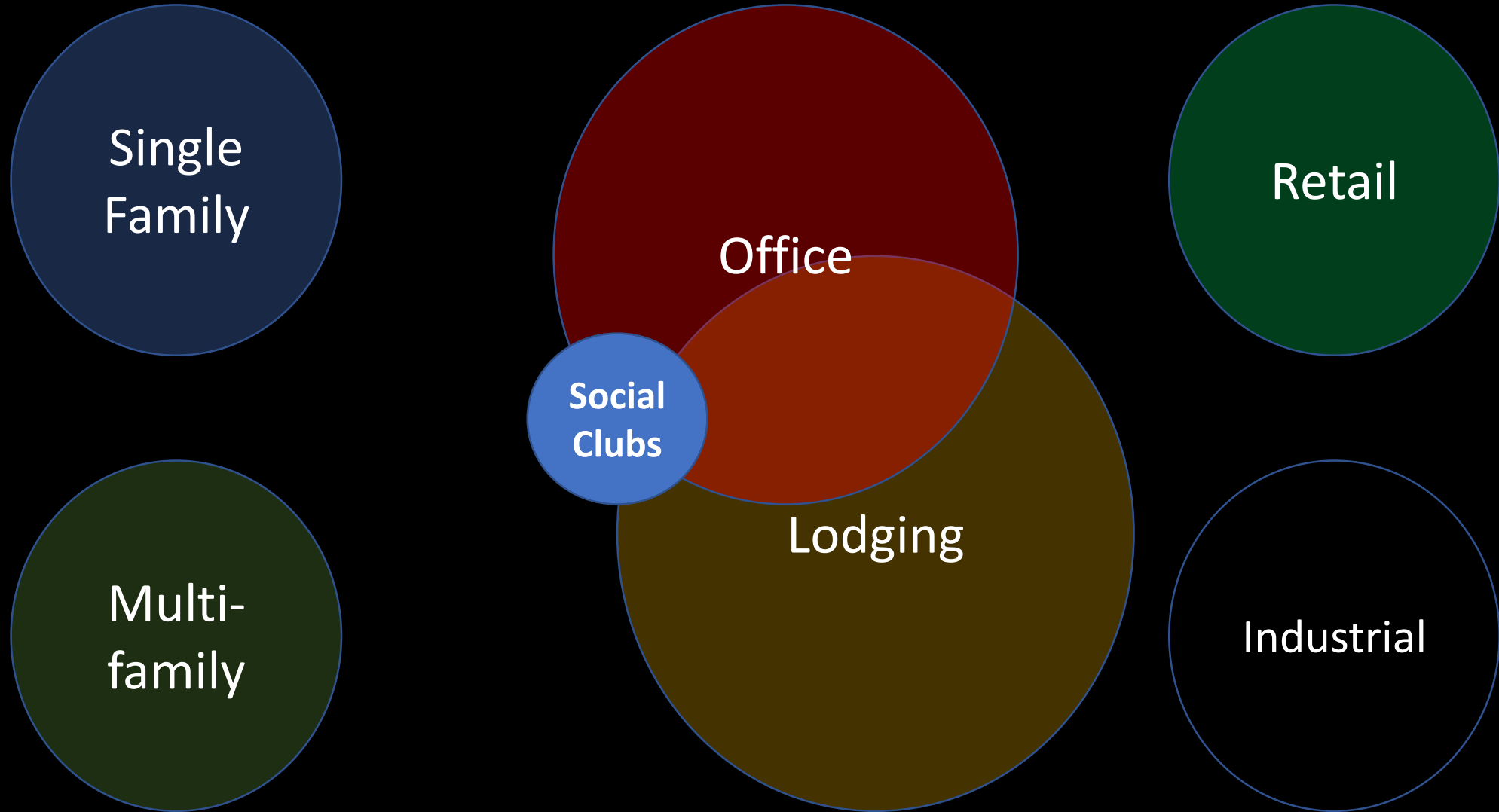
- 3D printing manufacturing centers
- Bio-tech, nano-tech, DNA sequencing analysis
- More remote parking stations for longer term vehicle parking
- Multi-transit nodes
- Urban farms
- Recharging stations
- Data centers, data centers, data centers...
- Senior housing of all types
- Virtual reality conference centers, gaming centers and exercise centers
- Other....?



