THE GLOBAL IMPACT OF THE CONCEPT OF
POPULATION HEALTH
ON THE DESIGN OF HEALTH NETWORKS + HEALTH FACILITIES

RESEARCH BASED DESIGN
Fundamental to Architectural Excellence
While Advancing Population Health

BALLINGER

Louis A. Meilink, Jr., AIA, ACHA, ACHE

- Principal with 29 Years of Diversified Healthcare Experience
- 2 Pebble Projects with The Center for Healthcare Design
- Kansas State – Class of '87

Debbie Phillips, AIA, ACHA, EDAC

- Senior Healthcare Planner
- Accredited in Healthcare Planning and Evidence Based Design
- Aggie – Class of '85

TODAY'S AGENDA

- ABOUT BALLINGER

- RESEARCH/EVIDENCE BASE DESIGN

- TODAY'S HEALTHCARE LANDSCAPE

- POPULATION HEALTH

- THE EVOLVING QUADRUPLE AIM

- ARCHITECTS' ROLE IN PUBLIC HEALTH

ABOUT BALLINGER

ABOUT BALLINGER

- Founded in 1878

- 225 Architecture + Engineering + Interiors Professionals in Single Office in Philadelphia

- Collaborative, Client Focused Approach

- Principal Involvement

- Integration of Planning, Design + Technology; History of Innovation

- Design Excellence

- Health Science Initiatives: Clinical, Teaching, Research

225 ARCHITECTS, INTERIORS + ENGINEERS BASED IN PHILADELPHIA

ICONIC DESIGN & CLINICAL EXCELLENCE

NewYork-Presbyterian

Johns Hopkins University

Shore Memorial Hospital

Adelphi University

Cooper University Hospital

NYU Langone Medical Center / CUNY

Weill Cornell Medical Center

University of Wisconsin

George Washington University

ARCHITECTURE FOR HEALTH:
RECENT PROJECTS

Golisano Children's Hospital - 2015

University of Maryland Medical Center - 2014

Reading Hospital Medical Center - 2016

Penn Medicine, Lancaster General Health - 2013

RESEARCH/EVIDENCE BASED DESIGN

"Evidence-based design (EBD) is the process of basing decisions about the built environment on credible research to achieve the best possible outcomes."

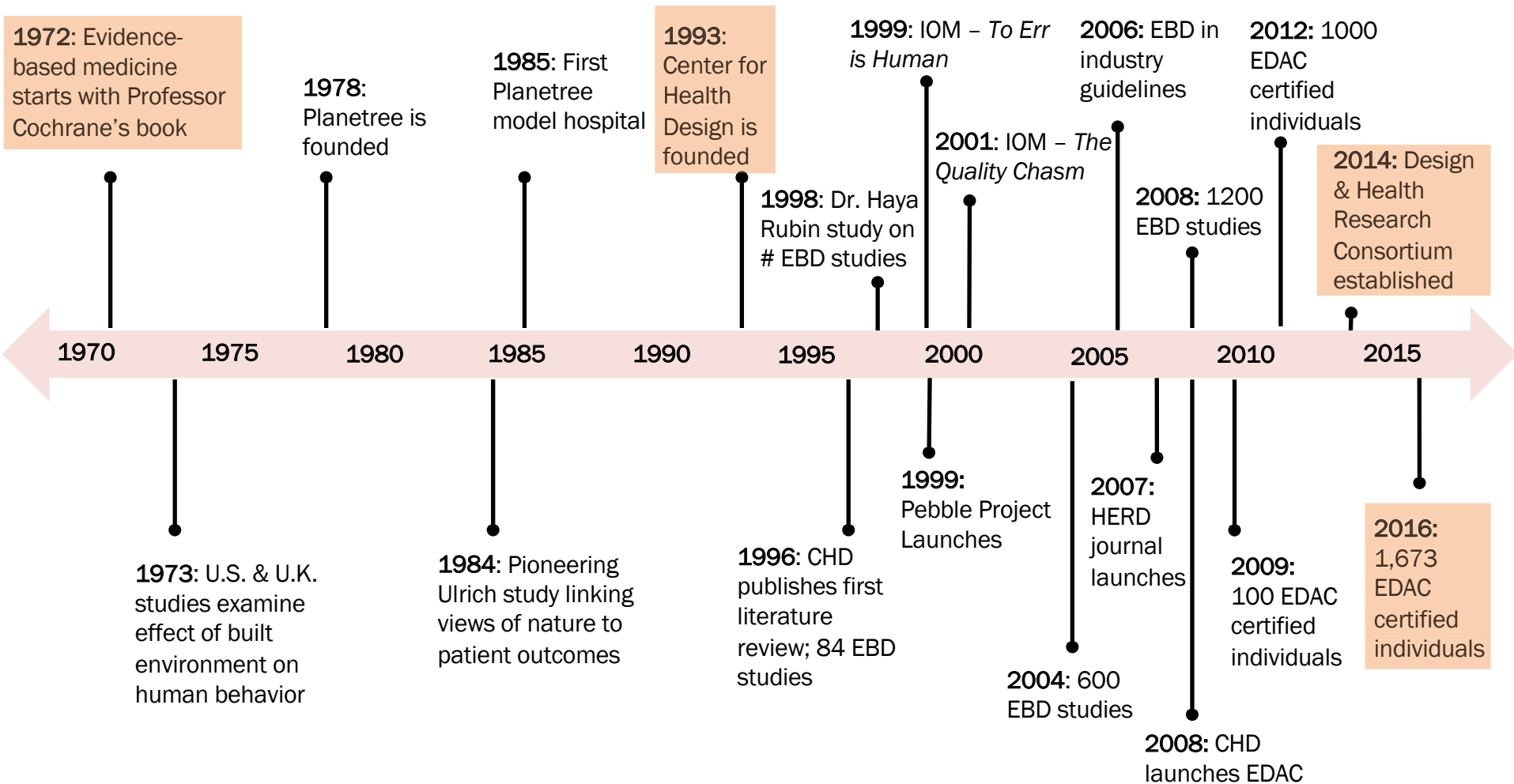- **The Center for Health Design, "Evidence-based Design Accreditation and Certification (EDAC),"** accessed 08/16/2012, http://www.healthdesign.org/edac/about.

RESEARCH BASED APPROACH

CODE

CODE REQUIREMENTS THAT ORIGINATED AS EBD STUDIES

HAND WASHING SINKS IN PATIENT ROOMS

ACOUSTIC REQUIREMENTS

VIBRATION REQUIREMENTS

PATIENT HANDLING AND MOVEMENT ASSESSMENT

LARGER SINGLE ROOMS   **CODE 2006 (3.1.1.1 CAPACITY)**

BARIATRIC DESIGN

BEST PRACTICE

COMMON HOSPITAL BEST-PRACTICES THAT ORIGINATED FROM PUBLISHED RESEARCH

ACUITY ADAPTABLE ROOMS

LARGER WINDOWS

LARGER PATIENT BATHROOMS WITH DOUBLE DOOR ACCESS

CEILING MOUNTED LIFTS

INHANCED INDOOR AIR QUALITY

DECENTRALIZED NURSING SUBSTATIONS

HAND-HYGIENE FACILITIES

LARGER SINGLE ROOMS

MEDICATION TASK AREA LIGHTING

NOISE-REDUCING MEASURES

ENERGY DEMAND REDUCTION

WATER DEMAND REDUCTION

ELECTRONIC INTENSIVE CARE UNIT

HEALING ART

RESEARCH (EBD)

EBD DESIGN FEATURES MOST EFFECTIVE IN IMPROVING PATIENT OUTCOMES*

ACCESS TO NATURE

ACCESS TO DAYLIGHT AND SUNLIGHT

HEPA FILTERS

SOUND ABSORBING CEILING TILES

CEILING LIFTS

SINGLE BED PATIENT ROOMS   **EBD 1990'S**

VISIBLE AND ACCESSIBLE HAND WASHING SINGS AND DISPENSERS

DECENTRALIZED NURSING STATIONS

FAMILY AREAS WITHIN PATIENT CARE SPACES

STAFF RESPITE SPACE

VIEWS OF NATURE

DECENTRALIZED SUPPLIES

* ACCORDING TO META RESEARCH BY JOSEPH ET AL. Anjali Joseph, Xiobe Quan, Amy Keller. "Top 10 Evidence Based Design Features that Improve Healthcare Outcomes." Center for Health Design.

Sadler et al, "Fable Hospital 2.0: The Business Case for Building Better Health Care Facilities," Hastings Center Report 41, no. 1 (2011): 13-23.

