An Ecosystem for Health Equity & Community Improvement: 1+1=3

IQSC Data & Analytic Virtual Event
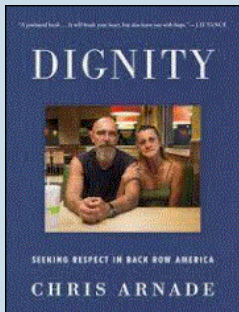
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Myrna R. Pickard Endowed Professor, CONHI

11/4/2021

Complex Patient Care Needs, Require Complex Solutions

"When you don't have anything, respect is all you have."

Images from 2016 - 2019

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Objectives

- Describe an ecosystem

- Associate the SDoH to the ecosystem

- Illustrate the step-by-step approach to analyze SDoH outcomes

- Questions

1. DESCRIBE AN ECOSYSTEM
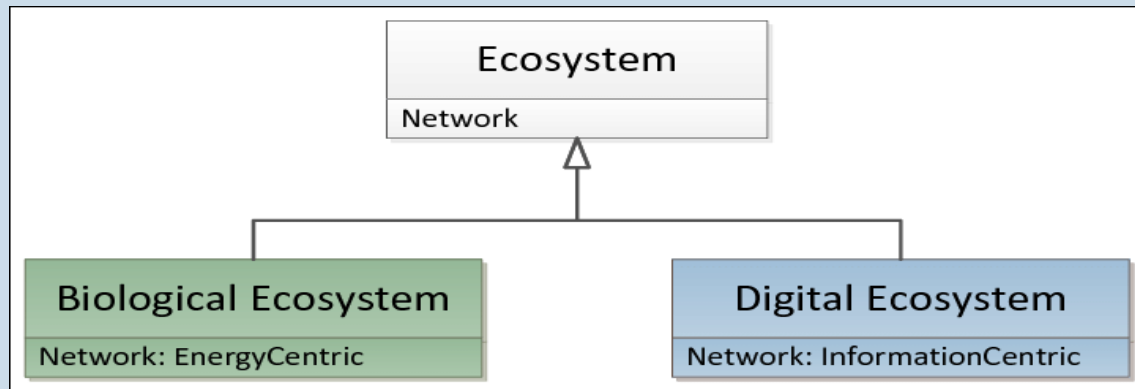
Ecosystem Definition


/ˈēkōˌsistəm/

noun   ECOLOGY

a biological community of interacting organisms and their physical environment.
"the marine ecosystem of the northern Gulf had suffered irreparable damage"

- (in general use) a complex network or interconnected system.
"Silicon Valley's entrepreneurial ecosystem"

