

working
FUTURES¹ GROUP

GREATER PHILADELPHIA

Dialogue. Collaboration. Knowledge-sharing.

Future Forces 2050 Working Group Meeting 2

Agenda

- Meeting 1 Recap
- 3 Working List Forces with Greatest Knowledge Gaps
 - Socioeconomic Inequality, *Tayyib Smith, Little Giant Creative*
 - The Digital Revolution, Nihit Jain, IBI Group
 - International Upheaval & (Im)Migration, Lauren Hansen-Flaschen, Visit Philly
- Finalize Research Statement
- Finalize Voting List Forces
 - What should be combined/separated from the Working List?
 - What is missing?
- Vote on the Forces that are Most Probable and Relevant to the Research Statement

Ground Rules

- Everyone will have a chance to speak.
- It's OK to disagree.
- Disagree with the idea, not the person.
- Do not interrupt each other.
- If you get stuck: park the issue so the process can keep moving.

Future Forces

170 Brainstormed Forces



41 Nominated Forces



15 Working List Forces



20 (Max) Voting List Forces

15 Working List Forces

- Climate Change
- Delivery on Demand / End of Bricks & Mortar Retail
- The Digital Revolution
- Greater Philadelphia in the Global Economy
- Housing Shortage
- International Upheaval & (Im)Migration
- Low-Density Divestment
- Mobility-as-a-Service
- Shifting Demographics
- Social & Political Dysfunction
- Socioeconomic Inequality
- Technocracy
- Transportation Technology Deployment
- Updating Infrastructure
- Workforce Automation

Participant Presentations



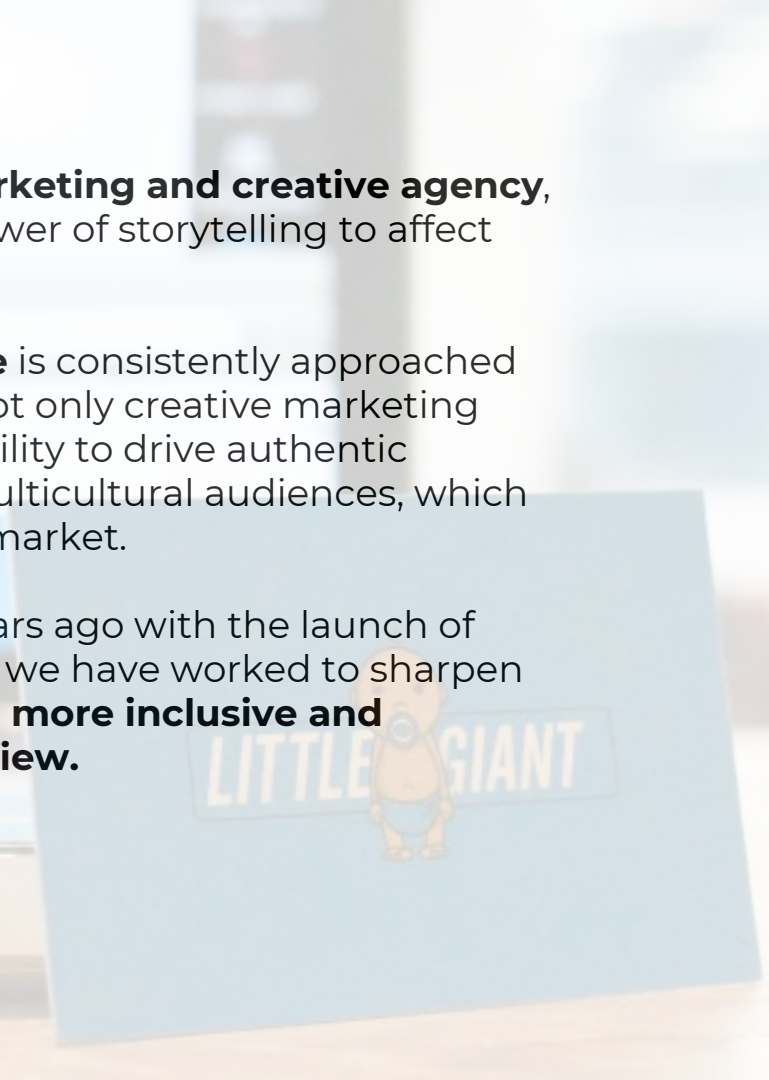
WHAT WE DO



As a **full-service marketing and creative agency**, we believe in the power of storytelling to affect change.

Little Giant Creative is consistently approached by clients seeking not only creative marketing solutions, but the ability to drive authentic connections with multicultural audiences, which to us is the general market.

Since our start 10 years ago with the launch of Little Giant Creative, we have worked to sharpen the cultural lens to **a more inclusive and equitable point of view.**



NONWHITE SCHOOL DISTRICTS GET

\$23 BILLION

LESS THAN WHITE DISTRICTS

DESPITE SERVING THE SAME NUMBER OF STUDENTS



THE NATIONAL STORY

Race and class are inextricably linked in the U.S. When comparing the poverty level of racially concentrated systems, a clear divide emerges. Predominantly white districts are far better off than their heavily nonwhite peers. These statistics confirm what we know about income inequality and the effects of segregation.

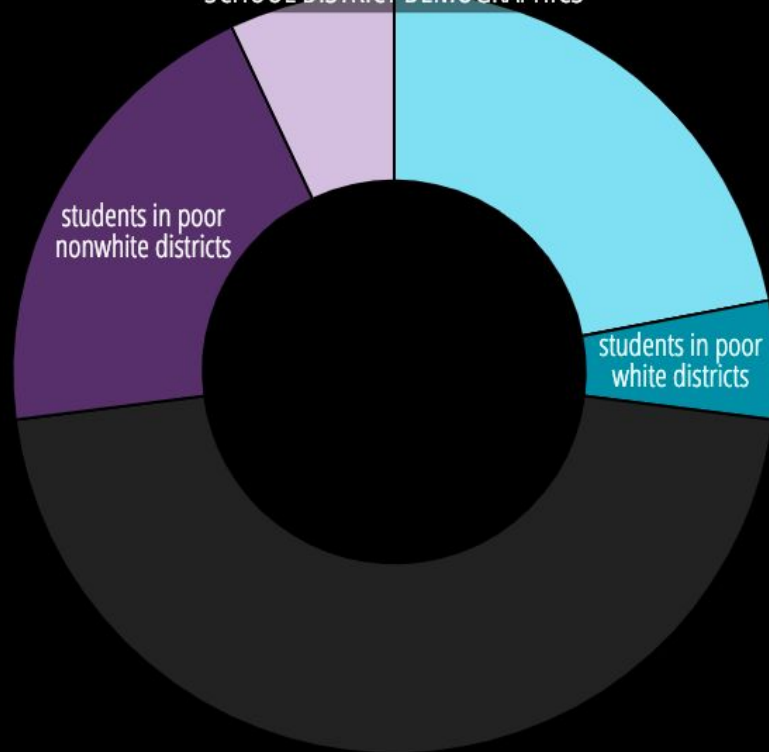
In the United States, 20% of students are enrolled in districts that are both poor and nonwhite,* but just 5% of students live in white districts that are equally financially challenged.†

Small districts can have the effect of concentrating resources and amplifying political power. Because schools rely heavily on local taxes,

* > 75% of students are nonwhite AND student poverty rate is >20%

† > 75% of students are white AND student poverty rate is >20%

SCHOOL DISTRICT DEMOGRAPHICS





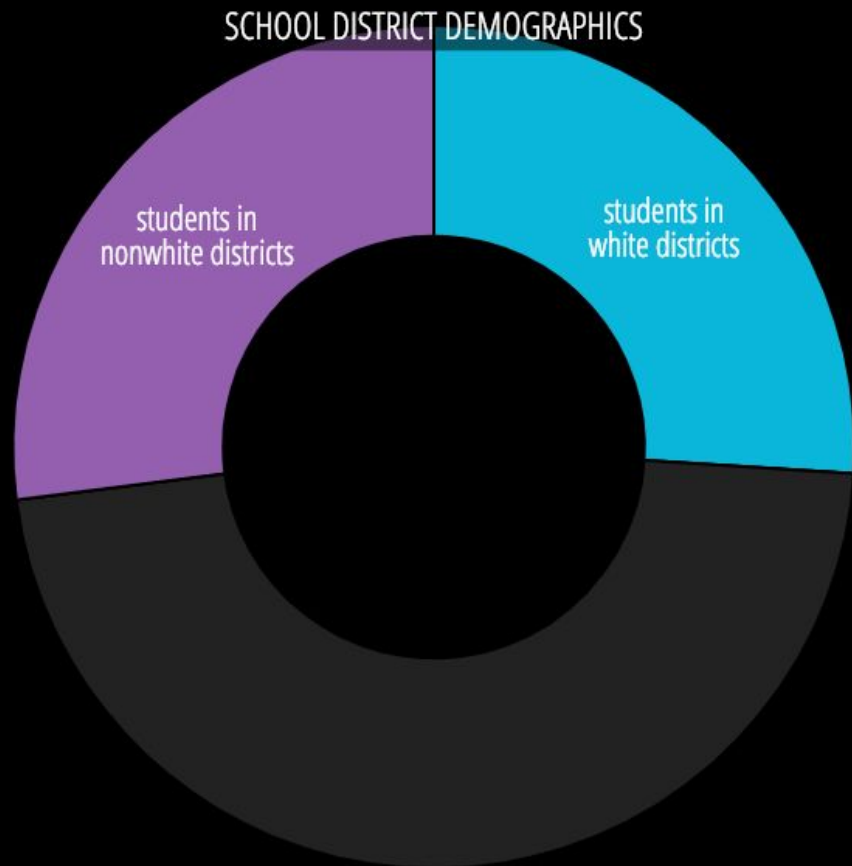
THE NATIONAL STORY

Despite more than a half-century of integration efforts, the majority of America's school children still attend racially concentrated school systems. This is reflective of the long history of segregation—policies related to everything from voting to housing—that have drawn lines and divided our communities.