HISTORY OF EVIDENCE BASED DESIGN

1972: Evidence-based medicine starts with Professor Cochrane's book

1978: Planetree is founded

1985: First Planetree model hospital

1993: Center for Health Design is founded

1999: IOM – *To Err is Human*

2006: EBD in industry guidelines

2012: 1000 EDAC certified individuals

2001: IOM – *The Quality Chasm*

1998: Dr. Haya Rubin study on # EBD studies

2008: 1200 EBD studies

2014: Design & Health Research Consortium established

1970   1975   1980   1985   1990   1995   2000   2005   2010   2015

1973: U.S. & U.K. studies examine effect of built environment on human behavior

1984: Pioneering Ulrich study linking views of nature to patient outcomes

1996: CHD publishes first literature review; 84 EBD studies

1999: Pebble Project Launches

2007: HERD journal launches

2009: 100 EDAC certified individuals

2016: 1,673 EDAC certified individuals

2004: 600 EBD studies

2008: CHD launches EDAC

Adapted from Center for Health Design

TODAY'S HEALTHCARE LANDSCAPE

NATIONAL HEALTH EXPENDITURES 2015($Billion)

$293
OTHER*
9%

$223
NET COST OF HEALTH INSURANCE
7%

$106
OTHER RETAIL
4%

$328
RX DRUGS
10%

$167
LONG-TERM CARE
5%

$87
HOME HEALTH
2%

$159
OTHER PERSONAL & RESIDENTIAL CARE
5%

$1,031
HOSPITAL CARE
32%

$850
PROFESSIONAL SERVICES
26%

$3T TOTAL

17% OF GDP GROWING TO 20% GDP BY 2020

*Other = Government administration + Government public health activities + Investment (noncommercial research, structures and equipment)

NATIONAL HEALTH EXPENDITURES: WHO'S PAYING?
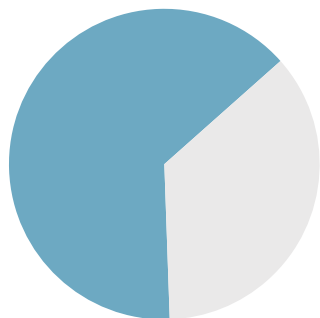
64% COST OF CARE BY GOVERNMENT

36% COST OF CARE BY PRIVATE INSURANCE

- *48% FOR MEDICARE, MEDICAID, AND VA*
- *6% FOR GOVERNMENT COVERAGE OF PRIVATE INSURANCE FOR EMPLOYEES*
- *10% TAX SUBSIDIES FOR HEALTHCARE INSURANCE*

Source: American Journal of Public Health - 2016

POPULATION HEALTH VS. UNBUNDLED CARE: CHALLENGE/TENSION

THE GOVERNMENT *WANTS TO BUNDLE PAYMENTS TO GAIN ACCOUNTABILITY FOR ENTIRE TREATMENT.*

PRIVATE INSURERS *WANT TO PAY BY SERVICE.*

Payer

Lump Sum Payment Drives Coordination
Through Shared Accountability

Physician Services   Hospital Services   Post-Acute Services

Payer

Individual Payments Minimize Coordination
Between Different Providers

Physician Services   Hospital Services   Post-Acute Services
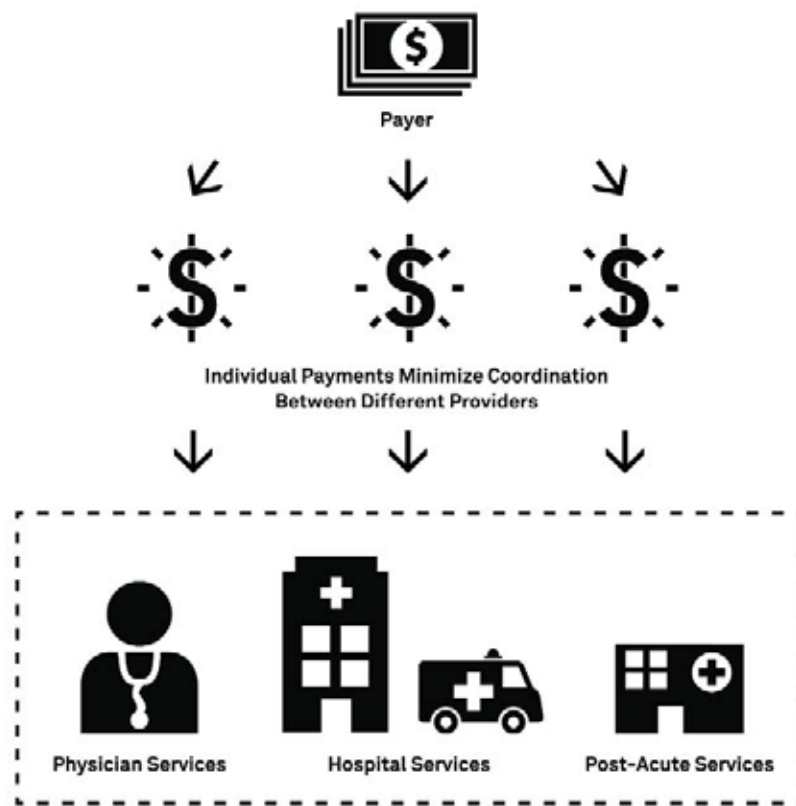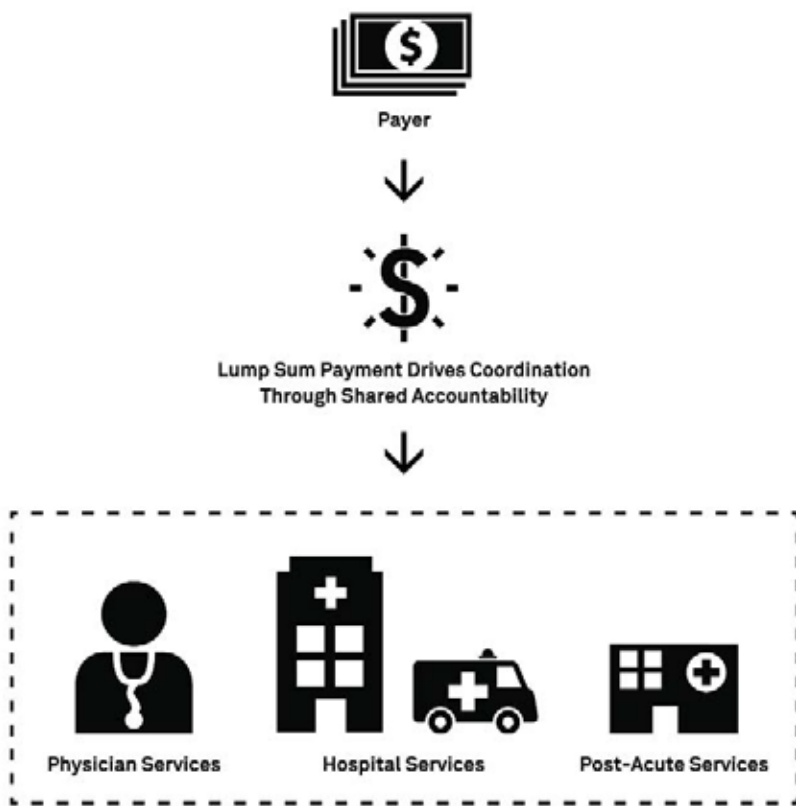
"THE PIE IS GETTING SMALLER AND THE TABLE MANNERS ARE GETTING WORSE."

- The Advisory Board

DISTRIBUTION OF COSTS

ACCOUNTS FOR
HALF
OF HEALTH SPENDING

5% OF THE POPULATION

PATIENTS	SPENDING
1%	21.8%
4%	27.7%
15%	31.7%
30%	15.9%
50%	2.9%

2/3 OF **ALL DEATHS** ARE CAUSED BY ONE OR MORE OF **5 CHRONIC DISEASES:**

- HEART DISEASE
- CANCER
- STROKE
- CHRONIC OBSTRUCTIVE PULMONARY DISEASE
- DIABETES

SOURCE: Centers for Disease Control and Prevention

THE EVOLVING HEALTHCARE LANDSCAPE

ADAPTABLE INFRASTRUCTURE

Well defined zones of pre-investment for infrastructure allow for **future flexibility where it is most needed.** It is cost prohibitive and ineffective to design all spaces with 100% flexibility.

PERFORMANCE BASED FUNDING

The American Affordable Care Act is **tightening the reins on reimbursements** through several initiatives (eg: Value-Based Purchasing program, Hospital Readmissions Reduction Program). Hospital Consumer Assessment of Healthcare Providers and Systems scores are also affecting reimbursements. **Quality of facilities has a positive impact** on these legislated initiatives.

HEALTH + PREVENTATIVE CARE

Evidence-Based Design of health facilities illustrates the importance of principles such as **quality of care and patient safety** on Population Health.

CHOICE + ACCESS

Today's patients and their families have access to information and choice about their care. Providing a **greater level of comfort and amenities** keeps institutions competitive. Hospital leaders are looking for innovative ways to **replace outdated** inpatient facilities, **repurpose existing buildings** and upgrade in place.

