

APA Texas Chapter Conference and Short Course



Theresa O'Donnell
Chief Resilience Officer
City of Dallas

Steven Duong, AICP
Senior Urban Planner
AECOM

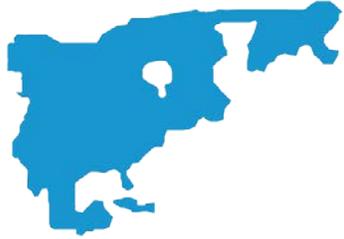
November 3, 2016



100RC partners
with cities around the
world to **help them**
become more resilient to the
social, economic and
physical challenges that
are a growing part of
the 21st century.

First Wave 32 Cities

NORTH AMERICA



LATIN AMERICA & THE CARIBBEAN



EUROPE



AFRICA



MIDDLE EAST



OCEANIA



SOUTH ASIA



EAST ASIA



BOULDER (CO)
BERKELEY (CA)
EL PASO (TX)
JACKSONVILLE (FL)
LOS ANGELES (CA)
MEXICO CITY
(MEXICO)
NEW ORLEANS (LA)
NEW YORK CITY (NY)
NORFOLK (VA)
OAKLAND (CA)
SAN FRANCISCO (CA)

MEDELLÍN
(COLOMBIA)
PORTO ALEGRE
(BRAZIL)
QUITO (ECUADOR)
RIO DE JANEIRO
(BRAZIL)

BRISTOL
(ENGLAND)
GLASGOW (SCOTLAND)
ROME (ITALY)
ROTTERDAM
(NETHERLANDS)
VEJLE
(DENMARK)

DAKAR
(SENEGAL)
DURBAN
(SOUTH AFRICA)

ASHKELON
(ISRAEL)
RAMALLAH
(PALESTINE)
BYBLOS
(LEBANON)

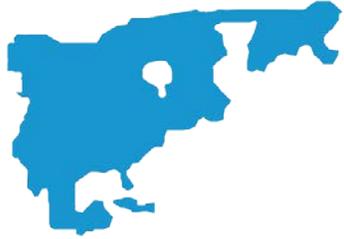
MELBOURNE (AUSTRALIA)
CHRISTCHURCH
(NEW ZEALAND)

SURAT
(INDIA)

BANGKOK
(THAILAND)
MANDALAY
(MYANMAR)
DA NANG
(VIETNAM)
SEMARANG
(INDONESIA)

Second Wave 34 Cities

NORTH AMERICA



LATIN AMERICA & THE CARIBBEAN



EUROPE



AFRICA



MIDDLE EAST



OCEANIA



SOUTH ASIA



EAST ASIA



BOSTON (MA)

CHICAGO (IL)

DALLAS (TX)

JUAREZ (MEXICO)

MONTREAL (CANADA)

PITTSBURGH (PA)

ST. LOUIS (MO)

TULSA (OK)

CALI (COLOMBIA)

SAN JUAN (UNITED STATES)

SANTA FE (ARGENTINA)

SANTIAGO DE LOS

CABALLEROS

(DOMINICAN REPUBLIC)

SANTIAGO, METRO AREA

(CHILE)

ATHENS (GREECE)

BARCELONA (SPAIN)

BELGRADE (SERBIA)

LONDON (ENGLAND)

LISBON (PORTUGAL)

MILAN (ITALY)

PARIS (FRANCE)

THESSALONIKI

(GREECE)

ACCRA (GHANA)

ARUSHA (TANZANIA)

ENUGU (NIGERIA)

KIGALI (RWANDA)

AMMAN (JORDAN)

SYDNEY

(AUSTRALIA)

WELLINGTON CITY

(NEW ZEALAND)

BANGALORE

(INDIA)

CHENNAI (INDIA)

DEYANG (CHINA)

HUANGSHI (CHINA)

PHNOM PENH

(CAMBODIA)

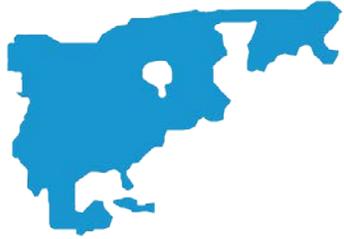
SINGAPORE

(SINGAPORE)

TOYAMA (JAPAN)

Second Wave 34 Cities

NORTH AMERICA



LATIN AMERICA & THE CARIBBEAN



EUROPE



AFRICA



MIDDLE EAST



OCEANIA



SOUTH ASIA



EAST ASIA



PANAMA CITY (PANAMA)

- ATLANTA (GA)
- CALGARY (CANADA)
- COLIMA (MEXICO)
- GREATER MIAMI AND THE BEACHES (FL)
- GUADALAJARA METROPOLITAN AREA (MEXICO)
- HONOLULU (HI)
- LOUISVILLE (KY)
- MINNEAPOLIS (MN)
- NASHVILLE (TN)
- SEATTLE (WA)
- TORONTO (CANADA)
- VANCOUVER (CANADA)
- WASHINGTON, DC

- BELFAST (NORTHERN IRELAND)
- GREATER MANCHESTER (ENGLAND)
- TBILISI (GEORGIA)
- THE HAGUE (THE NETHERLANDS)

- ADDIS ABABA (ETHIOPIA)
- CAPE TOWN (SOUTH AFRICA)
- LAGOS (NIGERIA)
- NAIROBI (KENYA)

- LUXOR (EGYPT)
- RMALLAH (PALESTINE)
- TEL AVIV (ISRAEL)

- JAIPUR (INDIA)
- MELAKA (MALAYSIA)
- PUNE (INDIA)

- CAN THO (VIETNAME)
- HAIYAN (CHINA)
- JAKARTA (INDONESIA)
- KYOTO (JAPAN)
- MELAKA (MALAYSIA)
- SEOUL (SOUTH KOREAN)
- YIWU (CHINA)

URBAN RESILIENCE

Is the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of **chronic stresses** and **acute shocks** they experience.

1900



2007



2030



2050



1.4 million new people are moving into cities **every week.**

People are drawn to cities as centres of economic activity, social connection, opportunity, and innovation.

The Information Revolution Is Underway





One-half of the Infrastructure provided by cities in 2070 hasn't been built yet

Cities have a unique opportunity
re-think traditional approaches
and incorporate **resilient design**
into infrastructure projects

Inequity and Social Cohesion will define the Resilience Agenda

City resilience strategies must focus on ways to fully include vulnerable populations



Sao Paulo, Brazil

A city's ability to maintain essential functions is threatened by both acute shocks and chronic stresses.



MANDALAY, MYANMAR



PITTSBURGH, USA

Sudden shocks or accumulating stresses can lead to social breakdown, physical collapse, or economic decline.



AUSTERITY
RIOTS IN
ATHENS,
GREECE

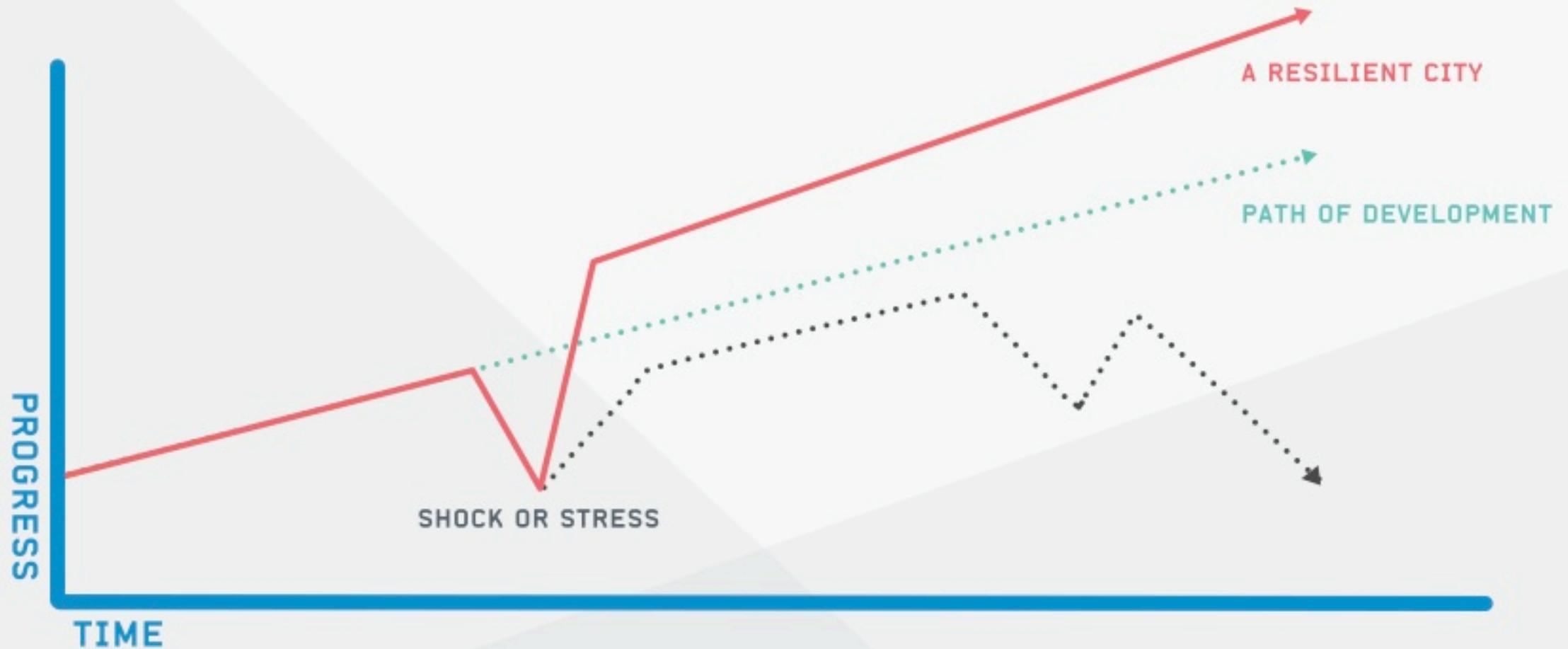
What Are Acute Shocks?

- Earthquake
- Wildfires
- Flooding
- Sandstorms
- Extreme Cold
- Hazardous Materials Accident
- Severe Storms and Extreme Rainfall
- Terrorism
- Disease Outbreak
- Riot/Civil Unrest
- Infrastructure or Building Failure
- Heat Wave

What Are Acute Stresses?

- Water Scarcity
- Lack of Affordable Housing
- Poor Air Quality
- High Unemployment
- Homelessness
- Changing Demographics
- Lack of Social Cohesion
- Poverty/Inequity
- Aging Infrastructure
- Shifting Macroeconomic Trends
- Crime & Violence

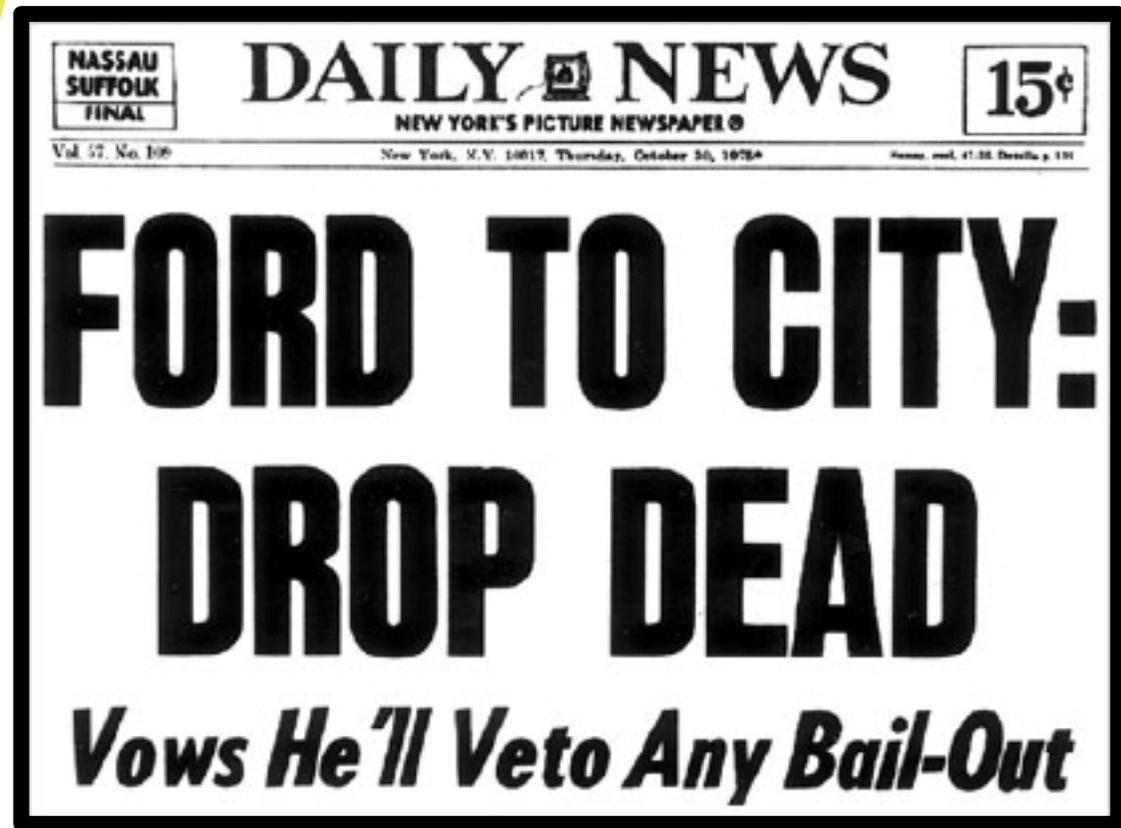
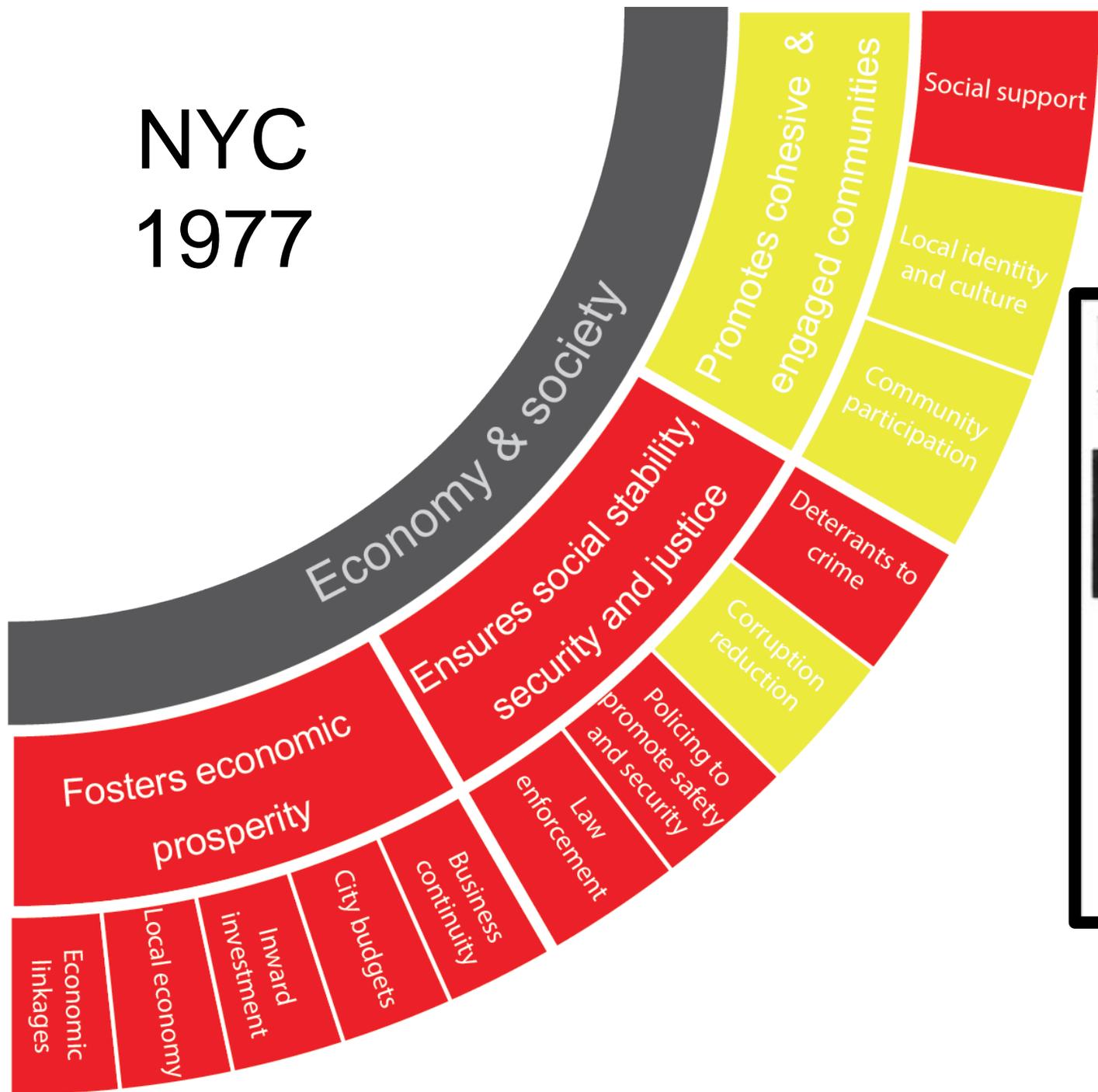
Shocks and stresses can bring opportunities for cities to evolve, and in some circumstances, transform.



