

Behavioral Symphony for Wellness in the Healthcare Plecosystem

A Framework for Humanity:
Community, Health and Resilience
March 13, 2014



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Survey

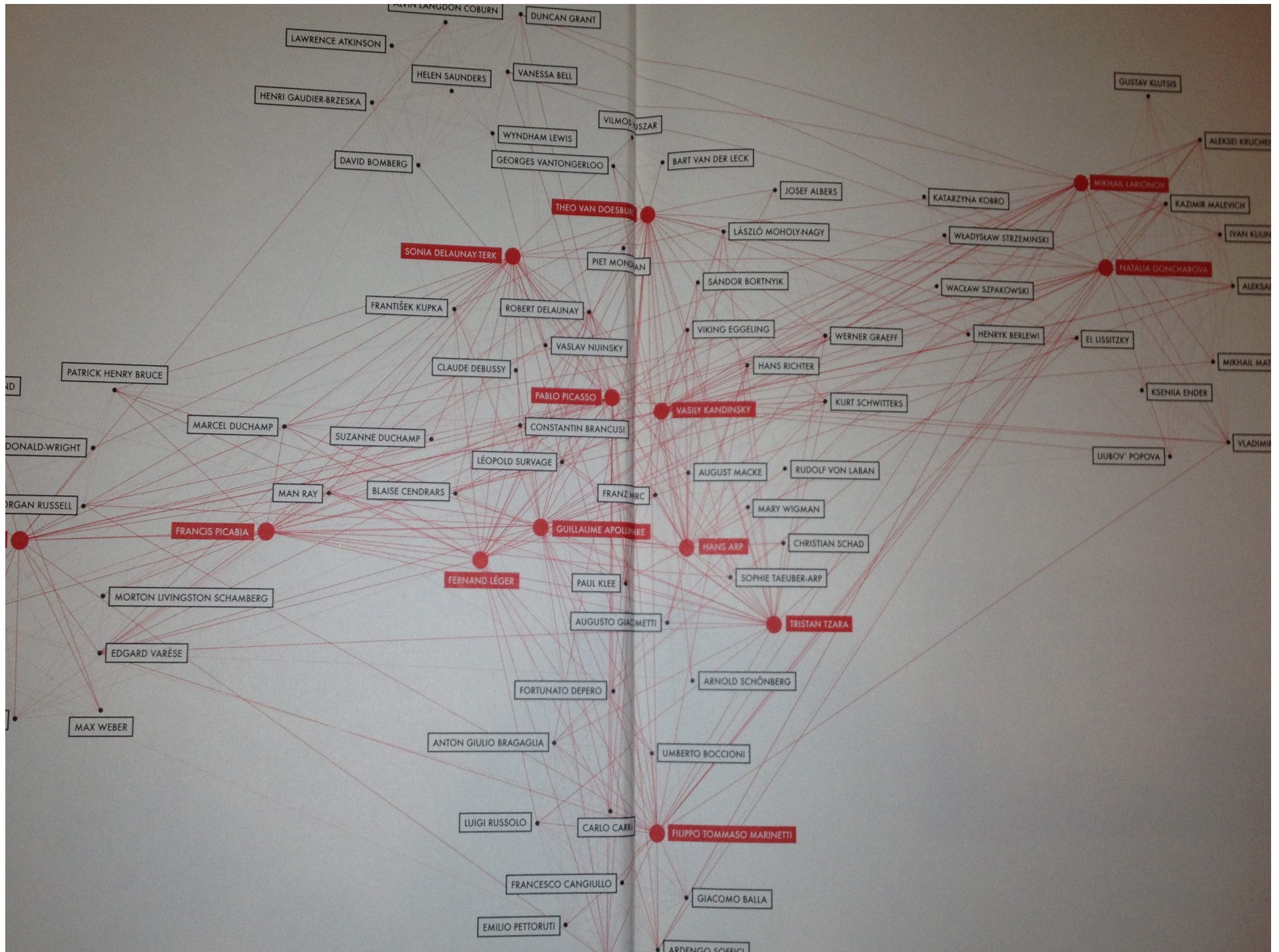
1. Have ever worn a pedometer or fitbit? Today?
2. Have used Uber Cab or AirB&B?
3. Have signed up for “NextDoor”?
4. Have Watched the HBO series “Weight of the Nation”, aka the Social Determinants of Health, PHII Work
5. Have read *Goodnight Moon* to your children?

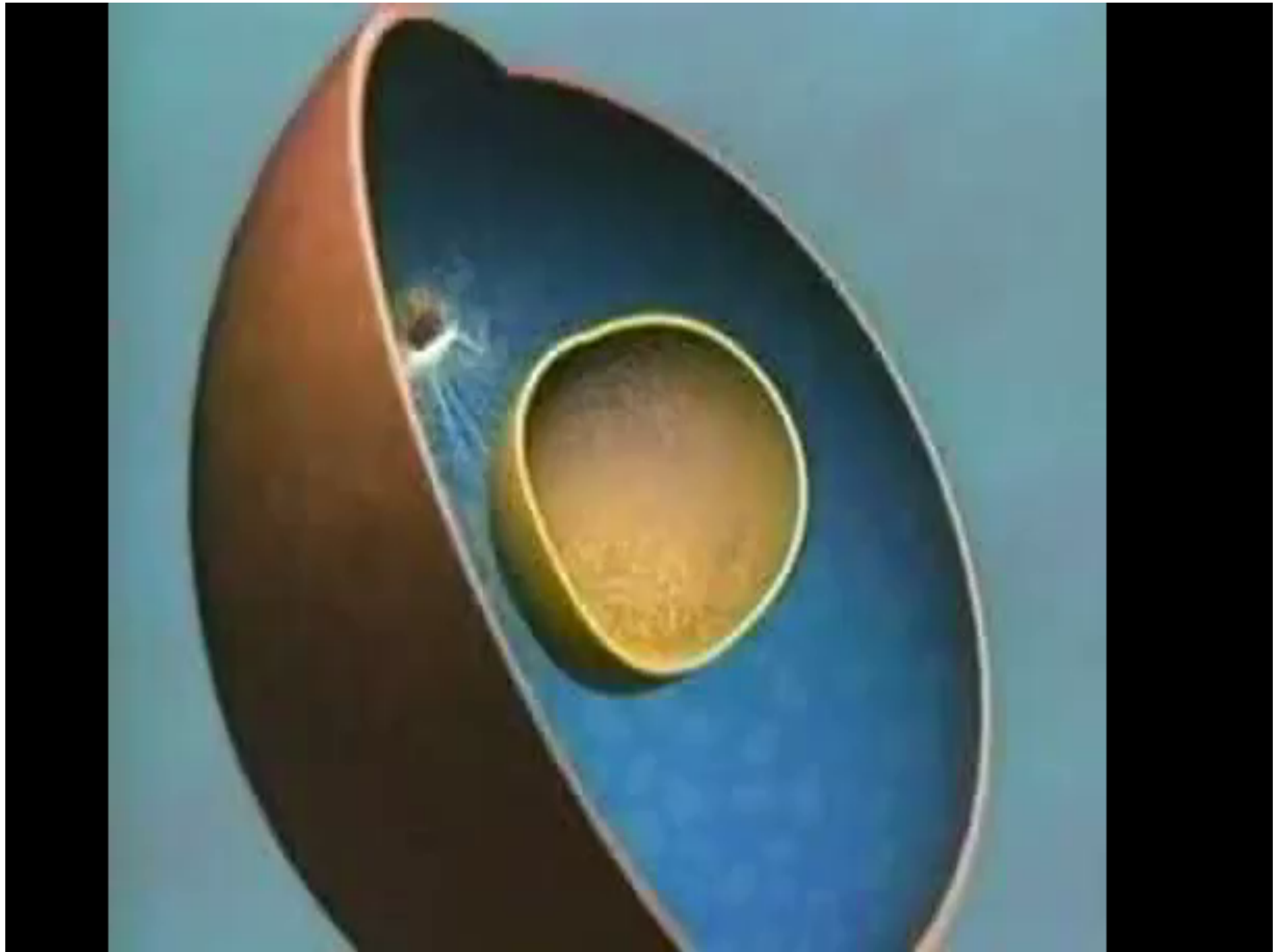
2013 Nobel Prize in Chemistry

- Three contributors from 3 countries
 - Three Universities
 - Two different technologies: Newtonian and Quantum
 - One new combined method for understanding how protein structure drives function
-
- Exemplars: Cross-disciplinary collaboration from different perspectives, and multiple platforms