TECHNOLOGY

LEGISLATION

POPULATION HEALTH

CONSUMERISM

INFLUENCE OF ARCHITECTURE, PLANNING, + DESIGN
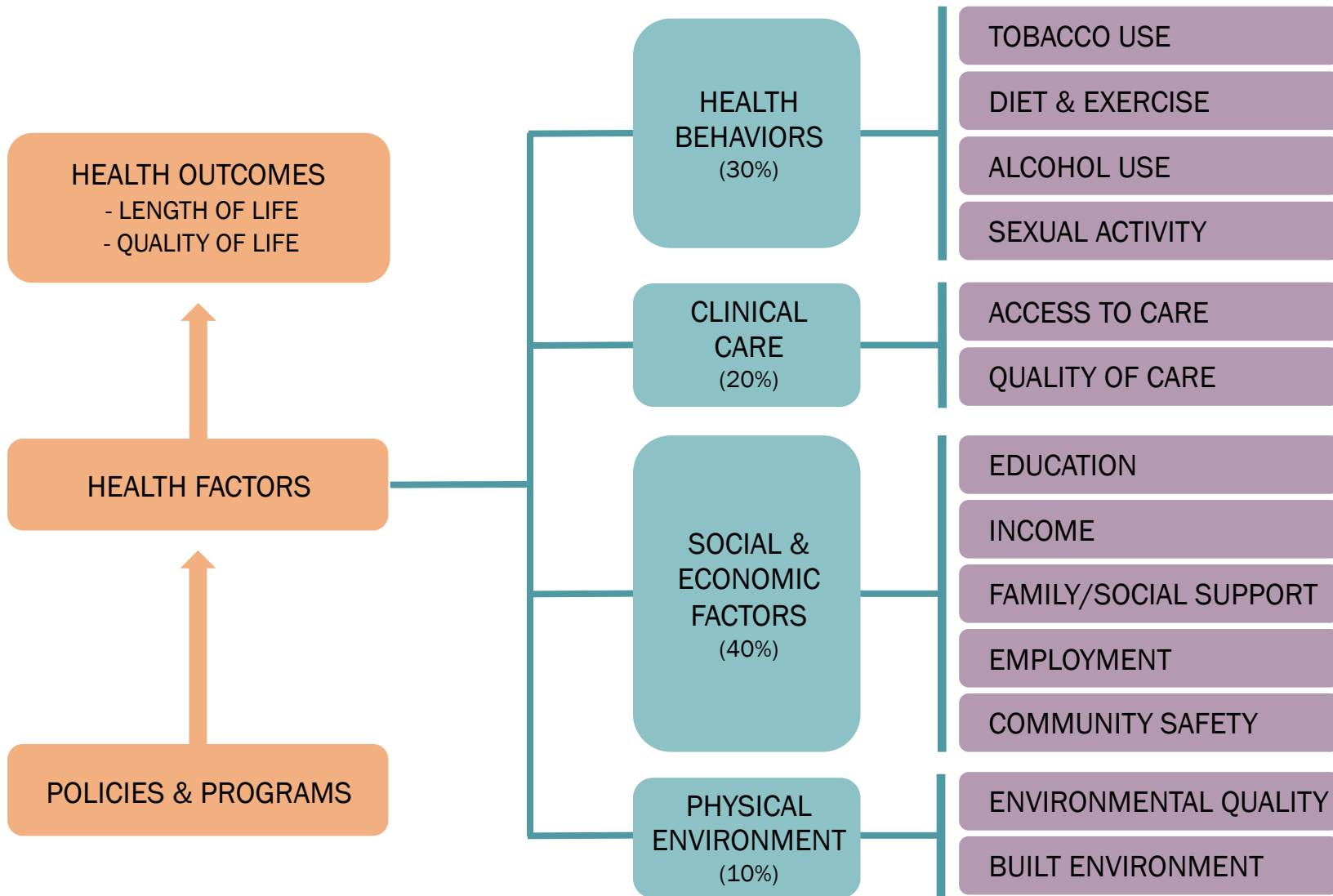
AGILITY

EFFICIENCY

DIVERSITY

POPULATION HEALTH

WHAT IS POPULATION HEALTH?

POPULATION HEALTH   THE HEALTH OUTCOMES OF A GROUP OF INDIVIDUALS, INCLUDING THE DISTRIBUTION OF SUCH OUTCOMES WITHIN THE GROUP *(Kindig & Stoddart)*

POPULATION HEALTH RESEARCH   THE STUDY OF HEALTH OUTCOMES, HEALTH DETERMINANTS, AND POLICIES AND INTERVENTIONS THAT LINK THE TWO IN EFFORTS TO IMPROVE POPULATION HEALTH AND AMELIORATE HEALTH DISPARITIES *(Kindig & Stoddart)*