Case Study: A Tale of Two Blackouts



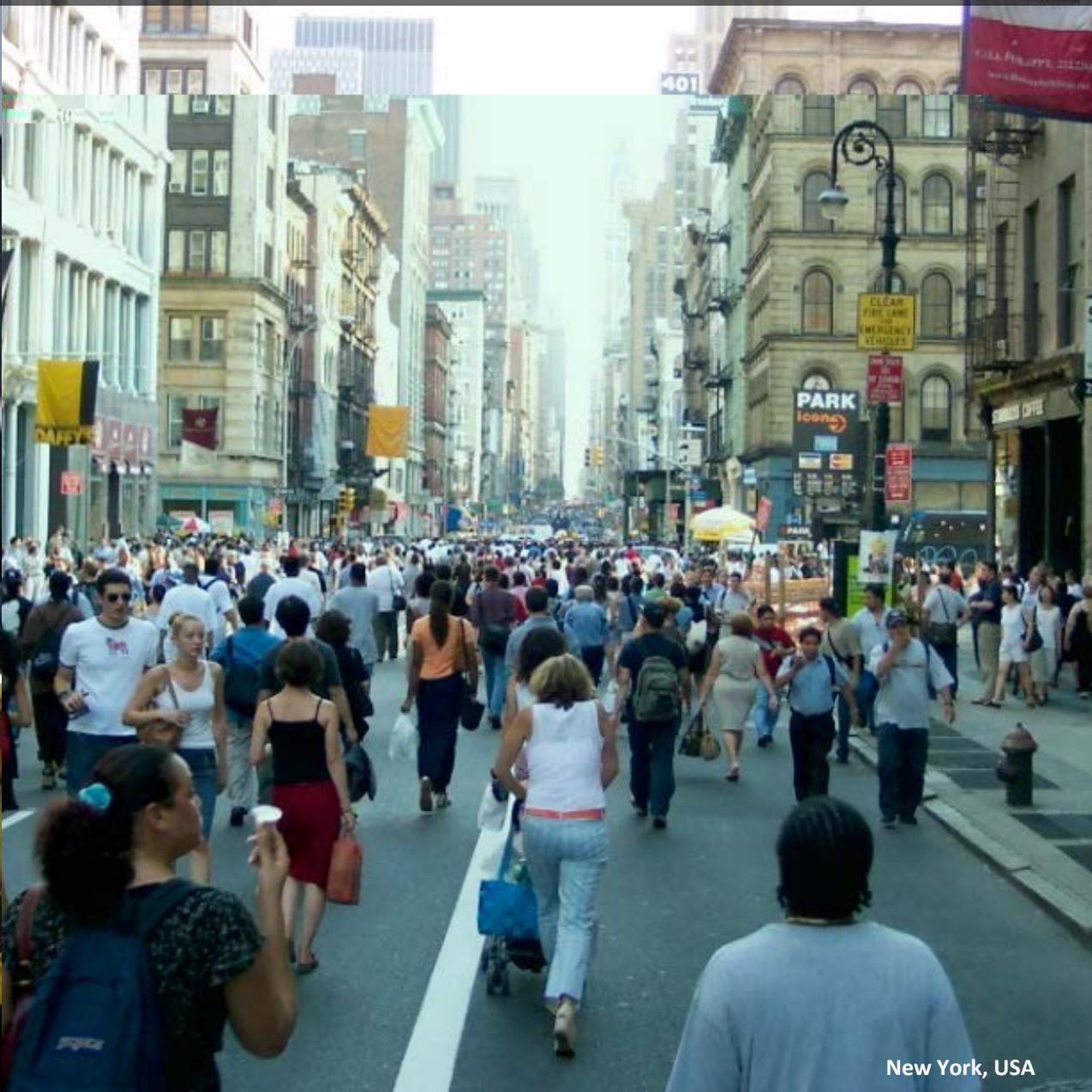
NYC
1977



Case Study: A Tale of Two Blackouts

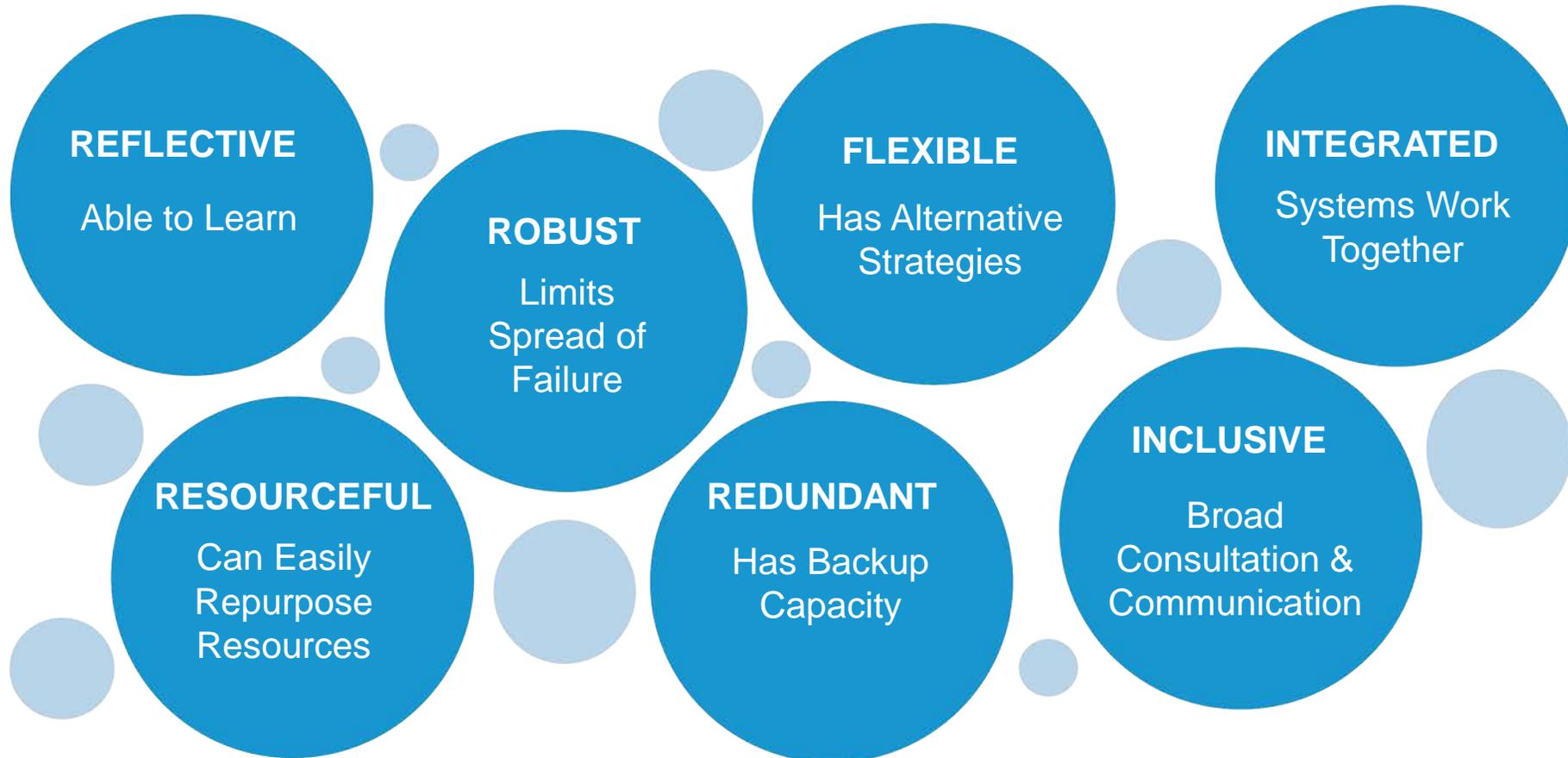


Case Study: A Tale of Two Blackouts



Qualities of resilient systems

Resilient systems exhibit certain qualities that enable them to withstand, respond, and adapt more readily to shocks and stresses.



An aerial photograph of a dense urban skyline in Bangkok, Thailand, captured during a golden sunset. The sky is filled with dramatic, orange-hued clouds. A large, white, circular graphic is centered over the image, containing the title text. The city features a mix of modern glass skyscrapers and older, more densely packed buildings. In the lower-left corner, a building with a glass facade reflects the sunset, and a sign for 'TIMES SQUARE' is visible. In the lower-right corner, a building has a sign that reads 'RUA MCHIT'.

Introduction to the 100 RC Program and Urban Resilience

100RC provides cities **4 types of support** to address these problems

1. Funding to hire a **CHIEF RESILIENCE OFFICER (CRO)**



2. Support to develop a **CITY RESILIENCE STRATEGY**



3. A **PLATFORM OF SERVICES** to support strategy implementation



4. Membership in the **100RC NETWORK**



TO HELP COMPLEX URBAN SYSTEMS ORGANIZE AND INTEGRATE AROUND RESILIENCE

TO SCALE SOLUTIONS EFFICIENTLY

Who is the Chief Resilience Officer?

The CRO is a catalytic force, transforming the way cities organize themselves to better meet the challenges of building resilience in the 21st century.

The CRO will lead the city's resilience building efforts, including:



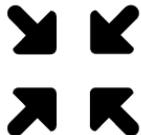
Working across silos to **create** and **implement** a resilience strategy



Serving as **a senior advisor** to the Mayor or municipal leader



Promoting resilience thinking, and acting as both **a local and global thought leader**

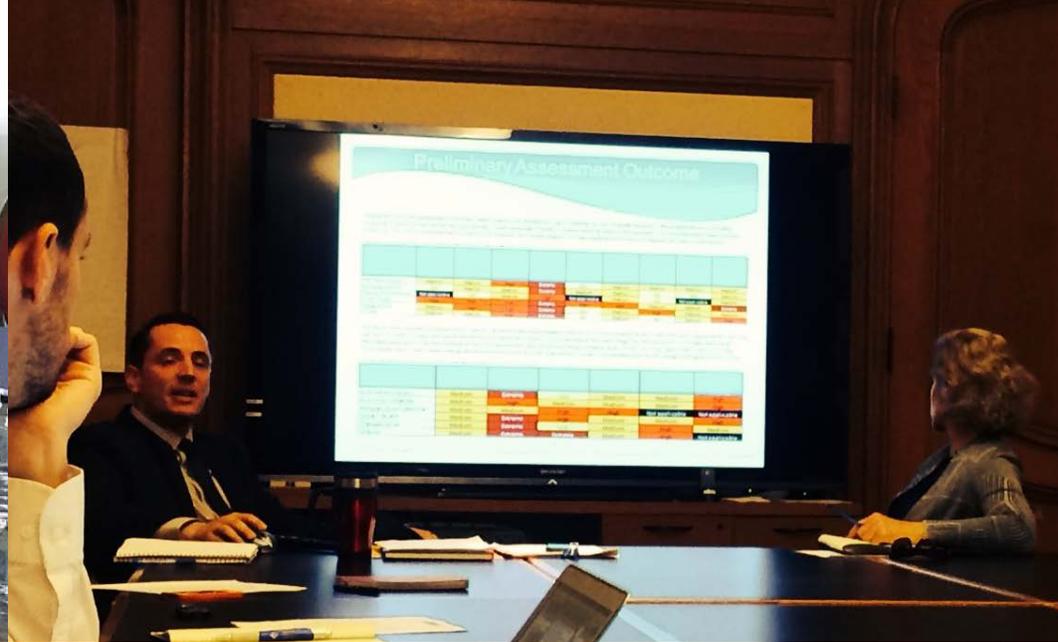


Coordinating resilience efforts across government and multi-sector stakeholders



Liaising with other **CROs, 100RC staff, and service providers** via the network and platform





STRATEGY DEVELOPMENT PROCESS



What is the 100RC Resilience Strategy?