27% of students are enrolled in predominantly **nonwhite districts**.^{*}
26% of students are enrolled in predominantly **white districts**.[†]

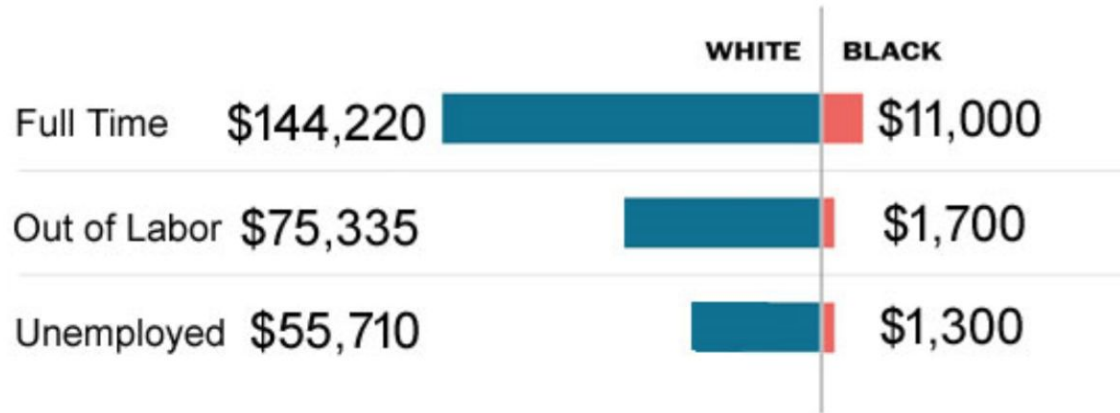
^{*} > 75% of students are nonwhite

[†] > 75% of students are white



white households with an employed head have more than ten times higher wealth than similar black households. *Furthermore, white households with an unemployed head have a higher net worth than black households with a head who is working full time.*

Figure 2: Median Household Net Worth by Race and Employment Status



Source: Authors' calculations, SIPP, 2014.

Homeownership while black

BROOKINGS

In U.S. metropolitan areas, **10 percent** of **neighborhoods** are **majority black**

50% LESS

homes in **majority-black neighborhoods** are **undervalued** compared to homes in neighborhoods with **no black residents**



Majority-black neighborhoods at a glance:

- **37% of the U.S. black population** live in these communities
- **\$609 billion** in owner-occupied housing assets
- **10,000** public schools
- **3 million** businesses

What is \$156 billion?



4.4 million black-owned businesses

Source: Stanford Institute for Economic Policy Research



8.1 million four-year degrees

Source: National Center for Education Statistics



Replace pipes in Flint, MI nearly **3,000** times

Source: American Water Works Association

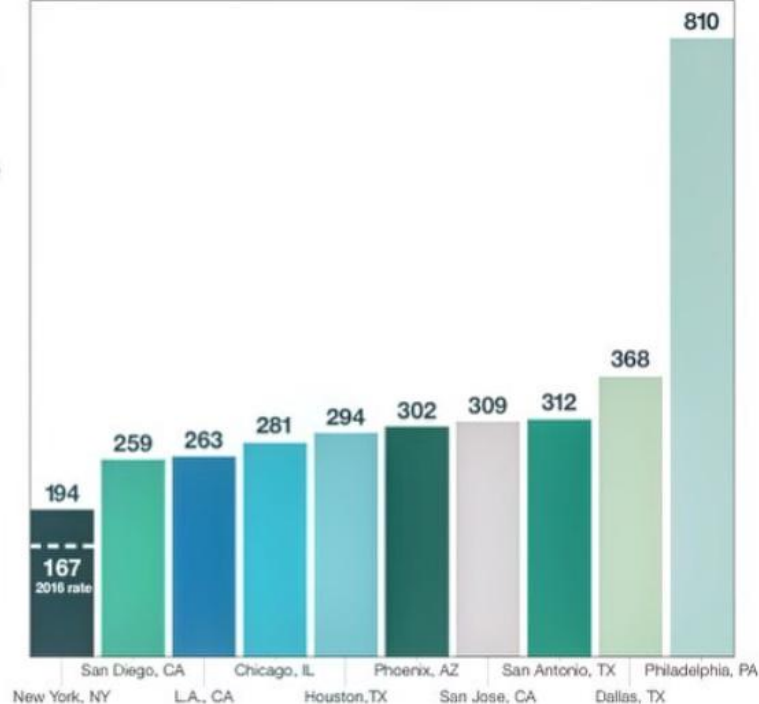


97% of the damage of Hurricane Katrina

Source: National Oceanic and Atmospheric Administration

**New York City's
use of jail is
the lowest among
large U.S. cities***

2014 incarceration rate
per 100,000 people



The trends toward less crime and less use of jail have accelerated in New York City over the last three years. Because of deliberate efforts to rethink policing strategy, expand alternatives to jail, and reduce the time it takes cases to move to conclusion, fewer people are entering city jails and the number of people in city jails for longer than one year has declined. Steep declines in the number of people admitted to New York City jails are evident across a number of different categories, including those detained pretrial on misdemeanors (down 25%), those serving sentences (down 34%), and those detained on bail of \$2000 or less (down 36%). After increasing for decades, the average length of time it takes a Supreme Court case to reach disposition has shrunk by 18 days over the last two years.

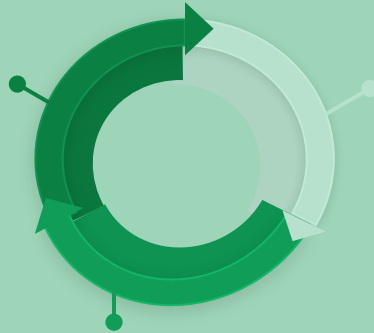


Creative Cities Lab

Pillars of CCL Projects

Shifting Contemporary Lens =

*Meet changing demographics →
Inclusion of minority-majority*



Building Equity =

*Meet rapid transition of cities →
Supporting equitable development*

Using Common Language =

*Change exclusionary communication →
Accessible, relevant and engaging*

A DREAM DEFERRED

Using **art + technology + media** to tell the story of how race and policy shape the landscape of Philadelphia

Goal: Establish a shared understanding and invite honest conversations to **build empathy**

Interactive Touchscreens

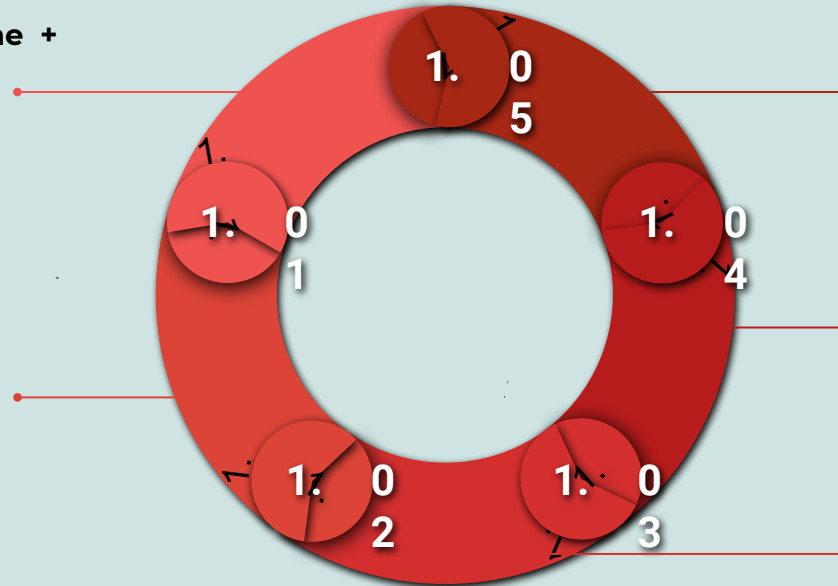
GIS data map + digital timeline + glossary of terms

Historians: Frauke Schnell, Danae Mobley, Brian Peterson
GIS Map: Azavea
Touch Tech: IB5K

Documentary

20-minute documentary
Partner: Kuyamba Media

Multi-Platform Project



Panel Discussion

4-part panel
“A Series of Uncomfortable Conversations: Breaking the Myths of Meritocracy”

Confessional Booth

Private safe space to capture real-time reactions & responses

Art Installation

Creative reimagining of equitable resource

Partner: Artist (s) TBD

INTRODUCTION

- Myth of meritocracy
- Housing and racial inequality
- Explicit segregation at the federal, state and local levels

“The geography of America would be unrecognizable today without the race-based social engineering of the mid-20th century.”

- Ta-Nehisi Coates



Photo: Marget Bourke-White

Setting the Stage - Reconstruction Era (1865-1877)

Post Civil-War and time of great violence + hostility

President Andrew Johnson passed “**Black Codes**” to control the labor of “freed” slaves.

- Paid low wages and forced to sign yearly contracts
- Black people could be arrested for almost anything
- Labor conditions in prisons were just as bad as slavery

Black was defined by blood.