Kazimir Malevich, 1915





Healthcare Plecosystem:

1. **Internet and cloud** provide connectivity to every corner of the globe.
2. **Smartphone** with video dialtone and Modality Steering: Stationary!!!
3. **Socialome**: The Digital data harvested for health and wellness
4. **Quantified Self**: Non-invasive biometric sensing, Tricorder, wearables
Enhance our capacity to understand what is important, and support behavioral models to initiate, motivate, and sustain healthy behaviors at the individual level
KEY VARIANT: Quantified Pedigree (context is king)
5. **Exposome**: Pervasive environmental sensing will bring new knowledge to public policy decisions about creating a healthier physical environment, and
6. **\$1000 genome** (genome, microbiome, transcriptome, lipidome, proteome, metabolome, multiome/panarome) Stem Cell and Genetic Tx (2000+ trials)
7. **EHR data**: exponential growth of phenome from Electronic Health Records
8. **Predictive Analytics** (Machine learning, AI, and Visualization)
Prediction: TenX more new knowledge from research *in silico* over RCT by 2020
9. **Persuasive Technologies**: Behavioral and motivational sciences
10. **Avatars, Robotics, Heads-up displays, 3D printing**: increasingly broker the PERSONALIZED digital relationships between individual people and their world.

Five Key Drivers of Healthcare Costs

1. Pervasive Influence of Pharma:
Regulatory/Policy/Education/Research/BigData
2. Failure to implement evidence-based preventive care
3. Fee for Volume Payment Incentives (Atul Gawande)
4. End of life care (Atul's 50/5, 80/20 rule): Social Issue
Movement: Death at Dinner discussions
5. Disorders of Lifestyle → Obesity, Diabetes.....

How will Personalized Medicine reverse these epidemics?

- **Lifestyle decisions: where we live, work, play, and learn**
- Mobile (stationary) apps are wherever we are
- Social determinants of health prevail throughout life
- Democratization of Technology is necessary but not sufficient

The Second Machine Age

- Behavioral economics and motivational science

Daniel Pink, *Drive*: Motivation 1.0, 2.0, 3.0
Kristakis and Fowler: *Connected*: power of social
BJ Fogg: *Persuasive Technologies*
Gamification (especially with Motivation 3.0)

- *****Personalization of all delivery aspects:**
Behavioral responsiveness of the individual
Communication modality and methods
Which levers work, e.g. competition vs. points for charity, vs. \$\$ donations to opposite political party
- **Adverse lifestyle habits are largely shaped in early childhood:**
Hence: early intervention with children is critical

The ACE Study

Adverse Childhood Experiences

- One of largest investigations ever conducted to assess associations between childhood maltreatment and later life health & well-being
 - 17,000+ participants
 - CDC & San Diego Kaiser Permanente
- Detailed info about childhood experience of abuse, neglect and family dysfunction

• Laura Jana Slides

Toxic Stress On Early Childhood

- Adverse effects of toxic stress have a significant impact on both health and learning
 - Disruption of brain architecture
 - Increased cognitive impairment and developmental delays
 - Increased risk of stress-related disease and health problems

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Quantified Self Movement

1. Larry Smarr, UCSD CalIT2—KP Collaboration
--Multiomics, Exposome, Phenome, Social, Visualization
2. Mike Snyder, Stanford, iPOP study (earlier work of George Church)
3. PGHD TEP: Painful process of paradigm shift
4. 23&me: ‘meet your family’: imminent crisis on discovery of biologic parents, sibs
5. UBIOME: citizen science and the MicroBiome/Microbiomics, aka metagenomics: 10/100/30%
6. **Sneakpeeks: sperm donor selection: founder’s friction
7. **EasyDNA: “Who’s your daddy?” 20% of some communities
8. **Persistent value of Data and sustainability: Mattison’s Principle
9. **Privacy implications: HIMSS Privacy book, Web Genomics
10. **Open mHealth and Catalyst Initiative: Sensemaking

1960

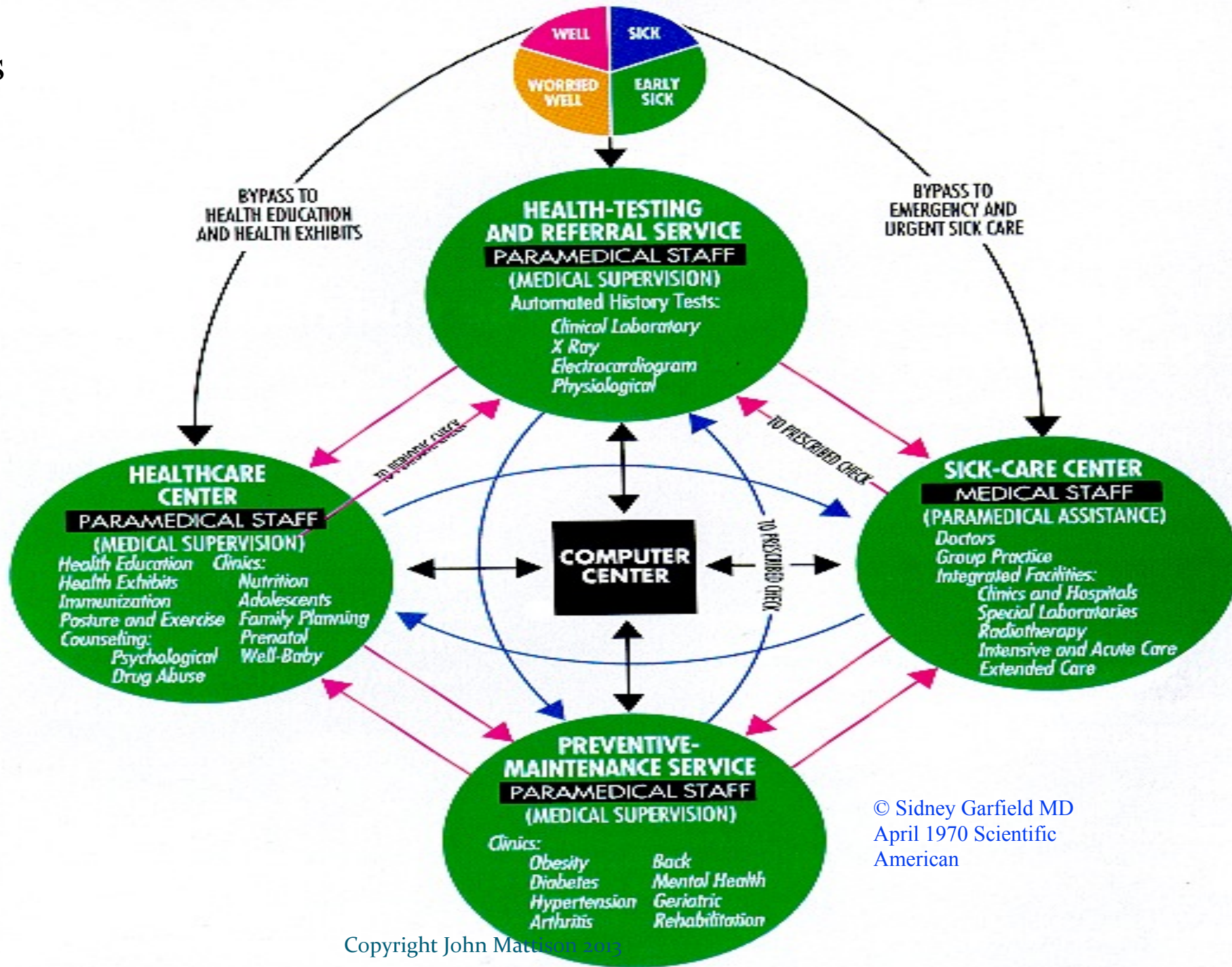
It's really time for us to revitalize our plan. For the future, I suggest a radical new idea – that we stop building hospitals and clinics for sick people. Let's concentrate on a brand new type of facility – a new first in the world. . . .Let us conceive a building for health – designed, streamlined and geared to serve our healthy members.

– *Sidney Garfield, MD*

DEDICATED TO ACHIEVING POSITIVE HEALTH
AND PREVENTION OF ILLNESS.

...SIDNEY R. GARFIELD. MD.