**PHASE I:
2-3 MONTHS**

**RAPID DIAGNOSTIC &
STAKEHOLDER
ENGAGEMENT**

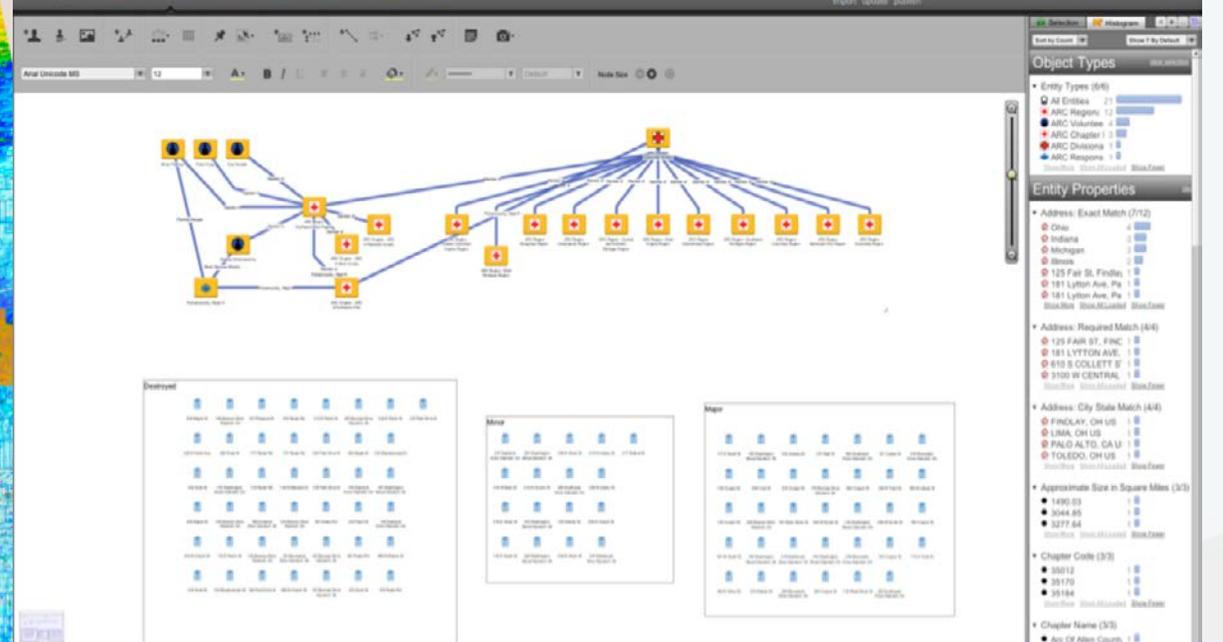
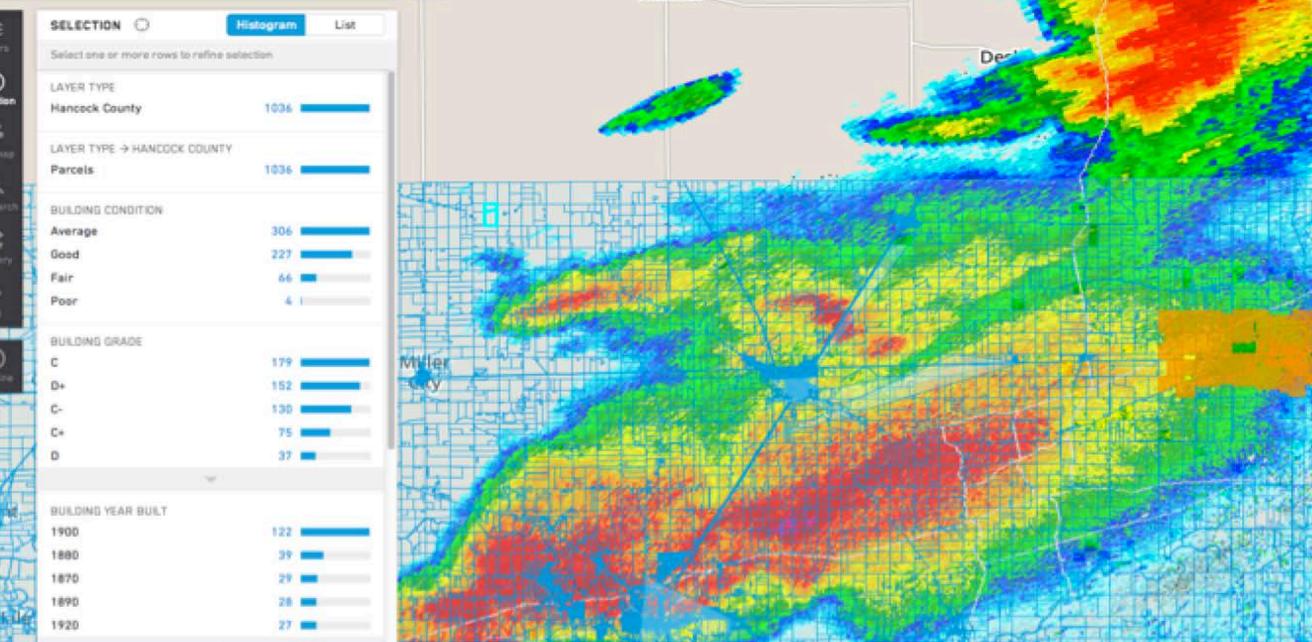
**PHASE II:
4-6 MONTHS**

**DEEP & FOCUSED DIAGNOSTIC
RESULTING IN ACTIONABLE INITIATIVES**

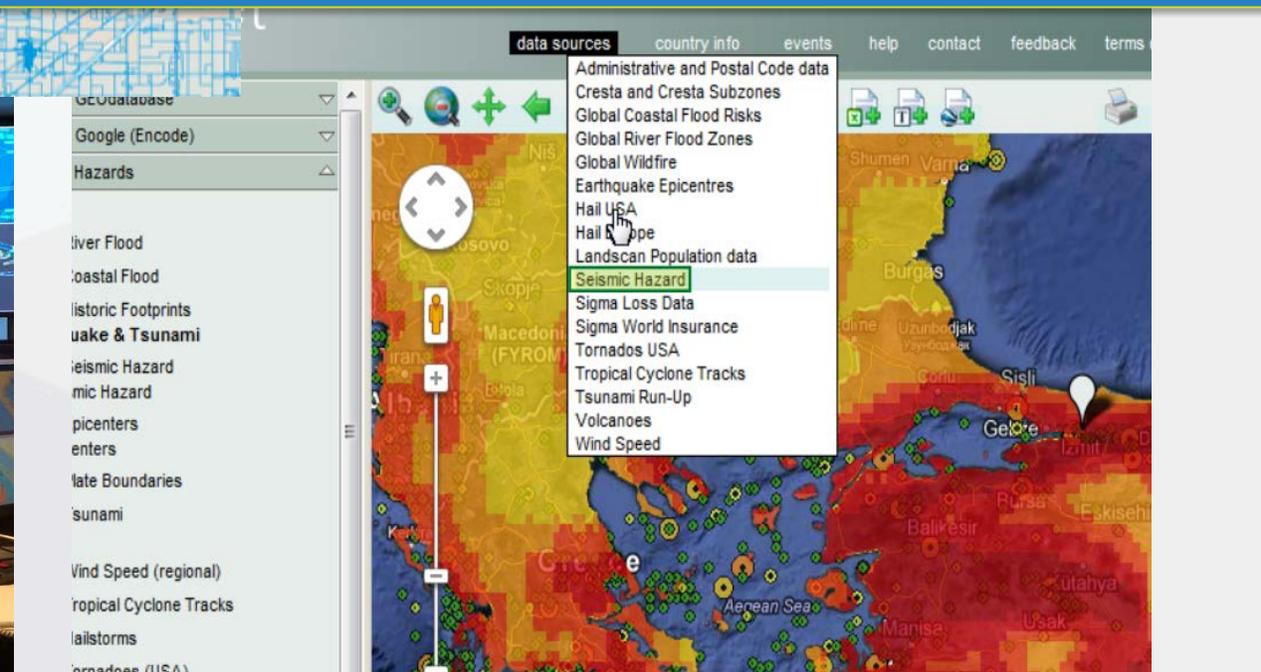
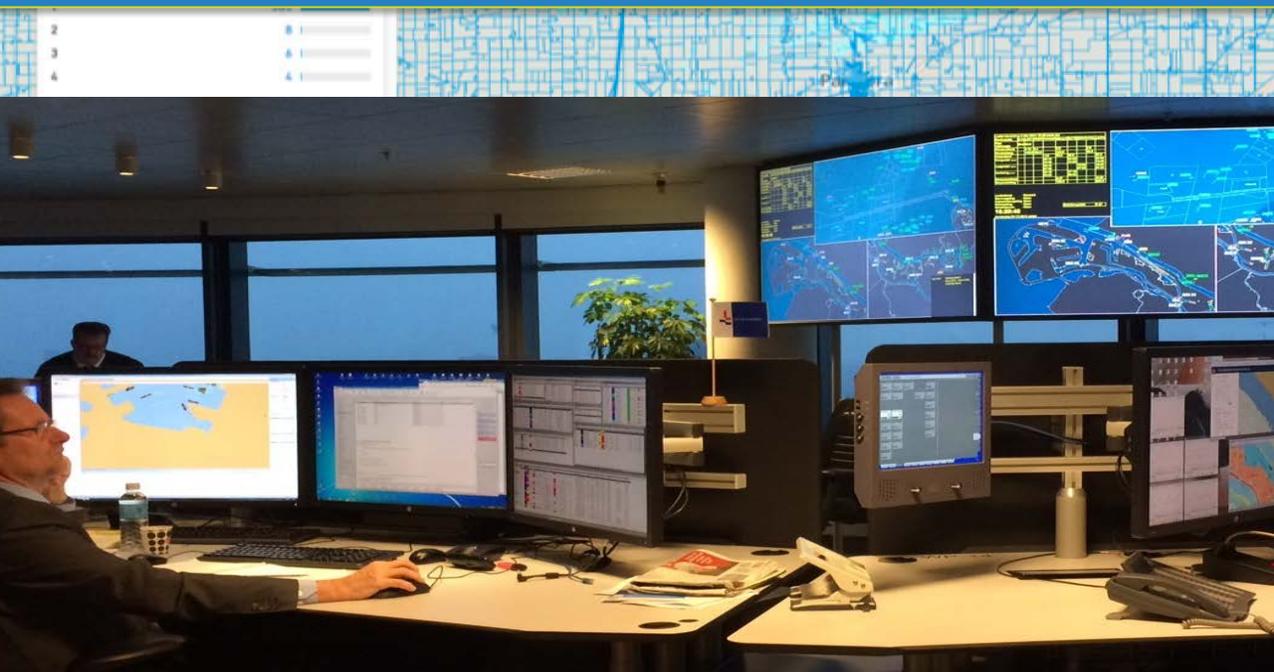
IMPLEMENTATION

6-9 MONTHS

The 100RC Resilience Strategy Process is a 6-9 month effort led by the CRO to develop a roadmap to resilience for the city. It is a deliberate process to engage a broad range of stakeholders, leverage existing plans and actions, identify cities' unique resilience priorities, and generate an actionable set of initiatives.



PLATFORM

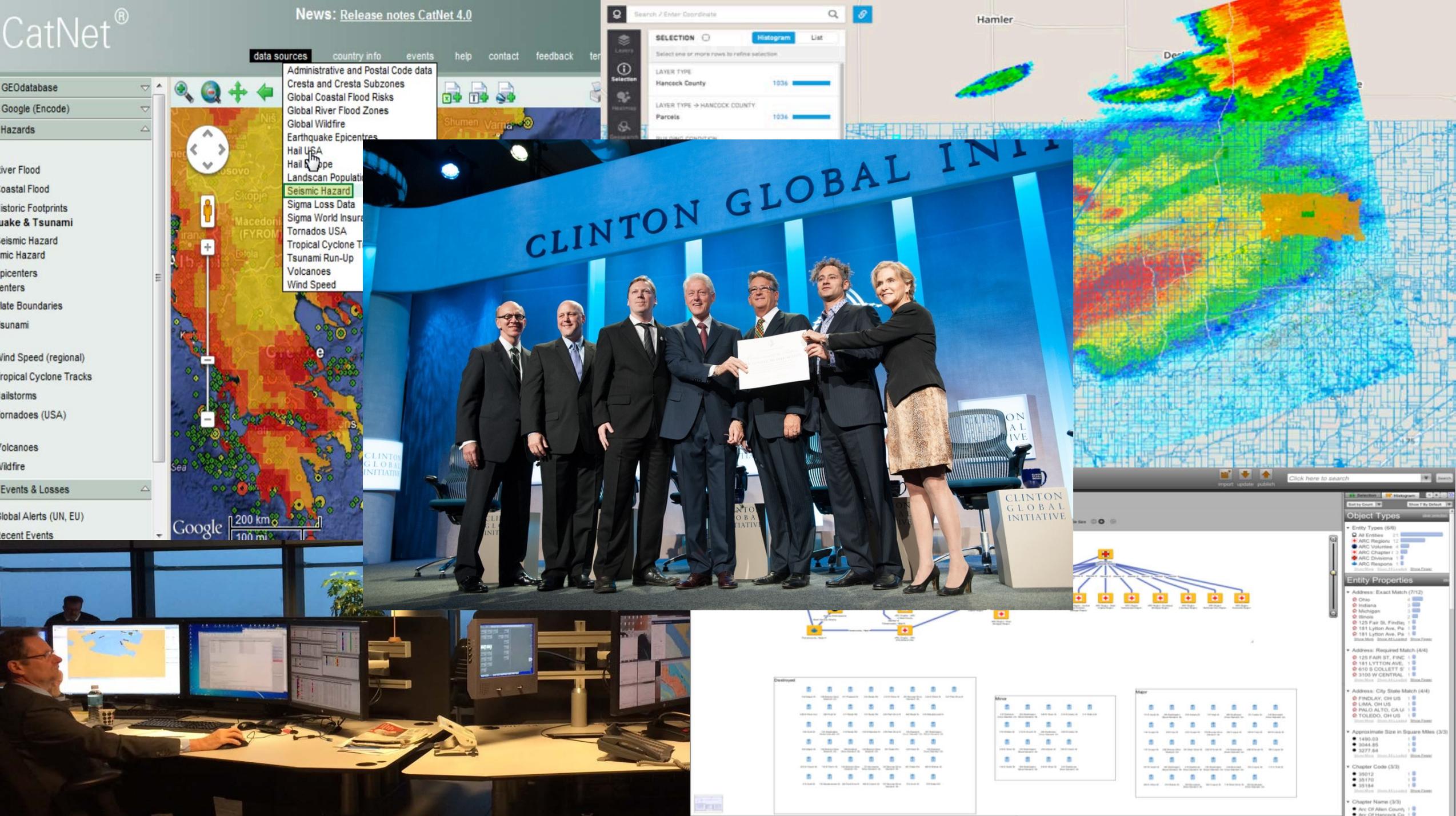


What is the 100RC Platform?