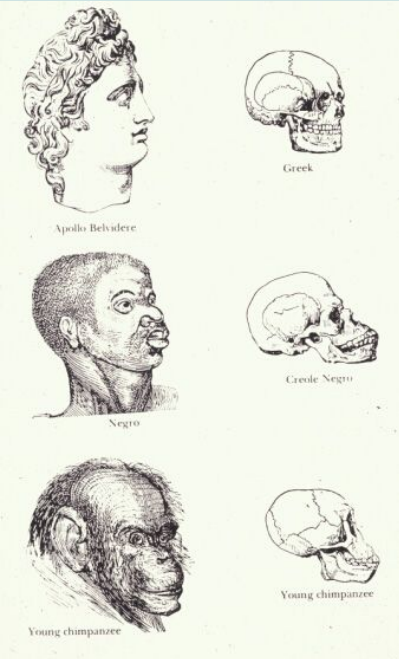
Any amount of black blood means one was black.



Convicts who violated Black Code.

Setting the Stage - Reconstruction Era (1865-1877)

Post Civil-War and time of great violence + hostility



Era of “scientific racism”

Pseudoscience such as eugenics and phrenology to justify racism

KKK formed weidling political powers in the Republican Party

Photo: Library of Congress

Setting the Stage - Jim Crow Era (1877-1950's)

Separate but equal

A system of legally enforced practice of segregation on both state and national level

Great Migration: *6 Million* African Americans relocated from the rural South to the cities of North, Midwest, and West.



Photo: Southern California Library for Social Studies and Research



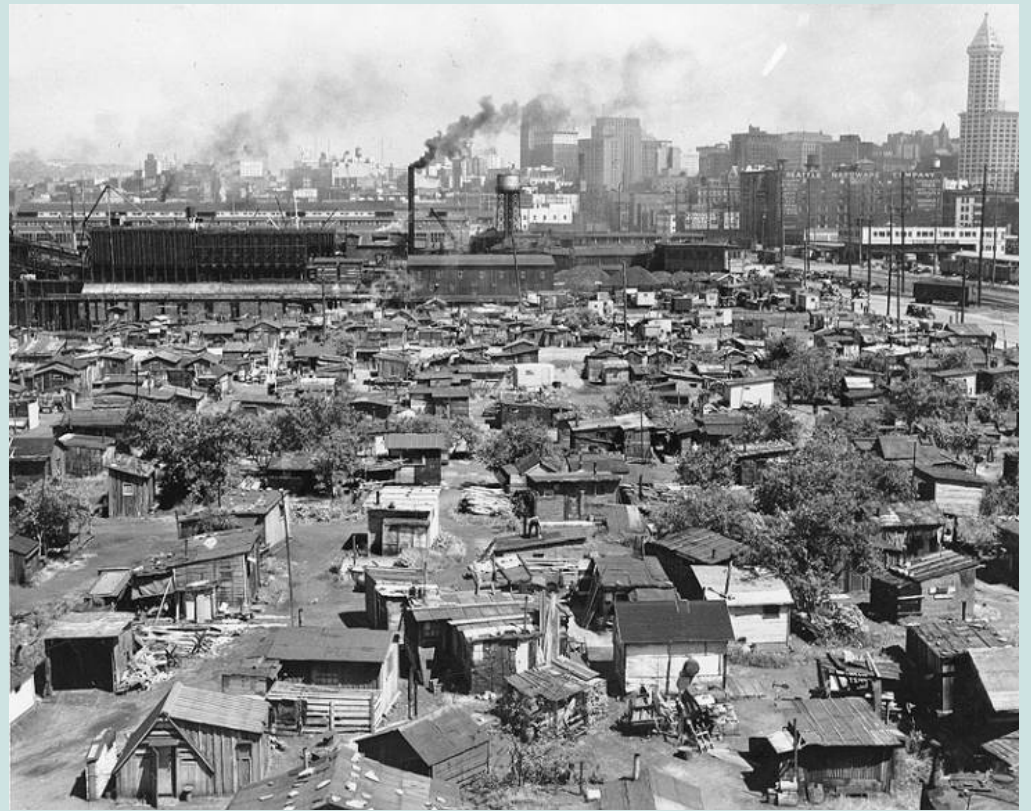
Photo: State Archives of Florida

Union Terminal
Colored Waiting Room

Our Story Begins - New Deal (1933 - 1939)

Federal government pursued important policies that segregated many metropolitan areas:

1. Development of Public Housing
2. Redlining
3. Subsidization of Suburb Development



*A typical shantytown of the Great Depression in the United States, this one located in Seattle, WA.
Source: University of Washington*

Public Works Administration (PWA) + Public Housing

- 1933 President Roosevelt established Public Works Administration (PWA)
- PWA builds the first public housing due to enormous housing shortage in the country and no construction was being done in the Depression
 - Built to provide homes mostly to *white middle-class + lower-middle class families.*
 - Project developed for African-American were very limited and built as an afterthought



First lady Eleanor Roosevelt (center) at a Works Progress Administration site in Des Moines, Iowa, 1936. Source: Getty Images

Major Federal Policies

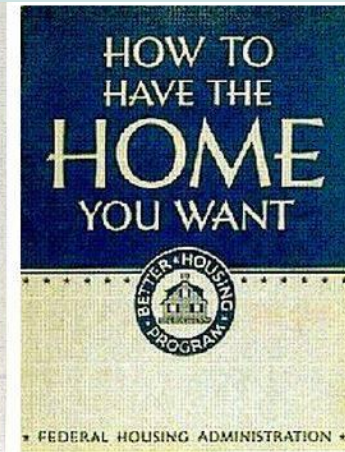
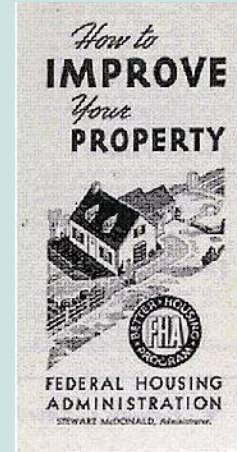
Home Owners Loan Corporation (HOLC)

established in 1933 to *provide relief to troubled mortgage borrowers* and their lenders. through refinancing

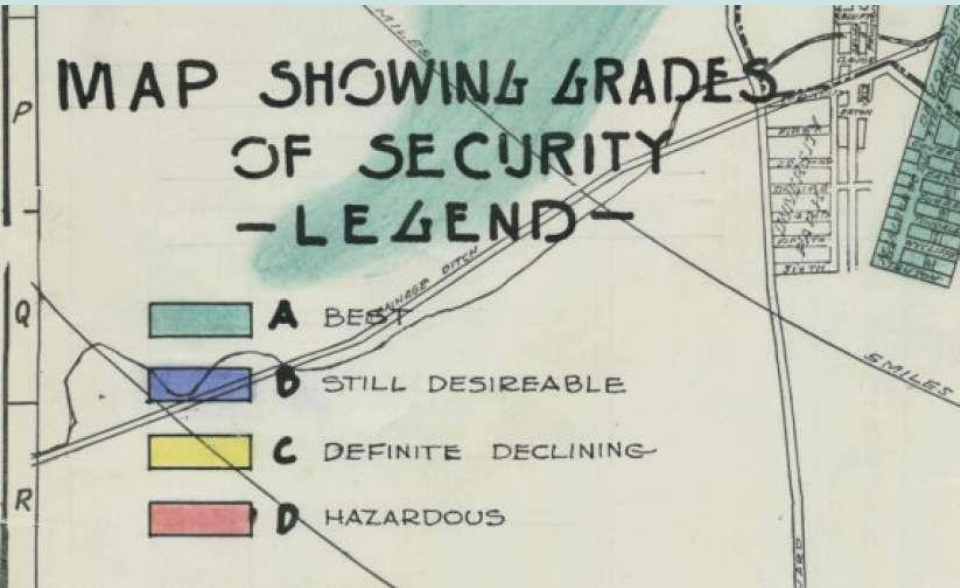


Federal Housing Administration (FHA) established

in 1934 to *jump-start new housing construction* through mortgage loans.