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 April 1970 Scientific
 American

We're #1...Market-leading Prevention

HEDIS Measures 2011

KP REGIONAL MARKET RANKING

	NCAL	SCAL	HI	NW	CO	GA	MAS	OH
Breast Cancer Screening	1	1*	1	1	1	1	1	1
Childhood Immunization Status – Combo 2 & 3	1*	1	1	1	1	1	1	1
Chlamydia Screening in Women - Total	1*	1	1	1	1	1	1	1
Appropriate Treatment for Children w/URI	1*	1	1	1	1	1	1	1
Adult BMI Assessment	1*	1	1	1	1	1	1	1
Weight Assessment for Children – BMI Percentile	1*	1	1	1	1	1	1	1
Comprehensive Diabetes Care – Medical Attention for Nephropathy	1*	1	1	1	1	1	1	1

*NCQA market ranking based on state boundary, and not KP regional market. SCAL and NCAL ranked first within each of its KP regional markets, but second in NCQA state market only to each other.

We're #1...Market-leading Care

NCQA ranking of 341 Medicare health plans in US (2011)

	KP Medicare Ranking	
	National ¹	State
Northern California	1	1
Southern California	2 ₄	2 ₄
Colorado	3	1
Georgia	31	1
Hawaii	7	1
Mid Atlantic ²	17	1
Northwest ³	4	1
Ohio	19	1

KEY:

1\ Medicare ranking out of 341 ranked health plans

2\ Mid Atlantic ranked #1 for Medicare in VA, DC, and MD

3\ Northwest ranked #1 in OR and WA

4\ Second only to the other KP plan in California

...But We Are Not #1 in Health Yet.

- **How Healthy Is Your County?**
 - New County Health Rankings give first county-by-county snapshot of health in each state
 - www.countyhealthrankings.com



- **Poorly ranked counties have:**
 - Two- and three-fold **higher rates of premature death**, often from preventable conditions.
 - **High smoking rates** that lead to cancer, heart disease, bronchitis and emphysema.
 - **High rates of obesity** which can put people at risk for diabetes, disability and heart disease.
 - **High unemployment** and poverty rates.
 - **High numbers of liquor stores and fast-food outlets** but few places to buy fresh fruits and vegetables.

Our Counties Are Not #1 in Health

2012 Weighted Average County Health Rank (Quartile)

	<u>Health Outcomes</u>	<u>Health Factors</u>
Northern California	2	2
Southern California	2	3
Colorado	2	3
Georgia	1	1
Mid – Atlantic (VA)	1	1
Mid – Atlantic (MD)	2	2
Northwest (OR)	1	2
Northwest (WA)	2	3
Ohio	3	2
Hawaii	N/A	N/A

N/A Since KP in all 4 counties in state.