The Platform consists of tools and services that cities can draw upon to develop and implement their resilience strategies.

Our Platform has grown to 37 partners offering 45 services, representing over **\$100 million** of value to our member cities



CatNet®

News: [Release notes CatNet 4.0](#)

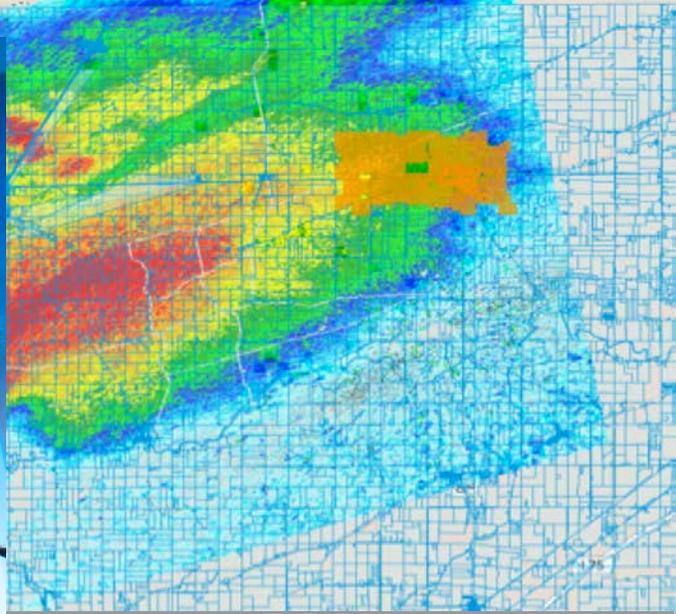
Search / Enter Coordinate

SELECTION Histogram List

Select one or more rows to refine selection.

LAYER TYPE	Hancock County	1036
LAYER TYPE → HANCOCK COUNTY	Parcels	1036

- data sources country info events help contact feedback ter
- Administrative and Postal Code data
 - Cresta and Cresta Subzones
 - Global Coastal Flood Risks
 - Global River Flood Zones
 - Global Wildfire
 - Earthquake Epicentres
 - Hail USA
 - Hail Scope
 - Landscan Population
 - Seismic Hazard
 - Sigma Loss Data
 - Sigma World Insurance
 - Tornados USA
 - Tropical Cyclone Tracks
 - Tsunami Run-Up
 - Volcanoes
 - Wind Speed



Entity Types (6/6)

- All Entities 24
- ARC Regions 12
- ARC Volume 6
- ARC Chapter 3
- ARC Divisions 1
- ARC Response 1

Entity Properties

- Address: Exact Match (712)
 - Ohio 1
 - Indiana 1
 - Michigan 2
 - Illinois 2
 - 125 Fair St. Findlay 1
 - 181 Lytton Ave. Pe 1
 - 181 Lytton Ave. Pe 1
 - 3100 W CENTRAL 1
- Address: Required Match (414)
 - 125 FAIR ST. FIND 1
 - 181 LYTTON AVE. 1
 - 810 S COOLETT ST 1
 - 3100 W CENTRAL 1
- Address: City State Match (414)
 - FINDLAY, OH US 1
 - LIMA, OH US 1
 - PALO ALTO, CA U 1
 - TOLEDO, OH US 1
- Approximate Size in Square Miles (32)
 - 1490.03 1
 - 3044.85 1
 - 3277.64 1
- Chapter Code (3/3)
 - 35012 1
 - 35170 1
 - 35184 1
- Chapter Name (3/3)
 - Arc Of Allen County 1
 - Arc Of Hancock Co 1



City resilience has 4 key dimensions

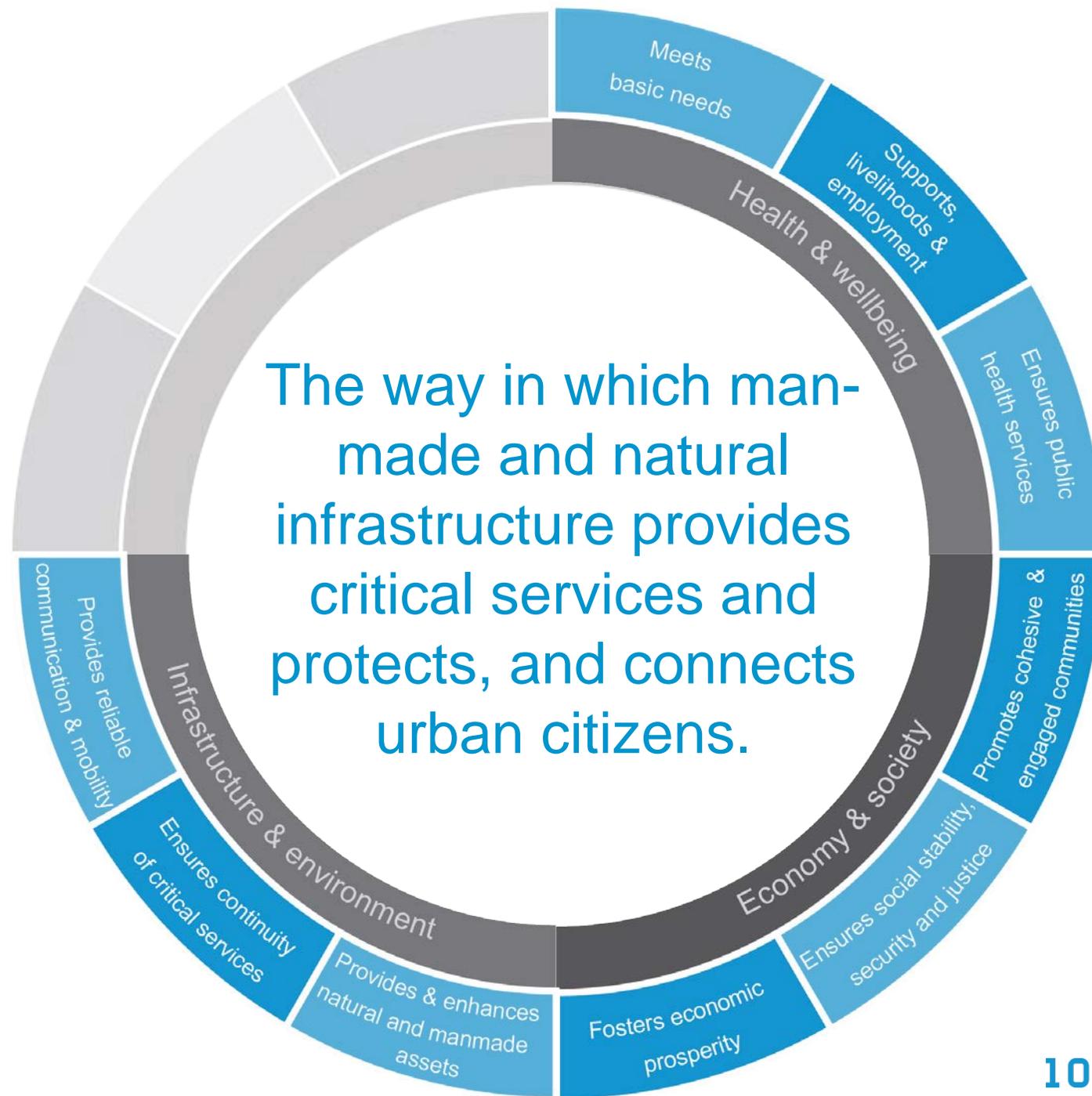
- Leadership & Strategy
- Health & Wellness
- Infrastructure & Environment
- Economy & Society



The 12 drivers in the City Resilience Framework collectively determine the city's ability to withstand a wide range of shocks and stresses