Home Owners Loan Corporation (HOLC) + Redlining



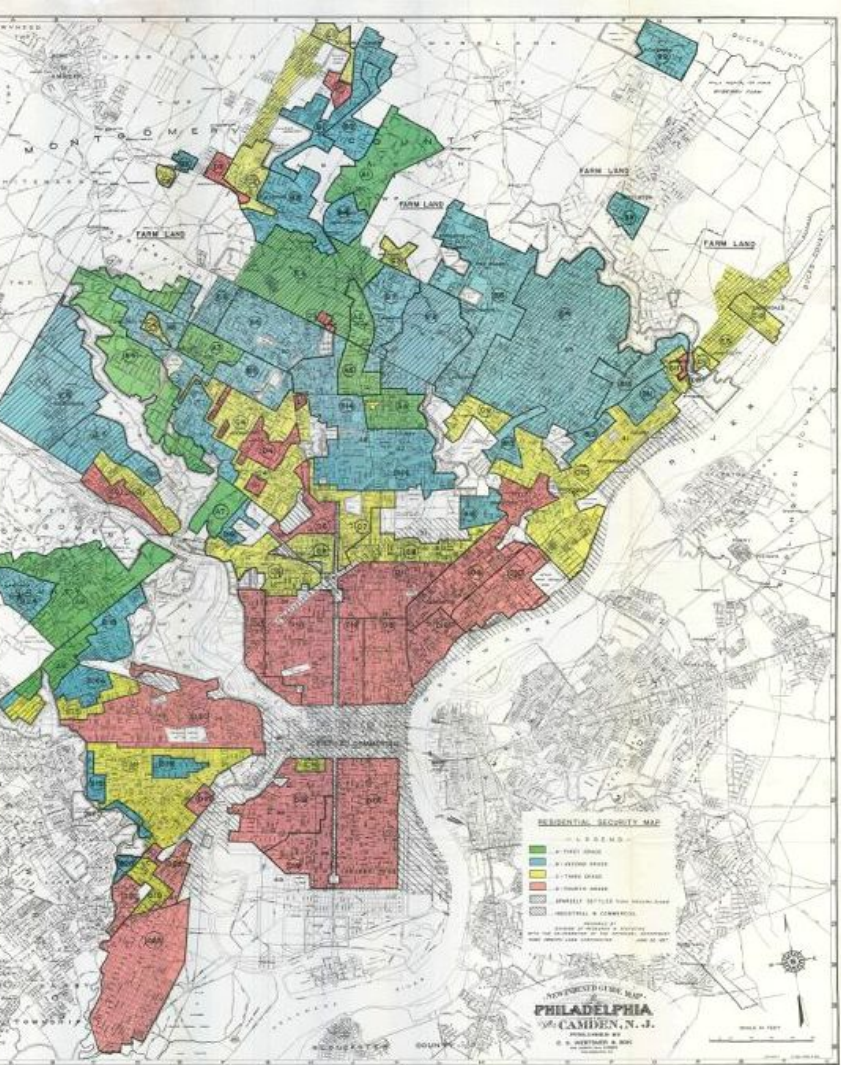
HOLC grade code

HOLC employed armies of real estate agents to conduct neighborhood appraisals. Color coded maps created from the surveyed data. It set mortgage value and race was the determining factor.

Grade A / Green = 'Hot spots' and safe for mortgage lenders to provide maximum loans.

Grade D / Red = Areas considered hazardous. "Characterized by detrimental influence in a pronounced degree."

Grade C + D areas were occupied by: African-Americans, recent immigrant European groups - Jews and Italian and Latinos



Consequences of Redlining

- Made it difficult to purchase homes and borrow against the value
- Lowered property values
- Decreased housing quality
- Increased racial segregation

HOLC Redlining map, 1937, Philadelphia.

Consequences of Redlining

- Predatory lending - “*Contract Buying*”
 - Offered relatively low down payment but to get this “deal”, there was a large fee
 - Fees ranged from a min of 35% to 115% (avg increase was 73%)
 - Tenants could be evicted for missing even 1 payment, regardless of their history
 - This created large scale government sanctioned *wealth theft*.



In Chicago, African-Americans move furnishings from evicted homes to dump at the Chicago Civic Center on March 30, 1970.

Consequences of Redlining

- Forced people of color into particular areas and then starved those areas of affordable capital.
- Combined with widespread job discrimination you had neighborhoods that were **impoverished by design**.



Federal Housing Authority (FHA) + Suburbia

- FHA subsidized mass-productions
- Financial incentives to white families with low-interest mortgages
- Monthly charges for mortgages were *less than* the rent in public housing
- In the suburban-shaping years (1930-1960) **less than 1%** of all African Americans were able to obtain a mortgage



Aerial view of Levittown, New York. Image courtesy [Mark Mathosian](#).



Sojourner Truth Homes, a federal government housing project, erected this sign in Detroit in 1942.

Source: Getty Images.

Racially Restrictive Covenants

- FHA established racially restrictive covenants = requirement that **no homes be sold** to African-American and also included other people of color
 - Every home had a clause in the deed that prohibited resale to POC
 - Developers of these suburbs got bank loans on condition they sell no homes to POC

Racially Restrictive Covenants

Example of language written into the deed:

*“No person or persons of **Asiatic, African, or Negro blood**, lineage or extraction shall be permitted to occupy a portion of said property or any building thereon except a domestic servant or servants who may actually and in good faith be employed by white occupants of such premises”*

(Greenlake neighborhood in Seattle, WA)



The first family moved into Levittown, Pennsylvania, on June 23, 1952, an arrival captured in this photograph by Howard Hamburger of the *Source: Philadelphia Evening Bulletin.*

Blockbusting

- Realtors + developers drive down home prices by encouraging blacks to move into white areas or create the appearance of this
- Once white-family fled, realtors converted homes into multi-family dwellings, cramming large groups into row houses coupled with contract buying to to make even larger profits.



Would you panic if a Negro moved next door?

"I'm broad-minded," said one home owner when Negroes moved into his block. But a short time later he panicked—and sold his house at a loss. out the whites. And how one speculator brags that he could "bust" your block in no time at all.

In this week's Post, you'll read how speculators decide which blocks are "ripe" for racial change. How they use vicious tactics to force

The Saturday Evening
POST
July 14-21 issue.
A Curtis Magazine



LOOK At These Homes NOW!

An entire block ruined by negro invasion. Every house marked "X" now occupied by negroes. ACTUAL PHOTOGRAPH OF 4300 WEST BELLE PLACE.

SAVE YOUR HOME! VOTE FOR SEGREGATION!



FHA's Underwriting Manual

- Well-known explicitly racist practices were written in the FHA's Underwriting Manual.
- The manual explicitly said that incompatible racial groups should not be permitted to live in the same communities.
- Their goal was: *"the prevention of the infiltration of ... lower class occupancy and inharmonious racial groups."*

A 1916 leaflet proposes to segregate St. Louis.

Evidence of explicit racism

A development in Detroit:

FHA would not proceed with development unless the developer built a 6' high cement wall separating development from a nearby African-American neighborhood to make sure that no African-Americans could even walk into that neighborhood.

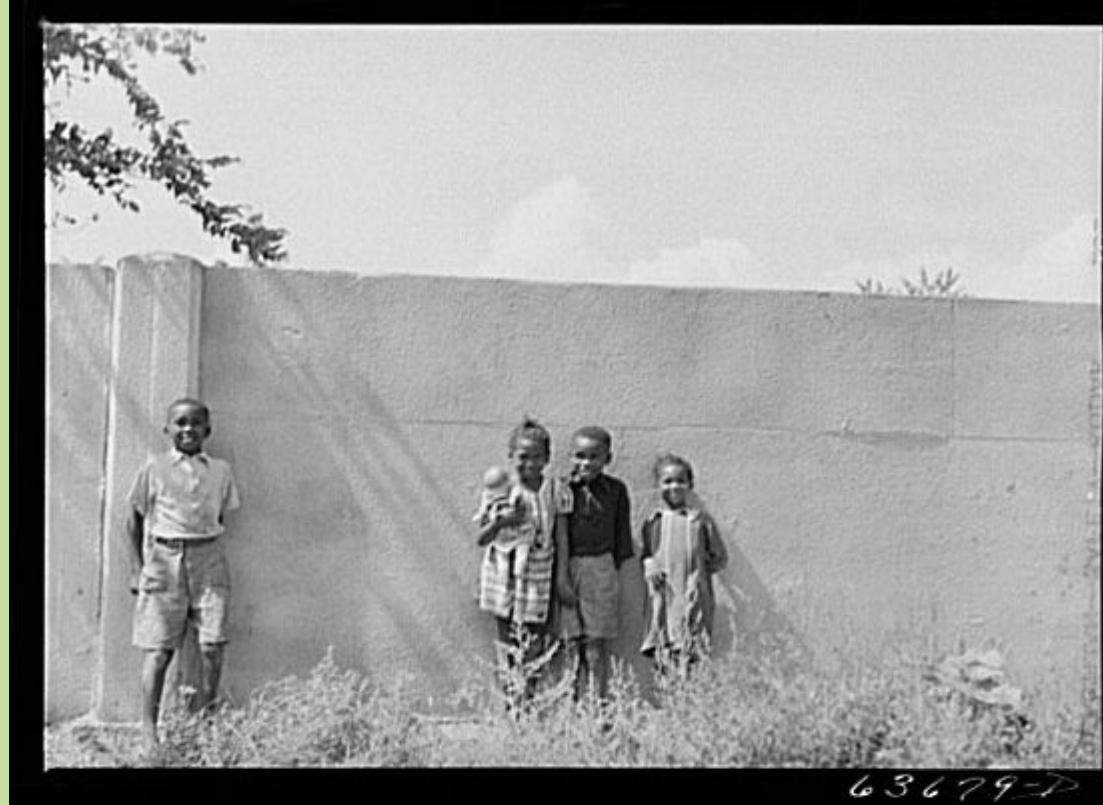


Image of the Detroit Wall. Captured by John Vachon.