Definitions from Oxford Languages

Ecosystem
Network

Biological Ecosystem
Network: EnergyCentric

Digital Ecosystem
Network: InformationCentric

ECOSYSTEM

SOLAR RADIATION

MOISTURE

DISTURBANCES

HABITAT

PLANT COMMUNITY

Nutrients

Minerals

Soil organisms

http://easyscienceforkids.com/all-about-ecosystems/

Briscoe's hypothetical abstract Ecosystem definition [34] Graca, P., & Camarinha-Matos, L. M. (2017). Performance indicators for collaborative business ecosystems — literature review and trends. *Technological Forecasting & Social Change, 116*, 237-255. https://doi.org/10.1016/j.techfore.2016.10.012.
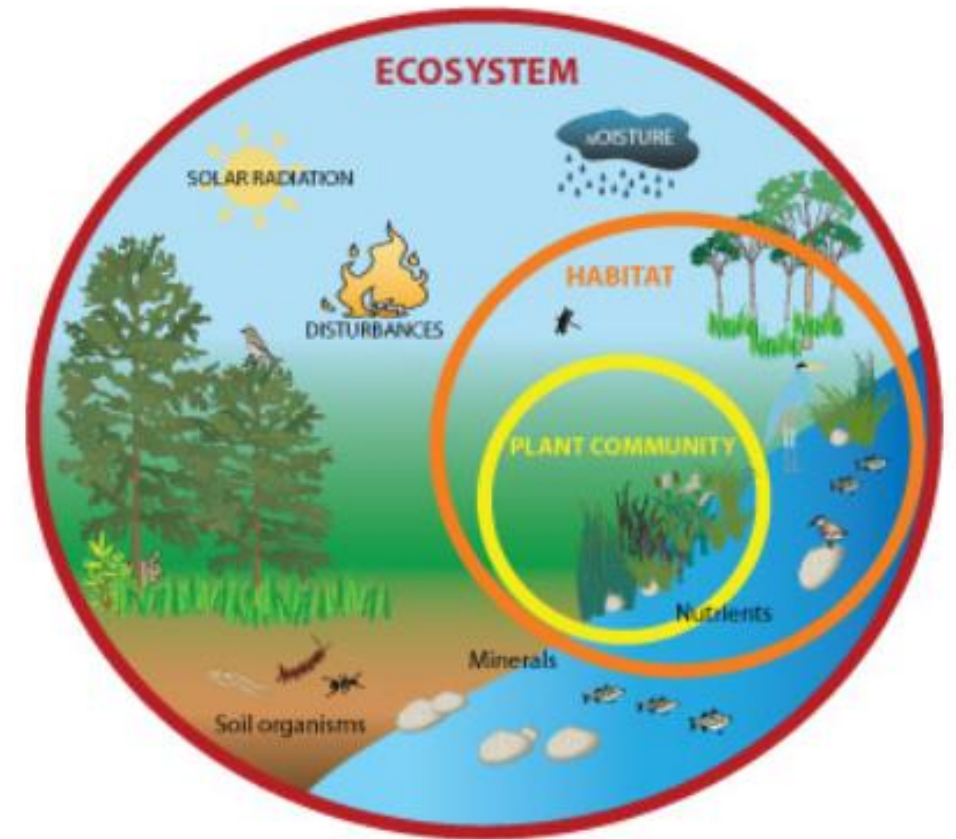
The 21st Century Cures Act [Dec. 13, 2016]
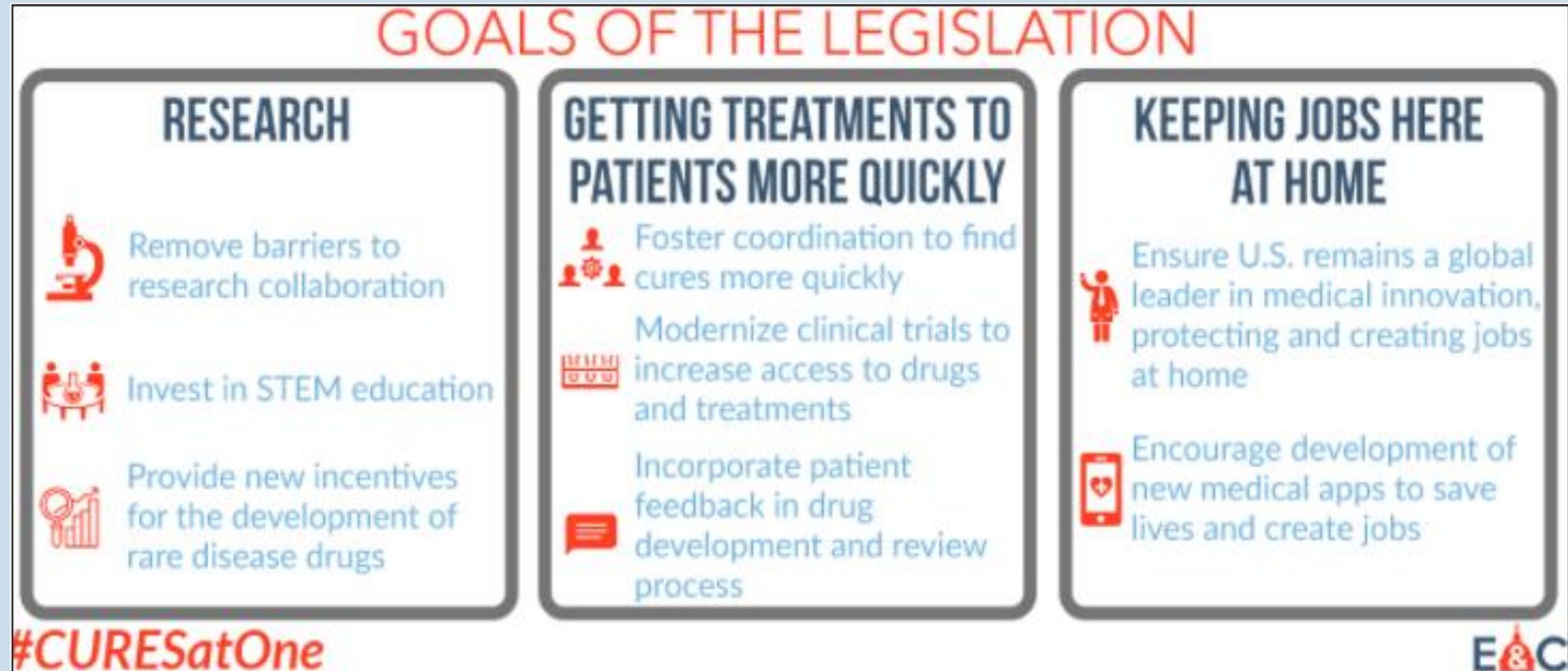
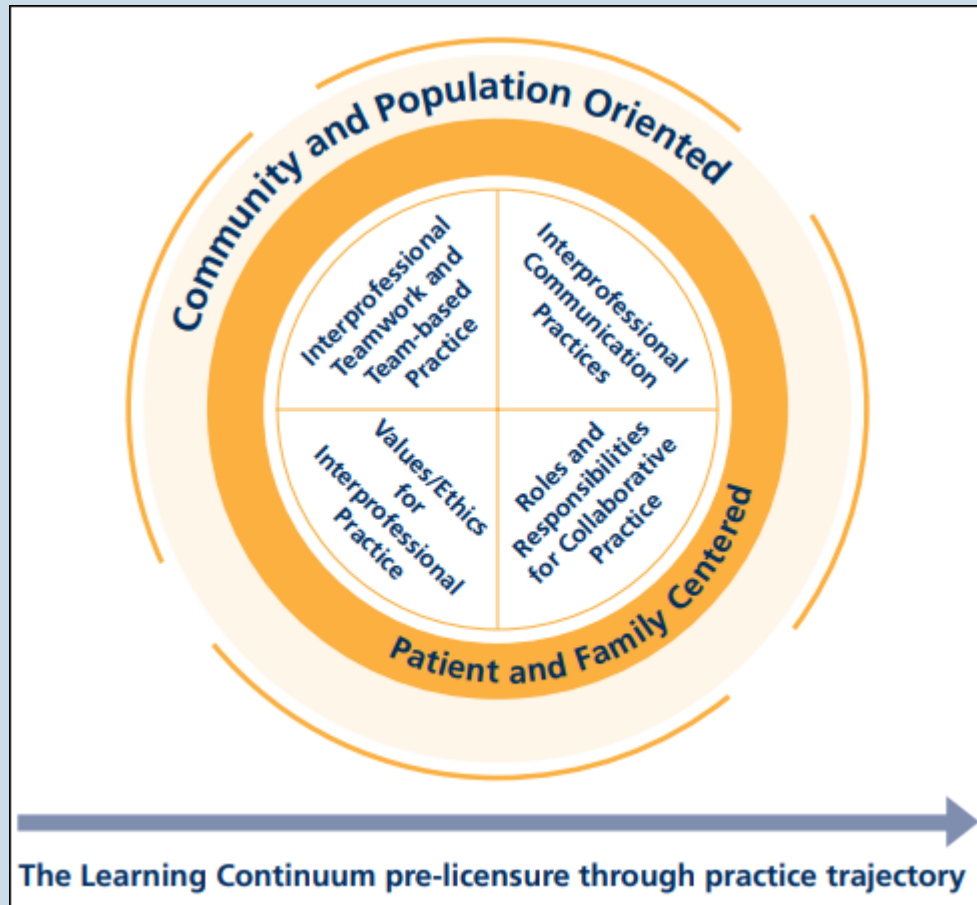