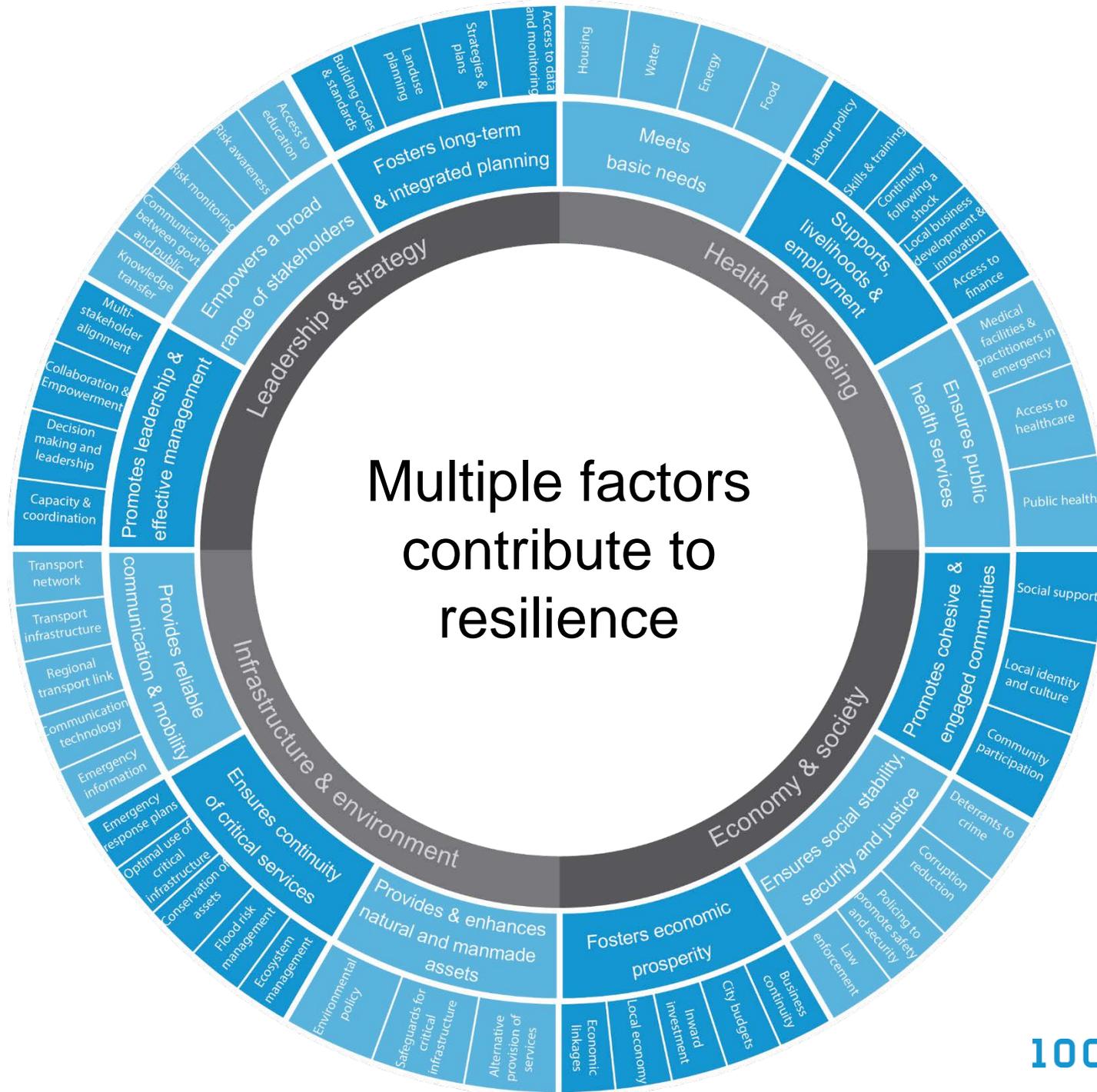






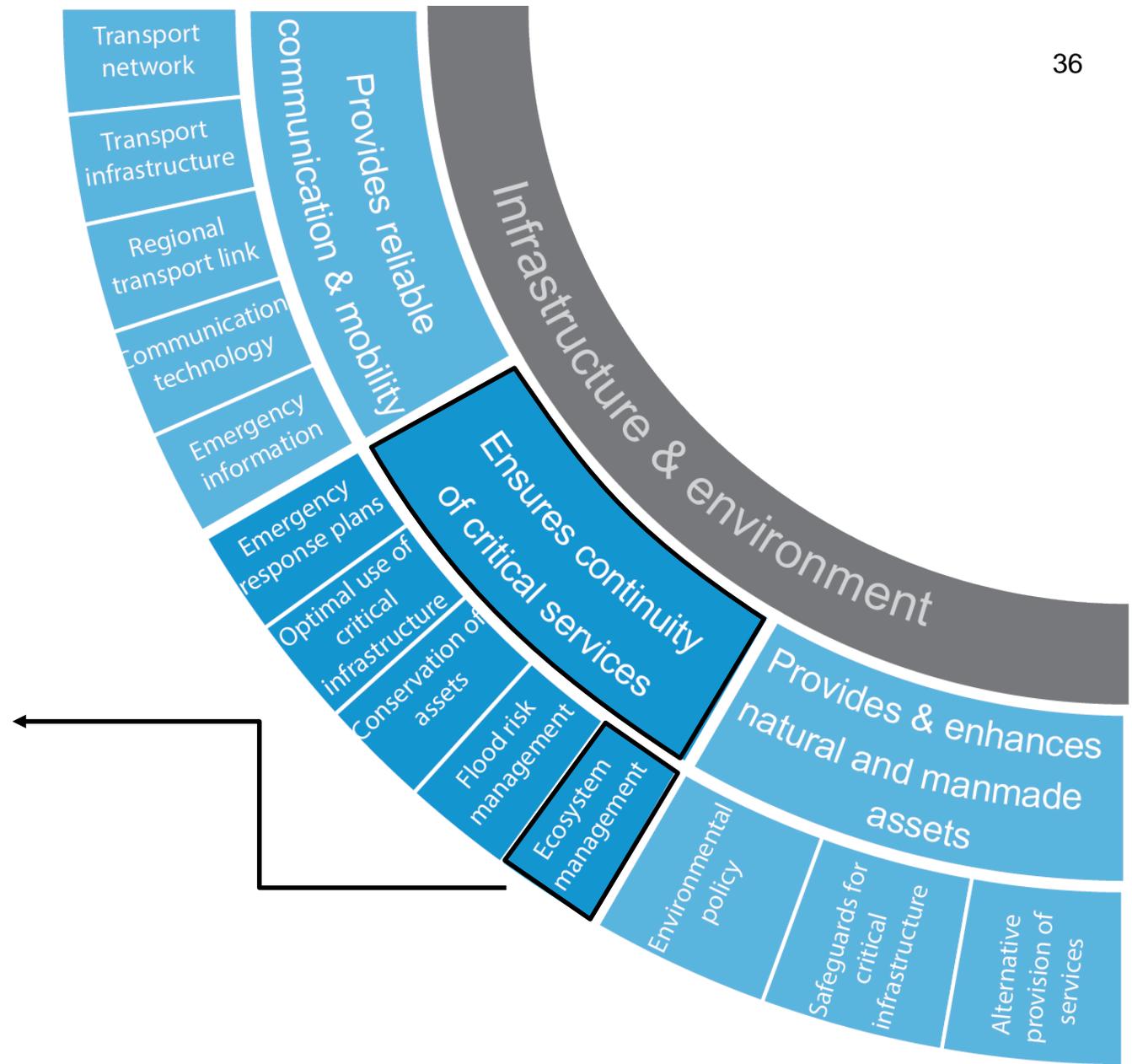
The way in which man-made and natural infrastructure provides critical services and protects, and connects urban citizens.



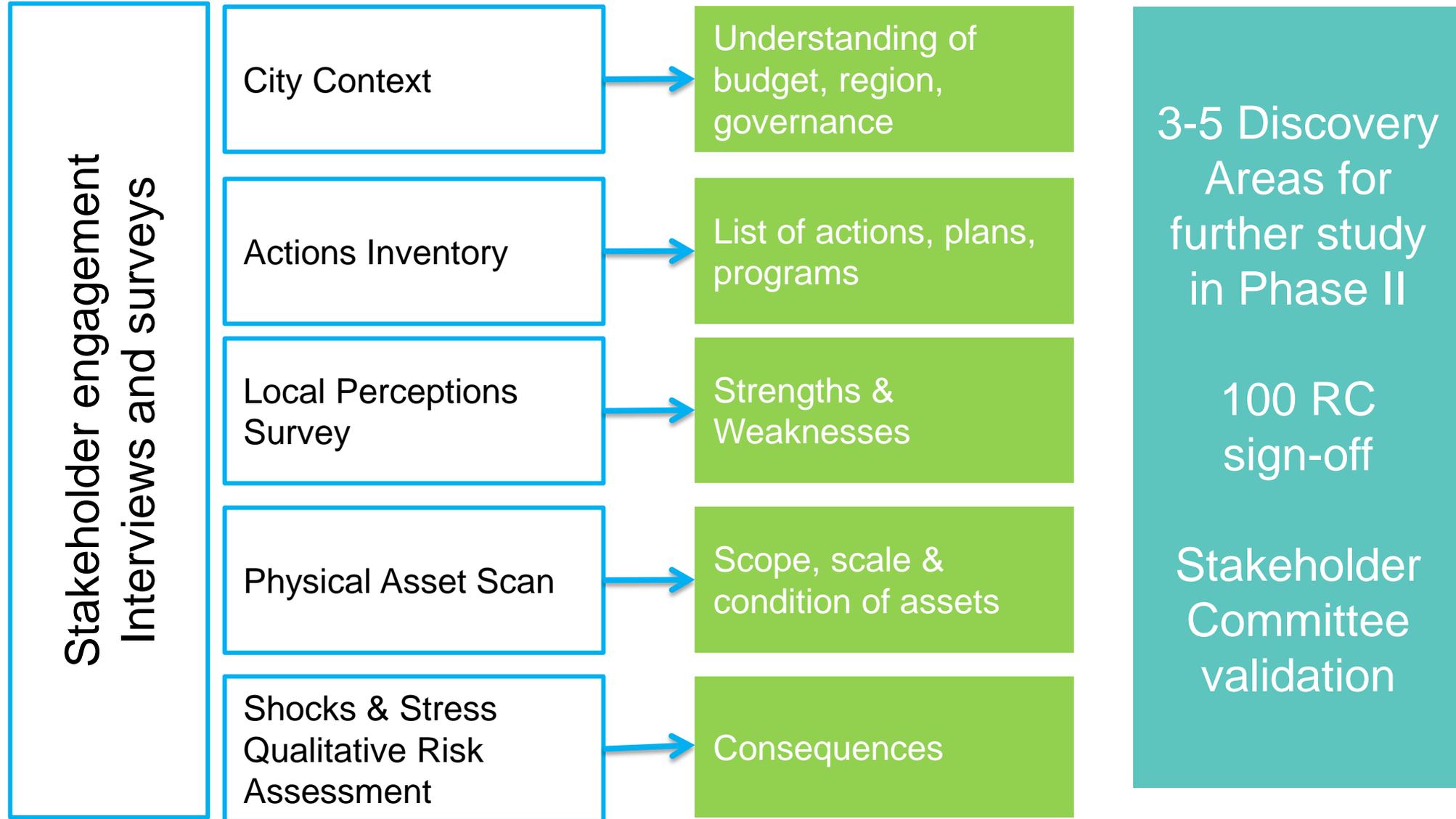


Each driver is made up of 3-6 sub-drivers

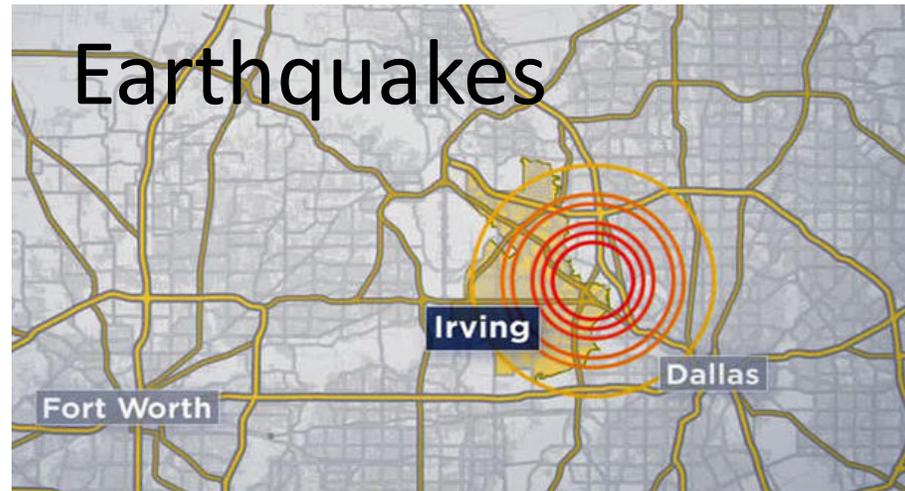
Ecosystem management



Phase I – Preliminary Resilience Assessment

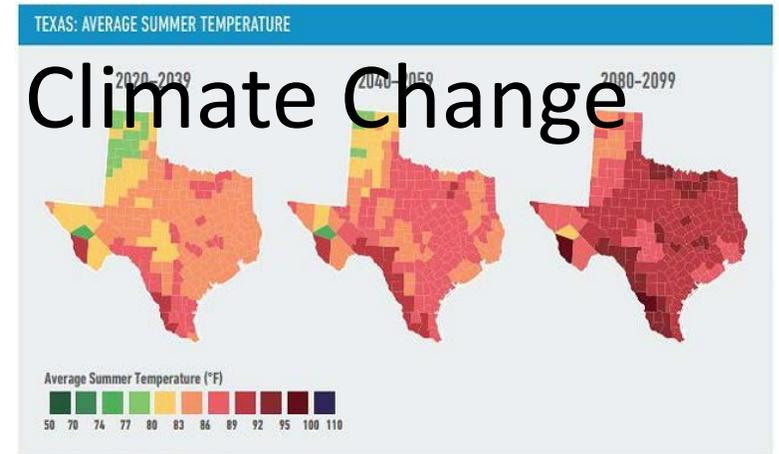


Top Shocks for Dallas



Disease
Outbreak

Top Stresses for Dallas



Considerations taken during Phase I

- What are the important linkages between shocks and stresses?
- What strengths and successful actions should we build on?
- Does the public's perception of the city's preparedness and performance match the plans and actions currently underway?
- What aspects of resilience is the city not yet addressing?

Building an Equitable 21st Century Dallas

- Recognize the current equity issues in our community and the diversity our population
- Build upon a foundation of strength – maximize the resources, assets and energy available to us
- Leverage the myriad partners and stakeholders already doing good work

Building an Equitable 21st Century Dallas

- Understand the interrelationships of shocks and the long-term stresses that increase Dallas' vulnerability
- Understand the cascading impacts of shocks and stresses on vulnerable populations
- Explore the role of technology in bringing new solutions to old problems

Dallas Discovery Areas

- Harnessing the power of the robust North Central Texas economy to be more inclusiveness and create economic resilience for Dallas residents
- Exploring opportunities for to improve Public Health outcomes and decrease health disparity
- Understanding the impacts of climate change on the natural and built environment and assessing the infrastructure in Dallas neighborhoods
- Preparing for a 21st century Urban Mobility and leveraging the region's transportation investment to expand mobility options, build mobility infrastructure, and improve transportation equity

Robust North Texas Economy

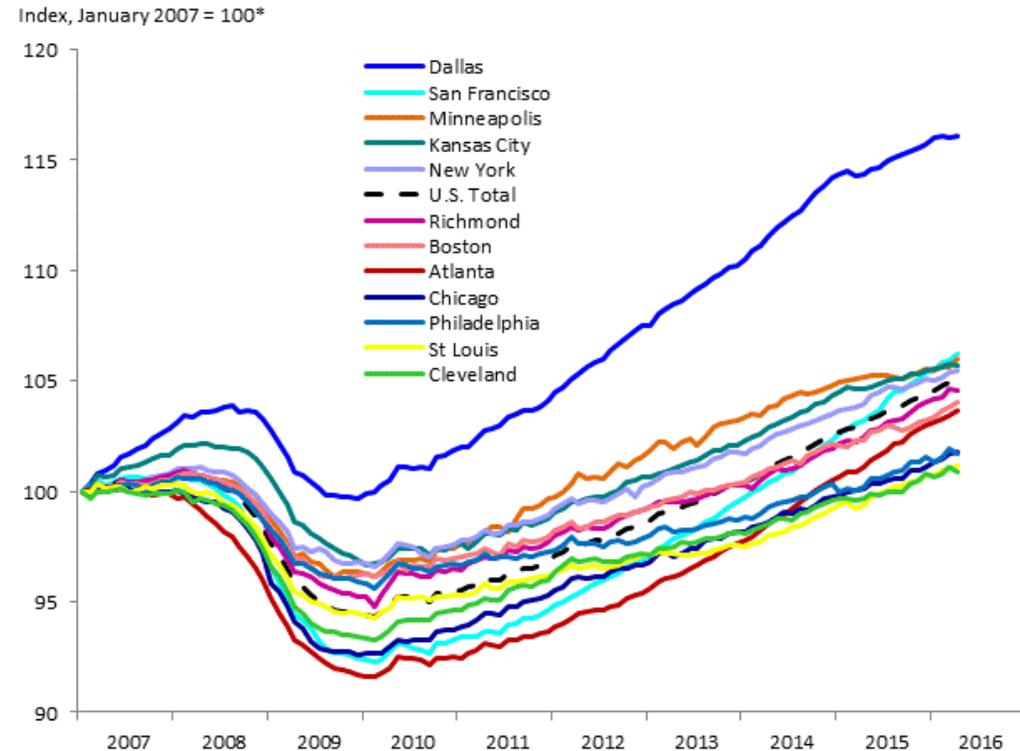
DFW Economic Overview

- 4th largest population in U.S.
- 6th largest economy by output
- 5th largest by personal income
- 5th largest employment market
- Unemployment rate of 3.7%



Strength of the Job Market

Payroll Employment by Federal Reserve District



*Monthly, seasonally adjusted.

Last data entry April 2016.

SOURCES: Bureau of Labor Statistics; Federal Reserve Bank of Dallas.