Evidence of explicit racism:

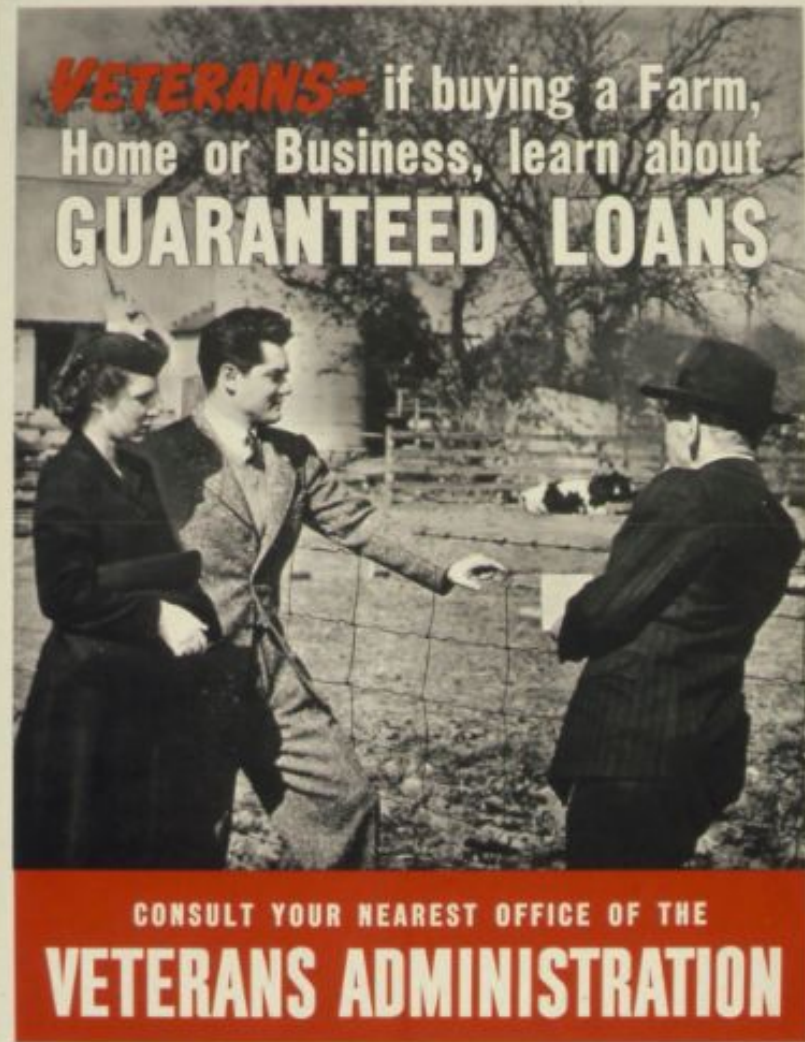
FHA recommended highways be a good way to separate African-American from white neighborhoods.

Image: Miami's Overtown

GI Bill

- In 1940's the Veterans Administration, established under the GI Bill
- It adopted ALL of the FHA **racial exclusion programs** when it began to insure mortgages for returning veterans
- Housing prices were so low in the FHA-insured suburbs - monthly mortgage payments were often less than rent in public housing, especially if a white family received veterans' benefits.

Advertisement for G.I. Bill





Public Housing

- After WWII, in 1950's public housing continued to be developed for whites and returning veterans.
- Segregation continued to be enforced: One project designated for white only and another for African Americans.

Members of the veterans committee campaigning for more housing. *Source: St. Louis Post Dispatch*

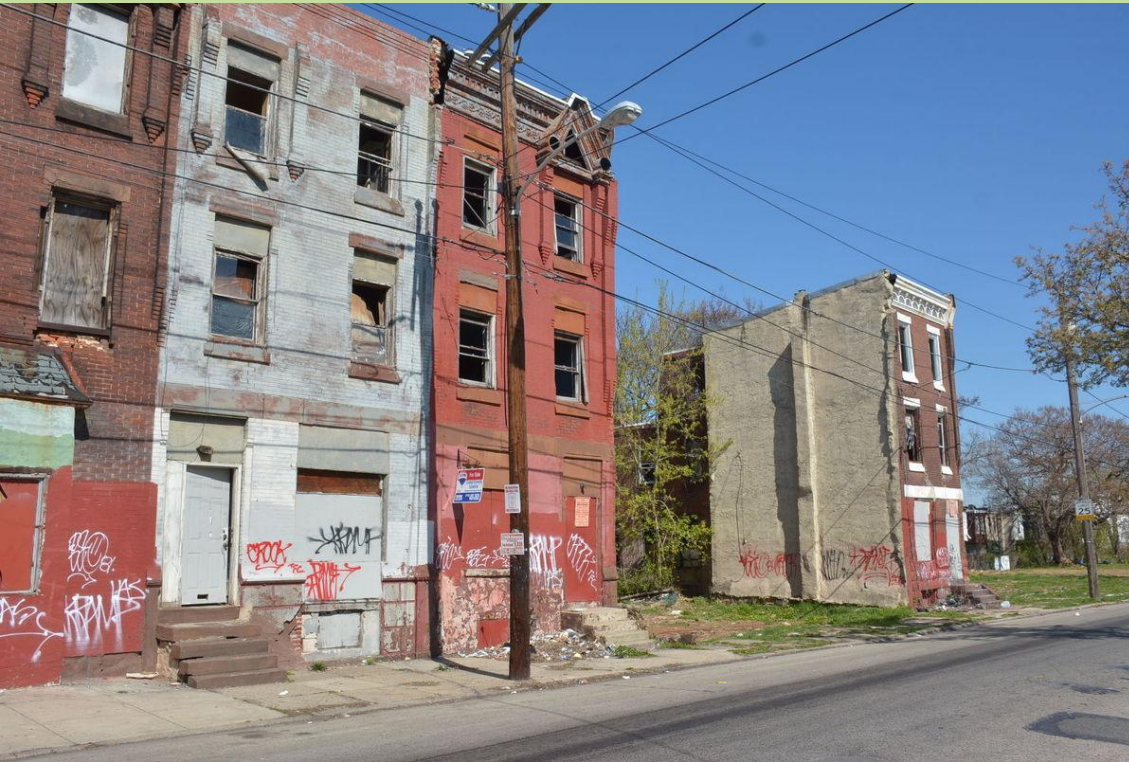
Public Housing

- Problem: Many white towers had many vacancies while a long waiting list of African-Americans.
- Solution: Open white-designated area to African-Americans
- Context: Industry was leaving the cities. African-Americans were becoming poorer in those areas.
- Result: Projects became a place for poor people - “vertical slums” we come to associate



Fairhill Apartments, a North Philadelphia public housing site, was built in 1959 in the redlined area. *Source: Next City.*

Urban Renewal aka “Negro Removal”



- In 1950's + 60's demolition of black neighborhoods to make room for middle-income white housing, hospitals & universities
 - Over **2,500** neighborhoods were bulldozed in **993** cities.
 - Estimate of **1,600** black neighborhoods were demolished
- African Americans once again displaced farther from downtown or central location near jobs
- “White Flight” - Continuation of white suburban development + disinvestment of cities

N. Philly abandoned homes. *Photo: Abdul Sulayman, Tribune Chief*

Zoning Laws

- Industrial plants and waste disposal zoned in black parts of the city
- Areas were permitted for industrial and toxic uses and turned neighborhoods into slums.
- Contribute to the perception that blacks were slum dwellers and if black moved into the white areas, they would bring those conditions with them.



Contaminated Hunters Point neighborhood of San Francisco, California . *Source: Propublica.*

Fair Housing Act

- 1968 the Fair Housing Act passed: Prohibits discrimination on the basis of race, color, religion, national origin, and disability.
- Empty promise because homes no longer affordable to those who could have one time afforded it
 - Equity + wealth gained from buying into affordable suburbs is lost
- The law was poorly enforced



Fair Housing March.

Source: Walter P. Reuther Archives of Labor and Urban Affairs, Wayne State University.

Futures Working Group

The Digital Revolution as a Future Force



Nihit Jain, Associate, IBI Group

March 2019



Agenda

Let's talk about the Digital Revolution!

Understanding it through the CLIOS
Framework

Case Study – Transit Fare Systems

Where can this Digital Revolution lead us?

But what is the Philadelphia and Delaware
Valley Perspective?

Let's talk about the
Digital Revolution!

A convergence of digital technologies such as the Internet of Things (IoT), Big Data, Artificial Intelligence, Robotics, and others.

Automation replaces many of the functions traditionally done by humans, providing exciting opportunities to change the nature of work, our lifestyles, education, healthcare, and how we get around.

What characterizes the Digital Revolution?



What
characterizes
the Digital
Revolution?

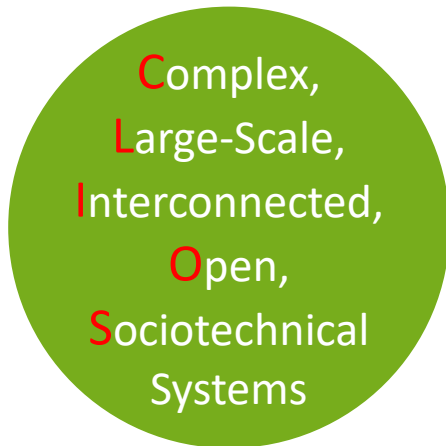
Acronyms and keywords – AI, Automation, AV, Big Data, Blockchain, CV, IoT, lol, ML, Security, and more

Many characterizations – Information Age, Fourth Industrial Revolution, Age of Surveillance Capitalism