Ecosystem Promotion and Development

The 21st Century Cures Act [Dec. 13, 2016] (cont.)

- Promotes and funds the acceleration of research into preventing and curing serious illnesses; accelerates drug and medical device development; attempts to address the opioid abuse crisis; and tries to improve mental health service delivery.
- The Act includes provisions that push for greater **interoperability**, adoption of electronic health records (EHRs) and support for human services programs.

- The 21st Century Cures Act allows patients to access their medical data upon request and, as of 2022, will allow third parties to access that data through APIs.
- Like open banking legislation has done in Europe, the law is expected to give rise to a **healthcare app ecosystem** that could disrupt the incumbent providers.

Glover, C. (2021, April 5). The cures act lays the foundations for 'open healthcare' in the US. *Techmonitor, 2021*, 1-1. https://techmonitor.ai/leadership/digital-transformation/21st-century-cures-act#:~:text=The%2021st%20Century%20Cures%20Act,could%20disrupt%20the%20incumbent%20providers.

Majumder, M. A., Guerrini, C. J., Bollinger, J. M., Cook-Deegan, R., & McGuire, A. L. (2017). Sharing data under the 21st century cures act. *Genetics in Medicine, 19*(12), 1289-1294. https://doi.org/10.1038/gim.2017.59

Interprofessional Collaboration

The Learning Continuum pre-licensure through practice trajectory

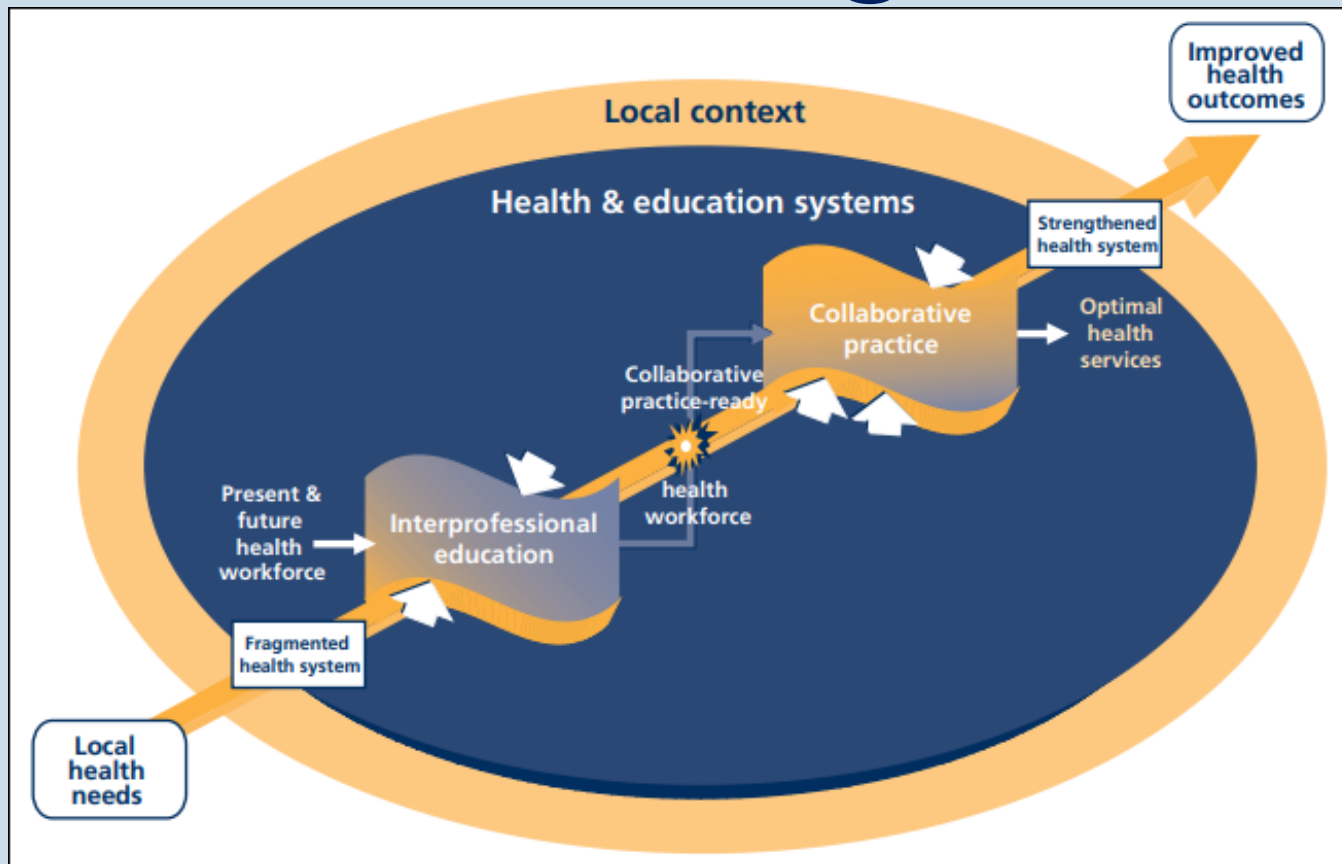The **World Health Organization** defines interprofessional collaboration in healthcare as:

"multiple health workers from different professional backgrounds work[ing] together with patients, families, carers (caregivers), and **communities** to deliver the highest quality of care."

$$1 + 1 = 3$$

Interprofessional Education Collaborative Expert Panel. (2011). *Core competencies for interprofessional collaborative practice: Report of an expert panel.* (No. IPE2011). Washington, D.C.: Interprofessional Education Collaborative. https://ipec.memberclicks.net/assets/2011-Original.pdf

Benefits of Interprofessional Collaboration

$$1 + 1 = 3$$

1. Improve patient care outcomes

2. Reduce medical errors

3. Start treatment faster

4. Reduce inefficiencies and healthcare costs

5. Improve staff relationships and job satisfaction

World Health Organization (WHO). (2010). Framework for action on interprofessional education & collaborative practice. Geneva: World Health Organization. Retrieved April 11, 2011 from http://whqlibdoc.who.int/ hq/2010/WHO_HRH_HPN_10.3_eng.pdf

COMMUNITY INVOLVEMENT BY HEALTH CARE PROFESSIONALS, STAFF, AND STUDENTS

Community Council >>
Moving families forward, leaving poverty behind.

AN ALL OF US RESEARCH PROGRAM COLLABORATION

LET'S GET MOVING THROUGH THE PANDEMIC

COMMUNITY OUTREACH EVENT
SATURDAY, JUNE 5, 2021 | 10 A.M. TO 2 P.M.

TEMPLE MISSIONARY BAPTIST CHURCH | 638 POWER DR., DUNCANVILLE, 75116

TALK TO A PHARMACIST
- Schedule an onsite appointment with pharmacist Alice Grant
- Enroll in the medication review program

COVID-19 VACCINATION SIGN UP
- Get info on the All of Us Research Program & COVID-19
- Register for the COVID-19 vaccination

BREAK-OUT SESSIONS
- Diabetes
- Pain Management
- PEARLs Program for depression

BENEFITS COUNSELING
- Application for Medicare Savings Program
- Counseling on Medicaid and Medicare
- Assistance with a Medical Director (power of attorney)

FREE FOOD BOXES
first 200 households

FREE HAIRCUTS
by barber Rashad Smith of 5th House Hair Cuts
first come, first served

KID ZONE
bounce house, face painting & more activities

ENTERTAINMENT
DJ (Unskript3d) Leo Alvarez

WORKOUTS
ABC Health and Fitness

2. ASSOCIATE THE SDOH TO THE ECOSYSTEM

Definitions

- **Disparity** - quantity that separates a group from a reference point on a particular measure of health that is expressed in terms of a rate, proportion, mean, or some other quantitative measure. (HP2010)

- **Inequity** - is the fair distribution of health determinants, outcomes, and resources within and between segments of the population, regardless of social standing.

- **Inequality** - A measure of the degree of association between differences in rates between groups and the distribution of the population among groups

- **Burden** - The difference in the number of persons affected between groups.

Neighborhood and Built Environment

Goal: Create neighborhoods and environments that promote health and safety.

Objective Status

- ✓ 3 Target met or exceeded
- ➕ 0 Improving
- ⊡ 3 Little or no detectable change
- ➖ 0 Getting worse
- ⋯ 16 Baseline only

- ⚙ 6 Developmental
- 🔍 1 Research

Social Determinants of (SDoH) & Examples

- General [violent crimes] [broadband Internet]
- Environmental Health [toxic pollutants]
- Health Policy [water systems]
- Housing and Homes [blood lead levels]
- Injury Prevention [motor vehicle crash deaths]
- People with Disabilities [non-steps house entrance]
- Physical Activity [walking or biking]
- Respiratory Disease [people with asthma]
- Sensory Disorders [hearing loss due to noise]
- Tobacco Use [prohibit smoking in businesses]
- Transportation [mass transit]

Social Determinants of Health

Education Access and Quality
Health Care Access and Quality
Economic Stability
Neighborhood and Built Environment
Social and Community Context