**National payroll employment by Federal Reserve District
2009 - 2016**

- Economic downturn began in 2008
- Turnaround began in 2009
- Job recovery in the 11th District outpaced all other areas of the country
- Texas and the Dallas Metro area continue to experience strong growth

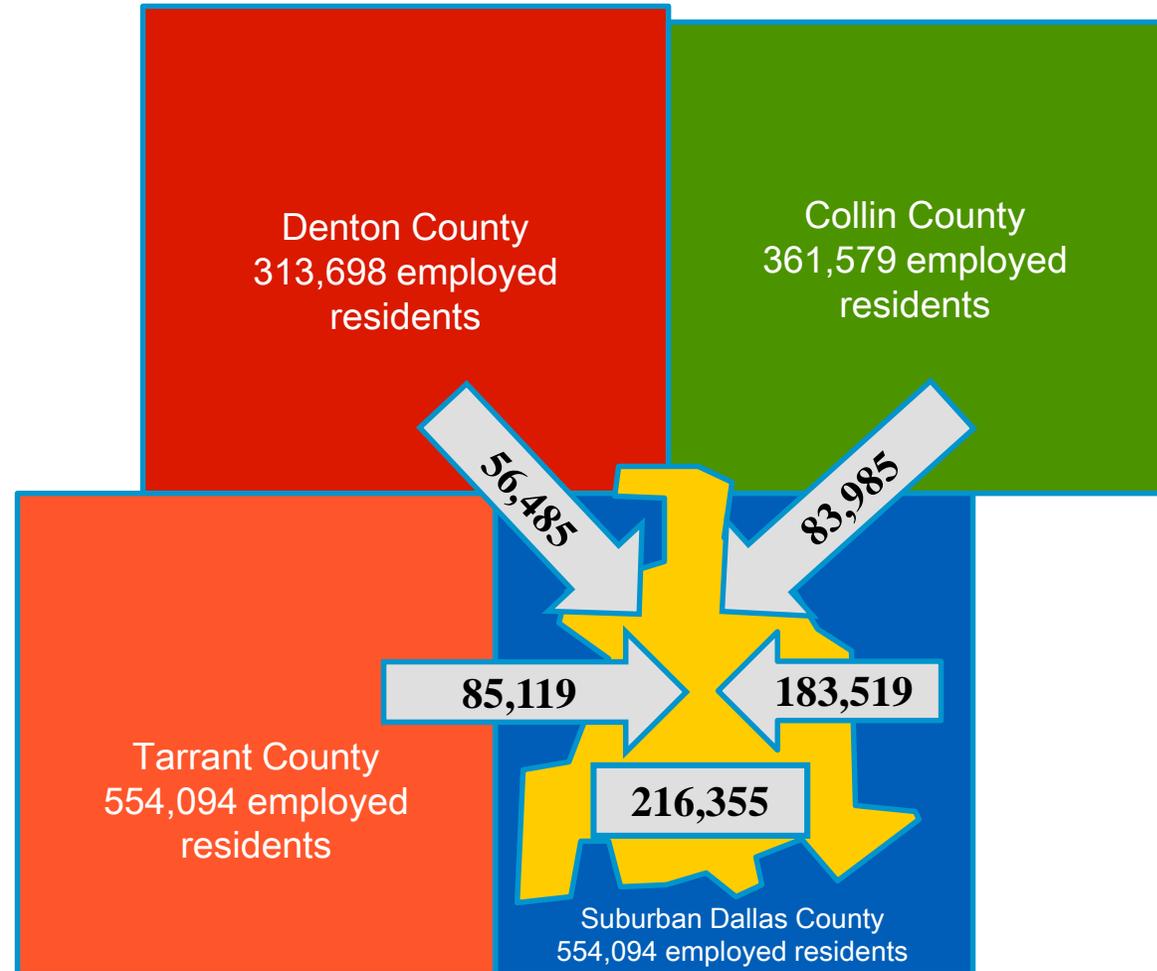
* Dallas Federal Reserve Bank, District 11, includes all of Texas and some portions of Louisiana and New Mexico

Dallas is the vibrant, urban core



Dallas must import talent to fill top jobs

- Dallas has well over 1 million jobs
- 625,000+ workers commute into Dallas every day to work
- 263,000 workers leave Dallas everyday to fill low-skill jobs



Economic Opportunity Gap

Despite the robust economy, the poverty rate in Dallas **increased by 42%** from 2000 - 2014

Strong economy has left many residents behind

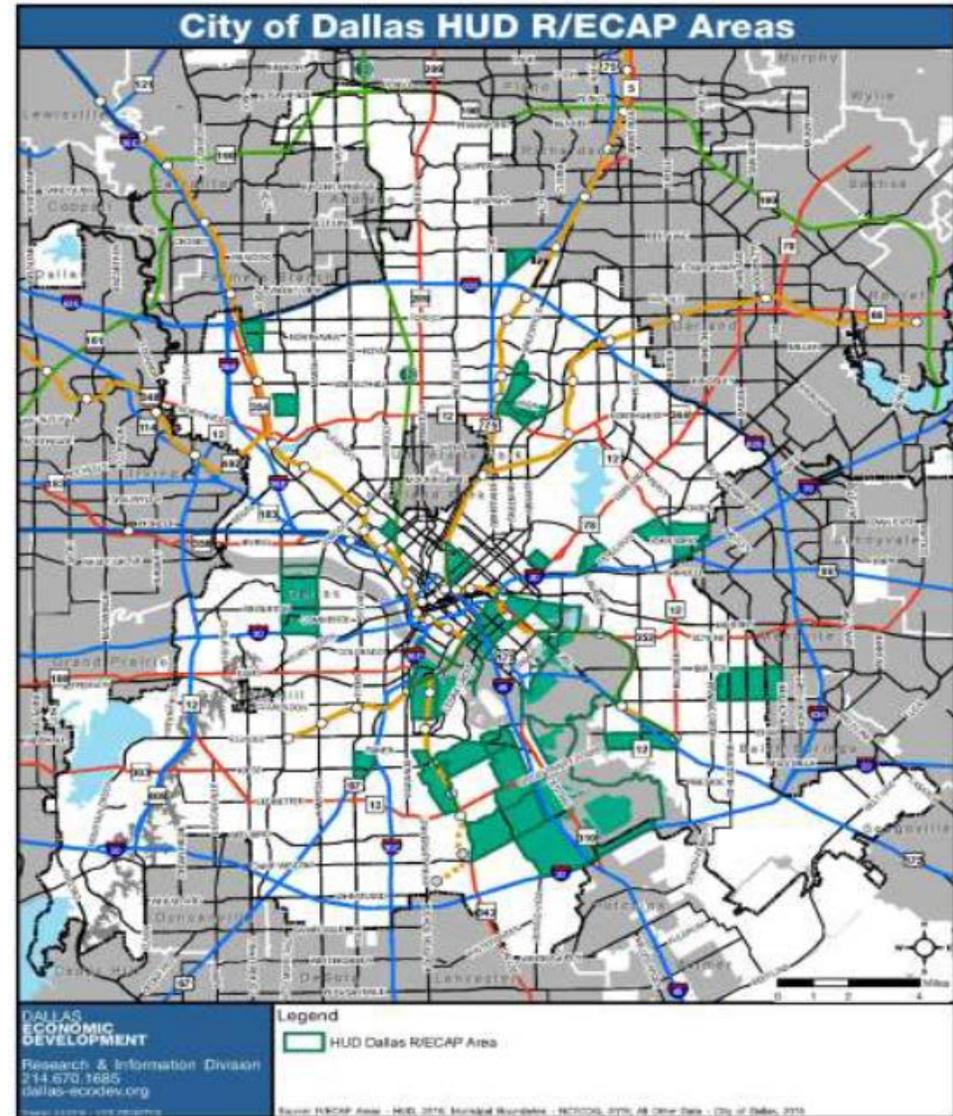
- 39% of households in Dallas live in asset poverty
- 45% of households with children live in asset poverty

Unemployed and underemployed people often lack the skills/training necessary to prosper in this strong economy

HUD R/ECAP

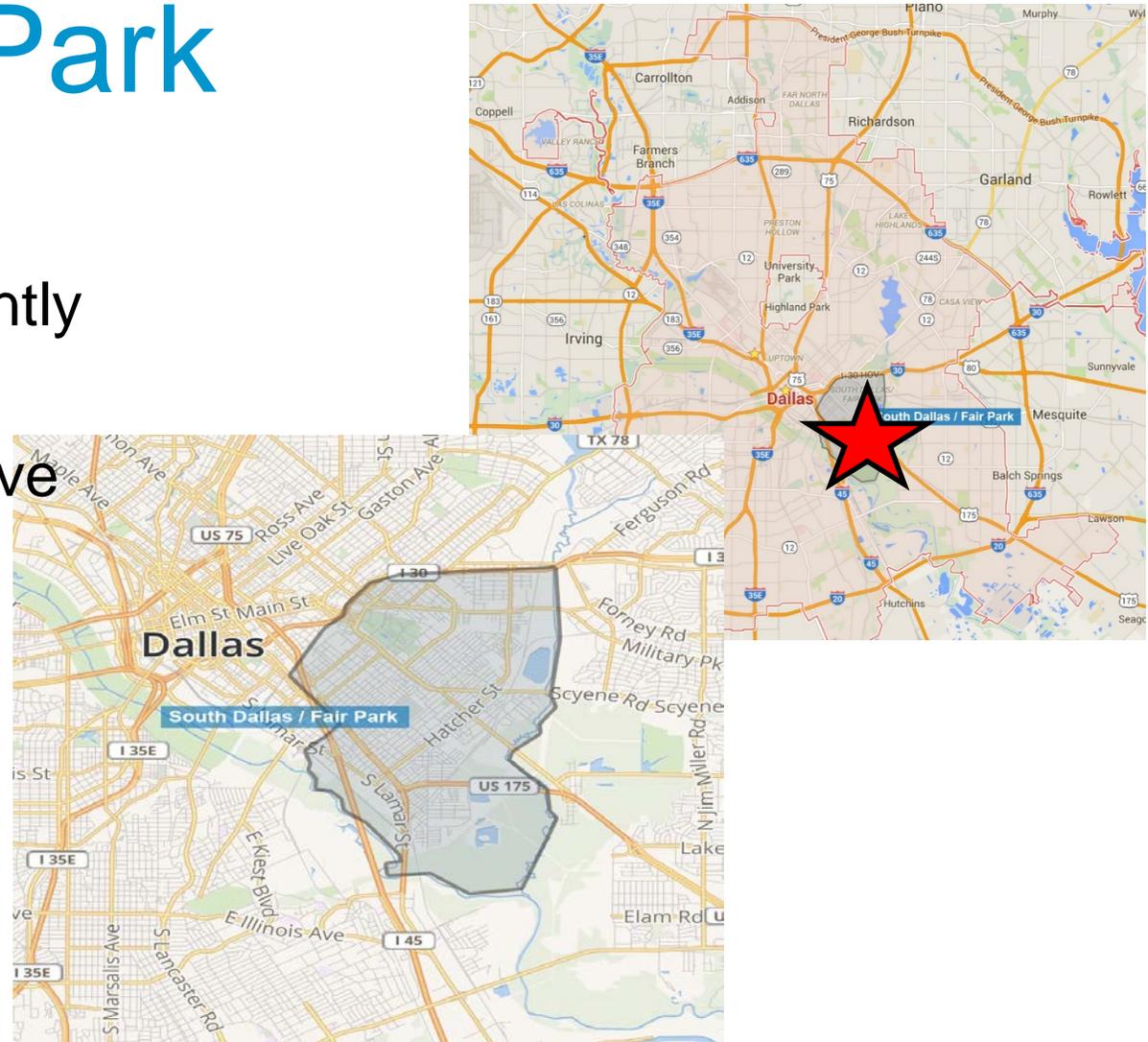
- 122,330 people, 55% are families
- Unemployment rate is 13%
- Adults not in the workforce can exceed 30% in some census tracts
- Per capita income is \$12,291

Challenges of education attainment, skills gap, language barriers, limited transportation options, and childcare costs have left many Dallas residents behind



South Dallas/Fair Park

- Unemployment rate of 18.5%
- Over 60% of adults are not currently employed
- Less than 8% of the residents have a bachelor's degree or higher
- Per capita income is \$12,263
- 35% of families with children live below the poverty level
- Population decline of 24% from 2000 - 2014



Discovery Area – Inclusive Economy

Understand how the robust North Central Texas economy can be more inclusive and provide market-driven opportunities to residents who have been left behind during this remarkable period of prosperity.

Proposed Diagnostic Questions

- What are proven, best practices for Dallas to consider for building an inclusive economy?
- What are the barriers and impediments that prevent some Dallas residents from finding living wage employment opportunities?
- How can we improve or adjust our existing practices, policies and funding priorities to expand economic opportunity and build economic resilience for Dallas residents?
- What programs, partnerships and collaborations can we build on to ensure all residents who want to obtain living wage employment have the skills and training opportunities necessary?

Health care in Dallas



Improving Public Health

3 essential factors for improving public health

- Health literacy - knowing when to go to a doctor and how to care for yourself or your family
- Access to healthcare through insurance coverage
- Having a medical home - doctors and clinics available in your neighborhood or in a location accessible by transit

Disparity in Health Care

Report: Texas has the highest number of uninsured Hispanic kids in the country

About two out of three of uninsured Hispanic children are eligible for Medicaid or CHIP but not enrolled.