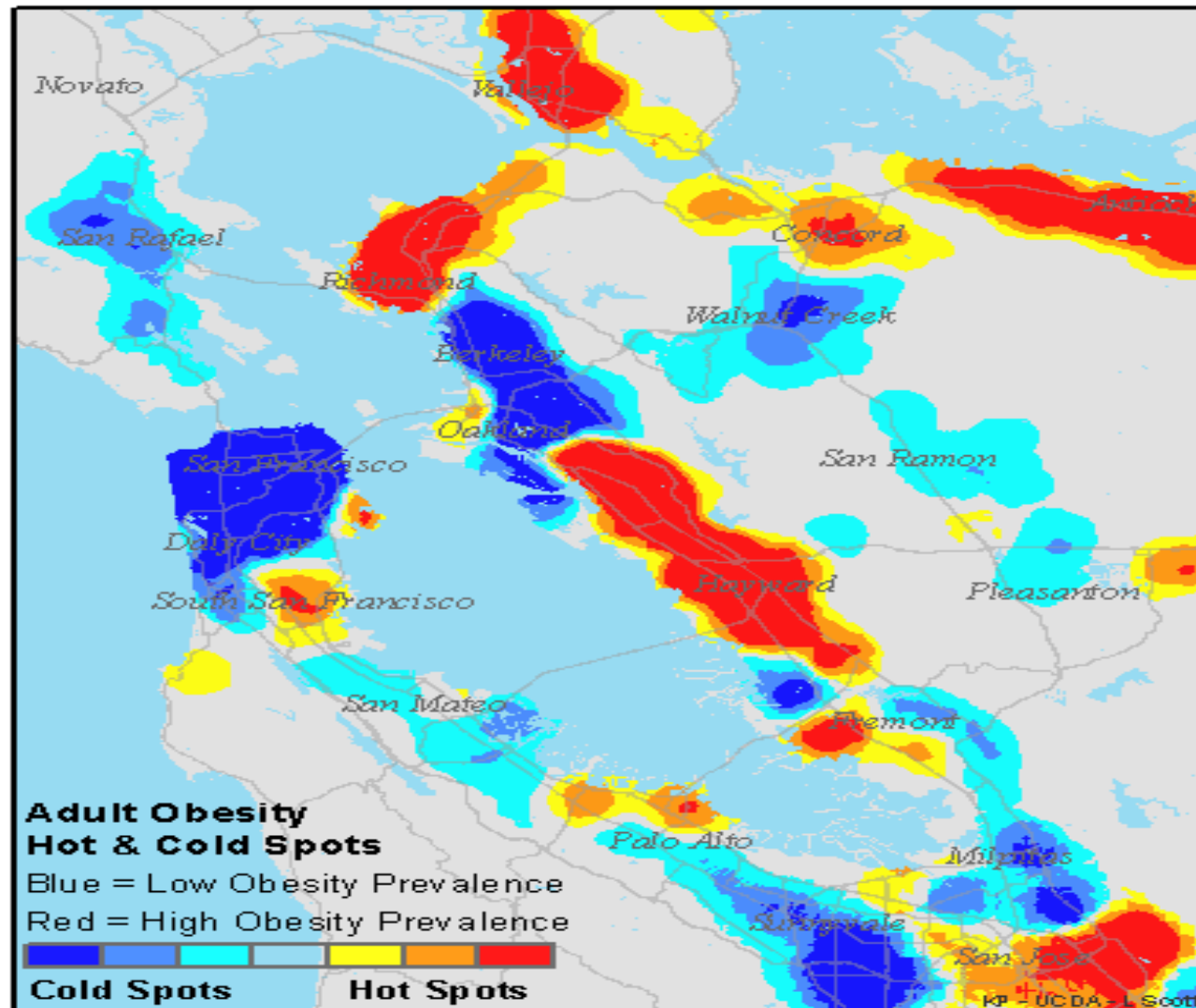
Key

- 1st (Top) Quartile
- 2nd Quartile
- 3rd Quartile
- 4th (Bottom) Quartile

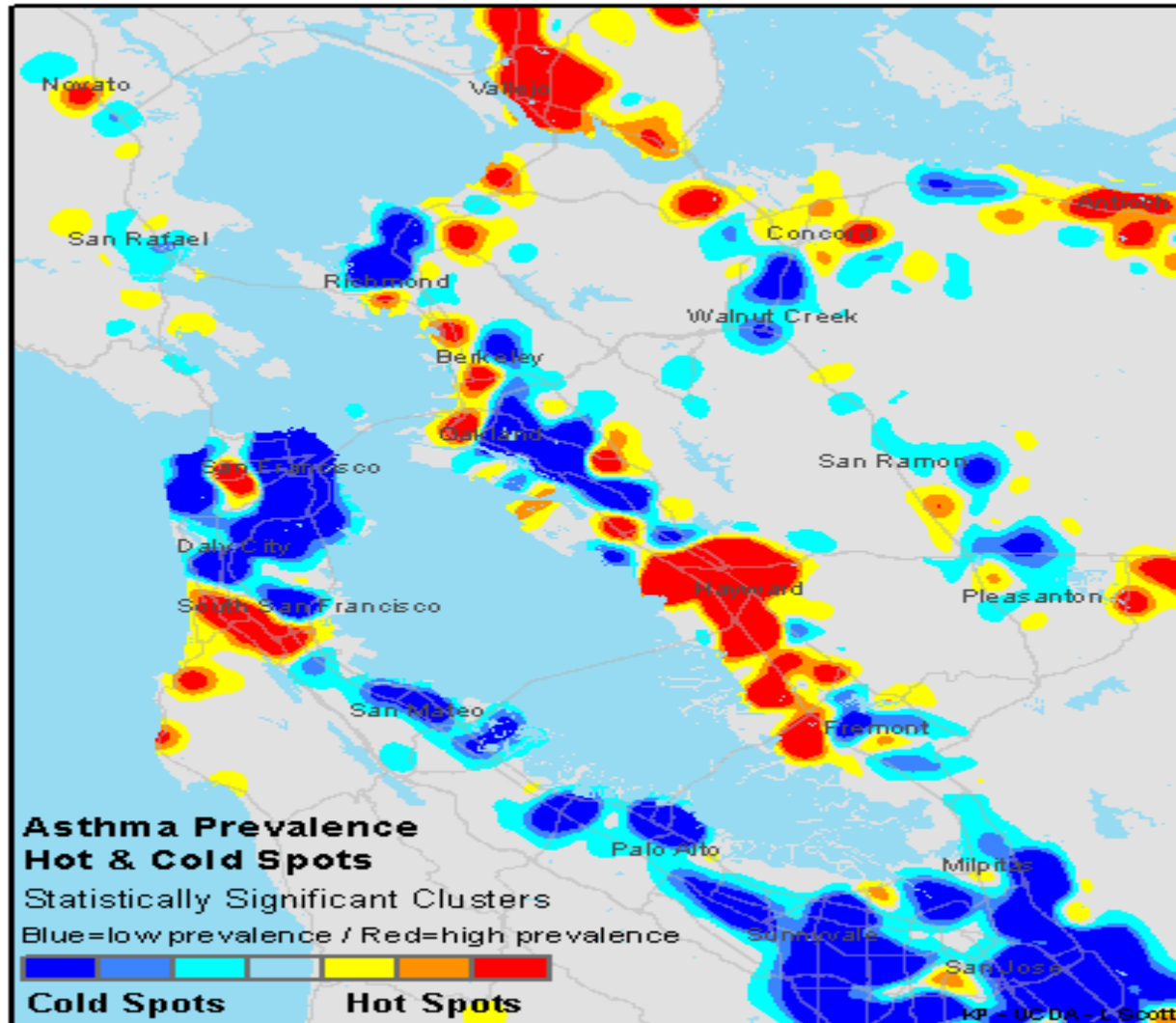
Source: KP Dept. of Care & Service Quality – Dominique Kim, Principal Consultant

April 2012 Note: Weighted by population of counties in the KP region.

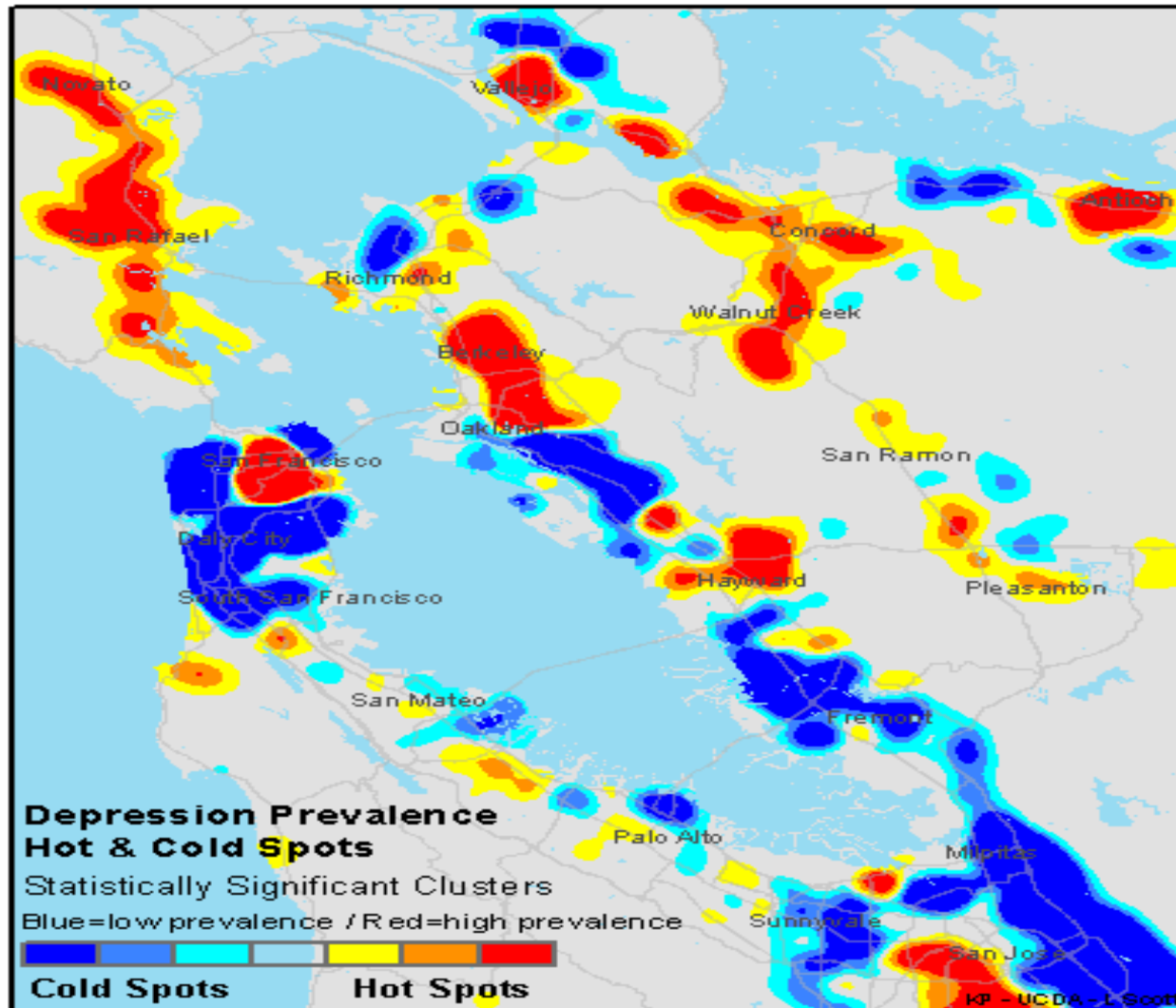
We Are Not #1 in Health for Everyone, Everywhere: Obesity



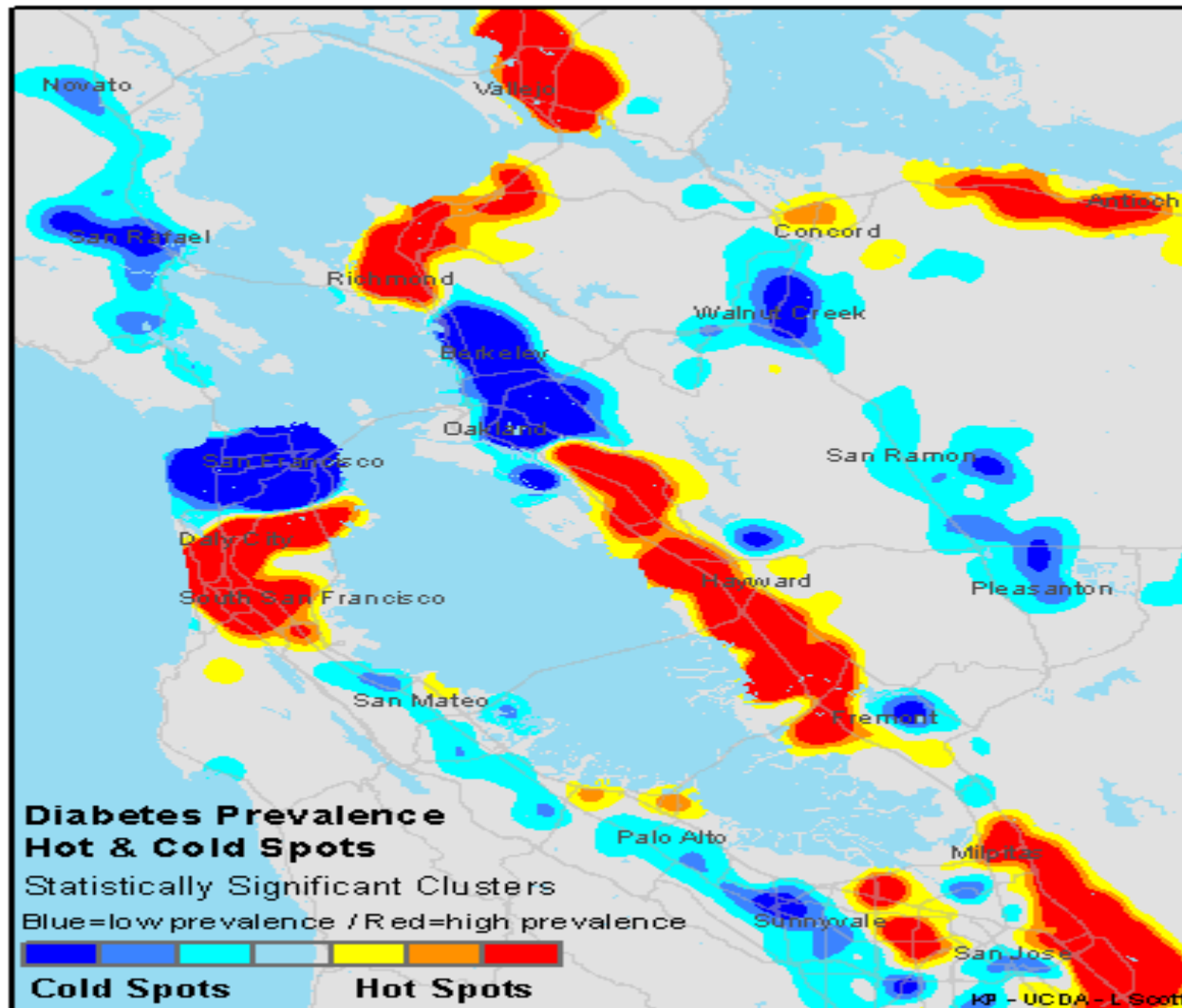
We Are Not #1 in Health for Everyone, Everywhere: Asthma



