

Streetcoin:
integrating place-based social landscape with
healthcare risk models through the electronic
health record

Alan Waxman, MLA
Chethan Sarabu, MD

Healthy City International 2019
Monday October 14th, 2019



Alan Waxman, MLA

Landscape Architecture
Urban Design



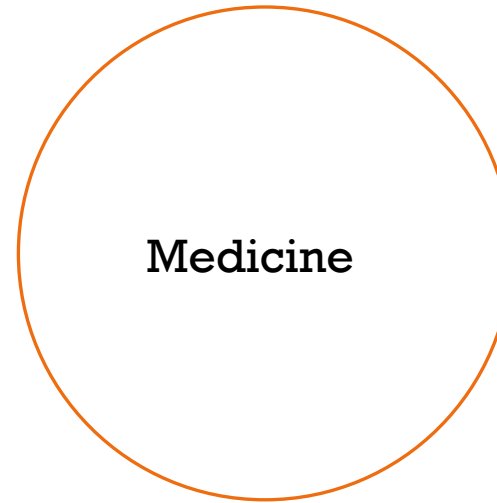
Chethan Sarabu, MD

Paediatrics
Clinical Informatics



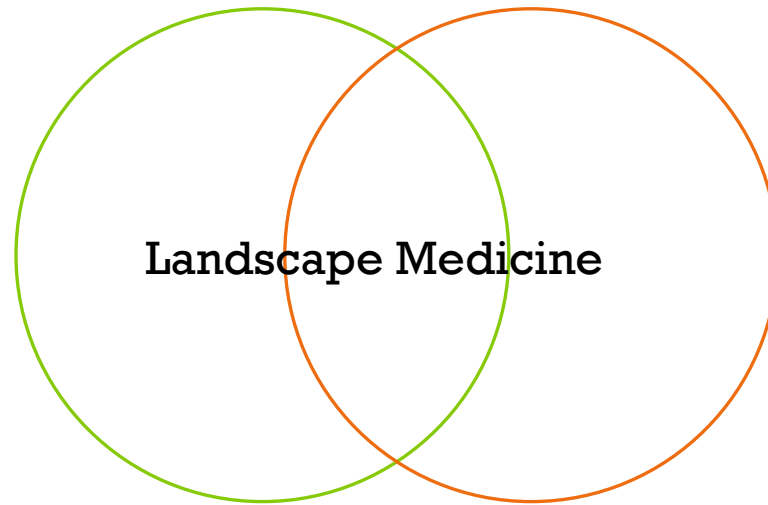
Landscape

Municipalities
City Planning
Landscape Architecture
Streets, Parks, Buildings
Maps



Medicine

Healthcare system
Doctors
Nurses
Hospitals & clinics
Electronic health records

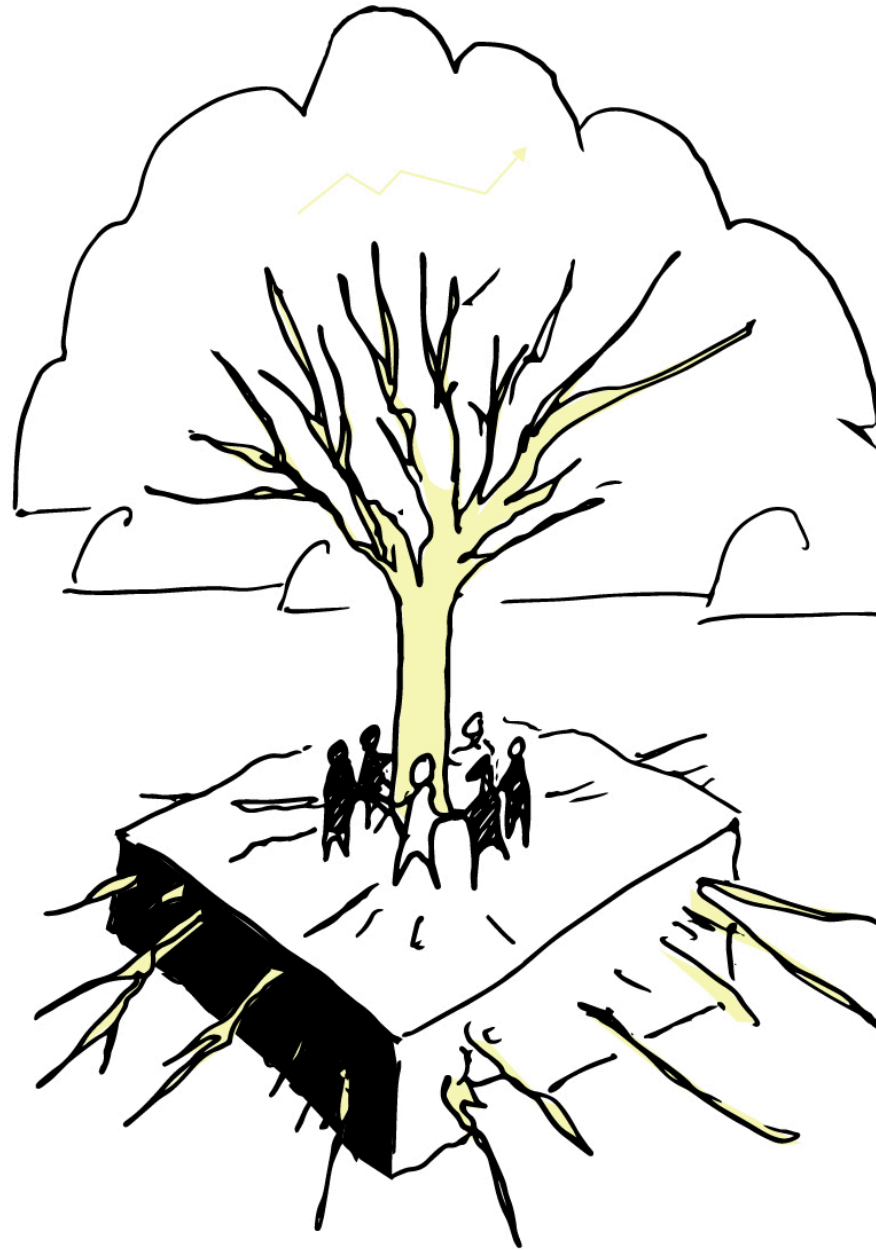


Landscape medicine:

A place-based framework for valuing community assets through the healthcare system

Landscape Medicine

A place-based framework
for valuing community
assets through the
healthcare system



Electronic Health
Records/Maps

Cipher/streetcoin

Patients/Community

Social determinants of
health/Environment

The time is ripe to connect landscape and medicine; particularly in the United States but globally as well.

As costs have escalated, all health systems are looking to invest in upstream preventive measures to decrease costs.