Social Determinants of Health
Copyright-free

Healthy People 2030

https://https://www.cdc.gov/socialdeterminants/index.htmwww.cdc.gov/socialdeterminants/index.htm
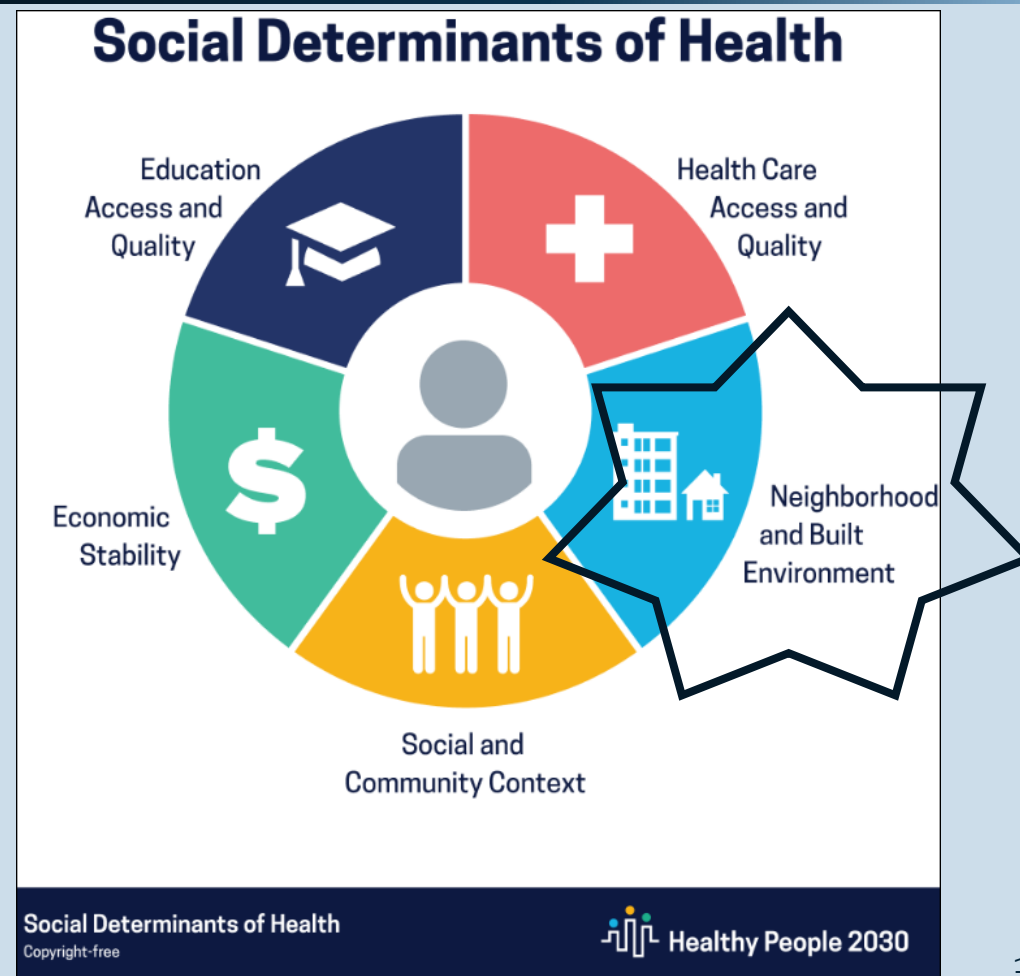
Social Determinants of Health and Care Delivery

Increasing skills to support SDoH awareness

- Incorporate SDOH curriculum into all clinical courses, ensuring students routinely assess for SDOH in clinical rotations.

- Strengthen interdisciplinary collaboration with social work, public health, city planning, occupational health, police, and fire fighters to ensure care is delivered effectively at the community level. **[Community-based Ecosystem needed]**

- Include SDOH in administrative policies.

- Stay current on proposed legislation and their potential effects on SDOH.

- Advocate for the use of documentation tools that utilize SDOH measures.

- Integrate SDOH into the standard assessment and electronic health records.

All of Us Research Work Bench

- Academic involvement via curriculum and assignment activities
- Academic involvement via recruitment efforts

May 2021

Researcher Workbench Reaches 1-Year Anniversary

More than 382,000 participants who have completed the consent process.

382,000 +

More than 279,000 participants fully enrolled.*

279,000 +

More than 500 research projects are using *All of Us* data.

500 +

*Fully enrolled participants are those who have shared their health information with *All of Us*, including giving blood and urine or saliva samples.

The Gravity Project

- Initiated in November 2018 by by Social Interventions Research & Evaluation Network (SIREN) with funding by Robert Wood Johnson Foundation

- Convene broad stakeholder groups in identifying social risk data for interoperable electronic information exchange

- Call to action around creating national standards for representing SDoH data in EHRs

- Seeks to identify coded data elements and associated value sets to represent social determinants of health data documented in EHRs
  - Focused on food insecurity
  - Housing instability/quality
  - Transportation access.

- These domains were selected based both on existing research linking these factors with health and utilization

3. ILLUSTRATE THE STEP-BY-STEP APPROACH TO ANALYZE SDOH OUTCOMES

Prerequisite: Reliable Data

Data quality matters
- Government Agencies
- National Research Organizations
- Private Market Research Organizations
- Universities

Data resources/databases

- Centers for Disease Control and Prevention

- U.S. Census Bureau

- Dept. of Health and Human Services

- Local and state agencies [Texas Health Care Information Collection (THCIC)