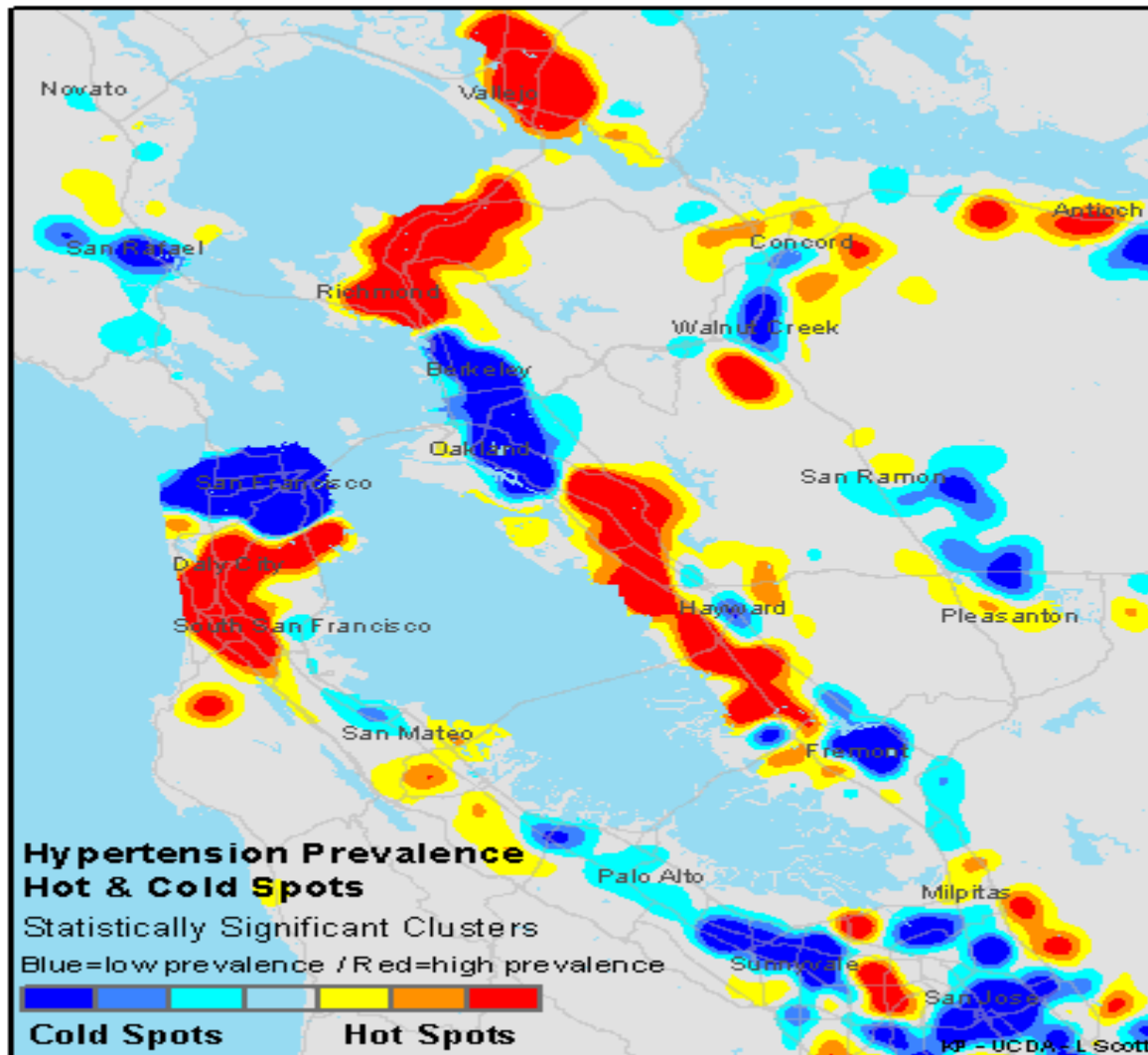
We Are Not #1 in Health for Everyone, Everywhere: Depression



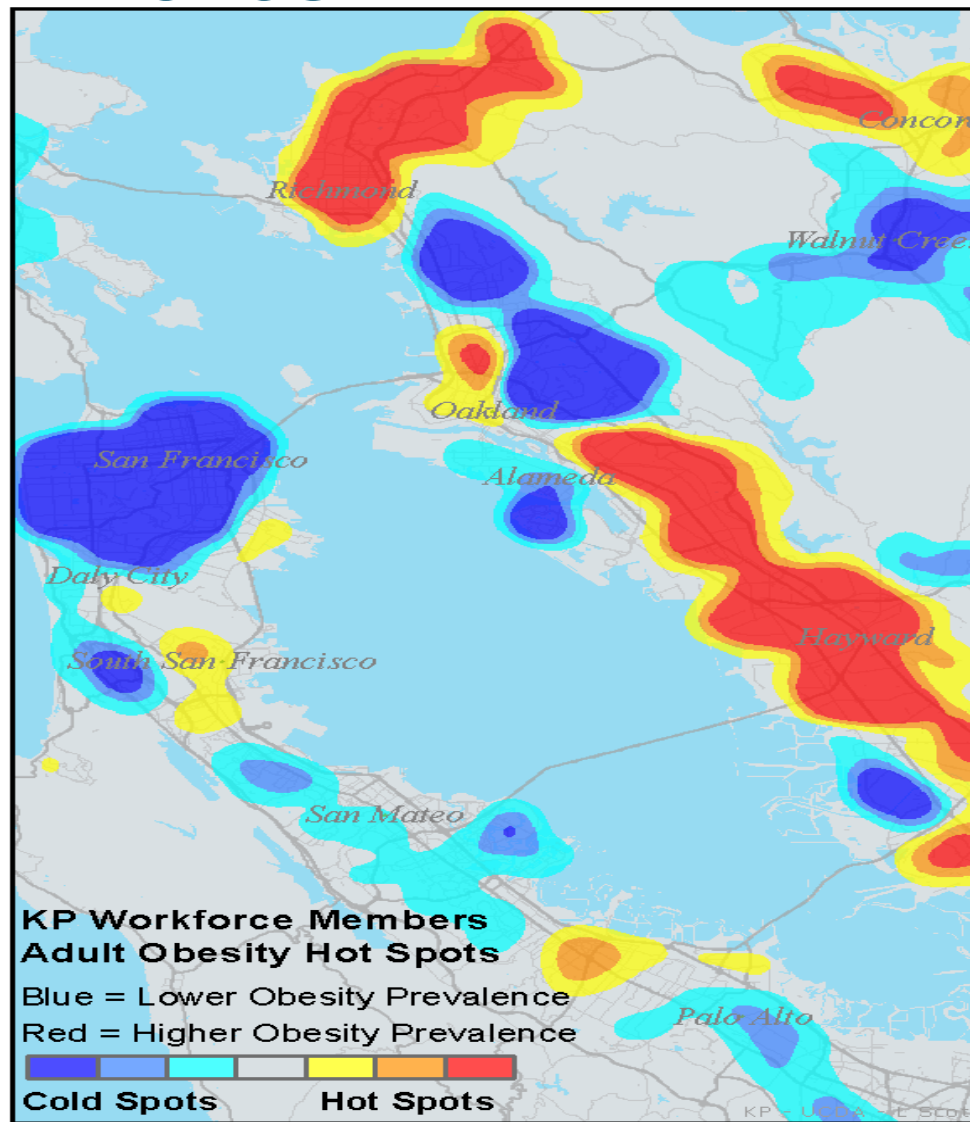
We Are Not #1 in Health for Everyone, Everywhere: Diabetes