IDEAS

CONCEPTS

GENERATIVE
LOOKING FOR NEW, UNTAPPED OPPORTUNITY SPACES, AND WHETHER SOLUTIONS EXIST FOR THEM

EVALUATIVE
NARROWING DOWN OR REFINING IDEAS THROUGH FEEDBACK FROM THE TARGET AUDIENCE

EXPERIENTIAL
TESTING & IMPROVING THE EXPERIENCE OF A NEW OR EXISTING PRODUCT/SERVICE

RESULTS
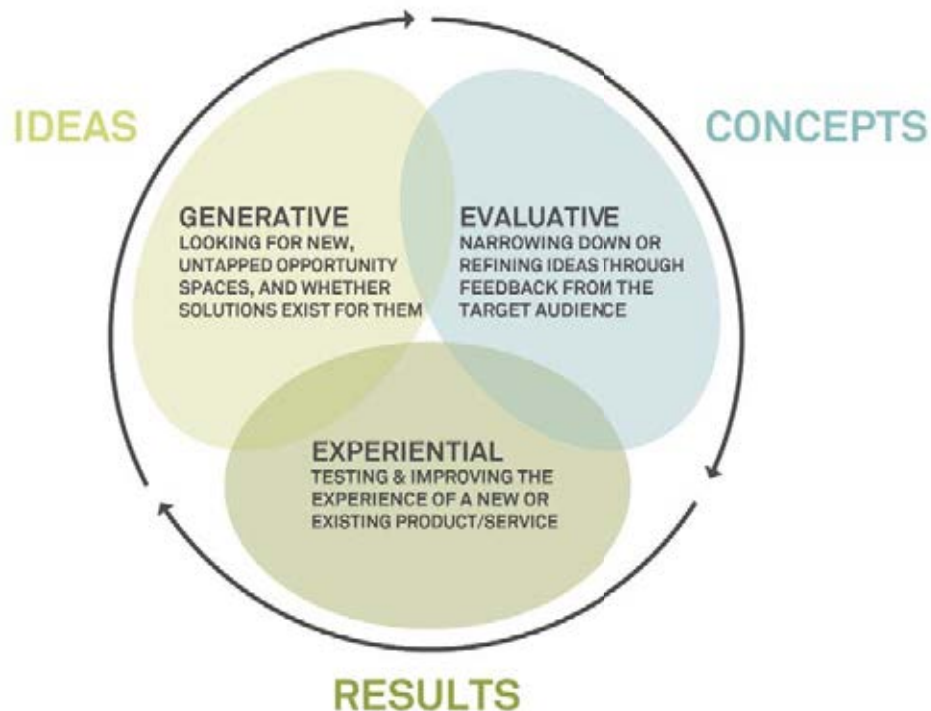
HEALTH DETERMINANTS VS OUTCOMES

HEALTH OUTCOMES
- LENGTH OF LIFE
- QUALITY OF LIFE

HEALTH FACTORS

POLICIES & PROGRAMS

HEALTH BEHAVIORS (30%)
- TOBACCO USE
- DIET & EXERCISE
- ALCOHOL USE
- SEXUAL ACTIVITY

CLINICAL CARE (20%)
- ACCESS TO CARE
- QUALITY OF CARE

SOCIAL & ECONOMIC FACTORS (40%)
- EDUCATION
- INCOME
- FAMILY/SOCIAL SUPPORT
- EMPLOYMENT
- COMMUNITY SAFETY

PHYSICAL ENVIRONMENT (10%)
- ENVIRONMENTAL QUALITY
- BUILT ENVIRONMENT

SOURCE: UNIVERSITY OF WISCONSIN POPULATION HEALTH INSTITUTE.
COUNTY HEALTH RANKINGS 2013

MEASURING SUCCESS

PHYSICAL HEALTH

- GREATER LIFE EXPECTANCY
- LOWER RATES OF CHRONIC DISEASE
- ACCESS TO HEALTHCARE
- BETTER SELF-REPORTED HEALTH

SOCIAL WELLBEING

- COMMUNITY ENGAGEMENT
- HIGHER LEVELS OF EMPLOYMENT
- LOWER RATES OF SMOKING
- LOWER RATES OF OBESITY

MENTAL HEALTH

- LOWER RATES OF DEPRESSION
- LOWER RATES OF SUBSTANCE ABUSE
- LOWER STRESS LEVELS
- GREATER ABILITY TO COPE

COST

- LOWER COST PER CAPITA
- LOWER INSURANCE PREMIUMS

ADVANCING POPULATION HEALTH WITH RESEARCH BASED DESIGN

RANK

1-60		
61-120		
121-181		
182-241		
N/A		
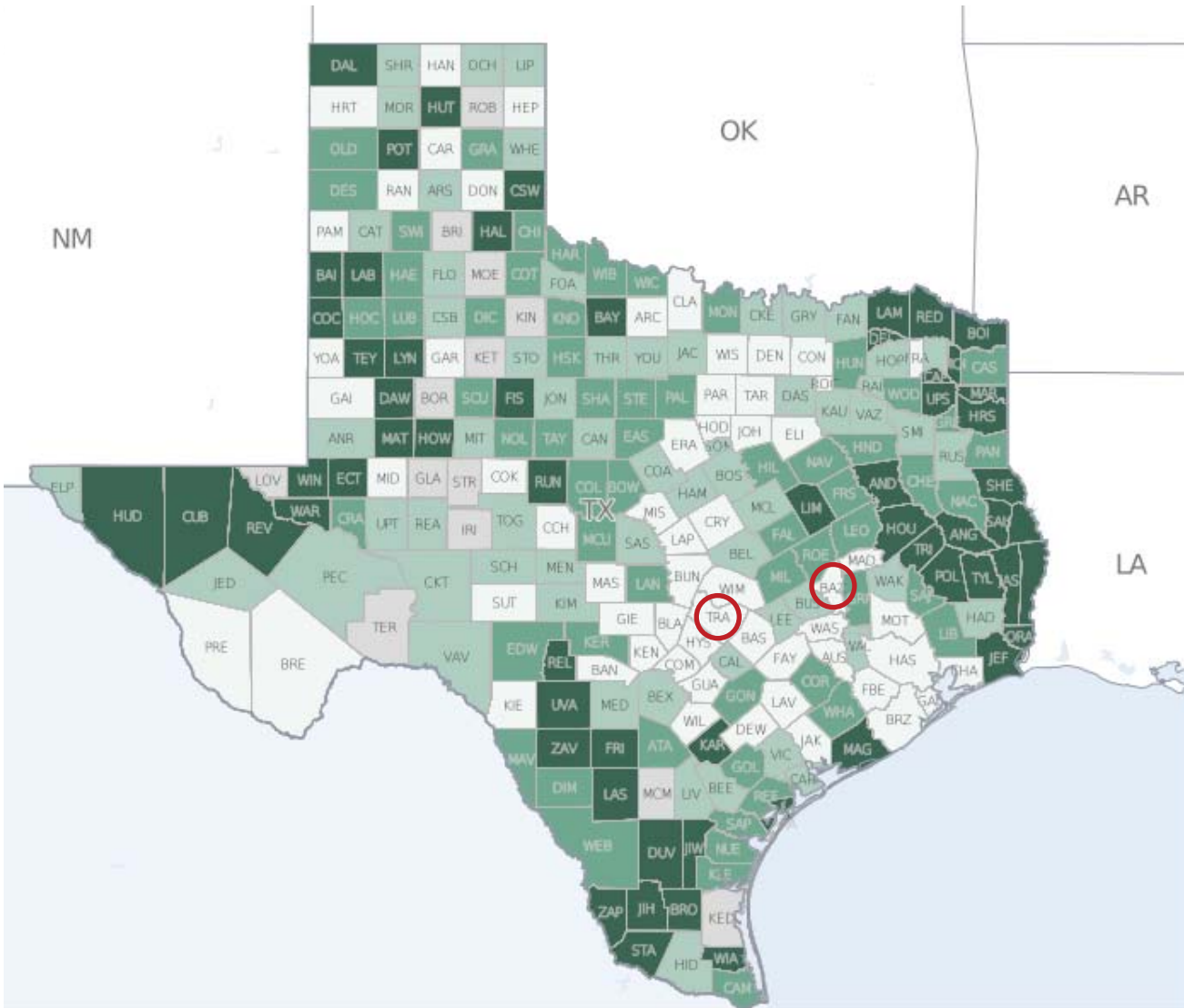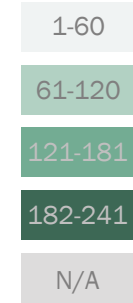
	TEXAS	BRAZOS (BAZ), TX	TRAVIS (TRA), TX
Health Outcomes		30	9
Length of Life		11	9
Premature death	6,600	5,100	4,900
Quality of Life		120	21
Poor or fair health	20%	20%	15%
Adult smoking	15%	16%	12%
Adult obesity	28%	26%	20%
Excessive drinking	17%	19%	23%
Alcohol-impaired driving deaths	32%	20%	35%
Teen births	52	25	41
High school graduation	88%	83%	87%
Children in poverty	25%	25%	23%
Violent crime	422	387	381

ADVANCING POPULATION HEALTH WITH RESEARCH BASED DESIGN

RANK   1-17   18-34   35-50   51-67
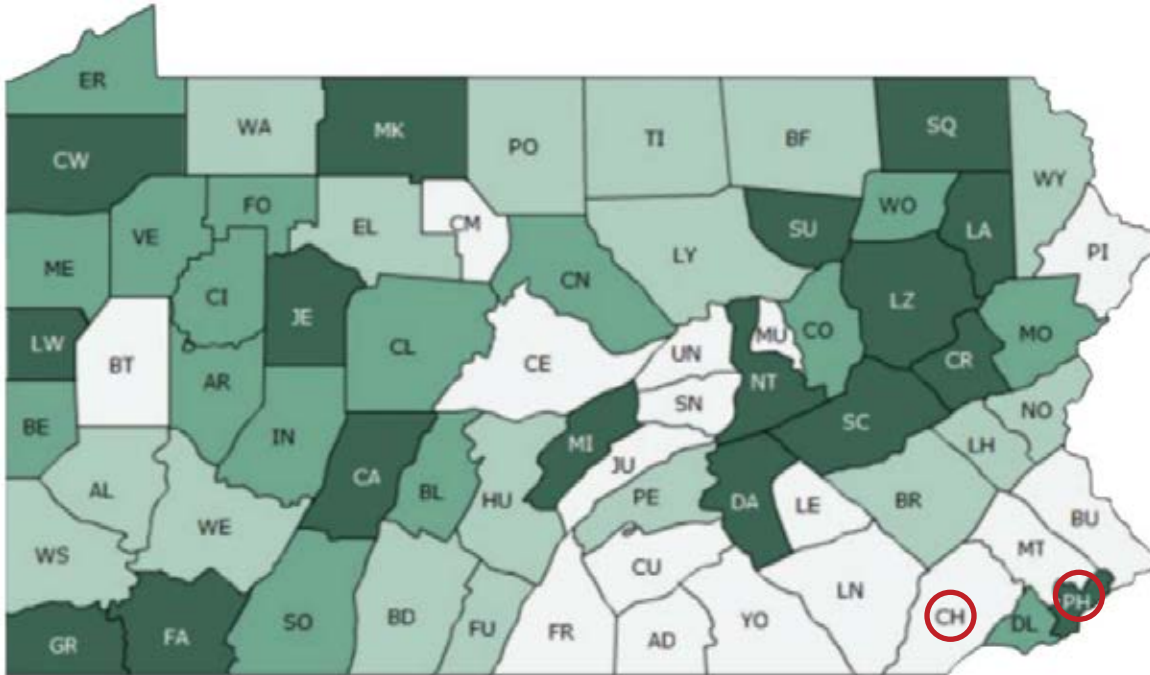
	CHESTER (CH), PA	PHILADELPHIA (PH), PA
Health Outcomes		
Length of Life		
Premature death	4,800	9,900
Quality of Life		
Poor or fair health	11%	23%
Adult smoking	14%	23%
Adult obesity	24%	29%
Excessive drinking	19%	19%
Alcohol-impaired driving deaths	44%	25%
Teen births	13	51
High school graduation	82%	72%
Children in poverty	9%	37%
Violent crime	165	1,190

WHAT IS THE AFFORDABLE CARE ACT?

ENACTED
MARCH 23, 2010

UPHELD
JUNE 28, 2012

2 PIECES OF LEGISLATION

- TO EXPAND HEALTH INSURANCE COVERAGE FOR AMERICANS
- HOLD INSURANCE COMPANIES ACCOUNTABLE
- LOWER HEALTHCARE COSTS
- GUARANTEE MORE CHOICE FOR CONSUMERS
- ENHANCE QUALITY OF CARE RECEIVED

HAS INSURED
6.1 MILLION ADULTS
AGES 19 TO 25

20 MILLION
PEOPLE GAINED
INSURANCE
SINCE 2010
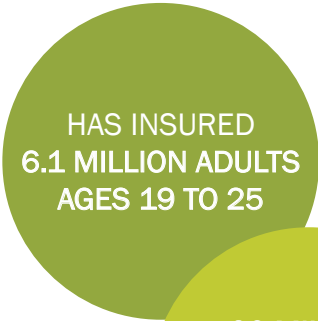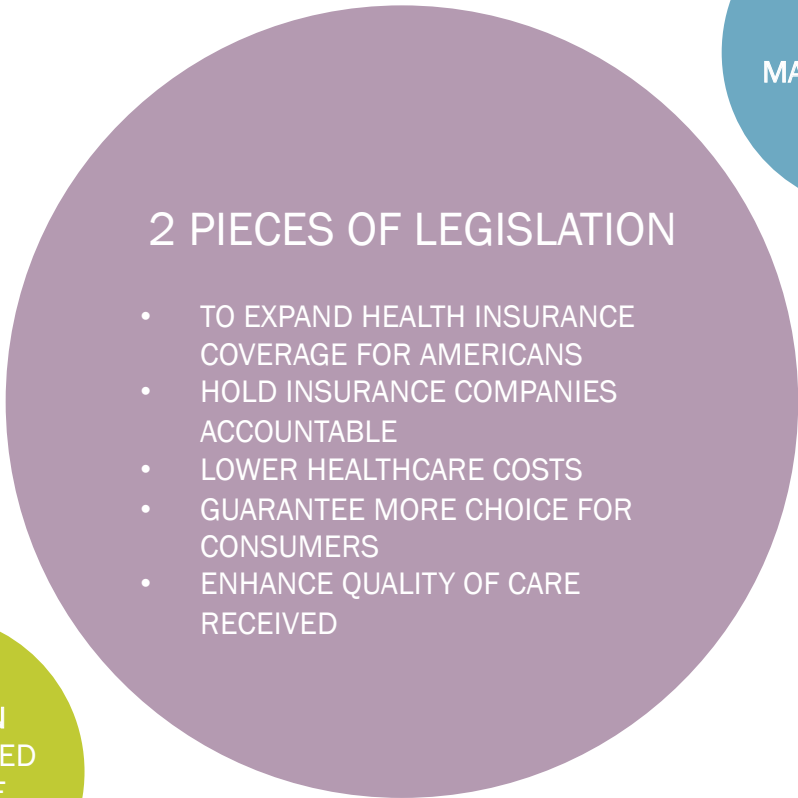
ACA'S FOCUS ON POPULATION HEALTH

Medicaid, Affordable Care Act, https://www.medicaid.gov/affordable-care-act/index.html.