Technology and data in every aspect of life

Communications, Data, Networks, Platforms

Understanding it through the CLIOS Framework



High degrees of

Human Agency

Interaction

Uncertainty

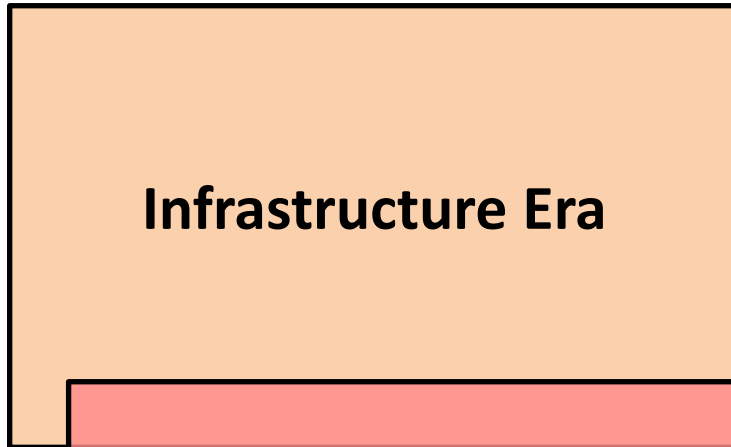
Complexity

Systems behaviors are often

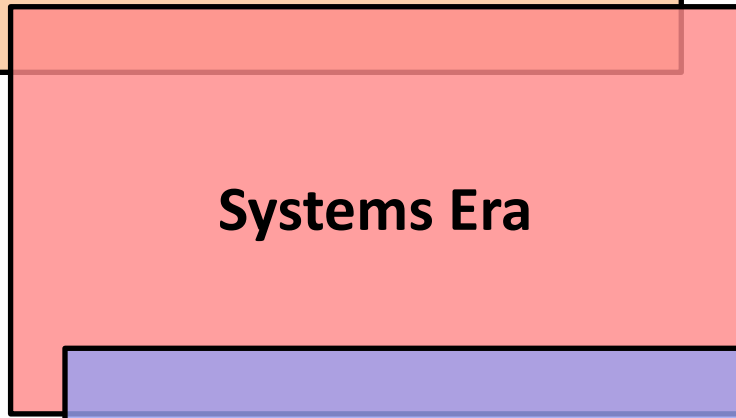
Not easily understood

Often counterintuitive

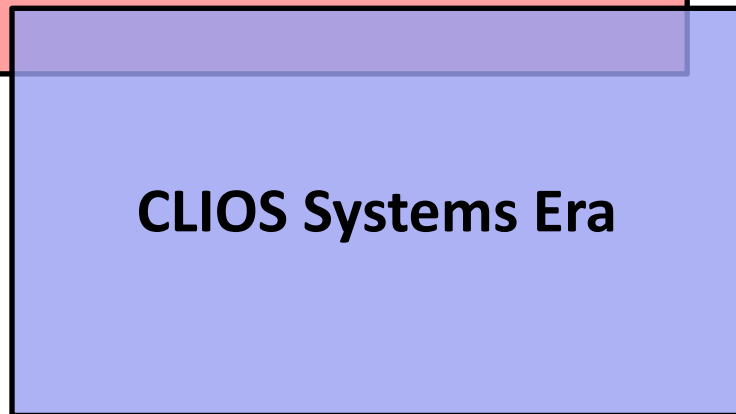
Inherently tough to analyze



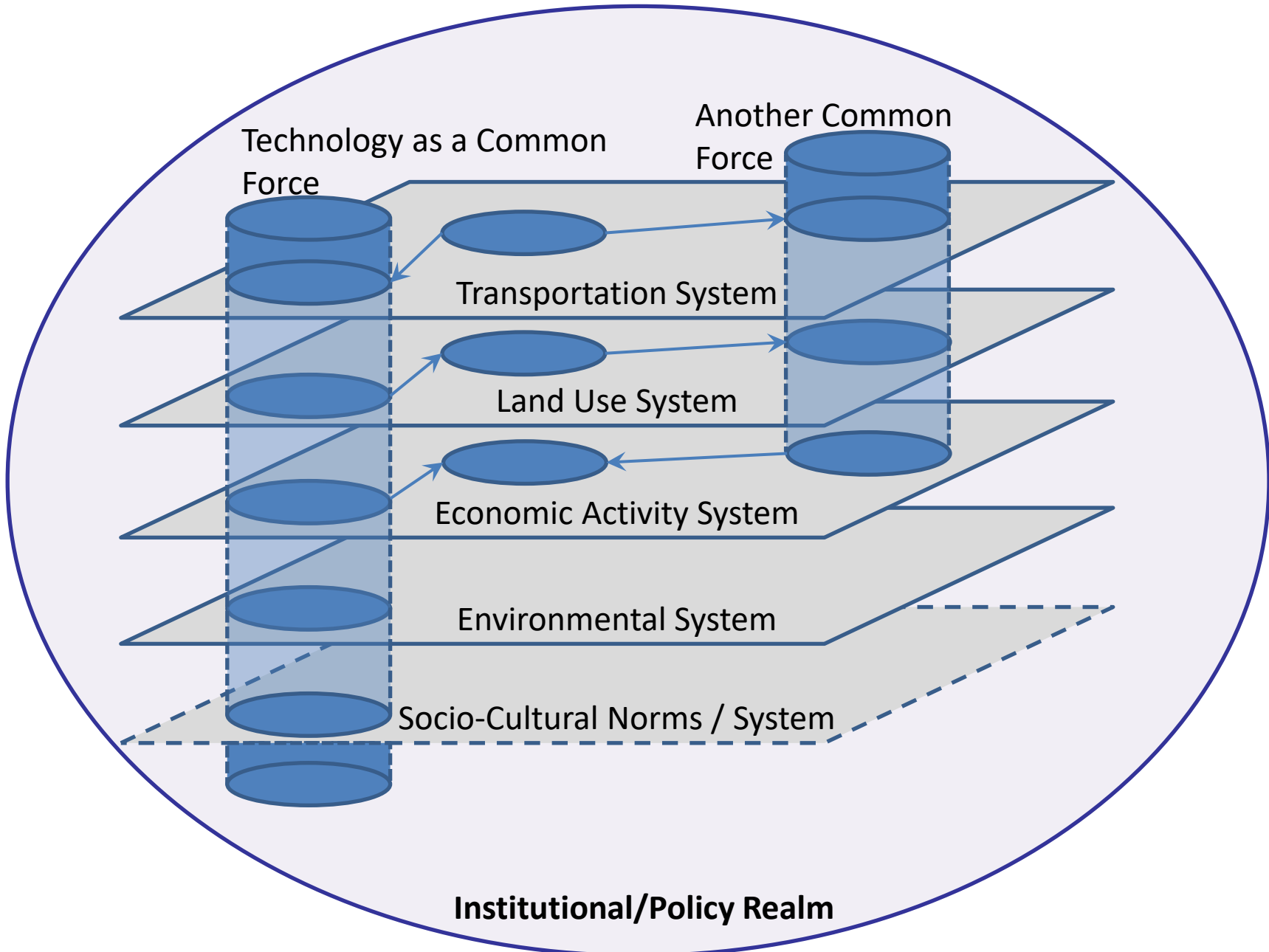
- Focus on the physical
- Focus on growth and mobility



- Economics-based framework
- Recognition of system interfaces



- Systems as **connected to other Sociotechnical Systems**
- Characterized by **advanced technology and mathematics**



Technology as a Common Force

Another Common Force

Transportation System

Land Use System

Economic Activity System

Environmental System

Socio-Cultural Norms / System

Institutional/Policy Realm

Case Study

Transit Fare Systems / SEPTA Key

History of Transit Fare Collection Systems

Day 1

Cash, printed paper, tokens

1980's -
2000's

Information on physical media (with some replication centrally)

Late
2000's
- Today

All information captured and stored centrally (like Septa Key)



Future

Information is automatically inferred?

Origin Destination Inference (ODX)



A customer taps an Oyster card on the reader, which records the location and time.

Can we infer the exit point?



Bus events are recorded in the iBus system and we can match this with our Oyster data

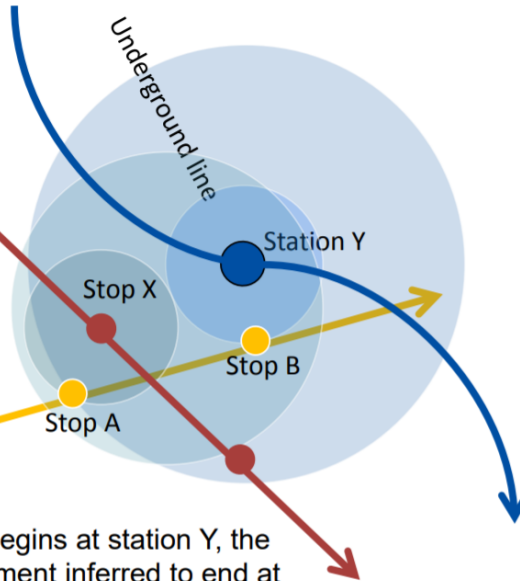


From the location of the next tap (if there is one), we can infer where a customer alights

If next trip begins at stop X, the current segment is inferred to end at stop A

bus route of current journey segment

If next trip begins at station Y, the current segment inferred to end at stop B



<https://youtu.be/NKFdXOKnLYA>



Where can this
Digital Revolution
lead us?



Opportunities

Market thresholds are initially lowered leading to greater competition

Use technology to understand, experiment, and find solutions

Ability to design and build for resiliency and redundancy in systems



Threats

Network effects rapidly escalate power of some players and lead to winner-take-all scenarios

Assumption that technology will “solve everything”

Increasing reliance on digital infrastructure and challenges with security



Major trends

Commuting and land use patterns

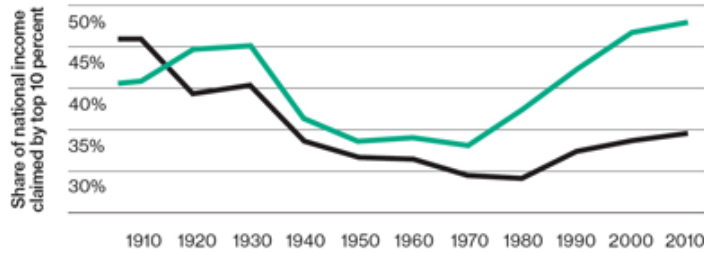
Move away from physical to virtual

Data privacy and security concerns

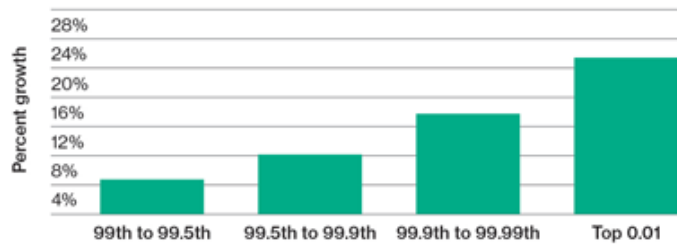
Growing disparities

Income inequality in Europe and the United States

— U.S.
— Europe



Growth in income for households within the top percentile, 2009–2010



Change in real wage levels in U.S. by education (men)