We Are Not #1 in Health for Everyone, Everywhere: Hypertension



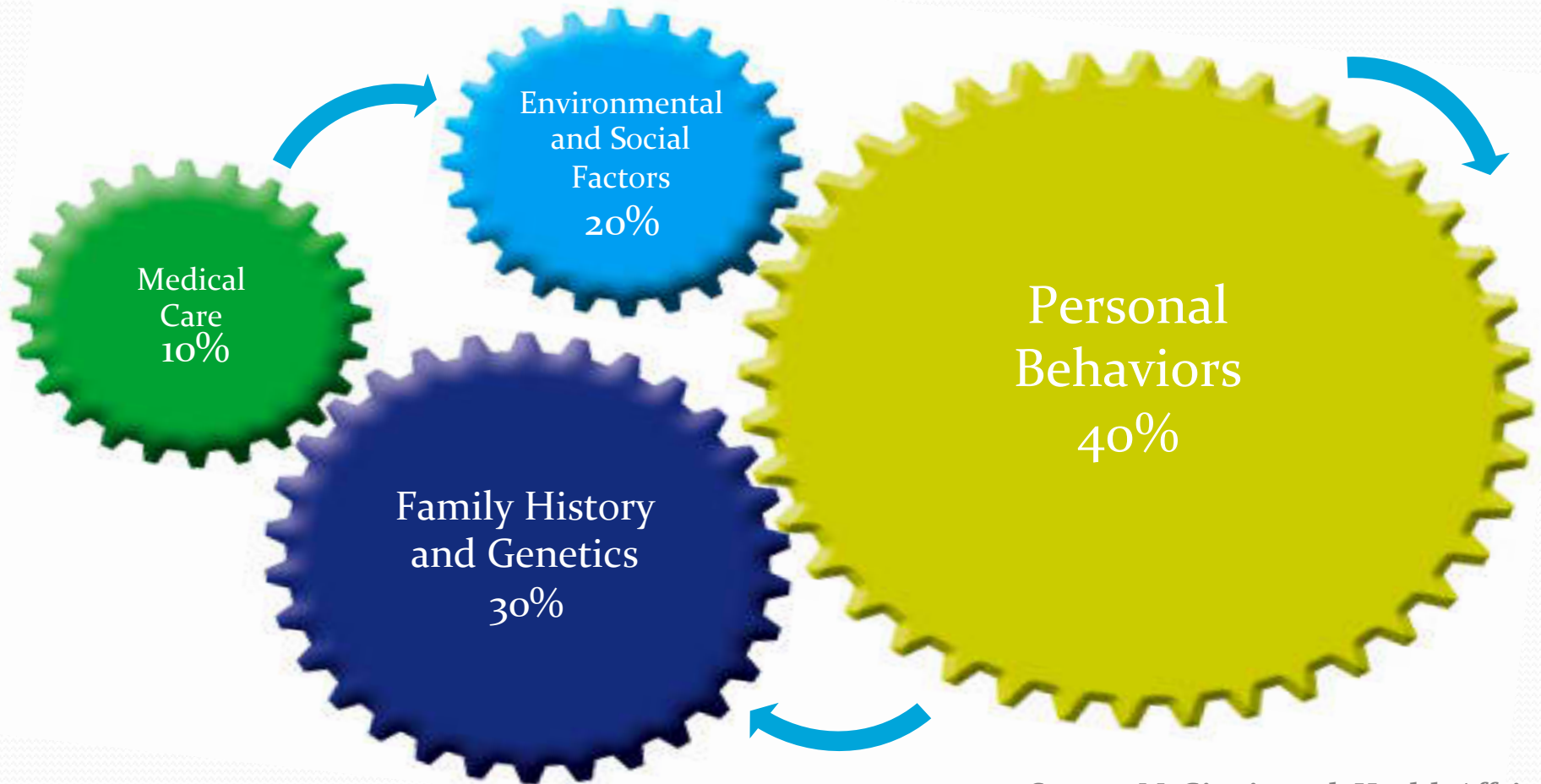
We Are Not Even #1 in Health for Our Own Workforce



Many Factors Shape Health

- Health is driven by multiple factors that are intricately linked – of which medical care is one component.

Drivers of Health



What Makes Us Healthy



Source: Derived from information from the Boston Foundation (June 2007).

What We Spend On Being Healthy



Source: Lots to Lose: How America's Health and Obesity Crisis Threatens our Economic Future



Mantras to THRIVE by:

- The Secret to patient care is caring for the patient.
- The secret to health is caring for the person.
- The secret to wellness is caring for the family (and SN).
- The secret to resilience is caring for the Community.
PHII, RWJF, IATF work

Behavioral Symphony of Wellness

- Obesity, Diabetes, Lifestyle disorders reflect a collision of old genes of scarcity with new abundances
- Shaping and choosing behavioral cues that reinforce our chosen outcomes
- Mobile Health is Critical: keeping cues “stationary” to us.
- Social Determinants of Health:
Individuals and their communities
Income prevails but does not preclude
- Bhutan’s model: Gross National Happiness GNH (1972)
Health is **not** the top of the pyramid
- New ecosystem: Evidence-based Compassionate Action

Health

Wellness
Empowerment
Happiness
Control
Fitness
Balance
Friends and family
Stress-free

Healthcare

Money
Profit/greed
Bureaucracy
Safety net
Sick care
Lack of control
Insurance
Fine print

Transparency into the “Black Box Economy”

- **Problem:** the ‘Opacity Hazards’:
 - a) Credit Default Swaps and global meltdown
 - b) The “President Gore” Election Dispute
 - c) “Drive by wire” terrorism
 - d) NSA/Prism
 - e) Avatars “free”, political, religious, nation states, multi-nationals. Ultimate trillion dollar sales and marketing channel.
- **Solution:**
 - ?policy solution
 - Systematic Reciprocal Transparency (Uber, AirBnB)
 - ?OSCCs? Open Source Clandestine Cops (anonymous) strike again?
 - ? How to manage the conflict of
 - a) transparency with IP protection and
 - b) transparency with sensitive negotiations



Visualization to Support Three Conversations

1. Patient with Professional Care team
2. Patient with Personal Care team
3. Patient with the Person that houses the patient persona: “Person-Centricity”