Ecosystems to Manage Complex Patient Care Needs

1.Compare Group Values
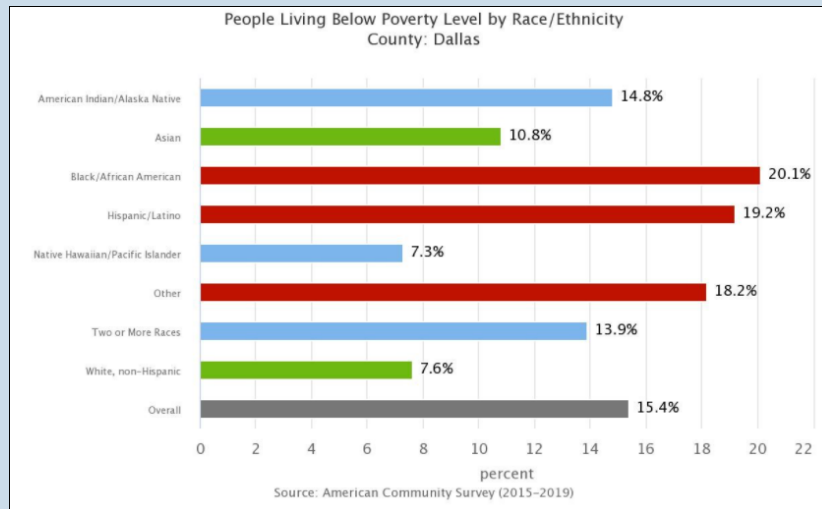
2.Explore Correlations
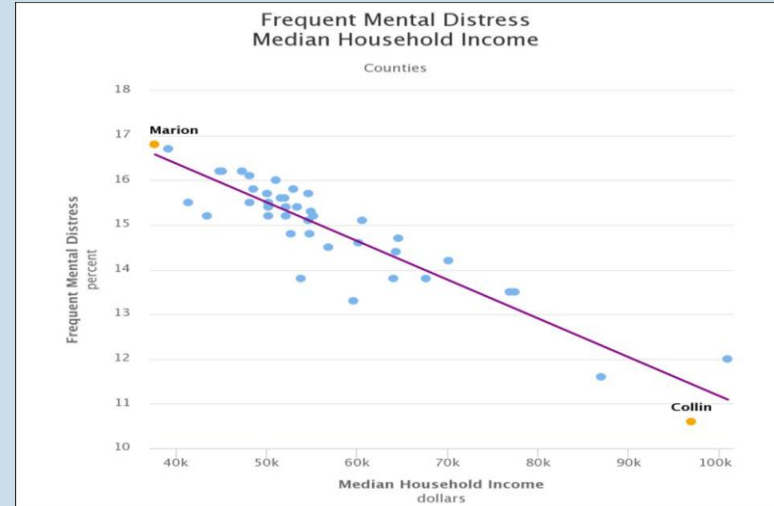
3.Show Trends Over Time
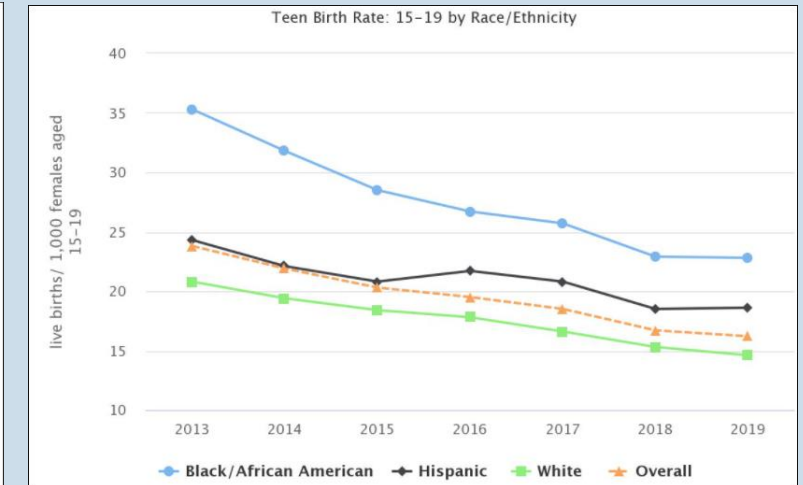
Connection to community

Connection to social media, citizen science and crown sourcing

Connection to academia

Common Source of Health Services and Condition Analysis: Patient Discharge/Episode Claims

https://www.dshs.texas.gov/thcic/OutpatientFacilities/OutpatientPUDF.shtm

THCIC Outpatient Episodes Analysis

- In accordance with Health and Safety Code, Section 108.012(b),"the council (department) may charge a person requesting public use or provider quality data a fee for the data. The fees may reflect the quantity of information provided and the expense incurred by the council in collecting and providing the data and shall be set at a level that will raise revenue sufficient for the operation of the council (department's program). The council (department) may not charge a fee for providing public use data to another Texas state agency. Chapter 108 may be viewed by clicking here.

- The Texas Outpatient Public Use Data File (PUDF) contains data on outpatient surgical and radiological procedures from Texas hospitals and ambulatory surgery centers. The PUDF has been released through fourth quarter 2020. The first quarter 2021 is tentatively scheduled to be released December 2021.

https://www.dshs.texas.gov/thcic/OutpatientFacilities/OutpatientPUDF.shtm

THCIC Outpatient Records

	A	B	C	D	E	F	G	H
1	DschrgQtr	HospitalName	PtType	AdmitSource	DschrgStatus	AgeGroup	SEX	RACE
2	2020Q1	Valley Baptist Medical Center	O	Personal Physician Referral	Discharged to Home or Self Care	60-64 Years	M	White
3	2020Q1	Valley Baptist Medical Center-Brow	O	Facilitys Clinic Physician Referr	Discharged to Home or Self Care	75-79 Years	F	White
4	2020Q1	Valley Baptist Medical Center-Brow	O	Facilitys Clinic Physician Referr	Discharged to Home or Self Care	70-74 Years	M	White
5	2020Q1	Christus St Michael Hospital Atlant	O	Personal Physician Referral	Discharged/Transferred to Home U	65-69 Years	M	Black
6	2020Q1	Memorial Hermann - Texas Medica	O	Personal Physician Referral	Discharged to Home or Self Care	60-64 Years	M	Asian or Pacific

	I	J	K	L	M	N	O	P
1	ETHNICIT	COUNTY	ZIPCODE	Payer1	PrinDxDesc	LOS	TOTALCHG	Mortality
2	Hispanic or Latino	Cameron	78550	Indemnity Insurance	TYPE 2 DIABETES MELLITUS WITH FOOT ULCER	1	8784	0
3	Hispanic or Latino	Cameron	78520	Health Maintenance Organization (HMO) Medicare Ris	TYPE 2 DIABETES MELLITUS WITH DIABETIC CATARA	1	31341.1	0
4	Hispanic or Latino	Cameron	78521	Unknown	TYPE 2 DIABETES MELLITUS WITH FOOT ULCER	1	2759	0
5	Not Hispanic or Latino	Cass	75551	Preferred Provider Organization (PPO)	TYPE 2 DIABETES MELLITUS W KETOACIDOSIS W/O	1	10572	0
6	Not Hispanic or Latino	Fort Bend	77407	Medicare Part A	TYPE 2 DIAB MEL W DIAB CHRONIC KIDNEY DISEASE	1	1.3	0

www.healthyntexas.org

Calculated from 6 indicators:
1. Poverty
2. Income
3. Unemployment
4. Occupation
5. Education
6. Language