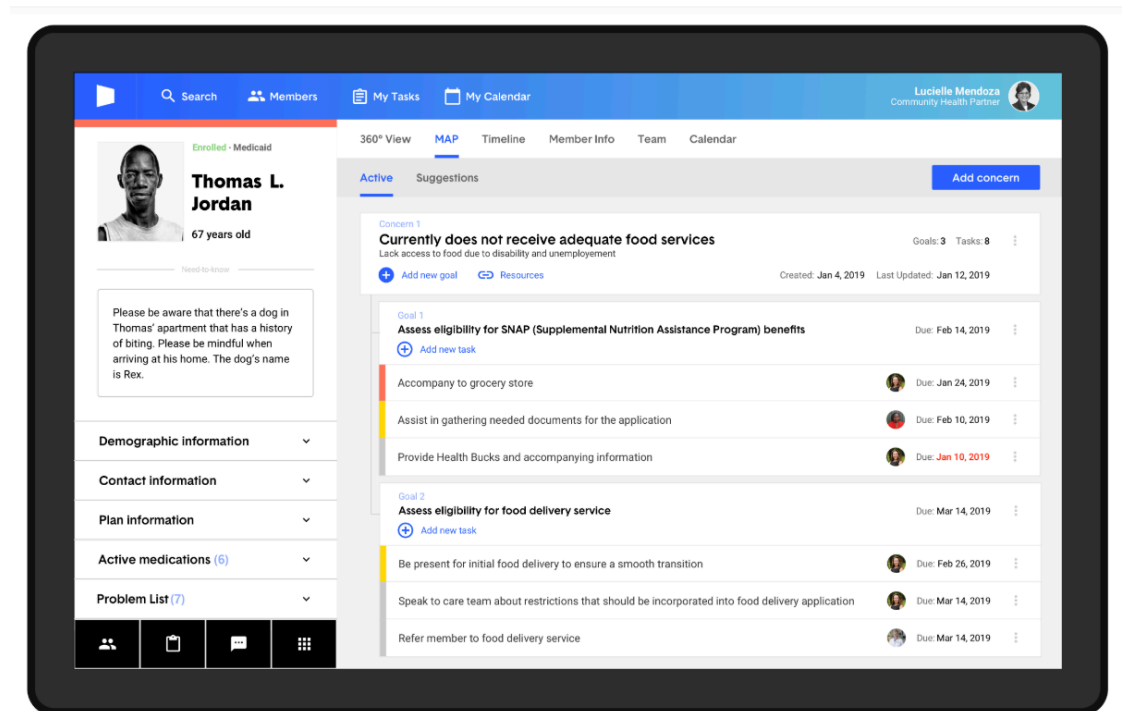
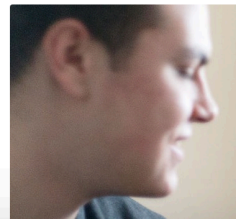
We also now have the technology and data layers to link the urban landscape, people, and health systems.

This is giving rise to a new type of healthcare/insurance system known as Accountable Care Organizations (ACOs).



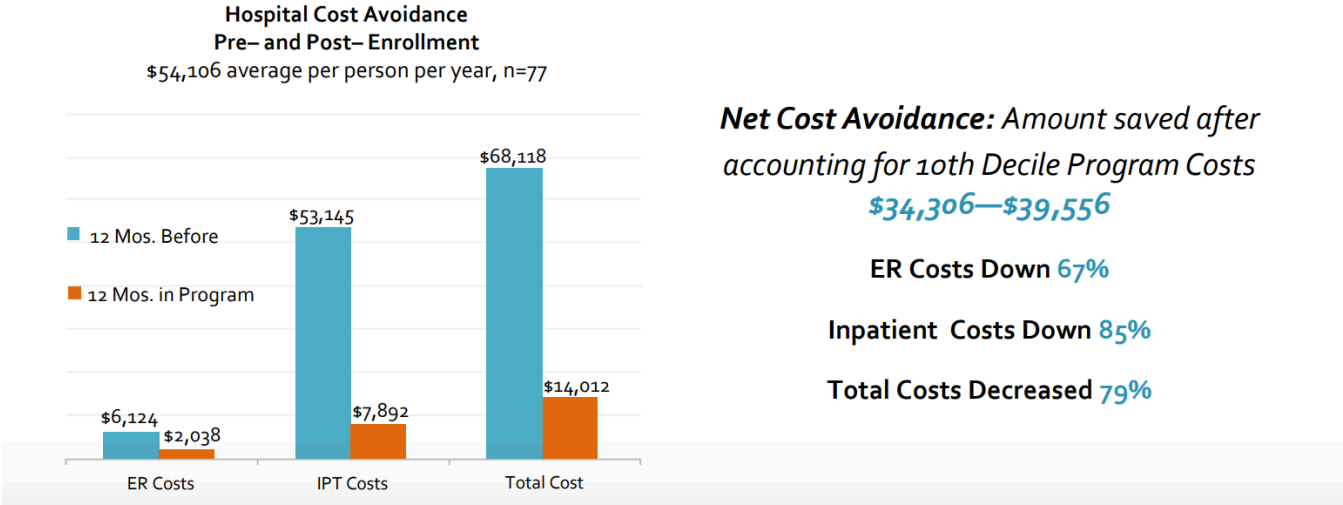
Health is local.

Cityblock was founded on the premise that health starts at the neighborhood level, and that everyone should have good care for what matters to them. We saw firsthand how healthcare has fallen short in providing adequate care for people living with complex health and social needs—and knew there was room for improvement.