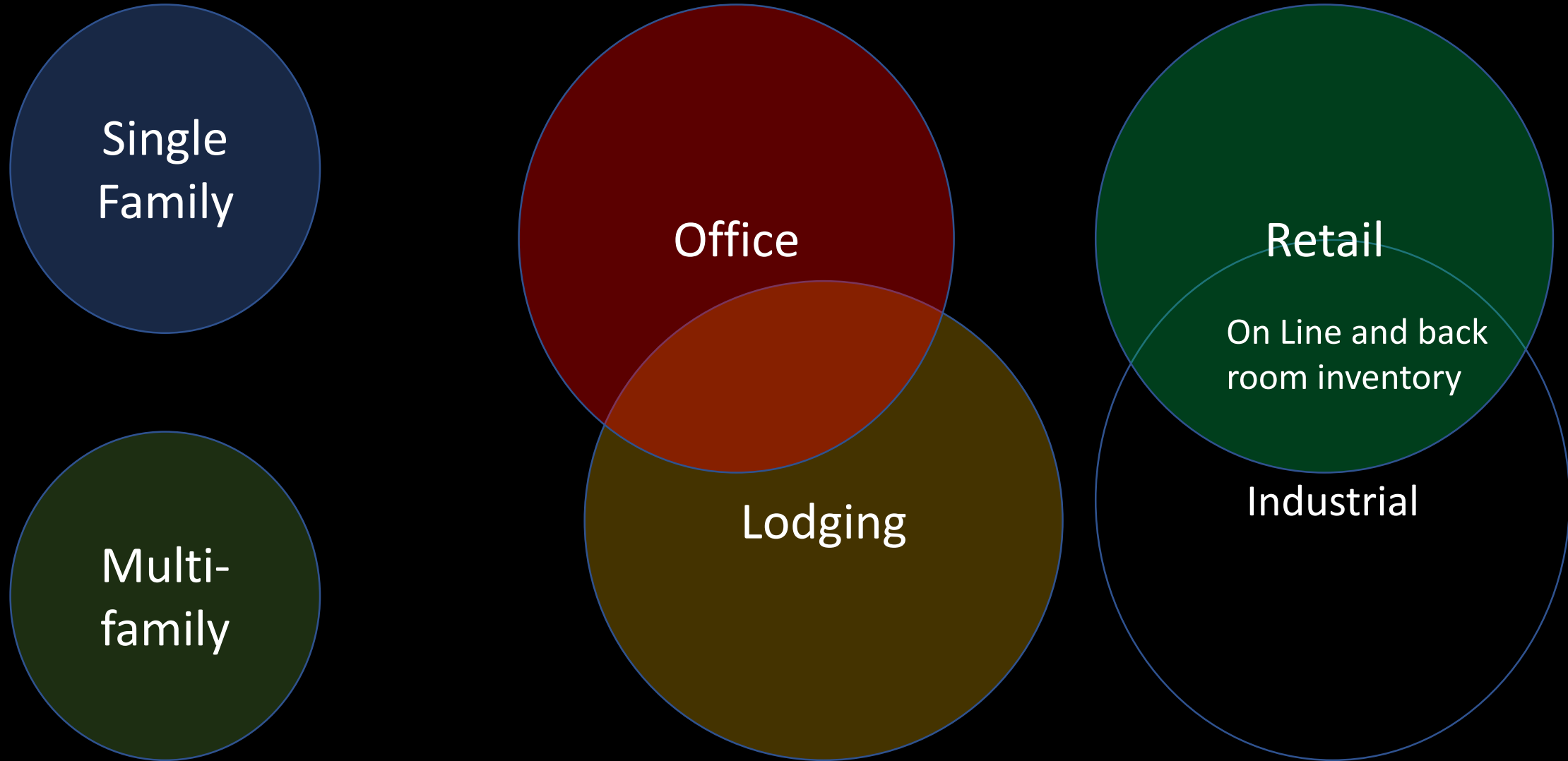
# Recall our Traditional Forms of Real Estate Prior to Transformation