U.S. Department of Health and Human Services, https://www.hhs.gov/healthcare/about-the-law/read-the-law/.

U.S. Department of Health and Human Services, *20 million people have gained health insurance coverage because of the Affordable Care Act, new estimates show,* http://www.hhs.gov/about/news/2016/03/03/20-million-people-have-gained-health-insurance-coverage-because-affordable-care-act-new-estimates, March 3, 2016.

IMPACT OF THE AFFORDABLE CARE ACT
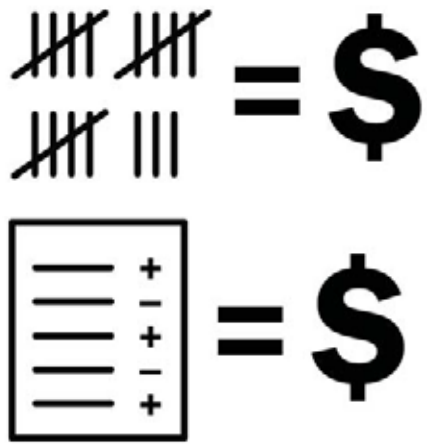
1 PAY FOR SERVICE / PAY FOR PERFORMANCE

2 FOCUS ON HEALTH + PREVENTATIVE CARE
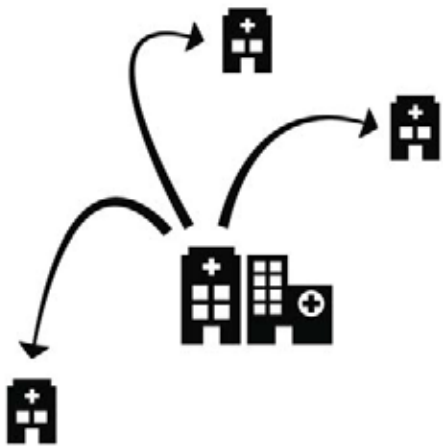
3 INCREASE IN OUTPATIENT SERVICES

4 PATIENT SATISFACTION MATTERS FOR HOSPITAL REIMBURSEMENT

MORE THAN 25% OF ALL CANCER DEATHS ARE CAUSED BY SMOKING
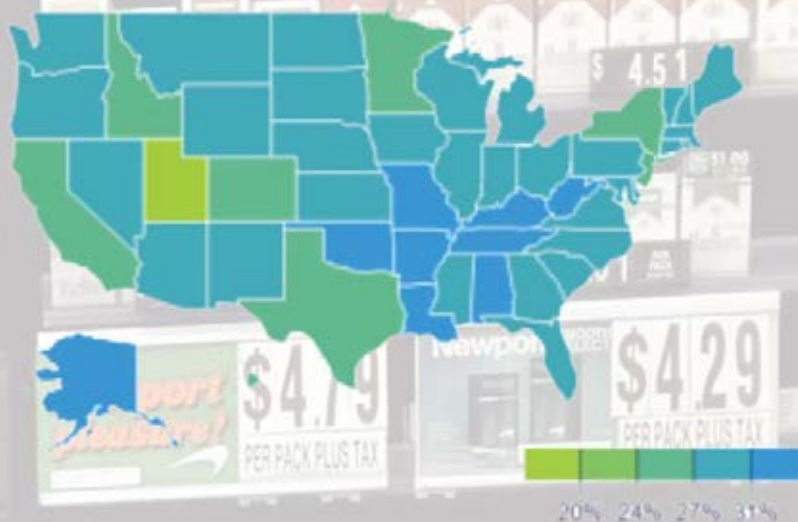
- Rate of smoking related deaths varies by state – 16.6% in Utah vs. 34% in Kentucky.
- Many southern states spend less on anti-smoking initiatives, have fewer restrictions on indoor smoking, and have lower taxes.

JAMA Internal Medicine 2016

A 3 CENTS PER OUNCE TAX ON SUGAR-SWEETENED BEVERAGES IN PHILLY COULD HELP...

- **36,000** people per year avoid obesity,
- prevent **2,280** annual cases of diabetes,
- avert about **730** deaths over a decade,
- save almost **$200 million** in health spending.

Harvard T.H. Chan School of Public Health

ELECTRONIC HEALTH RECORDS

VIRTUAL REALITY

ACCESS TO SHARED DATA

HEALTH TRACKING

TELEHEALTH

ACCESS TO INFORMATION

CONSUMERISM

THE WALL STREET JOURNAL.

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U.S. Edition ▾ | October 31, 2016 | Today's Paper

Home   World   U.S.   Politics   Economy   Business   Tech   Markets   Opinion   Arts   Life   Real Estate

DJIA ▼ 18149.20 -0.07%   Nasdaq ▲ 5194.77 0.09%   U.S. 10 Yr ▲ 5/32 Yield 1.831%   Crude Oil ▼ 47.90 -1.64%   Euro ▼ 1.0950 -0.34%

The Informed Patient

OCT. 24, 2016

New Reasons Not to Miss a Well-Child Visit
Pediatric practices are using new methods, including texts, to get parents to follow the recommended doctor-visit schedule for their children, which includes about a dozen appointments by the time they turn three.

OCT. 10, 2016

When Patients Take Too Many Pills, Doctors Deprescribe
Health-care professionals are screening patients to cut out ineffective medicines and avoid risky combinations.

SEP. 26, 2016

Are You Fit for Surgery?
Hospitals are working to prevent complications and save money by addressing more patients' conditions before surgery, such as diabetes, anemia, mental health and nutrition.

SEP. 12, 2016

The Ultimate Battle Against MRSA
Some hospitals are giving all intensive care patients germ-killing baths and an antibiotic nose ointment upon admission to fight MRSA, the potentially deadly bacteria. Recent studies show the universal treatment is effective.
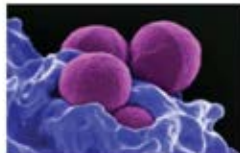
AUG. 15, 2016

New Treatments for Children With Eating Problems
Hospitals are setting up new clinics and protocols to help parents when infants and toddlers can't eat properly. Sometimes a feeding

SC CONGRESS NEW YORK
Nov. 10, 2016

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Most Popular Videos

1. Bottle Flipping Hits a Wall

2. The FBI Email Probe and Clinton's October Surprise

BLUE TOOTH ON MEDICINE BOTTLE

Smart wireless pill bottles bottle starts to glow with blue light as time to take pill approaches.

If pill has not been taken by a certain time, bottle glows red and beeps, and a message is sent to patient or caregiver, either through a recorded phone message or a text message.

Source: http://healthtechinsider.com/2015/05/11/smart-bottle-saves-lives-and-money/

CHANGING BEHAVIOR

Penn Medicine's Nudge Team and The Power of Adding a Step

GOAL: To reduce costs, encourage physicians to prescribe more generic drugs over branded drugs

SOLUTION: When physician prescribed a drug for a patient, the electronic medical record would default to a generic. (Need to go the extra step to check an "opt-out" box to prescribe brand name).

RESULTS: Generic prescription rates rose from 75% to 98%. Could result in major long-term cost savings.

✓ GENERIC   ☐ OPT OUT IF THE BRAND NAME IS NEEDED

Source: Penn Medicine News May 2016

THE EVOLVING QUADRUPLE AIM

THE IHI TRIPLE AIM

IMPROVING THE HEALTH OF POPULATIONS
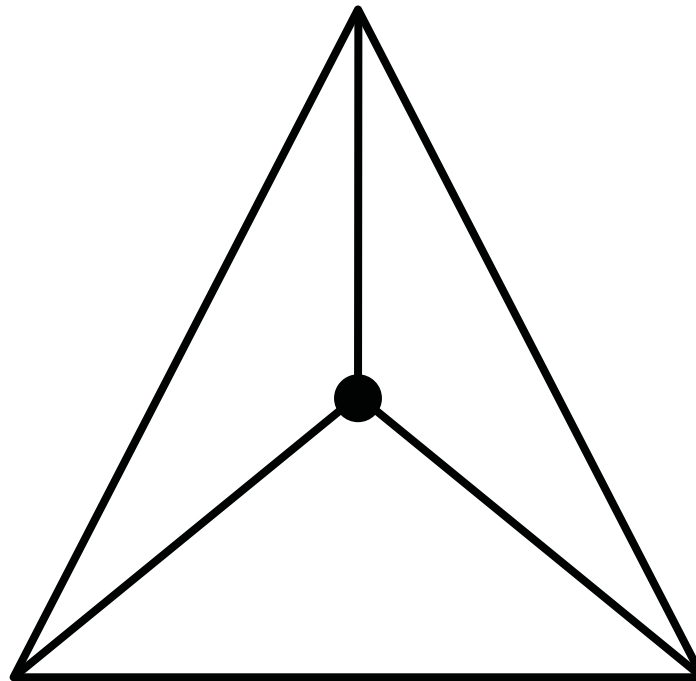
IMPROVING THE PATIENT
EXPERIENCE OF CARE
(INCLUDING QUALITY
AND SATISFACTION)