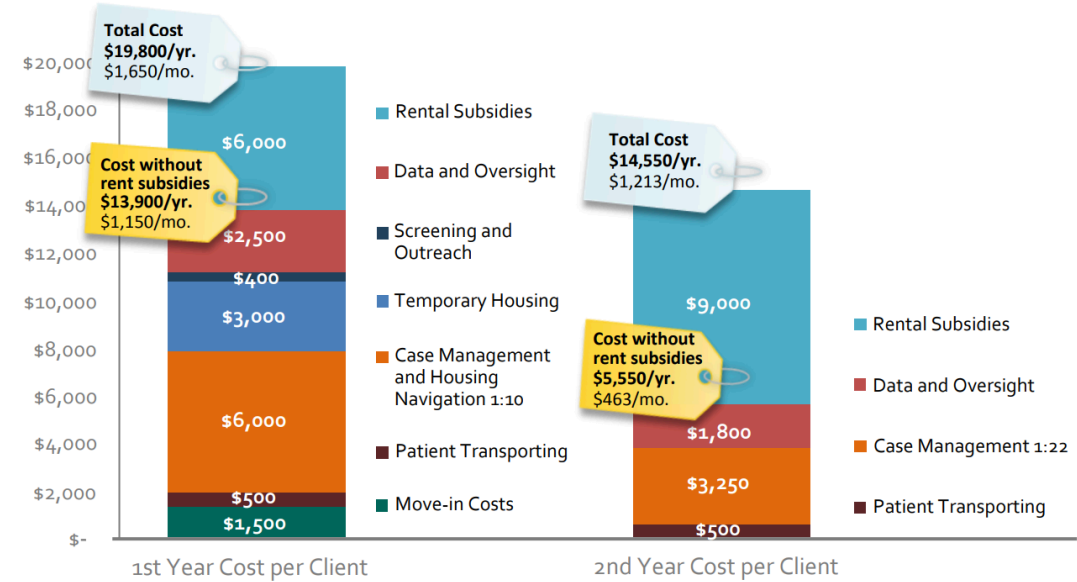
Cost Avoidance

Figure 6: Cost Avoidance



10th Decile Project

Los Angeles, CA | September, 2015



Health Benefits

The Benefits of Nature are Mental

There are currently more than 400 studies that demonstrate the numerous health benefits that nature provides. Below we've highlighted a few key resources that give an overview of the findings. You can also find relevant infographics in the [ParkRx toolkit](#).



Literature Reviews



Databases



Prescribe Parks

What is Park Rx America?

Resources

Media

Contact

[PRESCRIBER LOGIN](#)

For Health Professionals

Have you ever prescribed Nature before? As a provider, are you ready to try something new?

How much time do you spend outside in a natural setting during YOUR free time?

Take the opportunity to capitalize on the provider burnout that has to do with prescribing the same medications and doing the same things we do every day without considerable change in our patients' lives.



CREDIT: National Park Service

[Learn More »](#)

For Park Agencies

We work closely with managers of public lands to ensure patient access to therapeutic time in nature.

Park Rx America has collected data on thousands of parks and green spaces, searchable by location, with results filterable by standard park attributes and features, and viewable as printable one-page Park Summaries.

We have demonstrated scalability by replicating the park prescription model in diverse park agencies and health provider organizations across the country.



[Learn More »](#)

Table 1. Summary of evidence-based health benefits of nature contact.

No.	Health/well-being benefits	References
1	Reduced stress	Berto 2014 ; Fan et al. 2011 ; Nielsen and Hansen 2007 ; Stigsdotter et al. 2010 ; van den Berg and Custers 2011 ; van den Berg et al. 2010 ; Ward Thompson et al. 2016
2	Better sleep	Astell-Burt et al. 2013 ; Grigsby-Toussaint et al. 2015 ; Morita et al. 2011
3	Improved mental health: Reduced depression	Astell-Burt et al. 2014c ; Beyer et al. 2014 ; Cohen-Cline et al. 2015 ; Gascon et al. 2015 ; Kim et al. 2009 ; Maas et al. 2009b ; McEachan et al. 2016 ; Nutsford et al. 2013 ; Sturm and Cohen 2014 ; Taylor et al. 2015 ; White et al. 2013
	Reduced anxiety	Beyer et al. 2014 ; Bratman et al. 2015a ; Maas et al. 2009b ; Nutsford et al. 2013 ; Song et al. 2013 ; Song et al. 2015
4	Greater happiness, well-being, life satisfaction	Ambrey 2016 ; Fleming et al. 2016 ; Larson et al. 2016 ; MacKerron and Mourato 2013 ; Van Herzele and de Vries 2012 ; White et al. 2013
5	Reduced aggression	Bogar and Beyer 2016 ; Branas et al. 2011 ; Kuo and Sullivan 2001a, b ; Troy et al. 2012 ; Younan et al. 2016
6	Reduced ADHD symptoms	Amoly et al. 2014 ; Faber Taylor et al. 2001 ; Faber Taylor and Kuo 2009 ; Faber Taylor and Kuo 2011 ; Kuo and Faber Taylor 2004 ; Markevych et al. 2014b ; van den Berg and van den Berg 2011
7	Increased prosocial behavior and social connectedness	Broyles et al. 2011 ; Dadvand et al. 2016 ; de Vries et al. 2013 ; Fan et al. 2011 ; Holtan et al. 2015 ; Home et al. 2012 ; Piff et al. 2015 ; Sullivan et al. 2004
8	Lower blood pressure	Duncan et al. 2014 ; Markevych et al. 2014a ; Shanahan et al. 2016
9	Improved postoperative recovery	Park and Mattson 2008 ; Park and Mattson 2009 ; Ulrich 1984
10	Improved birth outcomes	Reviewed by Dzhambov et al. 2014
11	Improved congestive heart failure	Mao et al. 2017
12	Improved child development (cognitive and motor)	Fjørtoft 2001 ; Kellert 2005
13	Improved pain control	Acutely (Diette et al. 2003; Lechtzin et al. 2010) and chronically (Han et al. 2016)
14	Reduced obesity	Bell et al. 2008 ; Cleland et al. 2008 ; P. Dadvand et al. 2014a ; Lachowycz and Jones 2011 ; Sanders et al. 2015 ; Stark et al. 2014
15	Reduced diabetes	Astell-Burt et al. 2014a ; Bodicoat et al. 2014 ; Brown et al. 2016 ; Thiering et al. 2016
16	Better eyesight	French et al. 2013 ; Guggenheim et al. 2012 ; He et al. 2015
17	Improved immune function	Li et al. 2006 ; Li et al. 2008a ; Li et al. 2008b ; Li et al. 2010 ; Li and Kawada 2011
18	Improved general health: Adults	Brown et al. 2016 ; de Vries et al. 2003 ; Kardan et al. 2015 ; Maas et al. 2006 ; Maas et al. 2009b ; Stigsdotter et al. 2010 ; Wheeler et al. 2015
	Cancer survivors	Ray and Jakubec 2014
	Children	Kim et al. 2016
19	Reduced mortality	Coutts et al. 2010 ; Gascon et al. 2016b ; Hu et al. 2008 ; James et al. 2016 ; Takano et al. 2002 ; Villeneuve et al. 2012
20	Asthma and/or allergies (studies show both improvements and exacerbations)	Andrusaityte et al. 2016 ; Dadvand et al. 2014a ; Fuertes et al. 2014 ; Fuertes et al. 2016 ; Lovasi et al. 2013 ; Lovasi et al. 2008 ; Ruokolainen et al. 2015

Note: ADHD, attention-deficit hyperactivity disorder. The references in [Table 1](#) are illustrative rather than exhaustive; they include both recent reviews and research reports and older, widely cited publications.

Parks are a huge asset, and we need to value them for the 21st century

Alison Benjamin

Our green spaces are shrinking, despite all the benefits they give us. If we want to save them, we need to value the ecosystem and health and wellbeing services they offer



▲ Angel Meadow park, Manchester. Many small but vital 'green lungs' are being lost to development. Photograph: Ian Canham/Alamy

THE  TIMES

Newcastle uses public health cash to save city parks

Jon Ungoed-Thomas

February 26 2017, 12:01am,
The Sunday Times



Leazes Park, Newcastle: the council says open spaces provide huge health benefits
ALAMY

Newcastle city council has become one of the first local authorities in Britain to use millions of pounds from its public health budget to help keep open its public parks.