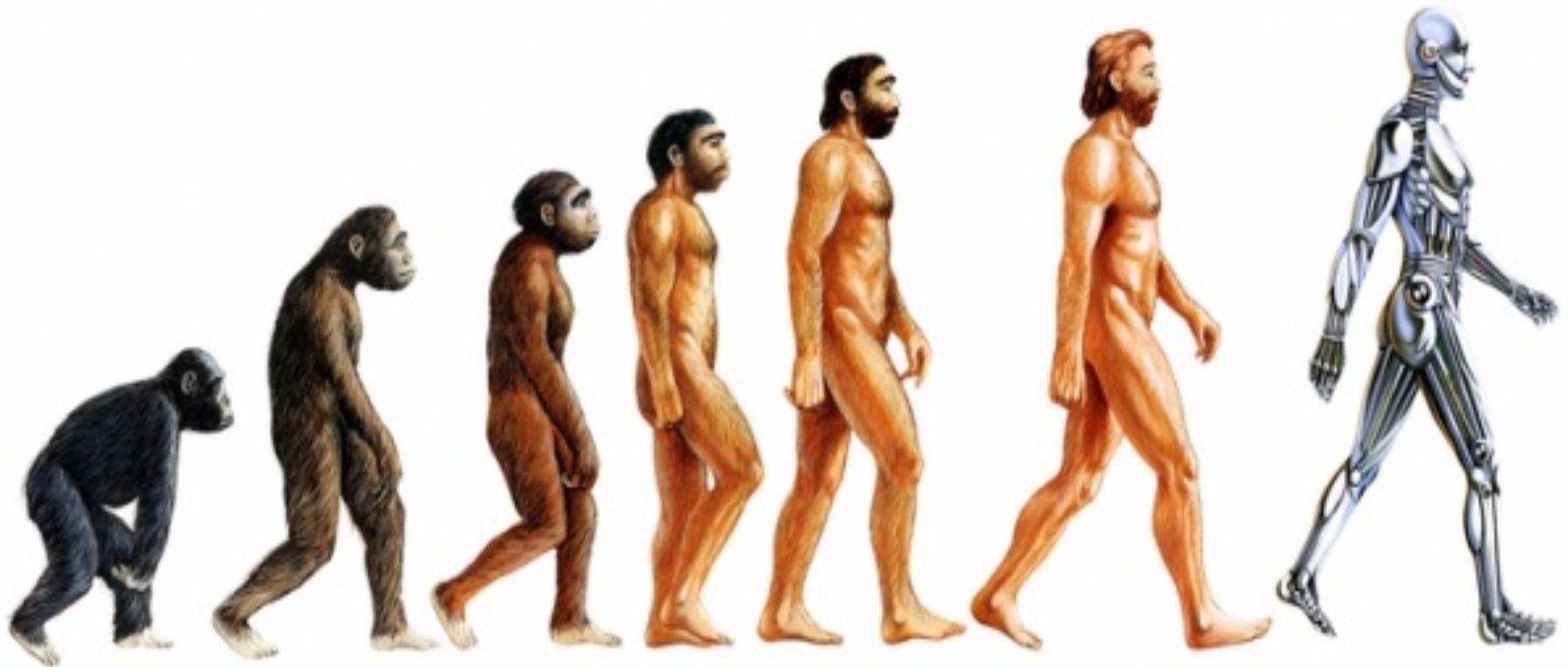
Primary sort is values-based, drill down to data.

Role of Pervasive Sensing

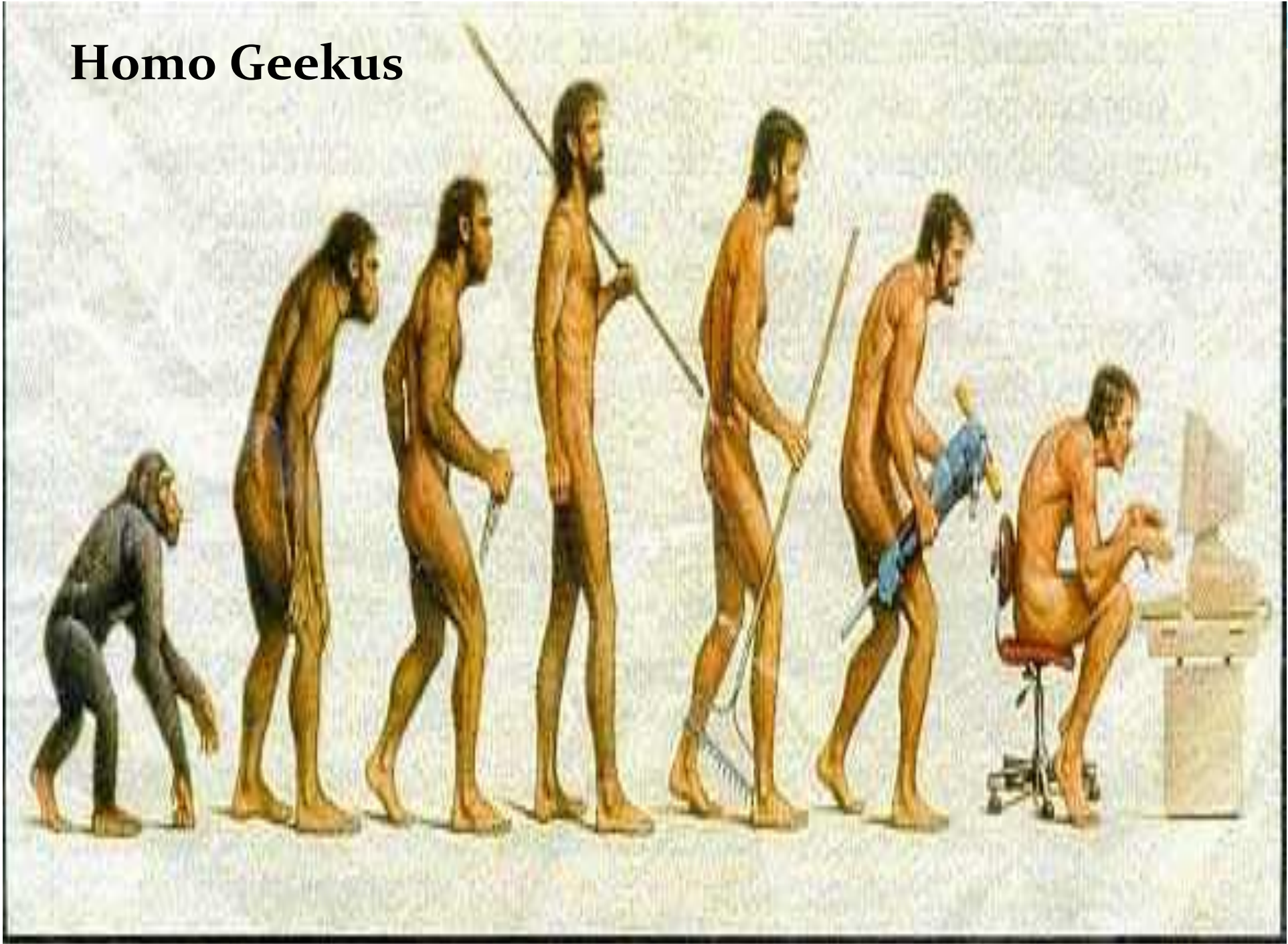
Three tiers of Pervasive Sensing:

- 1) Athlete/warrior: realtime tuning
- 2) Chronic Illness: Post-discharge from hospital: early event detection and intervention (Mayo Study)
- 3) The rest of us: **mindfulness** (Pedometers, GSR, etc)
 - a) Initiation
 - b) Motivation, and
 - c) Calibration