REDUCING THE PER CAPITA
COST OF HEALTH

THE IHI TRIPLE AIM

THE RIGHT TIME (ACCESS)

THE RIGHT CARE

THE RIGHT PRICE

Source: Berwick DM, Nolan TW, Whittington J. The Triple Aim: Care, Health, and Cost. Health Affairs. 2008

THE EVOLVING QUADRUPLE AIM

THE RIGHT CARE

THE RIGHT PRICE

THE RIGHT PLACE

THE RIGHT TIME

DELIVERING THE **RIGHT CARE** FOR THE **RIGHT PRICE** AT THE **RIGHT TIME** – IN THE **RIGHT PLACE**
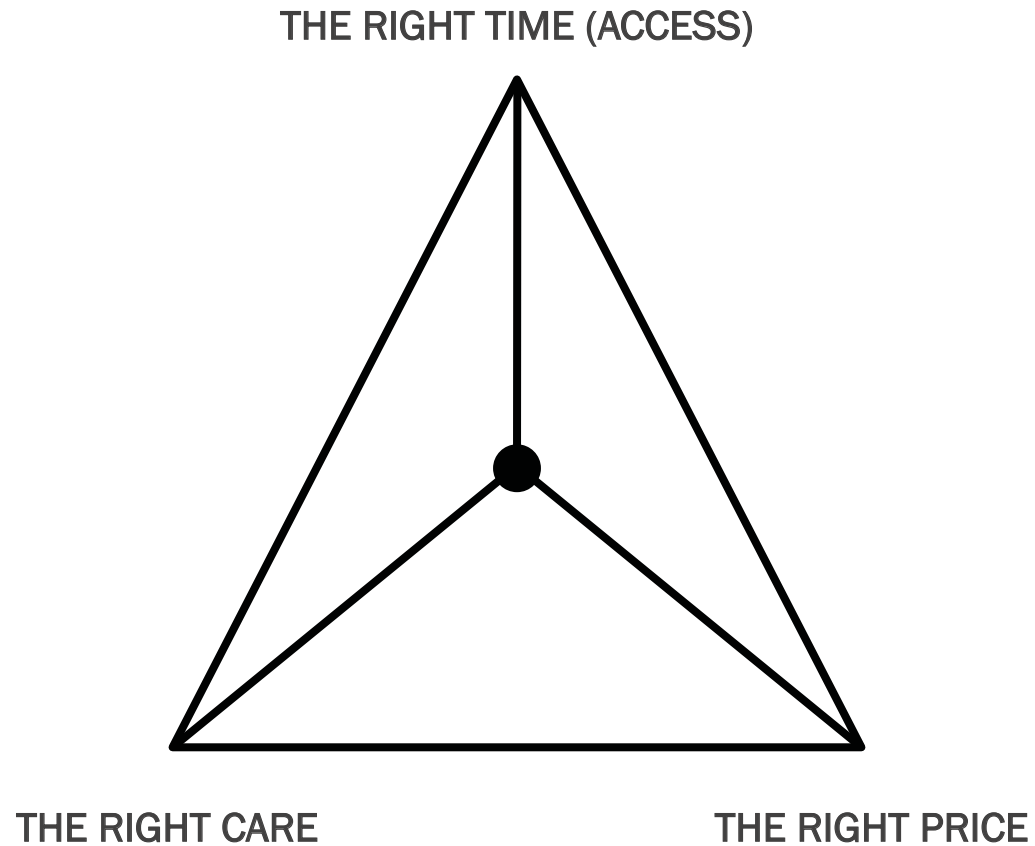
THE EVOLVING QUADRUPLE AIM

DELIVERING THE **RIGHT CARE** FOR THE **RIGHT PRICE** AT THE **RIGHT TIME** – IN THE **RIGHT PLACE**

| HOMECARE/ TELEHEALTH | SUPER MARKET CLINIC | URGENT CARE | AMBULATORY CARE | COMMUNITY HOSPITAL | SPECIALTY CENTER | REGIONAL HOSPITAL | ACADEMIC MEDICAL CENTER |

Building with no patients ⟷ Many inpatients
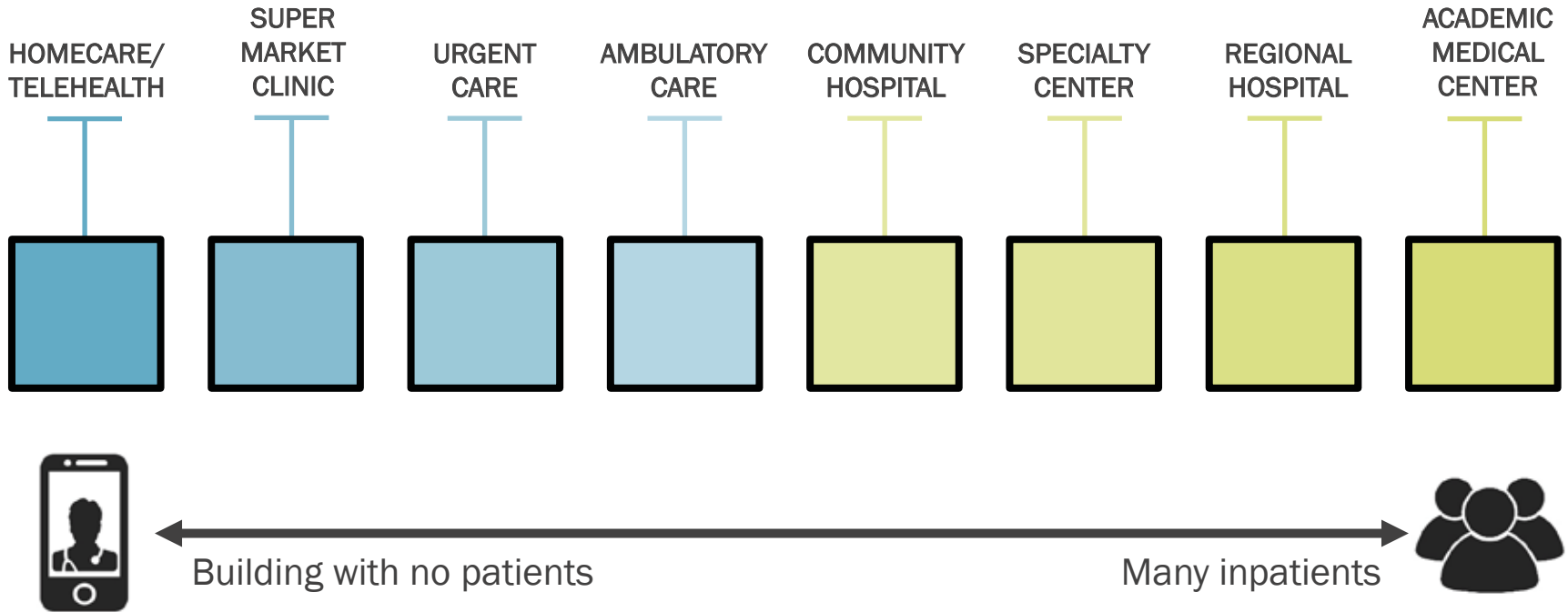
EXAMPLES OF HOW <u>DESIGN</u> OF THE **RIGHT PLACE** FOSTERS...

"THE **RIGHT CARE** FOR THE **RIGHT PRICE** AT THE **RIGHT TIME**"

HOMECARE

■□□□□□□□ TELEHEALTH

MERCY VIRTUAL

- ☑ On Demand Access
- Education to Primary Care
- Coverage in Rural Areas
- Manage Chronic Care