The council says health budgets and NHS funds should be used to fund cash-strapped parks as such open spaces provide huge health benefits.

Precedent



Frederick Law Olmsted



Smohalla

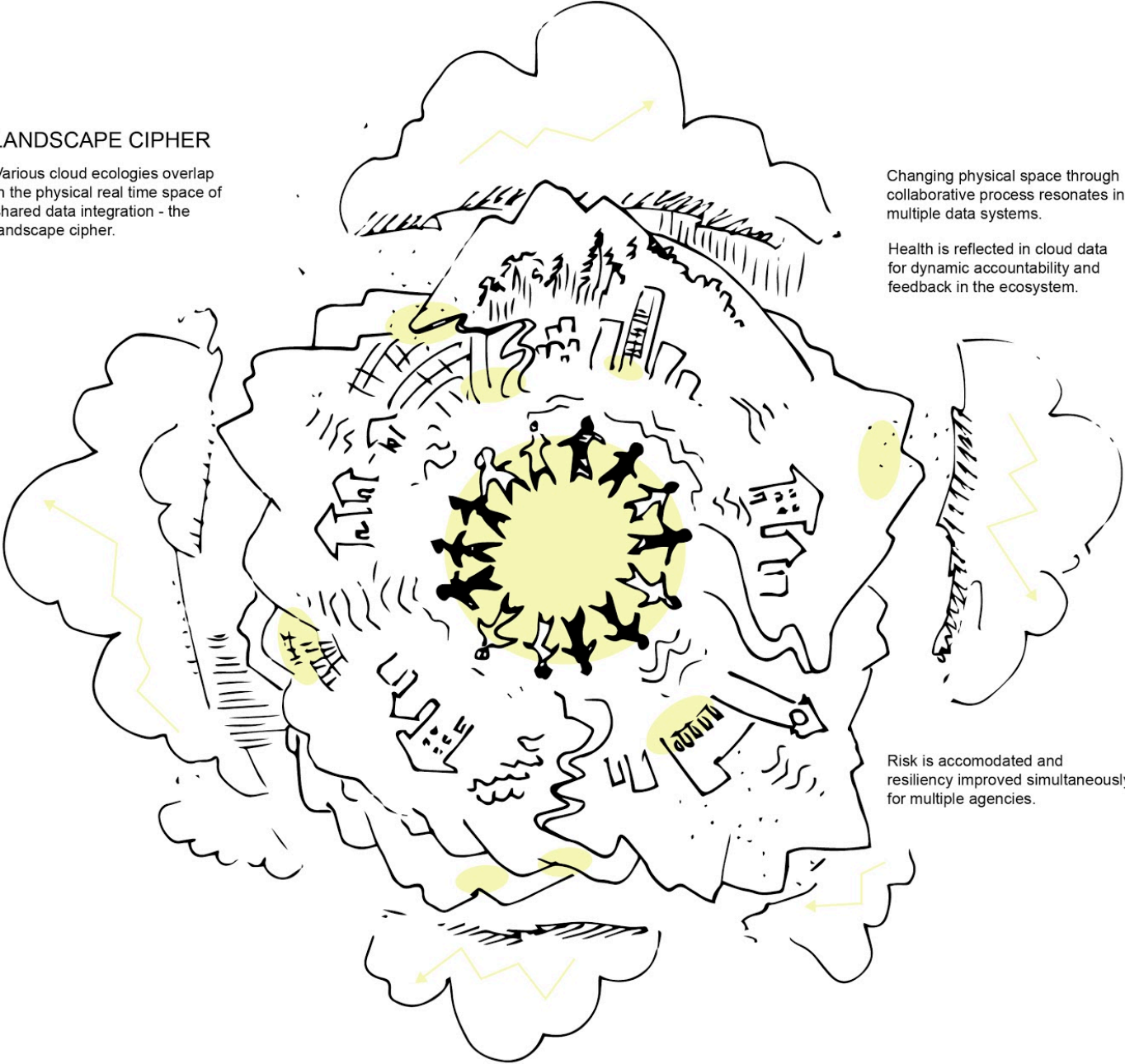
Olmsted.health

<https://www.olmsted.health>

Stewardship

LANDSCAPE CIPHER

Various cloud ecologies overlap in the physical real time space of shared data integration - the landscape cipher.