# New Forms of Real Estate

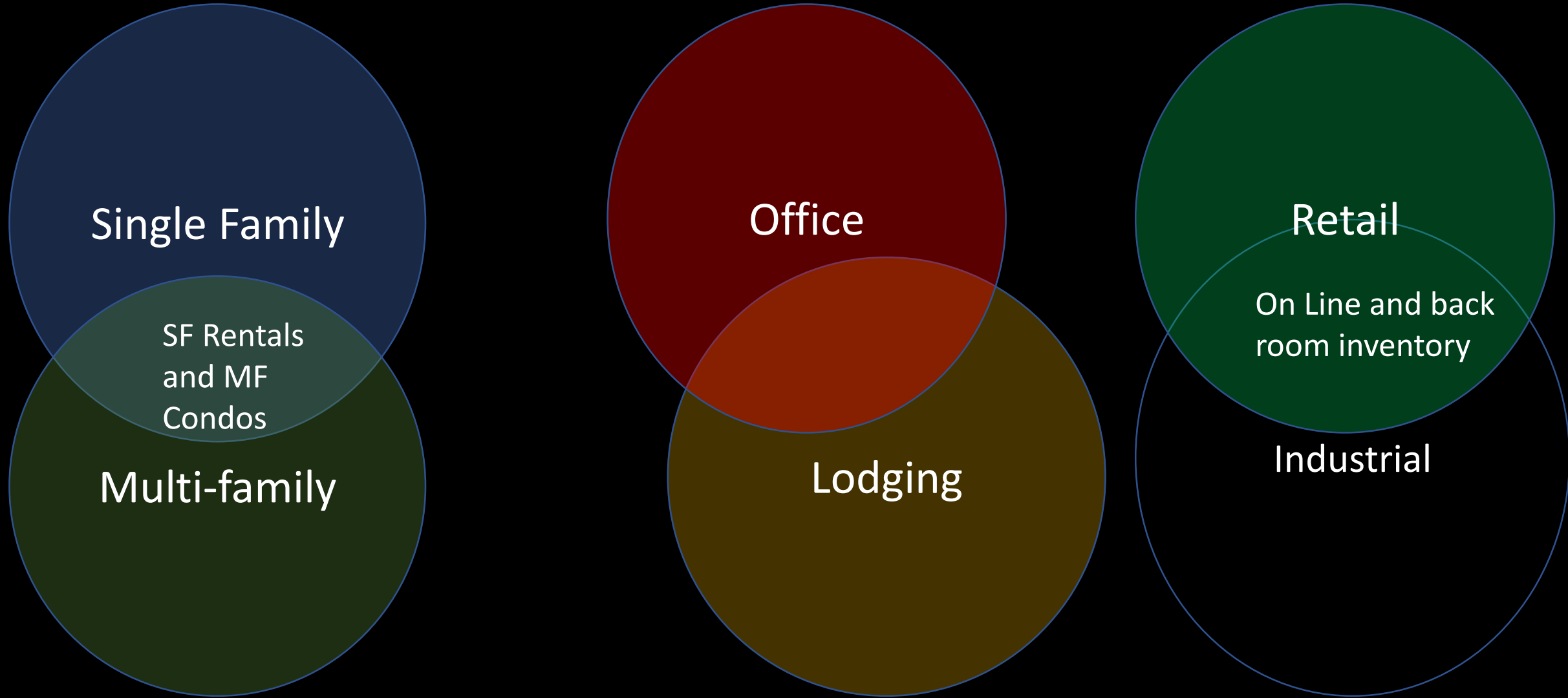