Cool Color Scheme - Option A
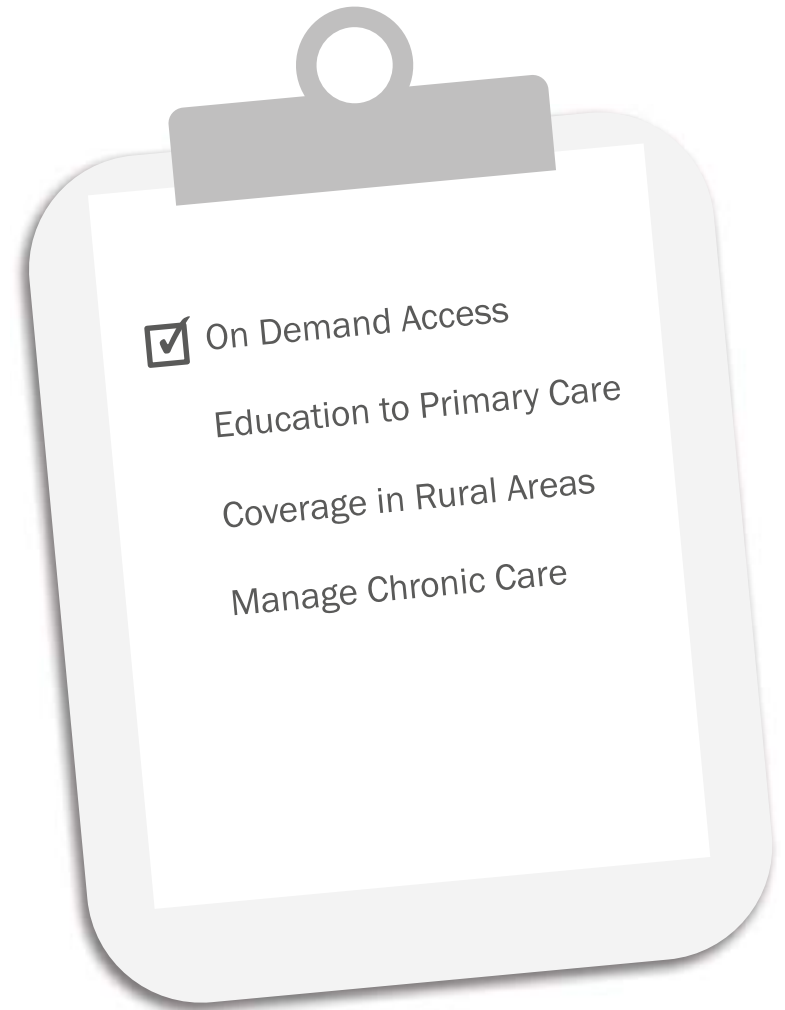
SUPER MARKET CLINIC

LANCASTER GENERAL HEALTH RETAIL

- ☑ Community Access
- Low Acuity Cases
- Care by Nurse Practitioner
- No Appointment

■■■□□□□□□ URGENT CARE

LANCASTER GENERAL HEALTH URGENT CARE

- ☑ Episodic Care
- No Appointment
- Alternative to Emergency Department
- After Hours Care
- Care by Physician

AMBULATORY CARE

NYU LANGONE MEDICAL CENTER
AMBULATORY CARE CENTER

■■■■□□□□
AMBULATORY CARE

NYU LANGONE MEDICAL CENTER
AMBULATORY CARE CENTER

☑ Local Aggregation of Many Clinical Services

Engage Community

Primary/Specialty Care

Ambulatory Surgery

Imaging

Rehab Center

66%
STAFF FEEL THE
DECENTRALIZED STATIONS
IMPROVE PATIENT CARE

91%
PATIENTS SAY THE
DECENTRALIZED STATIONS
IMPROVE THE WAY
THEY FEEL CARED FOR

76%
STAFF REPORTED THEY WILL
USE ANY AVAILABLE WORKSPACE

SATISFACTION WITH SOUND CONTROL

77%
45%

AT NURSE
STATION

80%
64%

IN
CORRIDORS

91%
36%

IN PATIENT
ROOMS

100%
25%

94%
31%

97%
19%

87% **97%**
ARE SATISFIED WITH
SPACES FOR
PRIVATE CONVERSATION

89%

L4   L3   L2

HCAHPS

34% AVERAGE INCREASE IN
SATISFACTION WITH
QUIETNESS
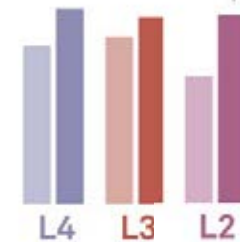
PATIENT SAFETY

$$$

HAIs HAVE **DECREASED**
52% ↓
SINCE THE MOVE

79%
ARE SATISFIED WITH
SELECTION OF **MATERIALS**
AND HOW THEY HAVE HELD UP

90%
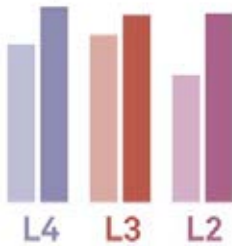
HCAHPS
28%
AVERAGE INCREASE IN
SATISFACTION WITH
CLEANLINESS

L4   L3   L2

■■■■■■□□
COMMUNITY HOSPITAL

PENN MEDICINE CHESTER COUNTY HOSPITAL
LASKO TOWER

☑ First Access for Essential Health

Emergency Department

Inpatient Care

Community Engagement

Research Toward Improving Population Health in the Design of Health Facilities

SPECIALTY CENTER

PENN MEDICINE LANCASTER GENERAL HEALTH
ANN B. BARSHINGER CANCER INSTITUTE

Biophilia

VISIT TIME

4% HEALING GARDEN

2% OTHER

3% VIEWING ART

23% MEETING WITH HEALTHCARE PROVIDERS

2% IMAGE RECOVERY CENTER

5% CAFE

5% MEDITATION ROOM

58% RECEIVING TREATMENT

STAFF   PATIENTS

■■■■■□□□
SPECIALTY CENTER
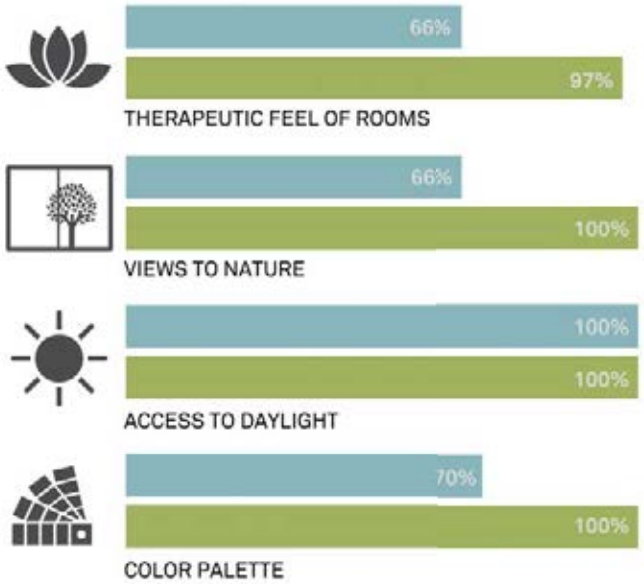
PENN MEDICINE LANCASTER GENERAL HEALTH
ANN B. BARSHINGER CANCER INSTITUTE

☑ Regional Aggregation of Service Line

Chronic Care and Wellness

One Stop Shopping

Spaces for Community Use
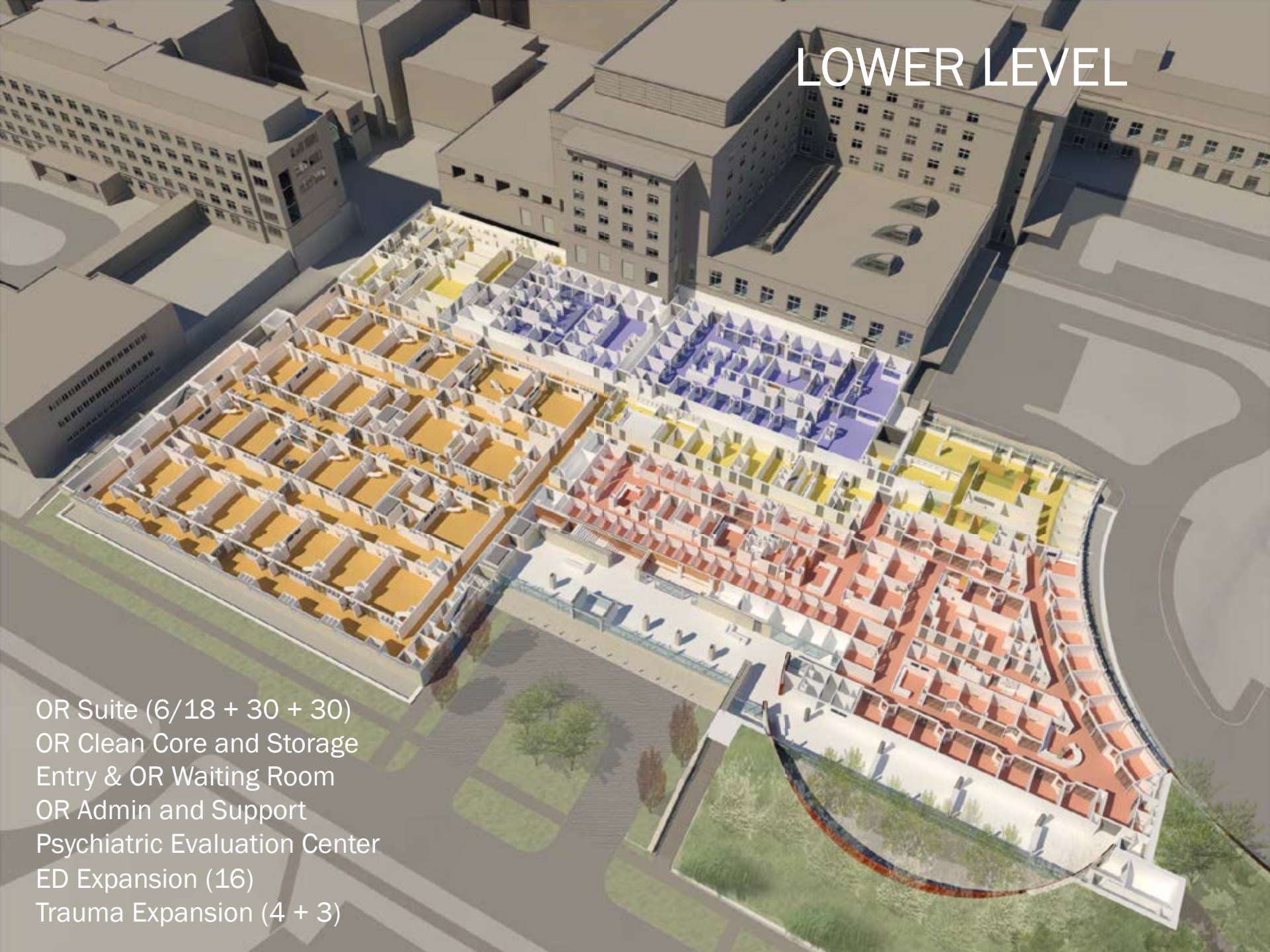
REGIONAL HOSPITAL