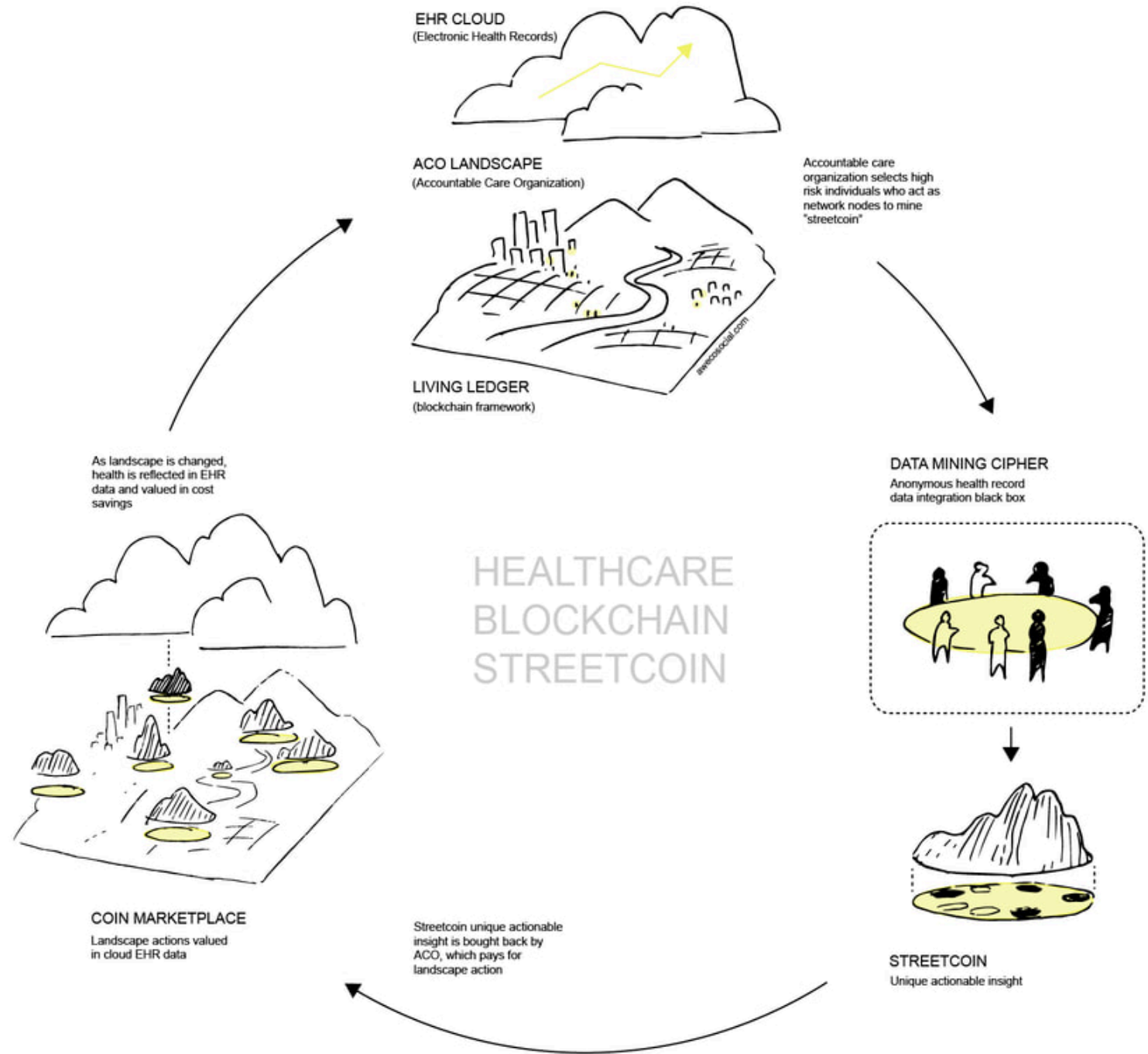


Changing physical space through collaborative process resonates in multiple data systems.

Health is reflected in cloud data for dynamic accountability and feedback in the ecosystem.

Risk is accomodated and resiliency improved simultaneously for multiple agencies.

Accountability



EHR CLOUD
(Electronic Health Records)



ACO LANDSCAPE
(Accountable Care Organization)



LIVING LEDGER
(blockchain framework)

Patient – Clinician View



EHR CLOUD
(Electronic Health Records)

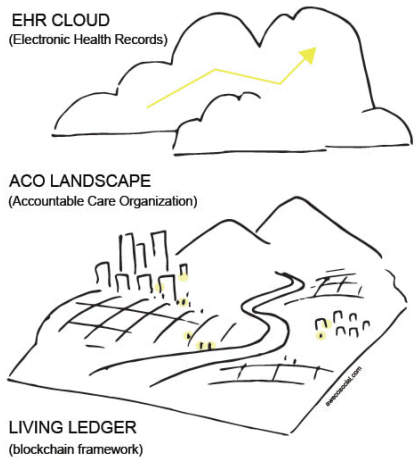


ACO LANDSCAPE
(Accountable Care Organization)




LIVING LEDGER
(blockchain framework)

Physician view:
patient story



BROOKLYN ACO



BETH


Demographics

Symptoms/Diagnoses

Therapies

Type in to search

CLINIC



Symptoms/Concerns

Options

Active diagnosis

Anxiety

Since 2015

Has had long standing anxiety that seems to be getting worse increasingly due to pressures at school exacerbated by social media based peer pressure.

Concern

Family history of Type 2 diabetes

Since 2015

Multiple family members have been diagnosed with type 2 diabetes, wonder what steps can be taken to prevent or delay condition.

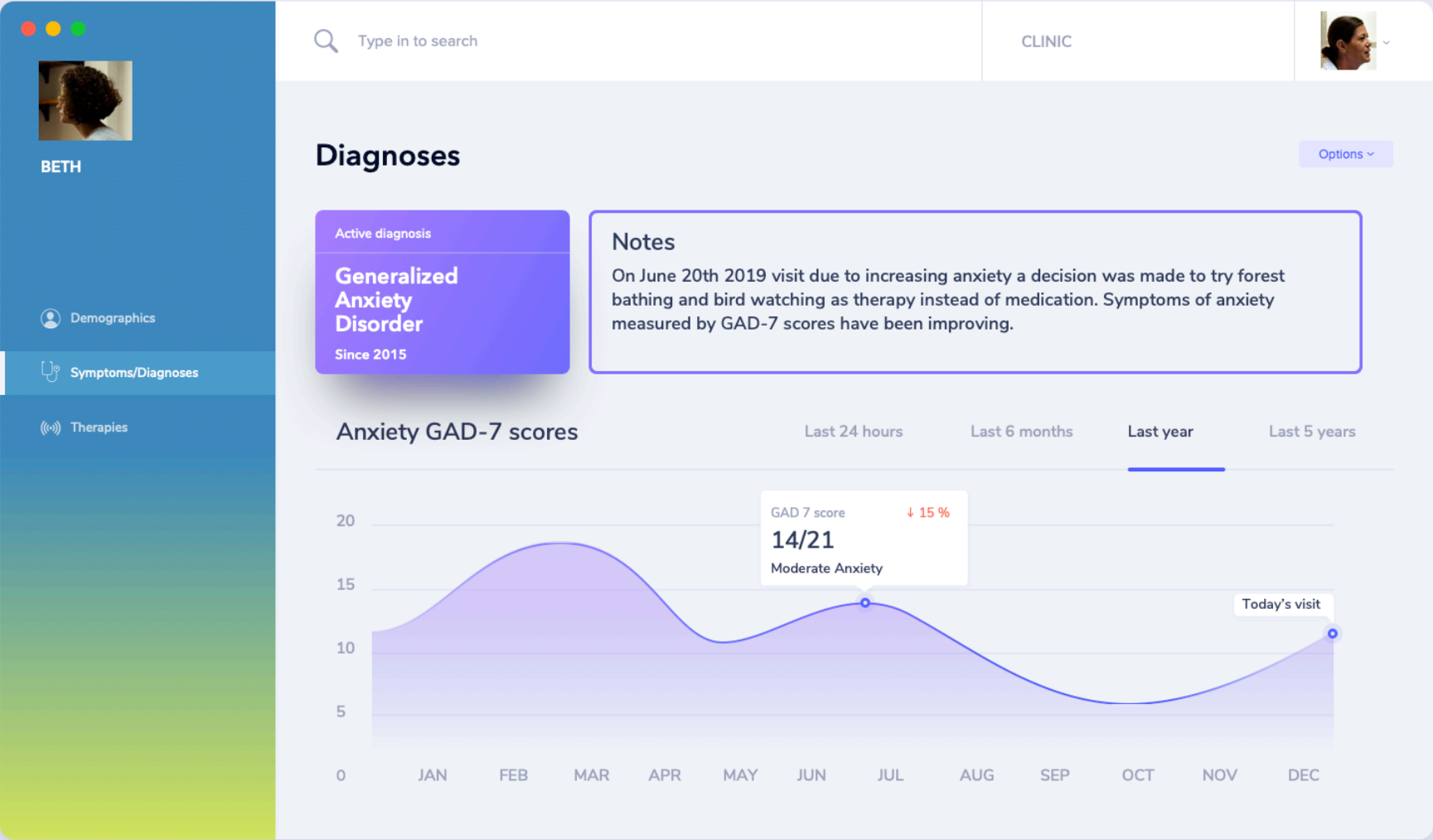
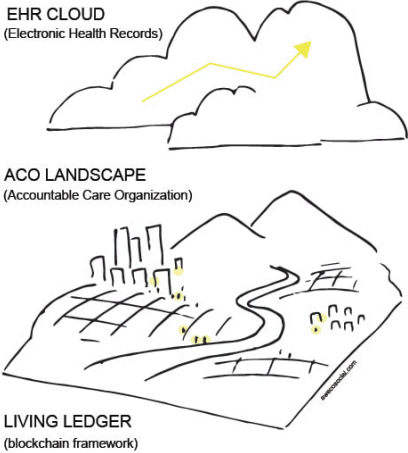
Concern