# New Forms of Real Estate

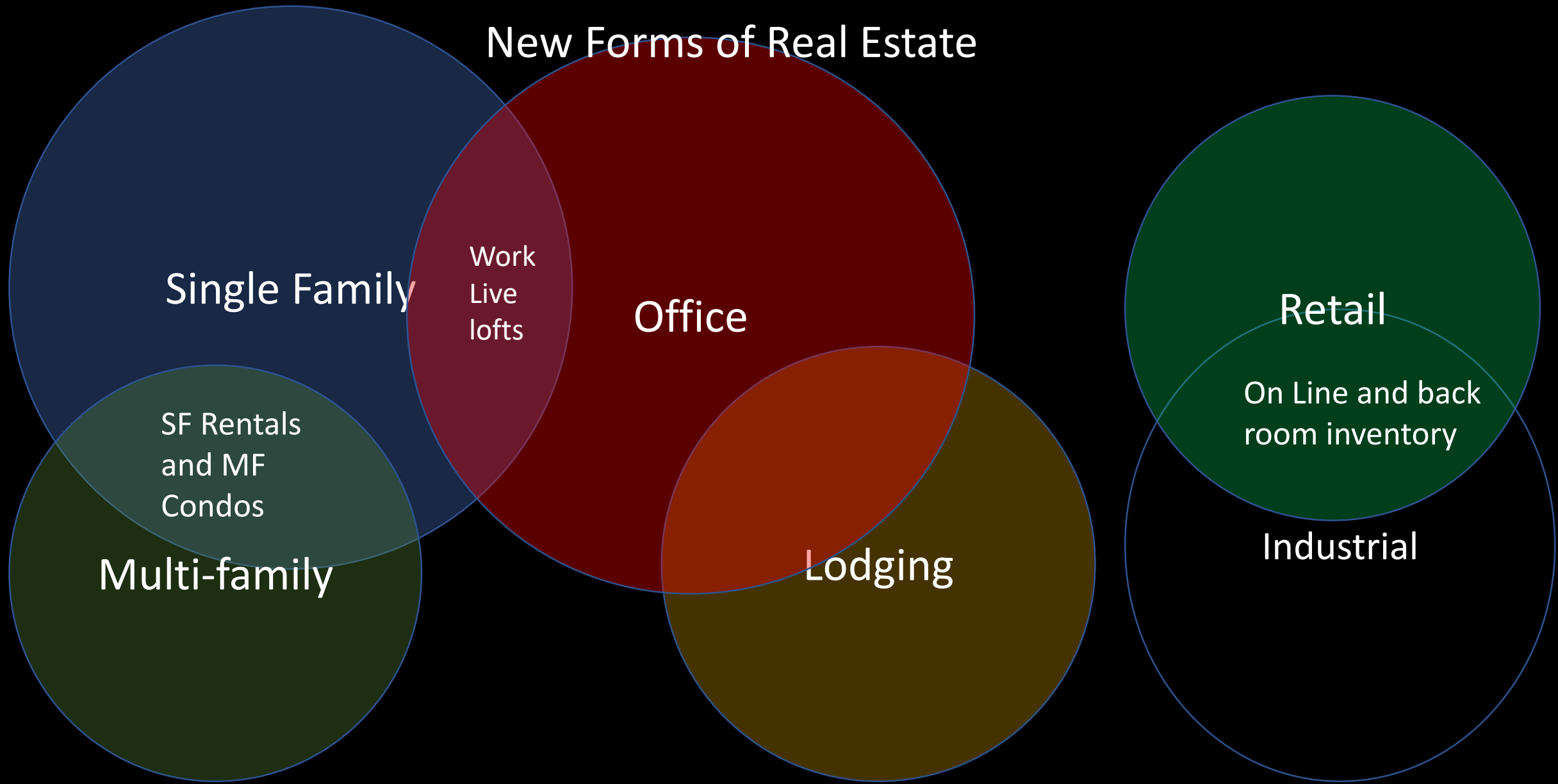