Learn more: <http://bit.ly/1ZvbIUz>

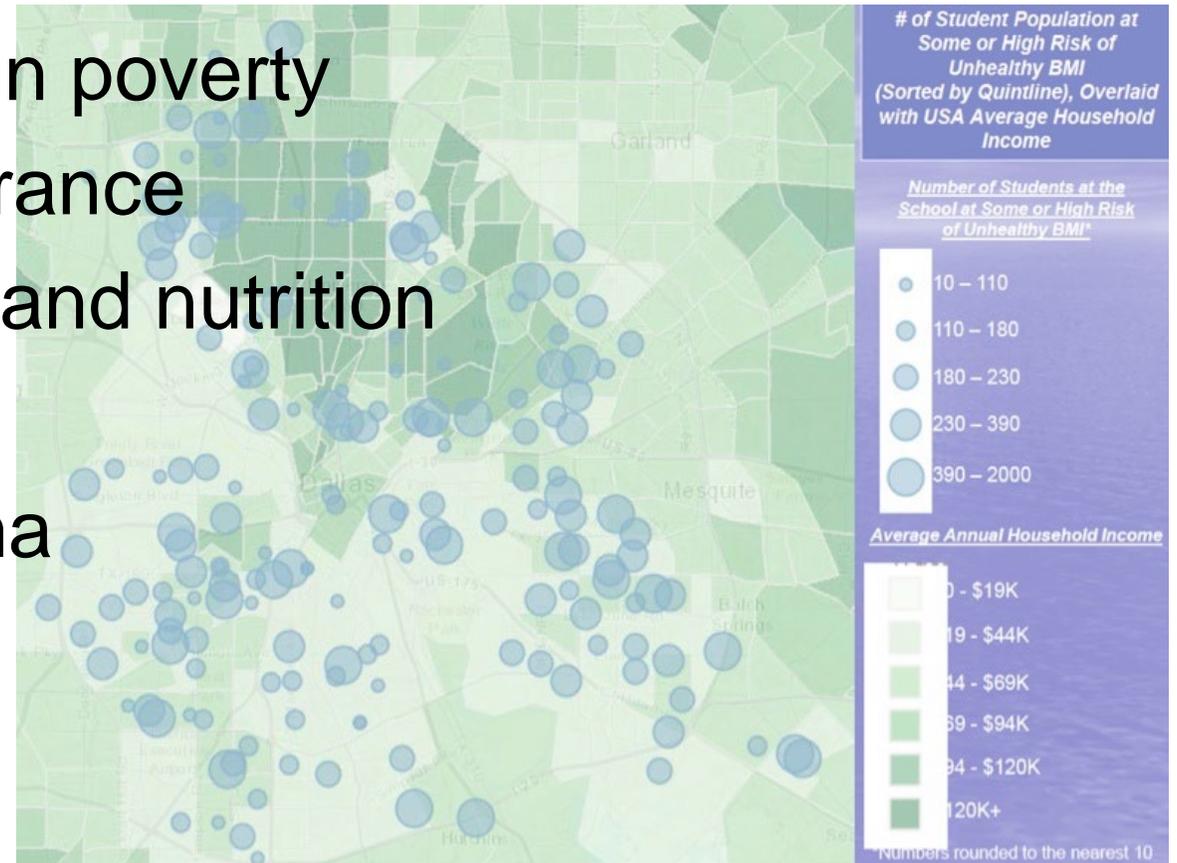
Community Need Index

Aggregates a number of socioeconomic risk factors

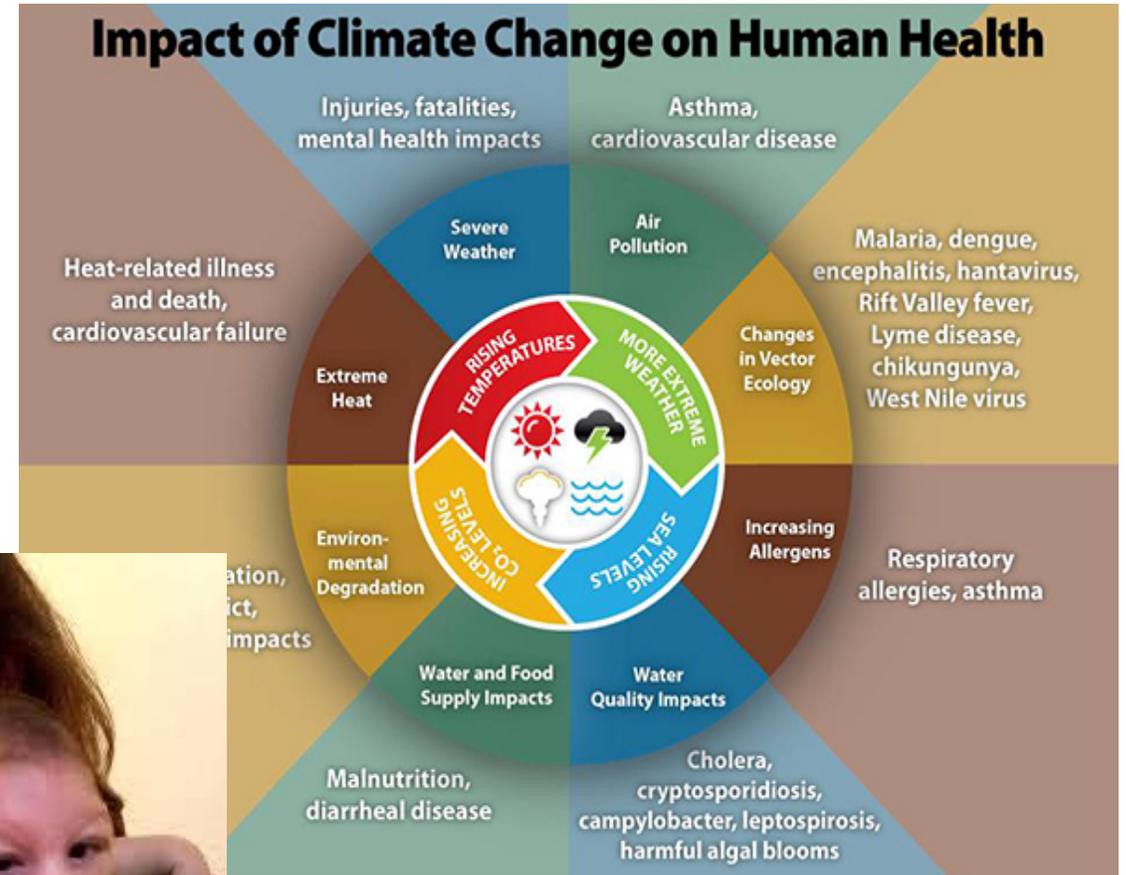
- Poverty
- Educational attainment
- Racial/ethnic minorities
- Limited English proficiency
- Unemployment
- Lack of health insurance

Growing up poor in Dallas

- 38% of Dallas children live in poverty
- 20% don't have health insurance
- 28% have inadequate food and nutrition
- 160,000 children are obese
- 60,000 children have asthma



Is Dallas vulnerable to a disease outbreak?



Dallas Fire and Rescue

- \$250M annual operating budget
- 83% of calls for service are not fires



Dallas Fire and Rescue

First line of defense in health care

- 1,200 highly-trained paramedics
- 43 ambulances
- 202,000 runs a year
- 69,000 runs to Emergency Rooms
- Average cost is \$1575



Health Deserts

60% of Emergency Room visits could be more appropriately handled in by a primary care physician



Discovery Area – Public Health

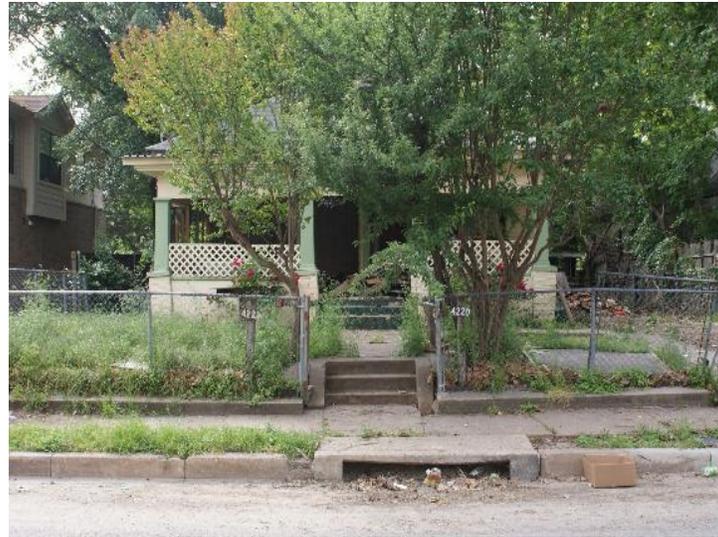
How can Dallas make a meaningful contribution to improving public health outcomes for Dallas residents?

What are the opportunities for partnerships and collaborations to improve public health outcomes for Dallas residents?

Proposed Diagnostic Questions

- How our resources and assets be used to improve health care literacy in neighborhoods with inadequate health care services?
- How can emerging best practices, such as those in tele-medicine and virtual care, be utilized in areas with inadequate health care services?

The 21st Century Infrastructure



The Edge in Amsterdam



Sensors in bridges and infrastructure

Is this the 'safest bridge in America?' - CNN.com - Google Chrome

www.cnn.com/2010/TECH/innovation/07/30/minneapolis.bridge.sensors/

CNN Tech » Gadgets | Cyber Security | Innovation Nation

Part of complete coverage on **BUILDING UP AMERICA**

Is this the 'safest bridge in America?'

By Thom Patterson, CNN
October 15, 2010 7:23 p.m. EDT | Filed under: [Innovation](#)



The new I-35W bridge opened in 2008, just eleven months after the original bridge fell into the Mississippi River. The new bridge is expected to last at least 100 years.

New I-35W bridge: Minneapolis, Minnesota HIDE CAPTION

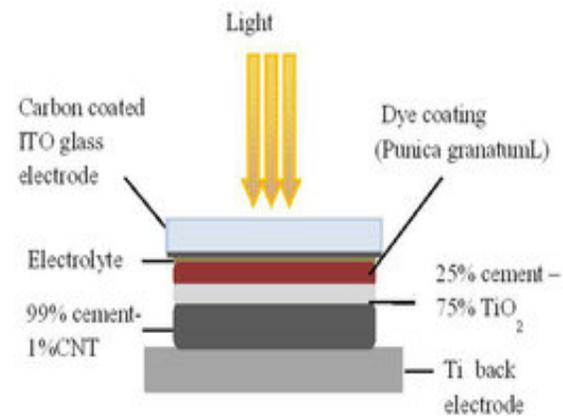
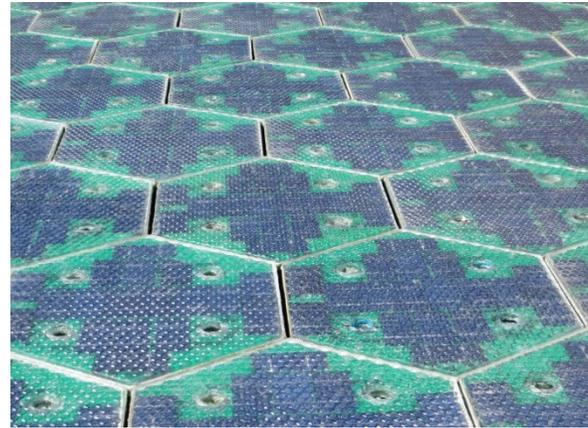
1 2 3 4 5 6 7 8 9 10 11 12 13 >



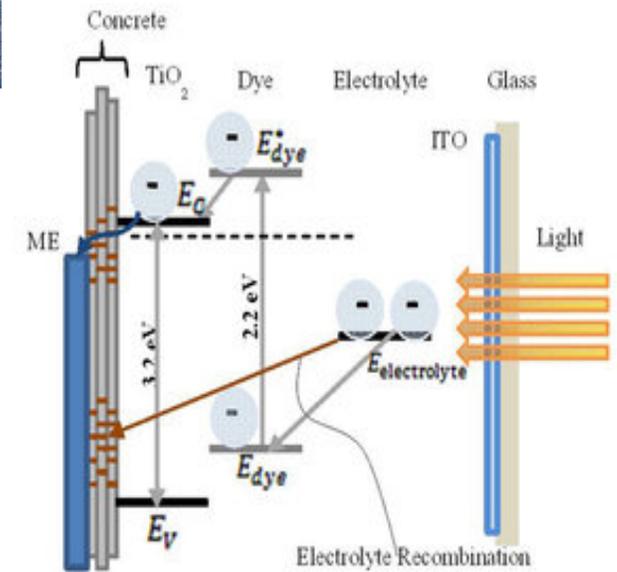
Solar Energy



Solar Panels



German researchers studying photovoltaic concrete



Proposed Diagnostic Questions

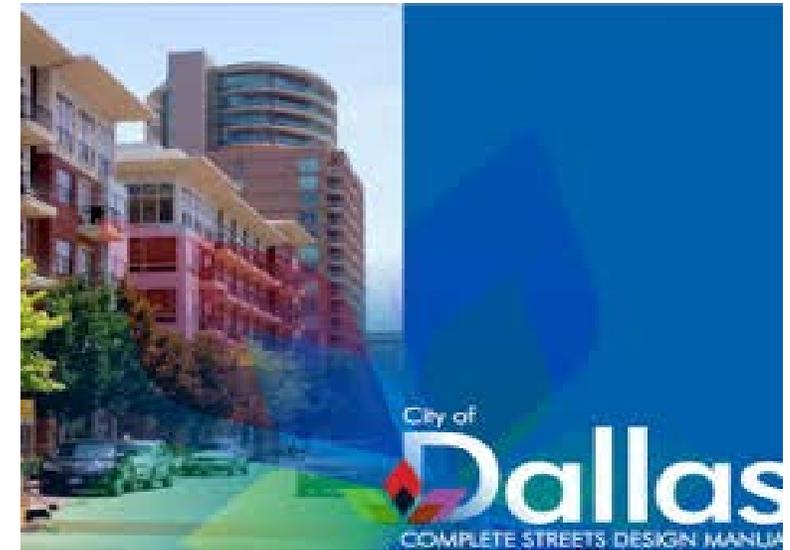
- What is the 21st century standard for basic infrastructure in Dallas neighborhoods?
- What are the long-term financial commitments, funding mechanisms, and policies necessary to build and maintain a 21st century Neighborhood Standard?
- How can city and other governmental resources be prioritized and strategically deployed to serve as a catalyst for private investment and development?

Proposed Diagnostic Questions

- How does climate change affect our most significant natural resources and other critical infrastructure, such as the Great Trinity Forest, flood control systems and water resource supply?
- What are the latest studies, best practices, and emerging technologies that Dallas can examine to understand how our natural and built environment must adapt to the changing climate?