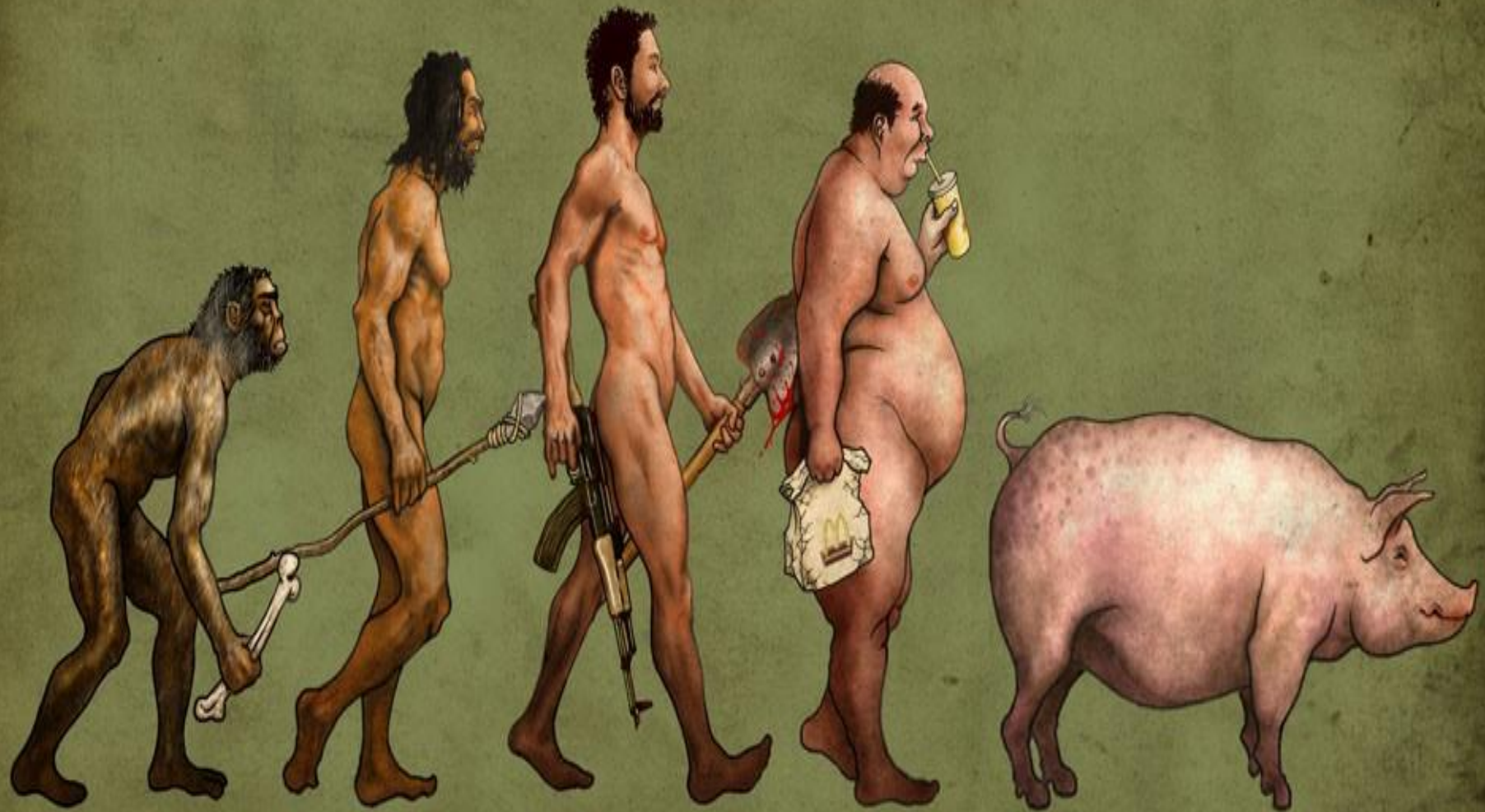
Homo Metricus: embedded sensor loops



Homo Geekus



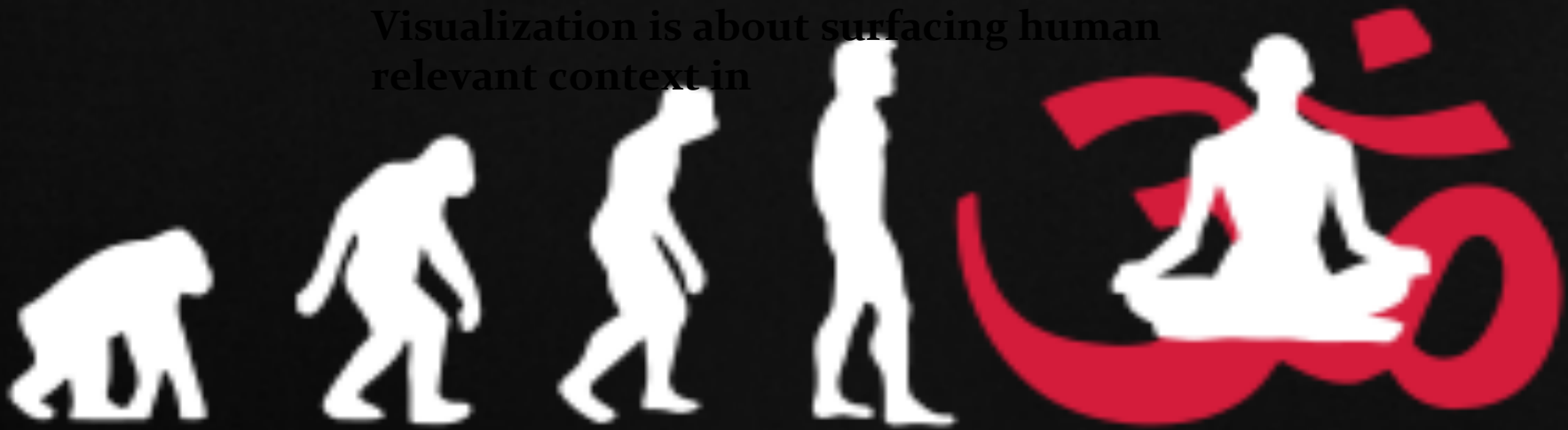
Homo FastFooderus





Mindful Man

Visualization is about surfacing human relevant context in



False Dilemma:

Too many imperatives and

Not enough funding????

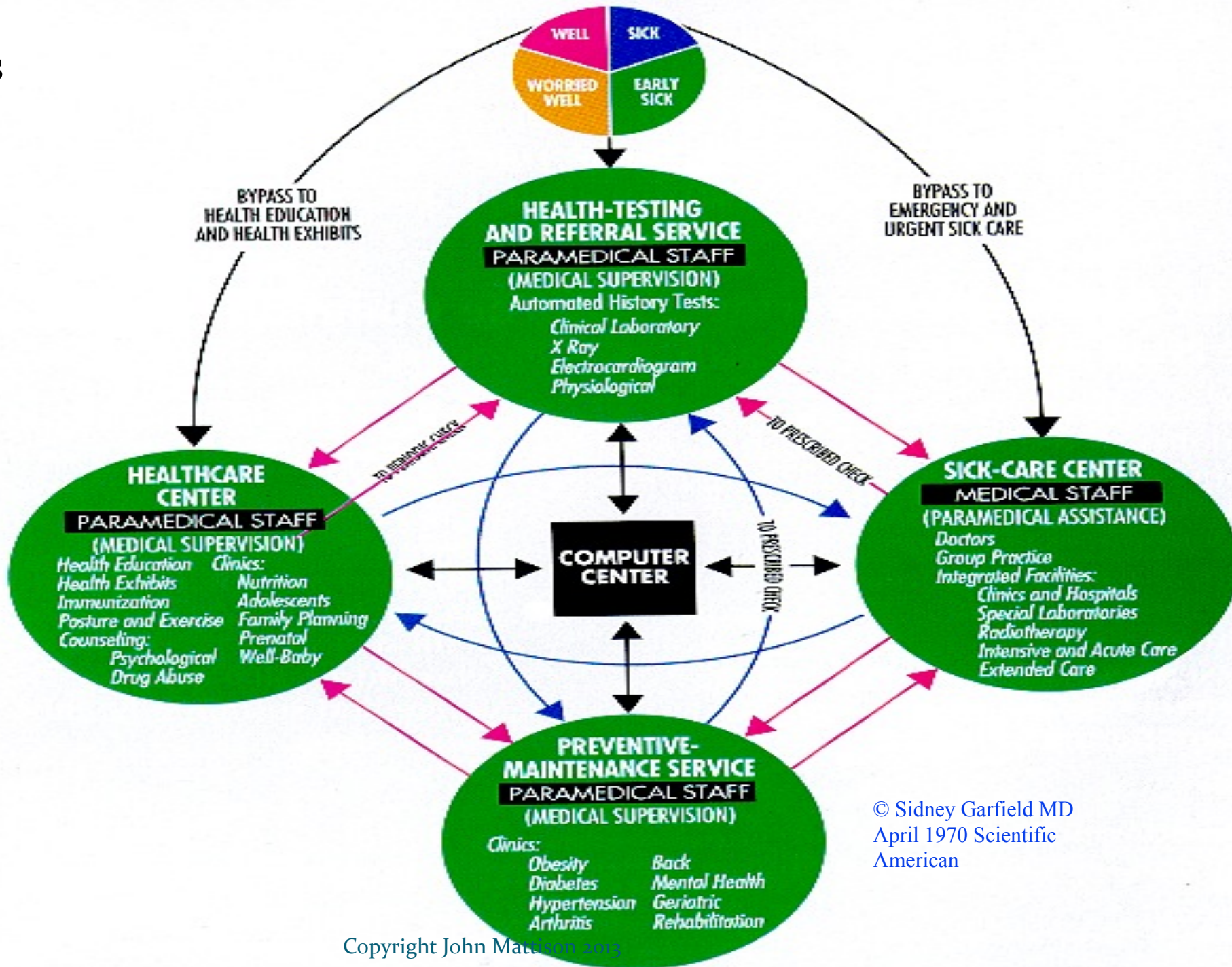
- How to focus community efforts on highest ROI
- More Prisons vs. Early Childhood Education?
- Adults vs. Children
- Mothers (Parents) as most influential change agents
- Role of Government
- Role of Healthcare industry
- Role of local thought leaders, and tribal collaboration
- Role of new investment models: Social Bonds, PRI

Hubert Humphrey at HHS

- It has been said that the moral test of government is how that government treats
 - those who are in the dawn of life, the children;
 - those who are in the twilight of life, the elderly;
 - and those who are in the shadows of life, the sick, the needy and the handicapped.
- *The Second Machine Age* chronicles some systematic societal challenges of technology.



Questions



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***For every large complex problem
there is almost always at least one
very simple solution.....***

and it's usually wrong.

-HL Menken

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