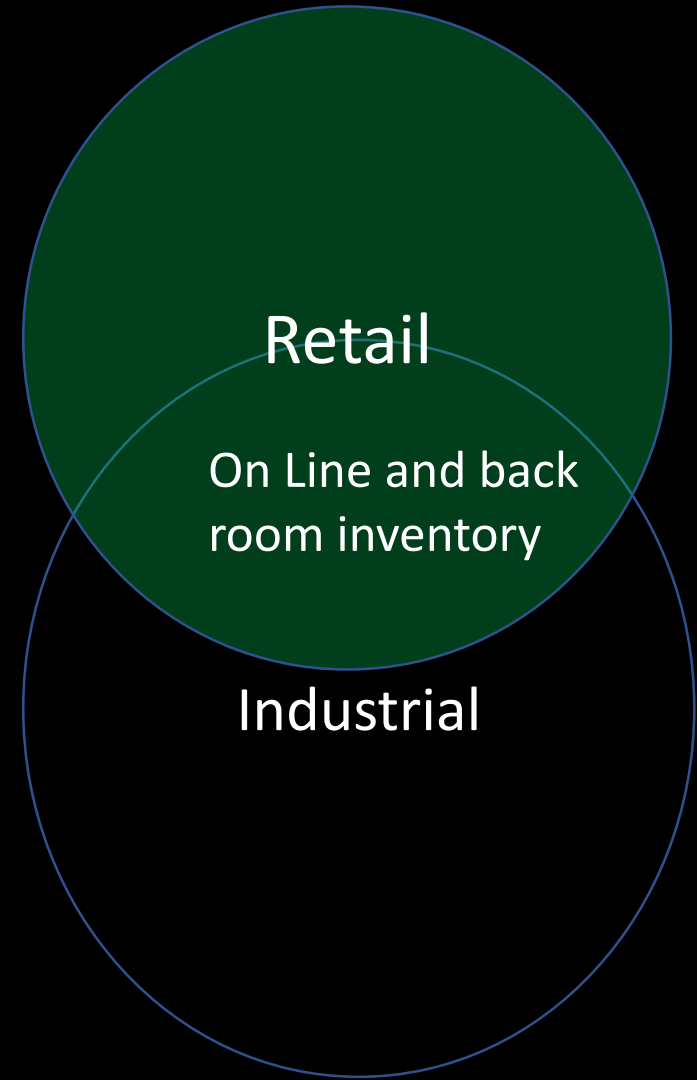
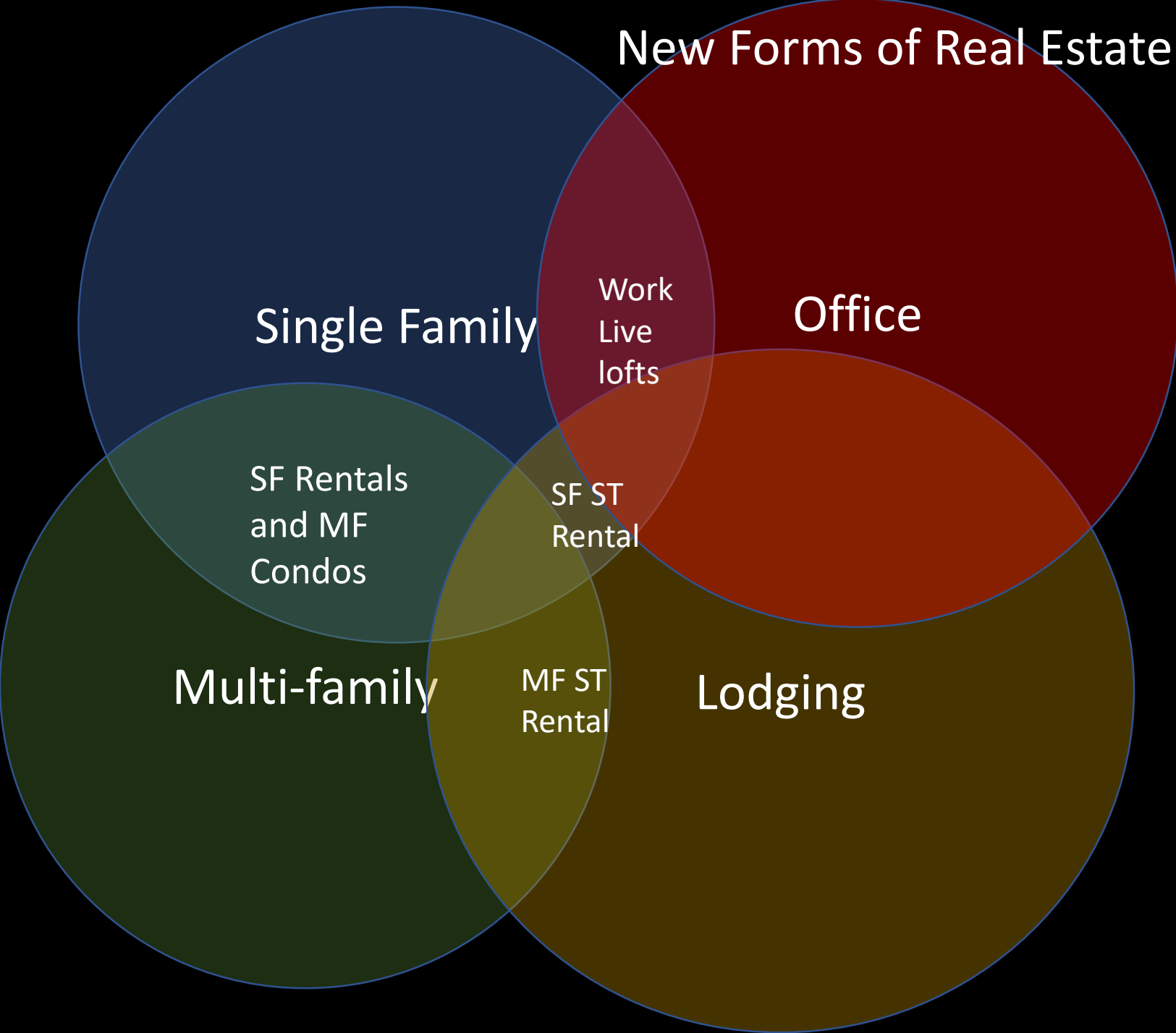