— > Bachelor's degree
— Bachelor's degree
- - - Some college
- - - High school graduate
- - - High school dropout

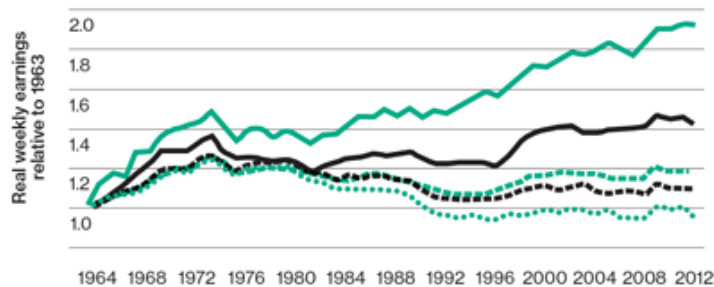
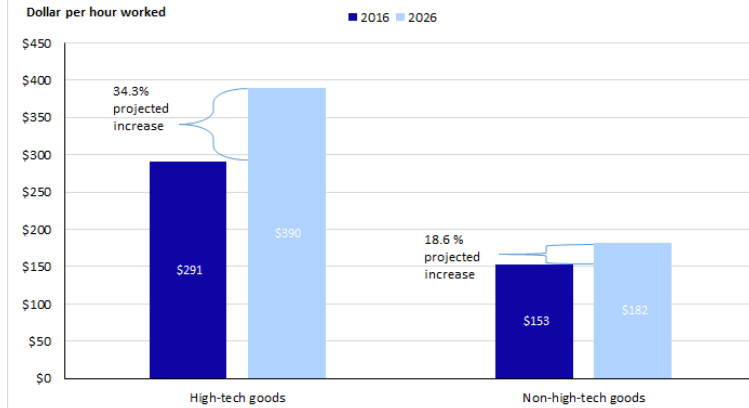
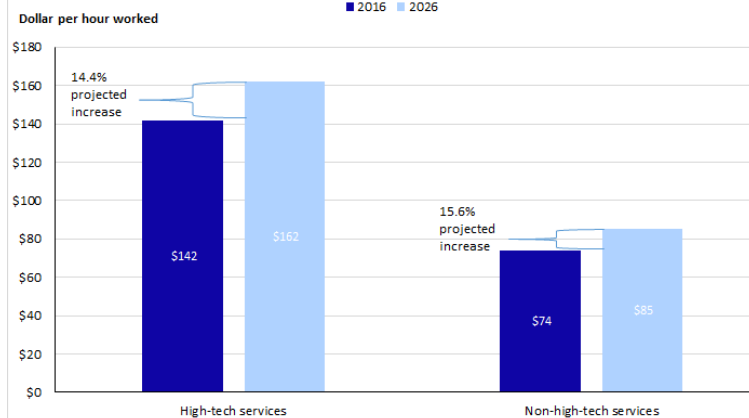


Chart 4. Wage and salary productivity in goods-producing industries by high-tech designation, 2016 and 2026



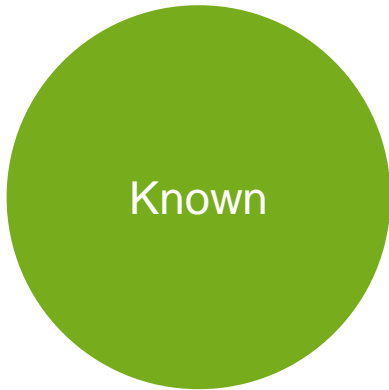
Note: Productivity defined as output in chain-weighted 2009 dollars per hour worked. Source: U.S. Bureau of Labor Statistics, Employment Projections program.

Chart 5. Wage and salary productivity in service-providing industries by high-tech designation, 2016 and 2026



Note: Productivity defined as output in chain-weighted 2009 dollars per hour worked. Source: U.S. Bureau of Labor Statistics, Employment Projections program.

Referenced from an MIT Technology Review article.



Focus on people and user experience

Increasing need for digital education

Need to build adaptable, flexible, and interoperable systems

Focus on data, privacy, security



Winners and losers

Technology leading to inequality

Effects of the underlying complexity

Impacts of design bias

But what is the
Philadelphia and Delaware Valley
Perspective?

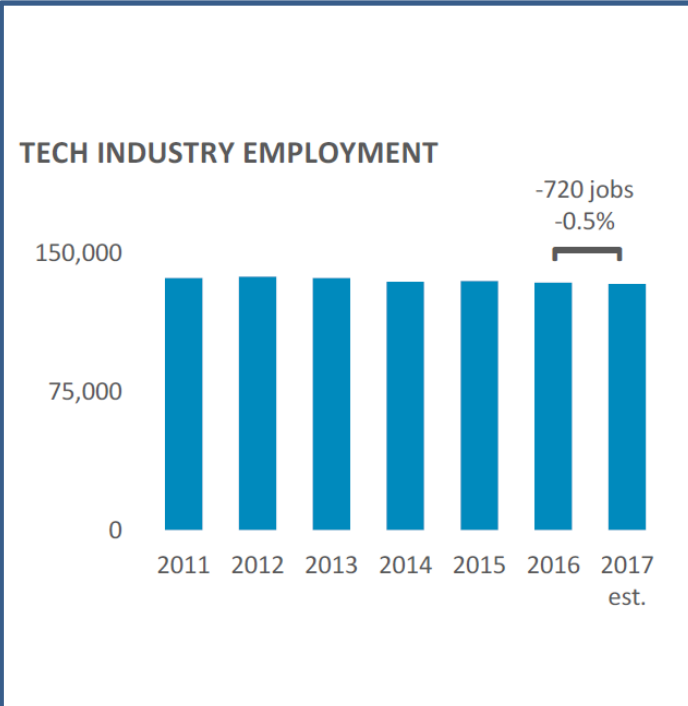
Where are we Headed?

Potential to be left behind

Need for digital literacy and education

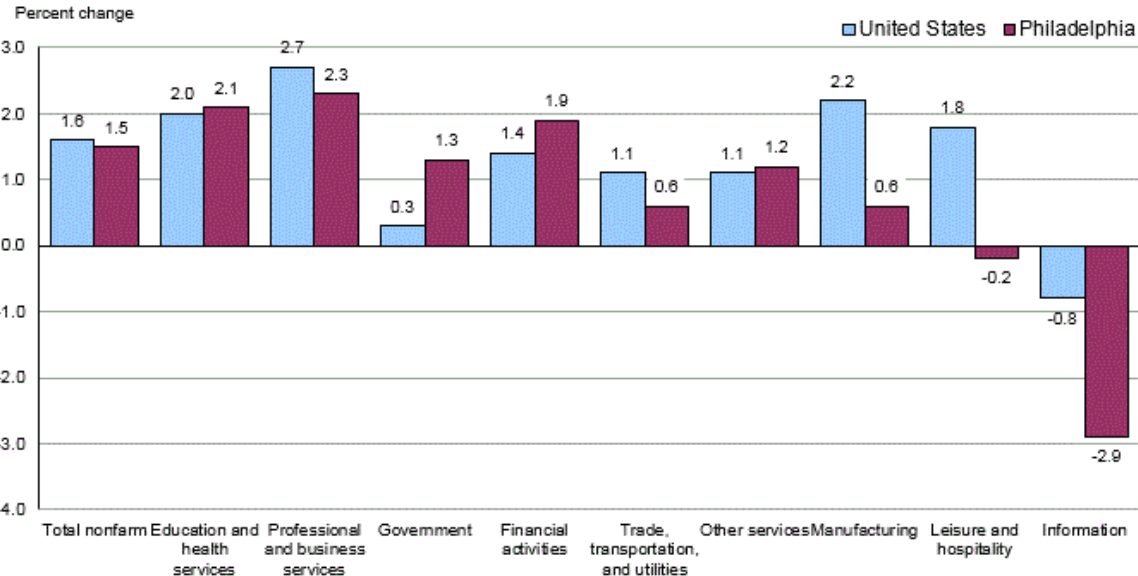
Strength of some sectors

Potential to learn from and leapfrog the “early movers”



Source: CompTIA Cyberstates 2018 Report

Chart 2. Total nonfarm and selected industry supersector employment, over-the-year percent change, United States and the Philadelphia metropolitan area, November 2018



Source: U.S. Bureau of Labor Statistics.

Thank You,
Questions?



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International Upheaval & Immigration

DVRPC Futures Working Group

March 8, 2019

**Lauren Hansen-Flaschen
VISIT PHILADELPHIA**

Globalization



Sources to reference:

Forbes article

<https://www.forbes.com/sites/panosmourdukoutas/2011/09/10/the-good-the-bad-and-the-ugly-side-of-globalization/#491f43b4483f> and

Deloitte article:

<https://www2.deloitte.com/kh/en/pages/risk/articles/sid-dir-bulletin-globalisation.html>

Globalization

By Guille3691

Global Value Chain Disruption



Source to reference: *Interconnected Economies Benefiting from Global Value Chains* (Paris, France: Organization for Economic Cooperation and Development, 2013), <http://www.oecd.org/publications/interconnected-economies-9789264189560-en.htm>.