Progress towards Urban Mobility



Mobility options are expanding

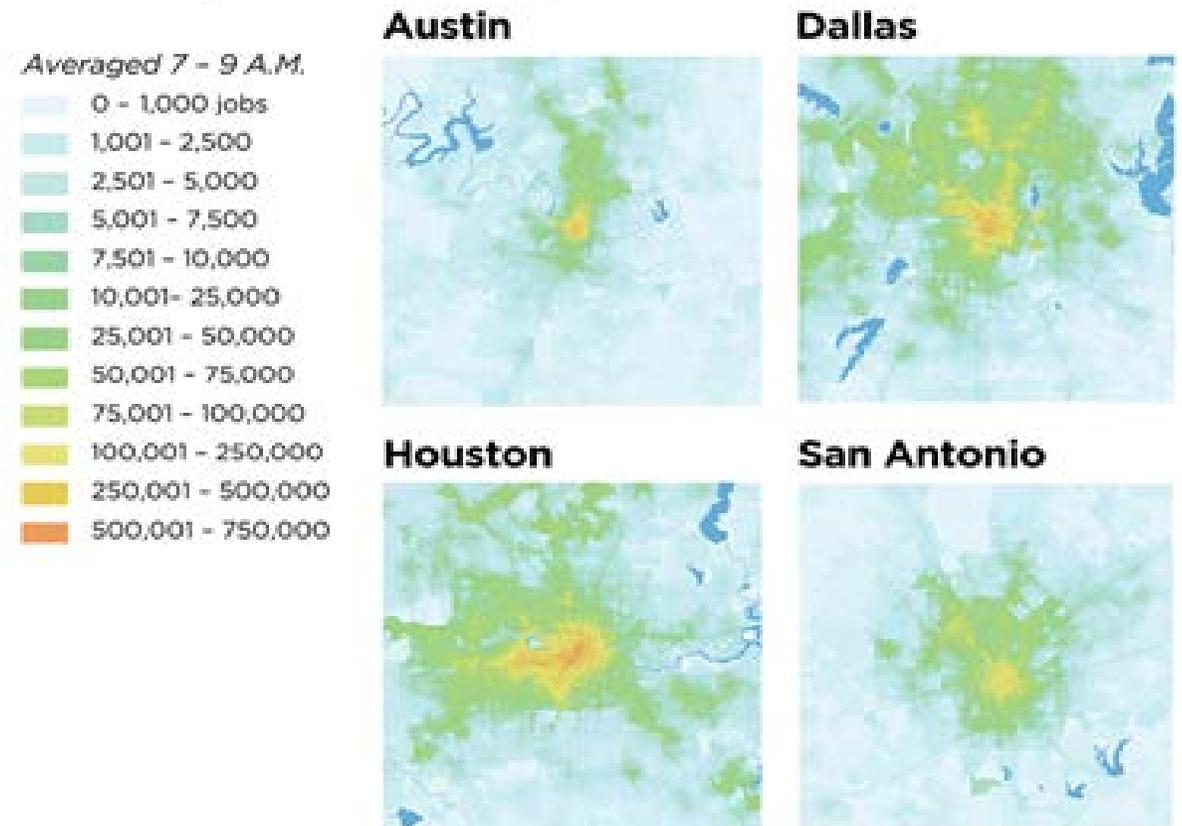


Mobility, Jobs, and Housing

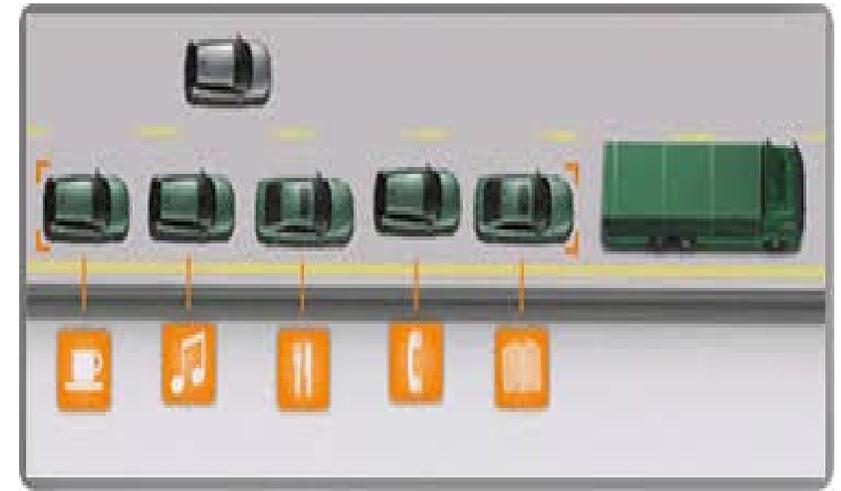
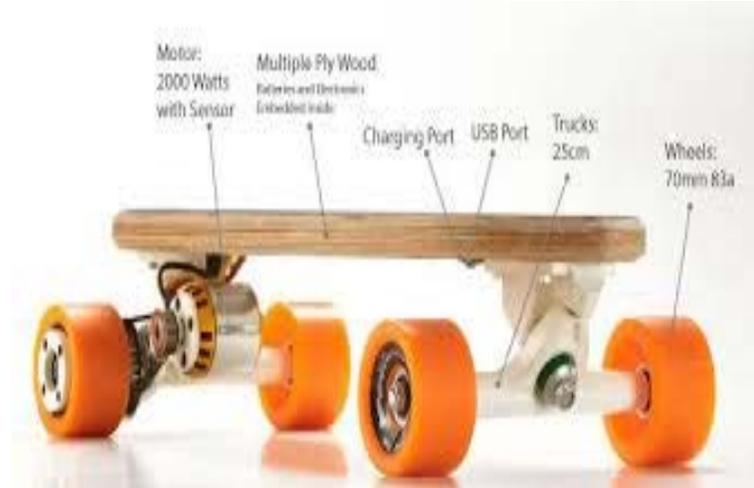
- The Metroplex ranks 5th nationally in jobs
- Less than 20% of jobs are accessible by transit in less than 90 minutes
- More than 70% of HUD assisted properties are considered **unaffordable** when housing costs and transportation costs are combined

Jobs within 30 minutes by transit

Most of Dallas' jobs accessible by transit within 30 minutes are in downtown and surrounding areas, though some suburbs have job centers near public transportation routes. But while the Dallas-Fort Worth region as a whole ranks fifth nationally in terms of the number of jobs, it ranks 21st in how many of them can be reached by transit in under one hour.



Defining a 21st Century Urban Mobility



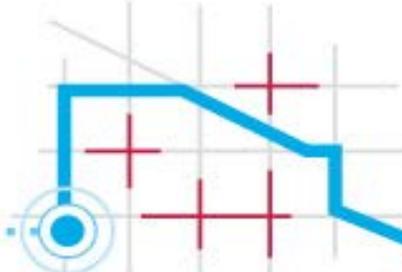
Role of Technology in Mobility

THE INTERNET OF CARS



1

You call your (autonomous driving) car to pick you up



2

You enter your destination and are dynamically routed to work based on traffic flows through the system

4

You are connected to everything you need while you travel in a car personalized for you



3

Your car travels down an automated roadway with platooned vehicles



5

You are dropped off at the doorstep and the car parks itself

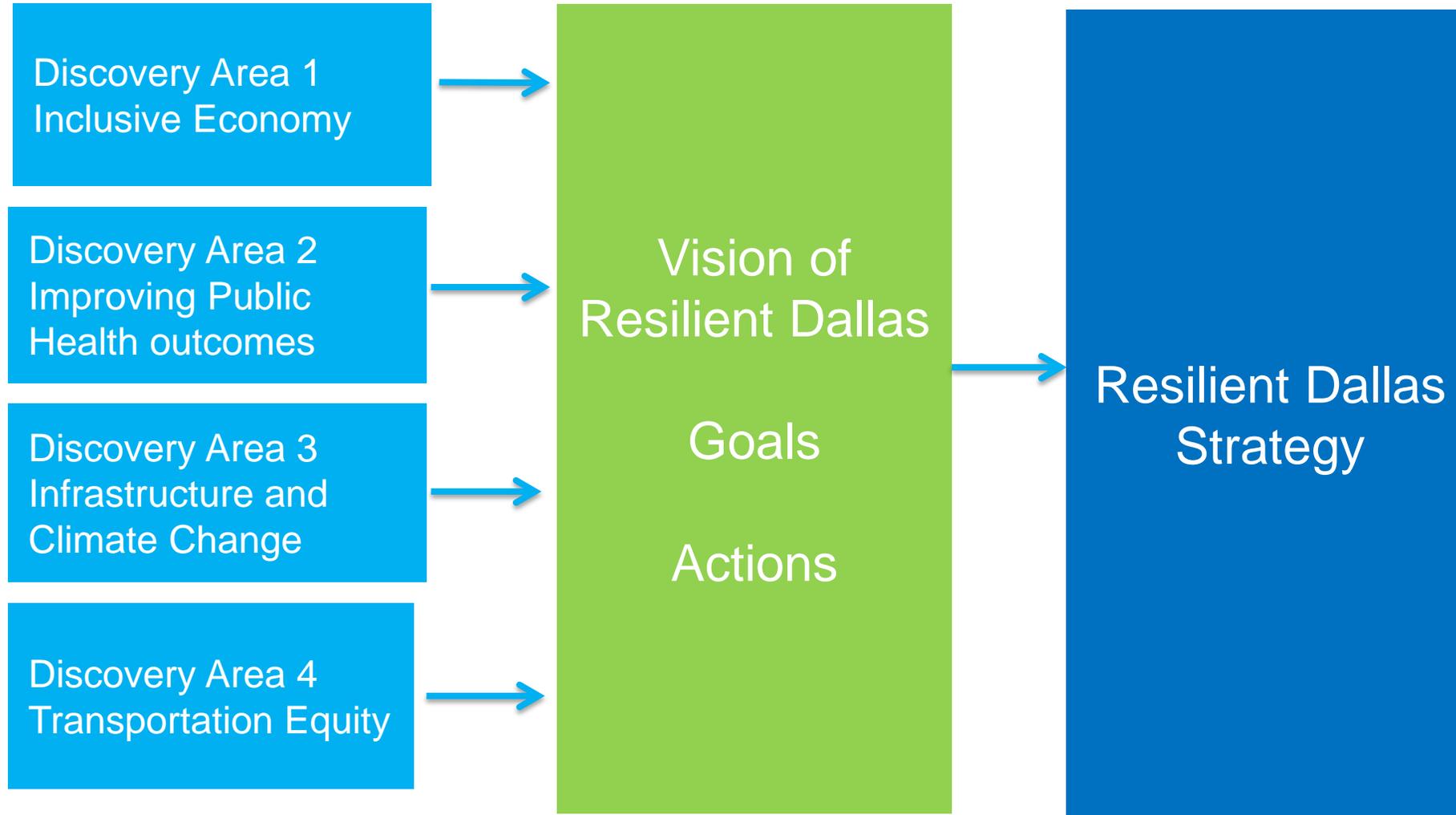


Discovery Area – Urban Mobility

What is the 21st century Urban Mobility for Dallas and the Metroplex?

How can we leverage the regional transportation investments to build mobility infrastructure, expand mobility options, improve transportation equity?

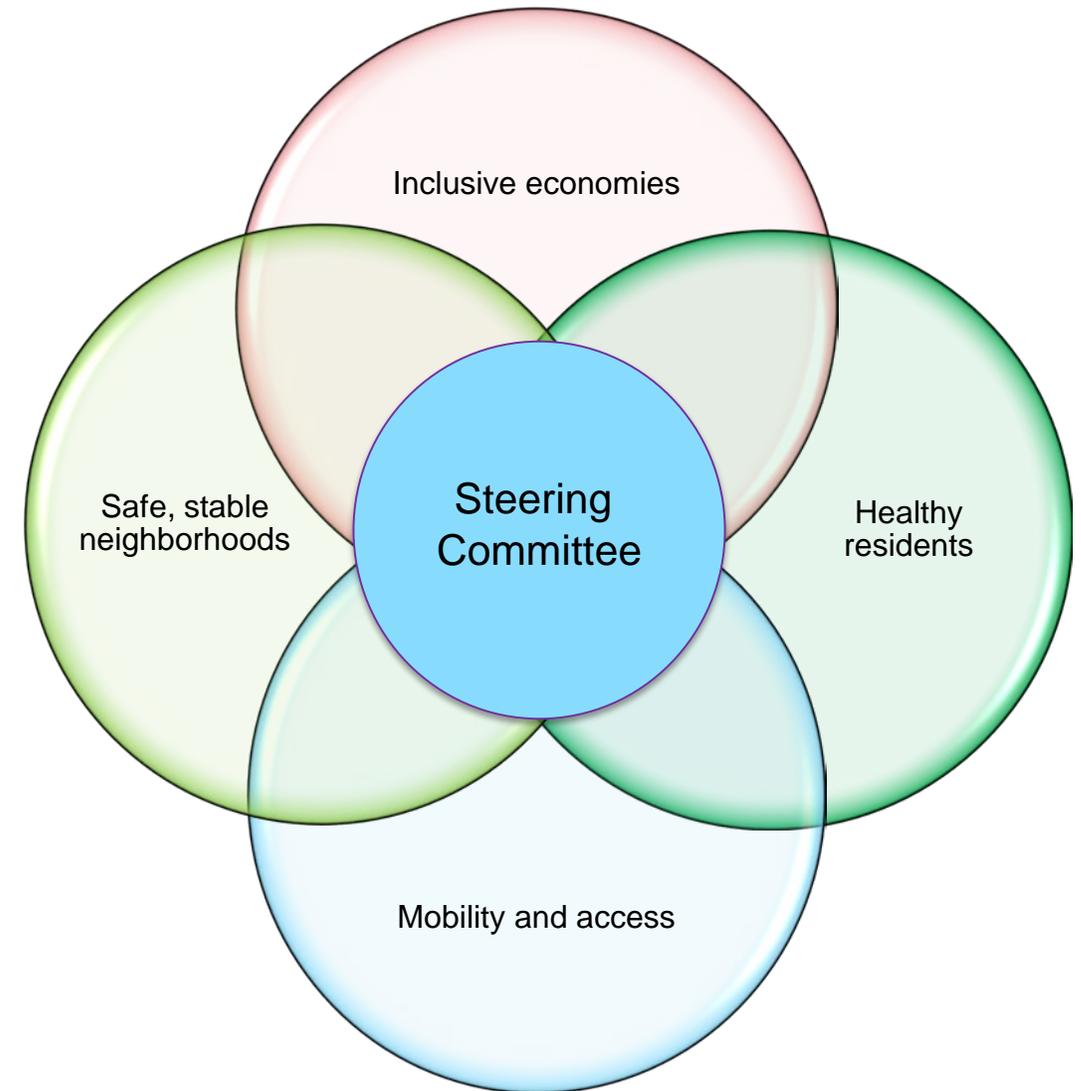
What happens during Phase II?



Phase 2 Work Model

4 working groups representing the four discovery areas

1 steering committee to insure interconnectedness between each discovery area is represented in the Resilient Dallas Strategy



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