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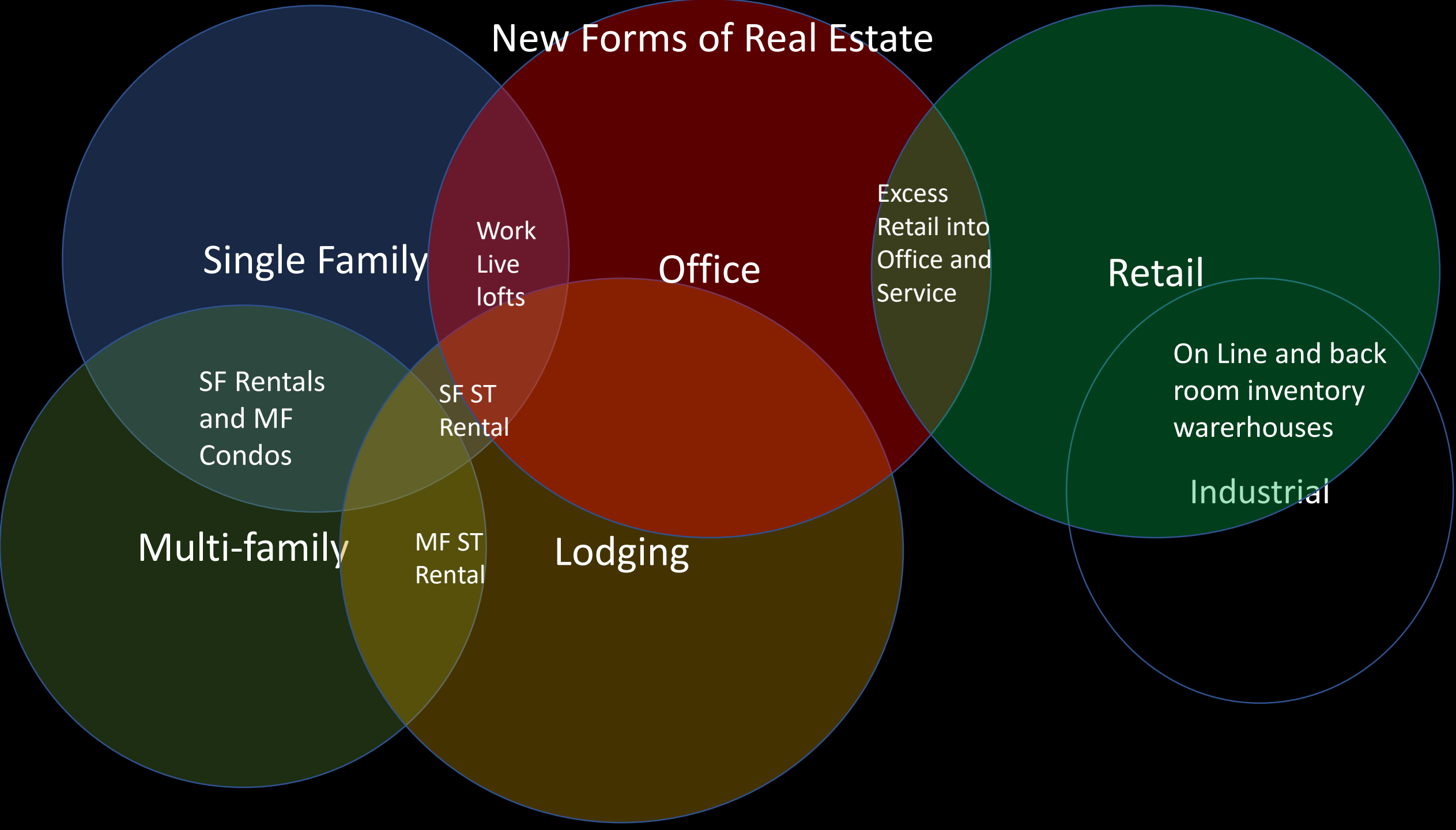