Excessive Screentime

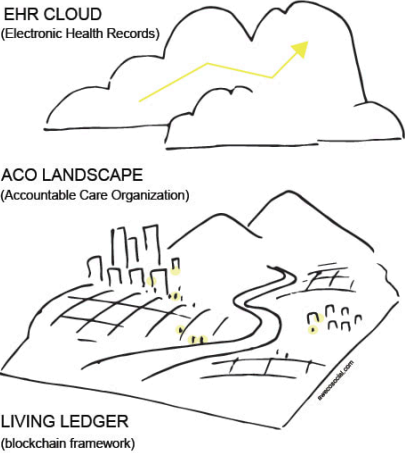
Since 2015

Patient and mother are concerned about her excessive time on her phone and feels that this is disrupting her sleep and other activities.


Monitoring patient condition over time



Physician view:
therapy selection



BROOKLYN ACO



BETH


Demographics

Symptoms/Diagnoses

Therapies

Type in to search

CLINIC



Therapies

Options

Active diagnosis

Generalized Anxiety Disorder

Since 2015

Notes

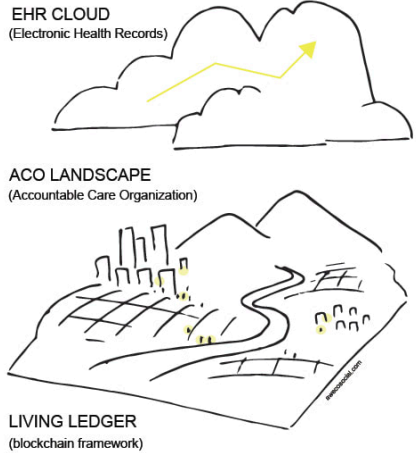
On June 20th 2019 visit due to increasing anxiety a decision was made to participate in a nearby park stewardship group. This was effective for a few months but now her anxiety seems to be rising.

Medication


Digital Therapeutics

Landscape Medicine

Physician view:
place selection



BROOKLYN ACO



BETH


Demographics

Symptoms/Diagnoses

Therapies

Type in to search

CLINIC



Landscape Medicine




Options

Active diagnosis

Generalized Anxiety Disorder

Since 2015

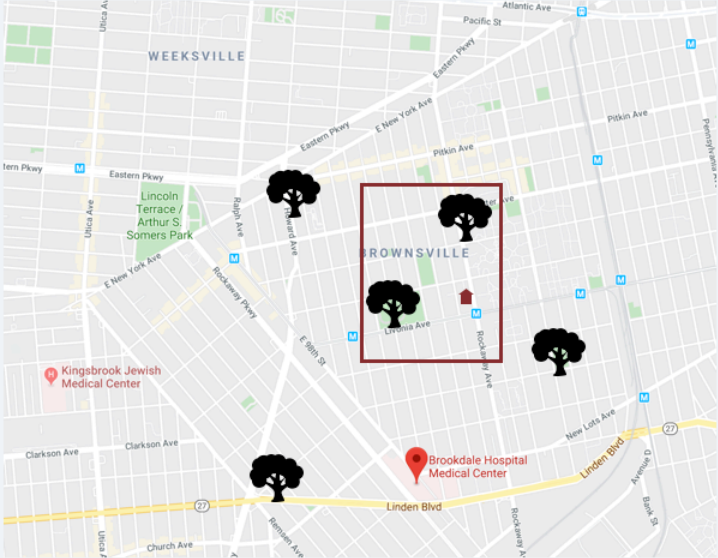
Stewardship Groups



Place: Betsy Head Park

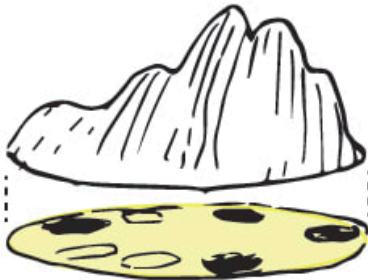
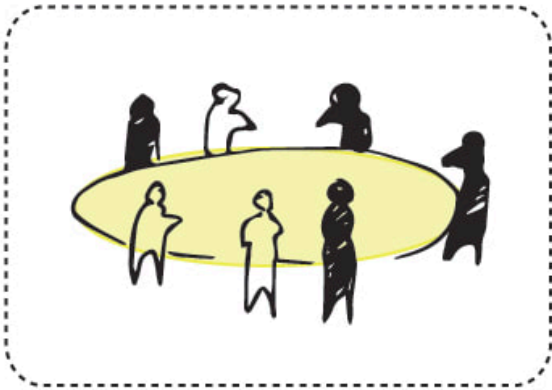
Condition: Anxiety prevention

2019 Activities: rap cipher, yoga group, birdwatching, tree planting



DATA MINING CIPHER

Anonymous health record
data integration black box

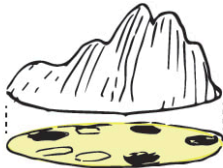
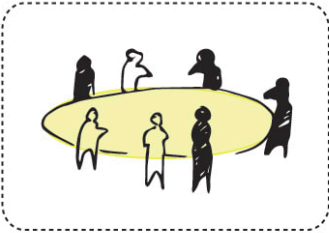


STREETCOIN

Unique actionable insight

Landscape doctor –
Stewardship group

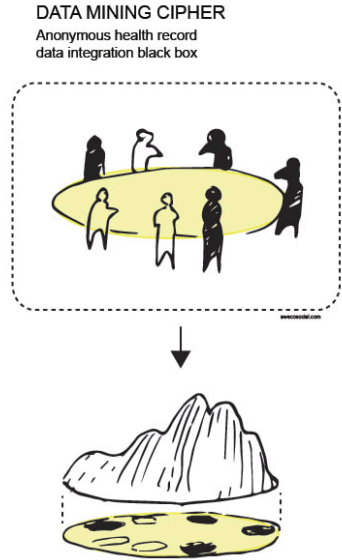
DATA MINING CIPHER
Anonymous health record
data integration black box