READING HEALTH SYSTEM
HEALTHPLEX FOR ADVANCED SURGICAL + PATIENT CARE

OR Suite (6/18 + 30 + 30)
OR Clean Core and Storage
Entry & OR Waiting Room
OR Admin and Support
Psychiatric Evaluation Center
ED Expansion (16)
Trauma Expansion (4 + 3)

Procedure Suite (8 + 24)
Pre-Admit Testing
Protocol
OR Support
On-Call Rooms
Trauma & ED Administration
Atrium Link & Healing Garden
Patio Seating Expansion

1ST FLOOR

Cardiac Decision Unit (10)
Private Bed Unit (30)
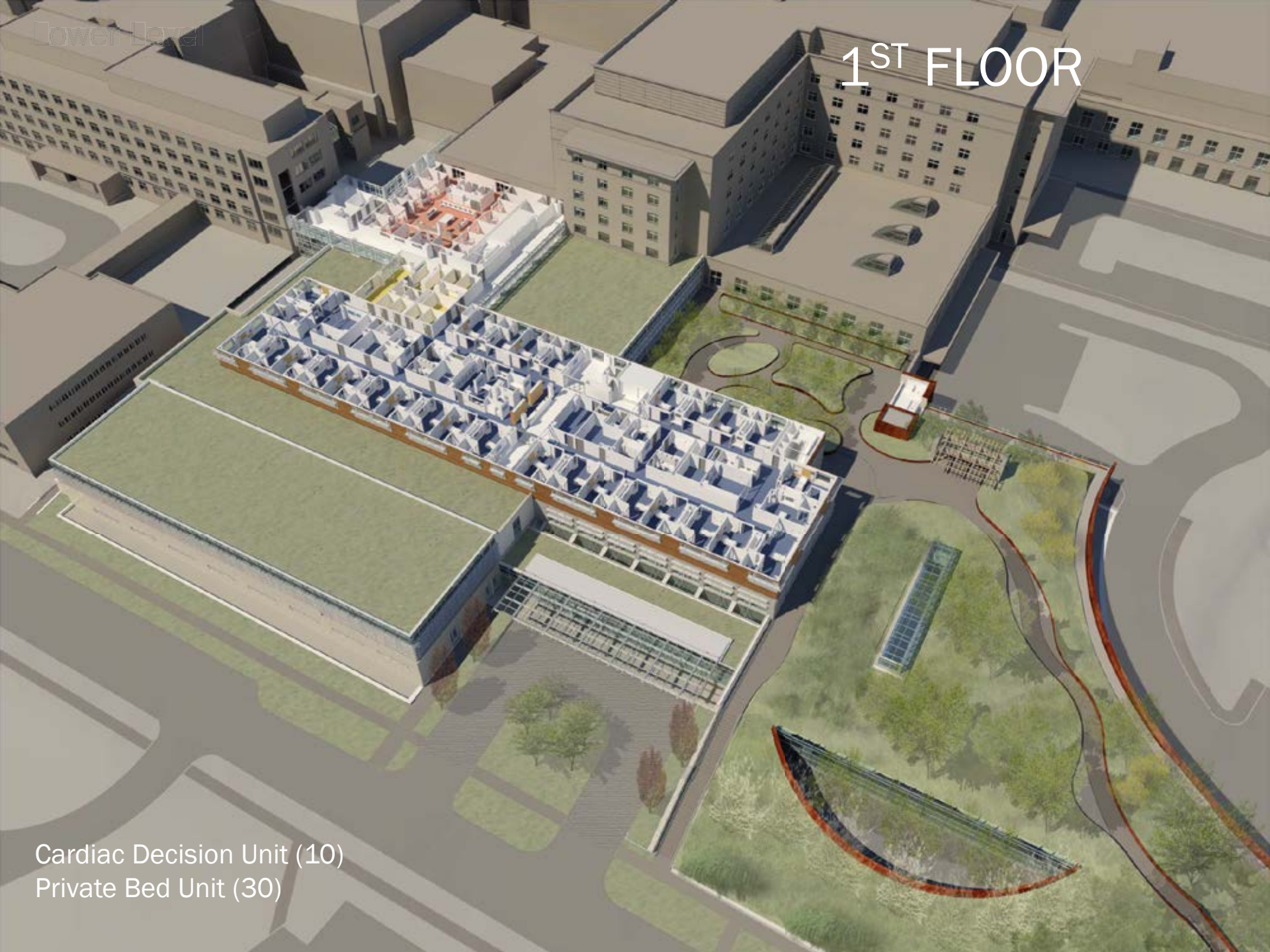
Lower Level

MEP Infrastructure
Private Bed Unit (30)

Lower Level

Private Bed Unit (30)

Lower Level

Private Bed Unit (30)

5TH FLOOR

Lower Level

Private Bed Unit (30)

MEP Infrastructure

ROOF

Helipad

■■■■■■□ REGIONAL HOSPITAL

READING HEALTH SYSTEM
HEALTHPLEX FOR ADVANCED SURGICAL + PATIENT CARE

☑ Tertiary Care

Higher Acuity

Specialty Care

Spaces for Community Use

Research Toward Improving Population Health in the Design of Health Facilities

CLEAN HANDS SAVE LIVES

■■■■■■■ ACADEMIC MEDICAL CENTER

UNIVERSITY OF MARYLAND MEDICAL CENTER
SHOCK TRAUMA CRITICAL CARE TOWER
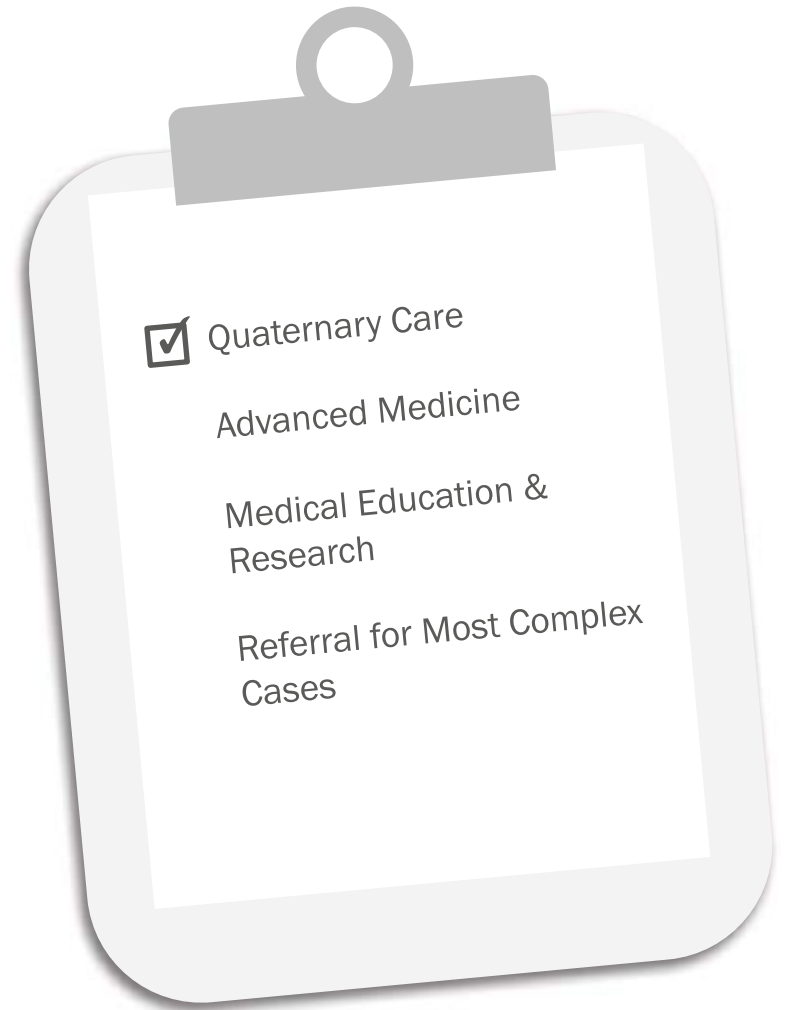
☑ Quaternary Care

Advanced Medicine

Medical Education & Research

Referral for Most Complex Cases

Research Toward Improving Population Health in the Design of Health Facilities

ARCHITECTURE'S ROLE IN PUBLIC HEALTH

ARCHITECTS & PUBLIC HEALTH

PUBLIC SAFETY

SOCIAL CONNECTEDNESS

ENVIRONMENTAL QUALITY

ACCESS TO NATURAL SYSTEMS

PHYSICAL ACTIVITY

SENSORY ENVIRONMENTS

QUESTIONS /////////////

THANK YOU.