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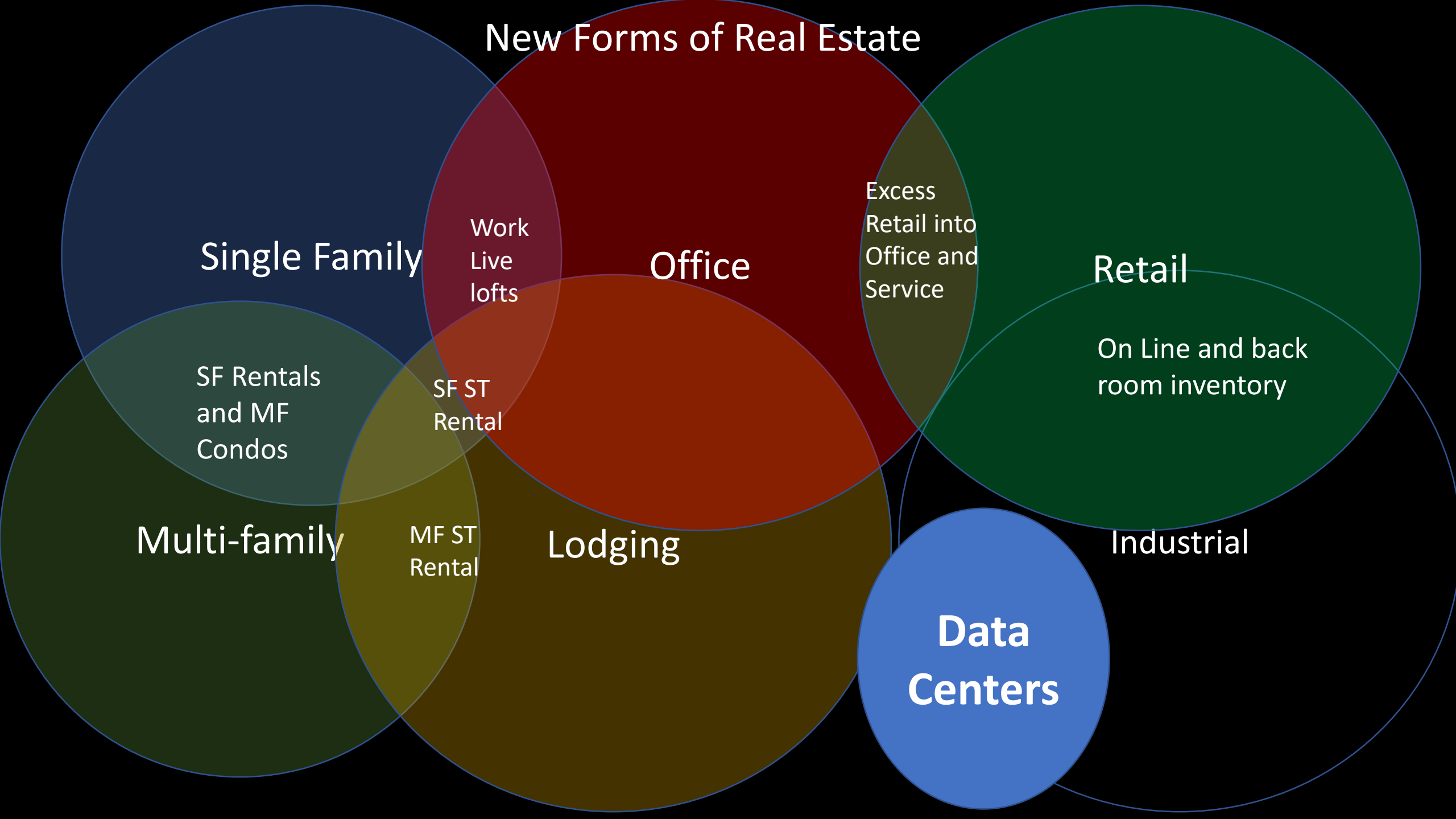