STREETCOIN
Unique actionable insight



Landscape doctor
view:
Stewardship groups



STREETCOIN
Unique actionable insight

BROOKLYN ACO

STEWARDSHIP GROUP

Demographics

Type in to search

CLINIC

Community anxiety mapping

WEEKSVILLE

ROWNSVILLE

Brookdale Hospital Medical Center

adaptation: add more openings in gates

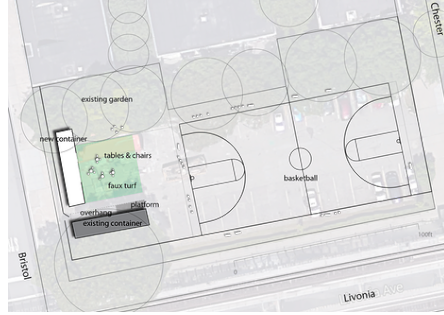
adaptation: farm

adaptation: open gate

adaptation: cover

This map is hidden from the digital fig for confidentiality of the participants.

Olmsted.health:
Landscape
doctor –
stewardship
group



Olmsted.health:
Landscape
doctor –
stewardship
group





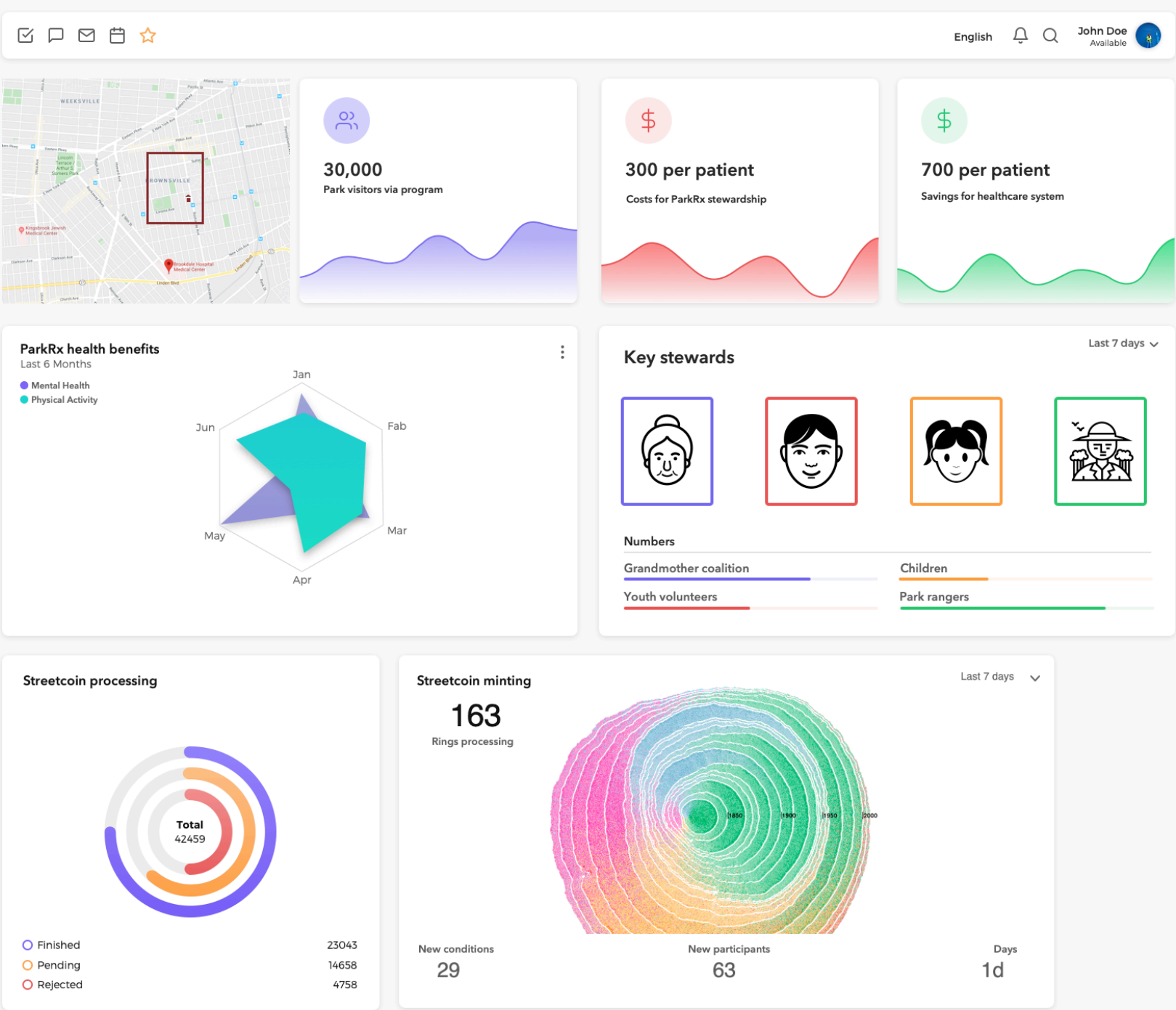
COIN MARKETPLACE
Landscape actions valued
in cloud EHR data