Threats to the Global Economy

- Food insecurity
- Civil unrest
- Vulnerable infrastructure systems
- Interdependence of financial institutions
- Environmental
- Technological

Global tourism



Source to reference: **World Trade Organization**
<http://www2.unwto.org/content/why-tourism>

Global Immigration

- Estimated 260 million people migrated to another country in 2017
 - Rapid growth over past ten years (+15%)
- Top countries of origin for international migrants: India, Mexico, China, Bangladesh, Syria, Pakistan, Ukraine (2017)
- U.S. has largest number of international migrants (50M)
- Migrant population is becoming younger overall

Refugee Crisis

- Total 68 million people displaced by end of 2017
- 16 million people newly displaced in 2017
- "International responsibility-sharing for displaced people has utterly collapsed."

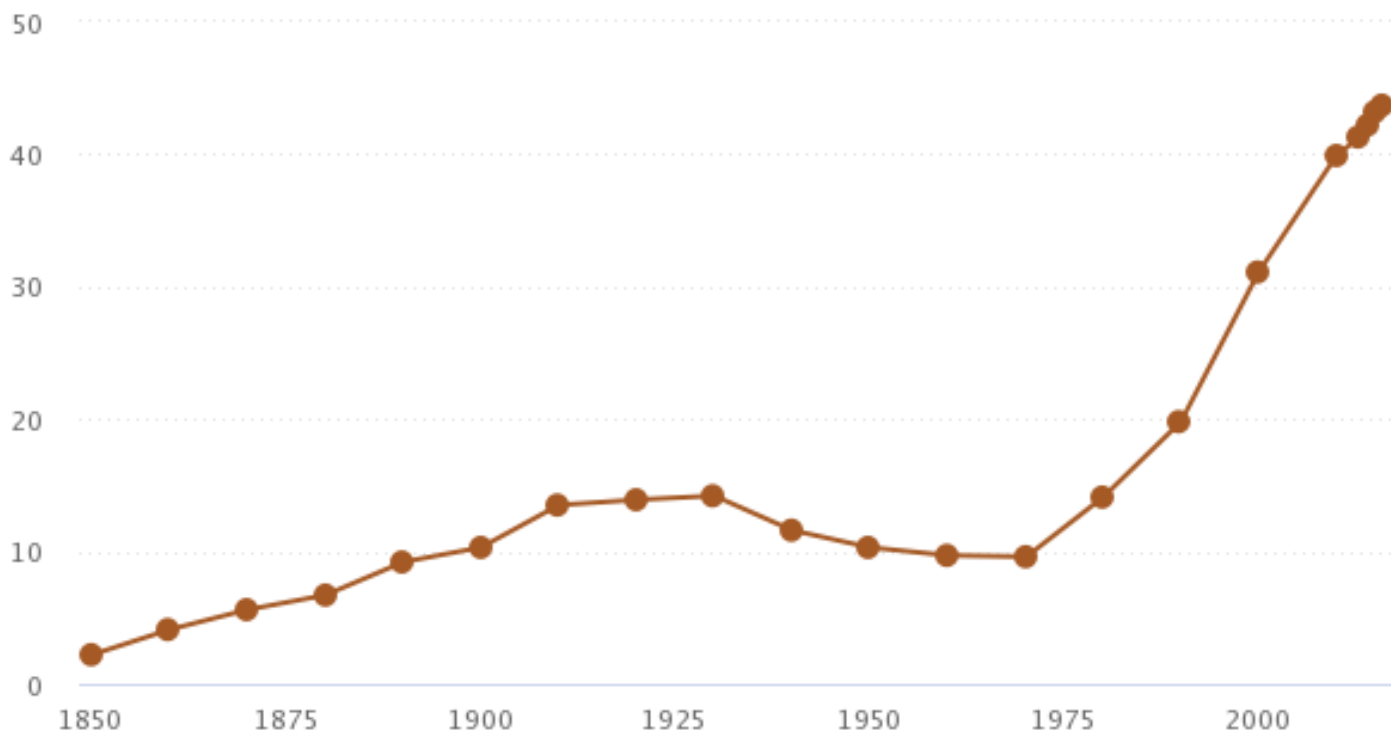
Immigration to the U.S.

Top origin countries of immigrants to the U.S.:

- Mexico
- India
- China
- Philippines
- El Salvador
- Vietnam
- Cuba
- Dominican Republic
- South Korea

Foreign-born population in the United States, 1850-2016

Foreign-born population, in millions



Source: U.S. Census Bureau population estimates and Pew Research Center tabulations of 2010, 2013-2016 American Community Surveys (IPUMS).

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Immigrant population in Philadelphia

- Foreign-born population grew 69% from 2000-2016
- 15% of all city residents
- Driven population growth, increased workforce and boosted number of entrepreneurs
- Diverse nationalities

International Travel to Philadelphia

Total International Travelers in 2017: 1.17 million

Top countries of origin:

- Canada
- United Kingdom
- China
- Germany
- India
- France
- South Korea/Mexico

**Total direct spending of
international visitors in
Philadelphia: \$833M**

Global Factors Influencing International Travel to the U.S.

- U.S. Trade War with China
- Inflation
- Strength of U.S. dollar
- Visit U.S. Coalition video

<https://www.visituscoalition.com/>

Social Forces

- **Socioeconomic Inequality** – Continuing and growing income and wealth disparities within and between regions are propelled by racism, nationalism, and gender.
- **Shifting Demographics** – Aging population, gentrification and displacement, immigration, and other sociodemographic factors will lead to major changes in the region.
- **Housing Shortage** – New housing models are needed, along with an increased supply of co-generational, infill, and affordable units.

Technological Forces

- **The Digital Revolution** – A convergence of digital technologies automates many of the functions traditionally human functions—creating exciting opportunities to change the nature of work, our lifestyles, education, healthcare, and how we get around.
- **Mobility as a Service (MaaS)** – Technology manages all modes and movements and links trip planning to single personal transportation account, which pays for tolls, fares, parking, and shared mobility services.
- **Transportation Technology Deployment** – Automated vehicles (AVs), electric vehicles (EVs), connected vehicles (CVs), the Hyperloop, and shared mobility services affect personal travel, goods movement, homeownership, and development patterns.

Economic Forces

- **Workforce Automation** – Robotics, artificial intelligence, and other technologies change the nature of work.
- **Technocracy** – Very large organizations concentrate power through massive quantities of information, real time responsive systems, big data analytical models, artificial intelligence, and winner-take-all economics from network effects.
- **Updating Infrastructure** – Will the public sector step up and provide new sustainable ways to fund infrastructure state-of-good repair, technological, and other needs? Or will the private market step in?

Economic Forces

- **Low-Density Divestment** – Economic and demographic forces combine to increase demand for compact, walkable communities.
- **Greater Philadelphia in the Global Economy** – How competitive will the region be in the global economy?
- **Delivery On Demand / End of Bricks & Mortar Retail**
– An intensification of current trends toward shrinking retail square footage and increased package delivery.

Environmental Forces

- **Climate Change** – More severe storms and storm surges, more heavy rainfall in some areas and droughts in others, higher temperatures and more temperature extremes, increased sea levels cause major disruptions throughout the world.

Political Forces

- **International Upheaval and (Im)Migration** – Refugee crises, uprisings, food shortages, rising authoritarianism, and terrorism increase population movement.
- **Social and Political Dysfunction** – Increasing polarization leads to an inability to advance legislative agendas.

Group Discussion – Research Statement

Test uncertainty from societal, technological, economic, environmental, and political trends and forces in Greater Philadelphia between now and 2050, which may:

- Present new opportunities and risks;
- Affect predictability in regional socio-economic, land use, and travel patterns; and
- Impact the region's ability to achieve its vision.

Group Discussion - Force Questions

1. Are there any forces that should be combined? Or are there any forces that should be separated out into two or more?
2. Are there any forces that we are missing?
3. Are there any revisions we should make to these force definitions?
4. All these forces should have at least a medium probability of occurring. Are there any with too low of probability to vote on?

Future Forces 2050

- Step 1. Define Research Statement
- Step 2. Brainstorm Future Forces
- Step 3. Short Presentations on Future Forces with Highest Knowledge Gaps
- Step 4. Vote for Working List Forces Most Probable and Relevant to Research Statement
- Step 5. Vote on Impact and Uncertainty for Top 20 Voting List Forces (identified in Step 4)
- *Step 6. Use Impact-Uncertainty voting results to form axes of uncertainty.**

**DVRPC staff-led steps.*

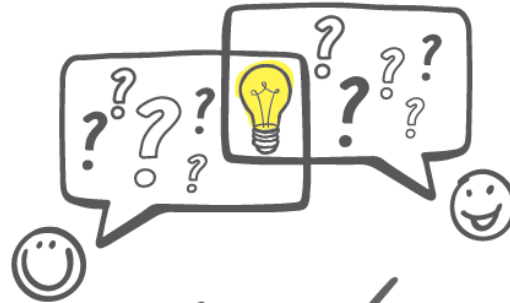
Future Forces 2050

- *Step 7. Use axes of uncertainty to form scenarios.**
- Step 8. Facilitated discussion of scenario implications.
- Step 9. Facilitated discussion on scenario recommendations.
- *Step 10. Model and develop scenario narratives.*
- Step 11. Review draft report.
- Step 12. Publish final report and communicate key findings.

**DVRPC staff-led steps.*

Next Steps

- Network and vote on the (5) working list forces with at least medium or higher probability and relevance to the research statement.
 - Determines the Voting List Forces
- Impact and Uncertainty Voting for Voting List Forces
 - Look out for e-mail.
 - DVRPC Staff will use results to develop axes of uncertainty and scenarios
- **Meeting 3: Thursday, April 11, 2019.**



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