# New Forms of Real Estate





New Forms of Real Estate

Single Family

Office

Retail

SF Rentals  
and MF  
Condos

Work  
Live  
lofts

Excess  
Retail into  
Office and  
Service

On Line and back  
room inventory

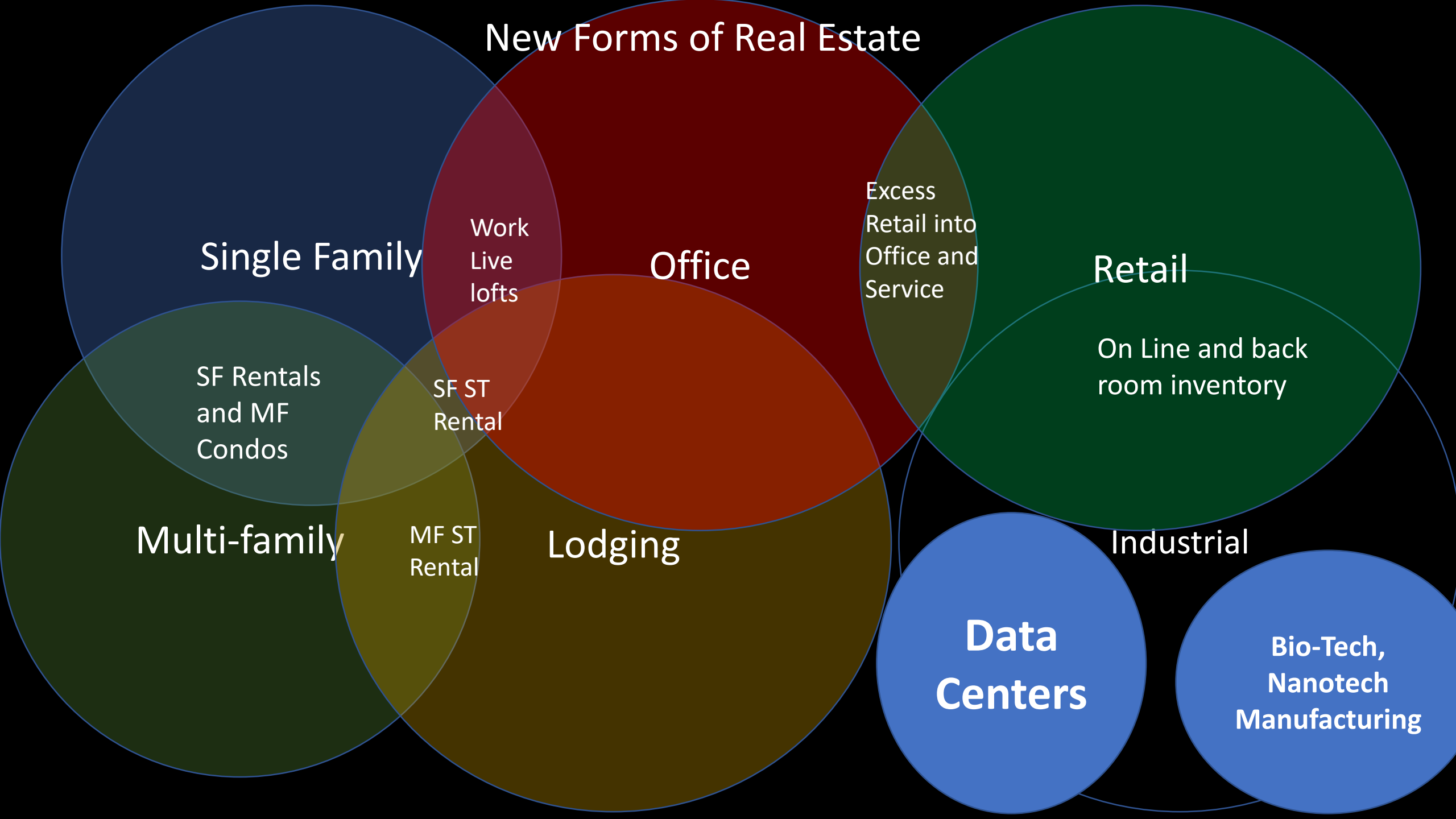
Multi-family

Lodging

Data  
Centers

SF ST  
Rental

MF ST  
Rental





# New Forms of Real Estate



Single Family



Office



Self-Storage  
Climate  
Controlled

Excess  
Retail into  
Office and  
Service

Retail



Industrial



Data  
Centers

Bio-Tech,  
Nanotech  
Manufacturing

Work  
Live  
lofts

SF ST  
Rental

MF ST  
Rental



Lodging



SF Rentals  
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Multi-family



# New Forms of Real Estate



Single Family



Office



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Lodging



SF Rentals  
and MF  
Condos

Multi-family





# Conclusions

1. **Science and innovation can save us from ourselves and resource limitations**
2. **Don't count on political solutions to a great recession by 2030.**
3. **Homeownership and car ownership will become less important.**
4. **Real estate offices, residential, hotels, retail and warehousing are all morphing into new kinds of adaptable and over lapping uses with higher occupant services and better and safer environments.**
5. **Many traditional uses of real estate will vanish but real estate decisions remain as critical as ever for those remaining! What you do matters!**



Questions? Comments on...  
Blurred Lines, Disruptions and the  
Future of Real Estate

Please send by email

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