Accountable Care Organization view



COIN MARKETPLACE
Landscape actions valued
in cloud EHR data

Streetcoin
Dashboard

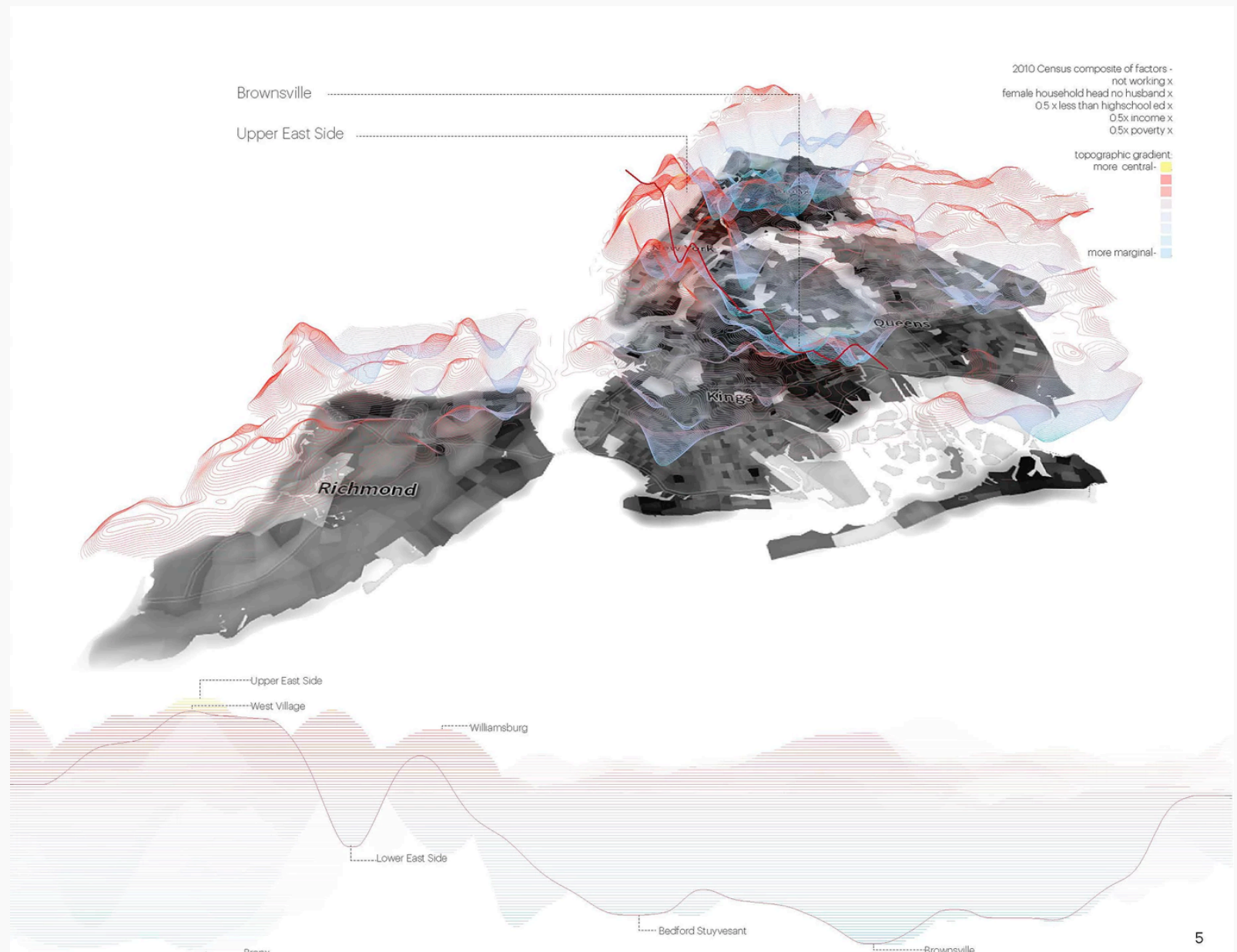


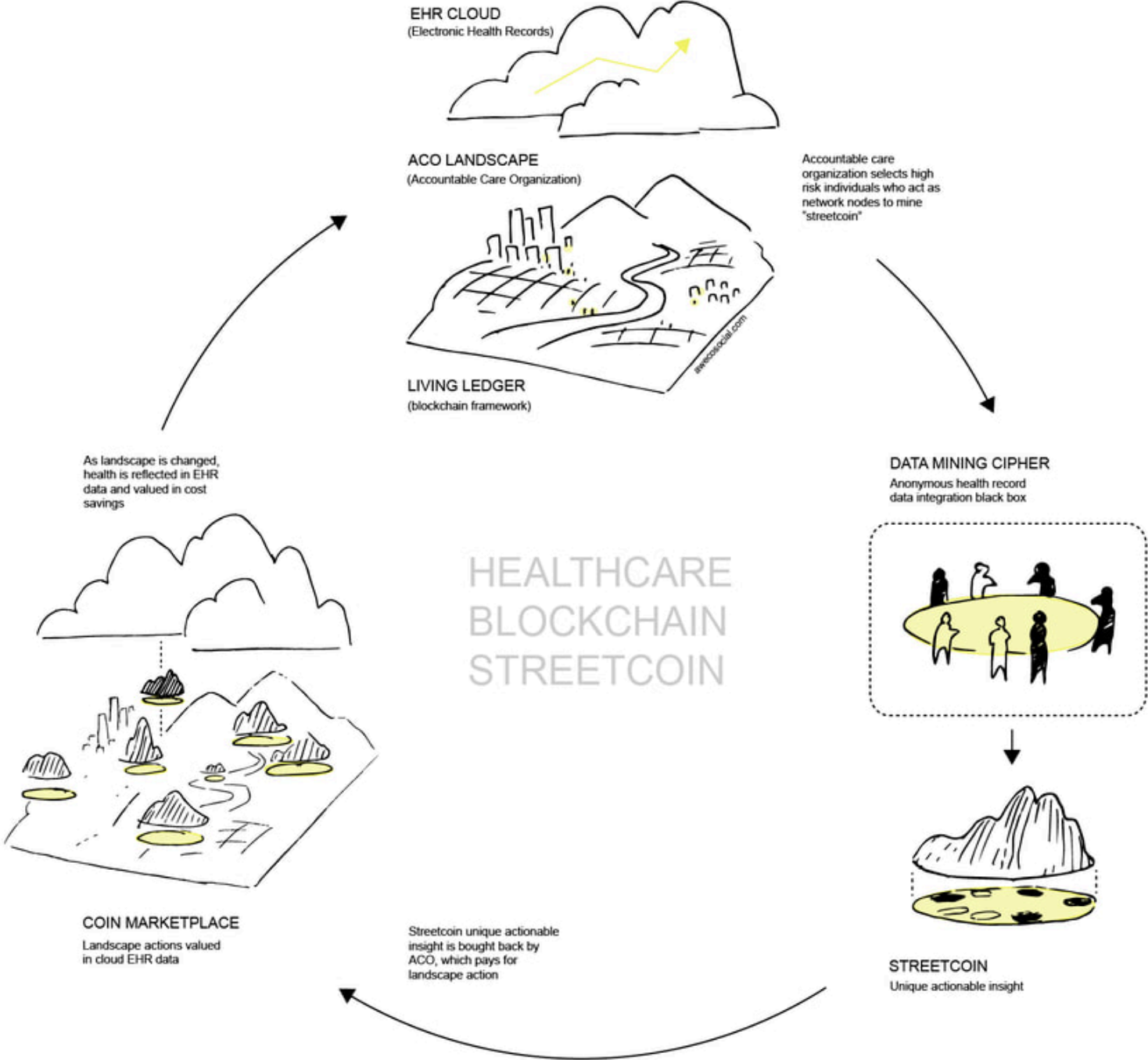
Accountable Care Organization view

As landscape is changed, health is reflected in EHR data and valued in cost savings



COIN MARKETPLACE
Landscape actions valued
in cloud EHR data





OLMSTED.HEALTH
landscape medicine

improving health outcomes with
patient led adaptive management

STEWARDSHIP

ACCOUNTABILITY

PRECEDENT

PEOPLE

alan.e.waxman@gmail.com
chethan.sarabu@gmail.com