The indicators are weighted to maximize the correlation of the index with [health indicators]:
1. premature death rates
2. preventable hospitalization rates

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SocioNeeds Index: North Texas Top 25 Counties

	Site Region			
	Zip Code	Index	Rank	County
3	75210	99.2	5	Dallas
4	76105	98.9	5	Tarrant
5	76164	98.8	5	Tarrant
6	76106	98.5	5	Tarrant
7	75212	98.4	5	Dallas
8	76115	98.4	5	Tarrant
9	76010	98.1	5	Tarrant
10	76119	97.9	5	Tarrant
11	76122	97.8	5	Tarrant
12	75216	97.7	5	Dallas
13	75217	97.6	5	Dallas
14	76104	97.3	5	Tarrant
15	75224	96.9	5	Dallas
16	75211	96.5	5	Dallas
17	75203	96.4	5	Dallas
18	76103	95.9	5	Tarrant
19	75223	95.1	5	Dallas
20	75227	95.1	5	Dallas
21	76111	95.1	5	Tarrant
22	75237	94.9	5	Dallas
23	75141	94.5	5	Dallas
24	75042	94.4	5	Dallas
25	75220	94.0	5	Dallas
26	75233	93.9	5	Dallas

Append ZIP
Codes to the
THCIC
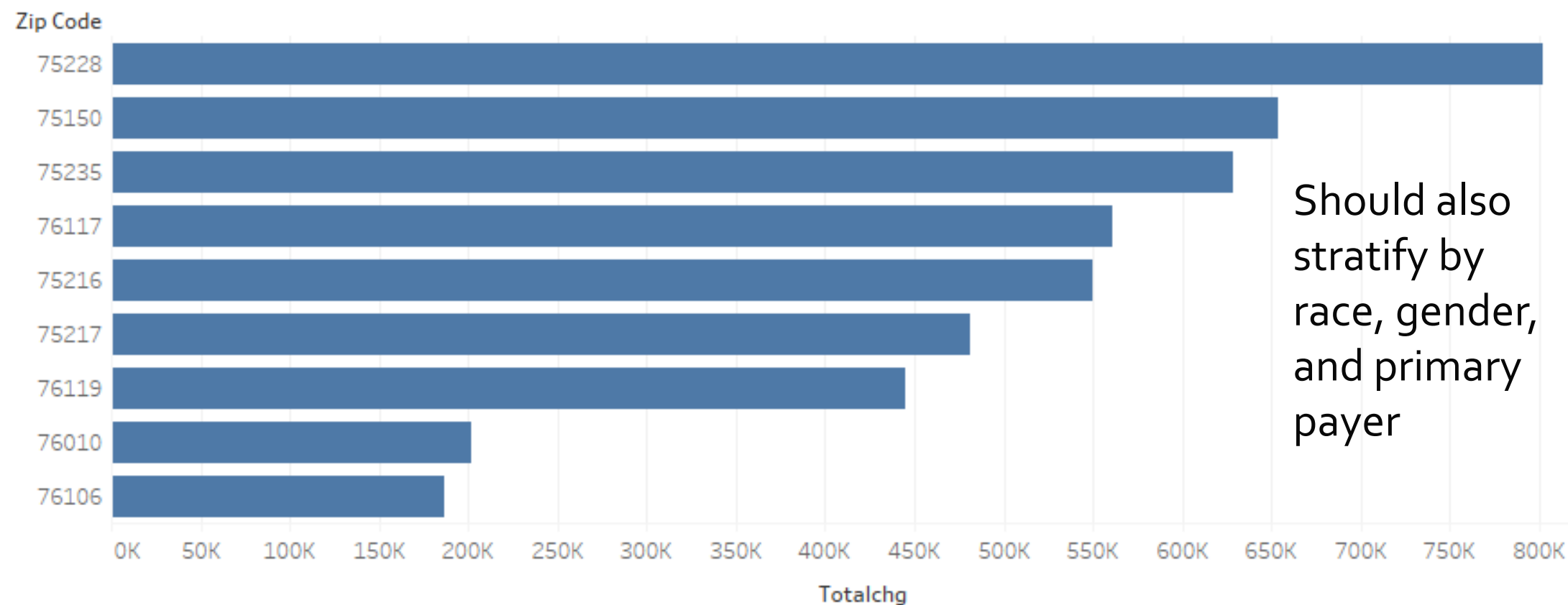Patient
Record ZIP
Codes
To
Strategize
Priorities
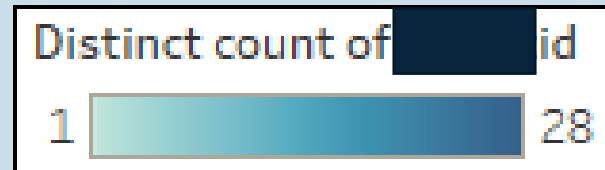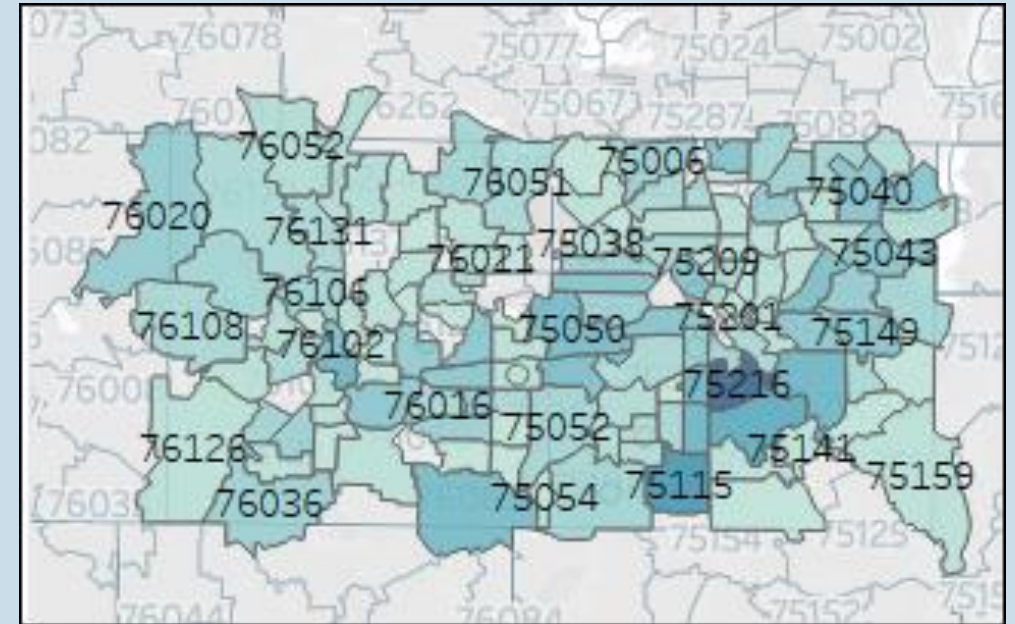
ZIP code by SNI Sum
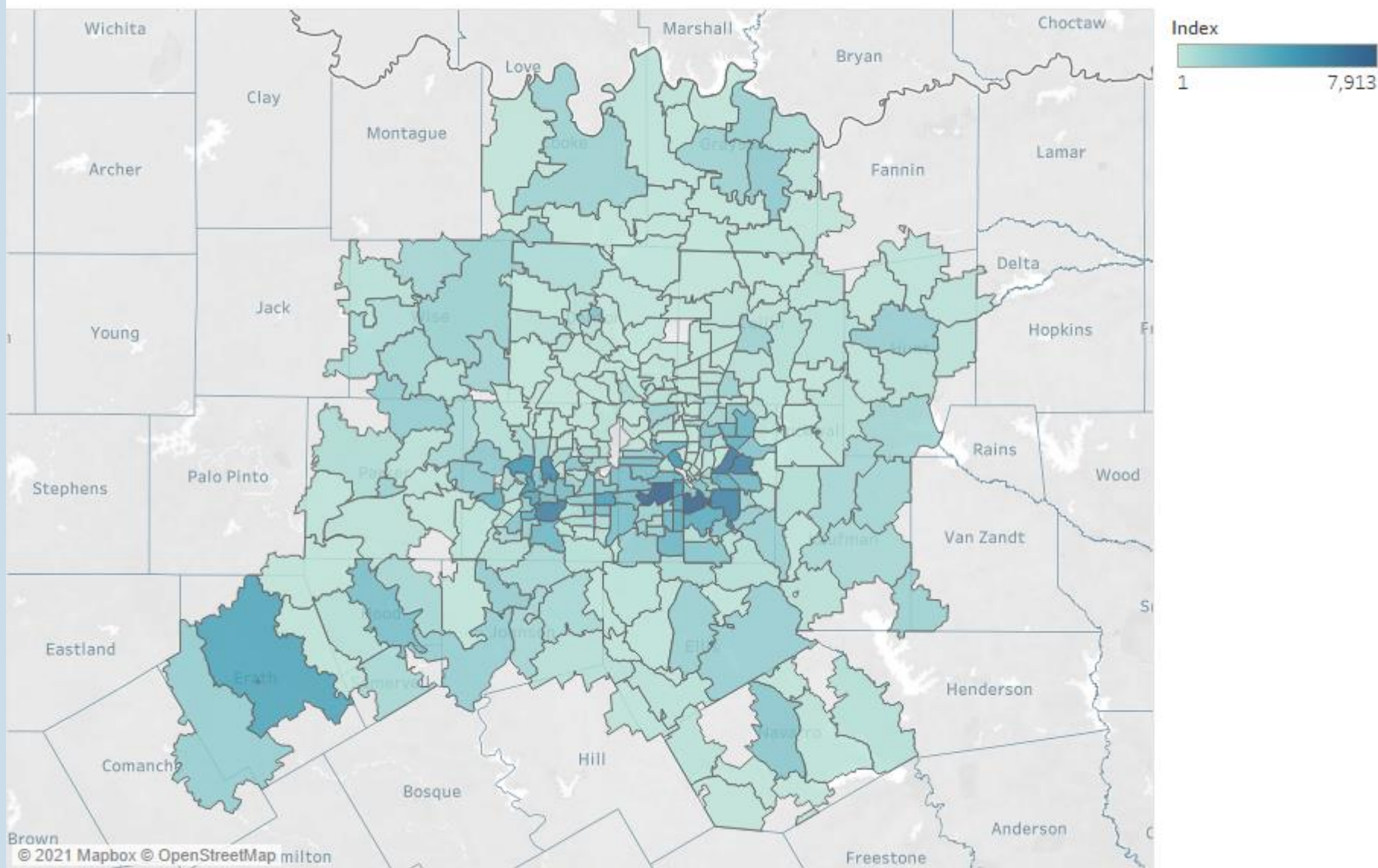
SocioNeeds Index by ZIP code multiplied by the number of patients associated with that SNI for diabetes type I and II on an outpatient basis
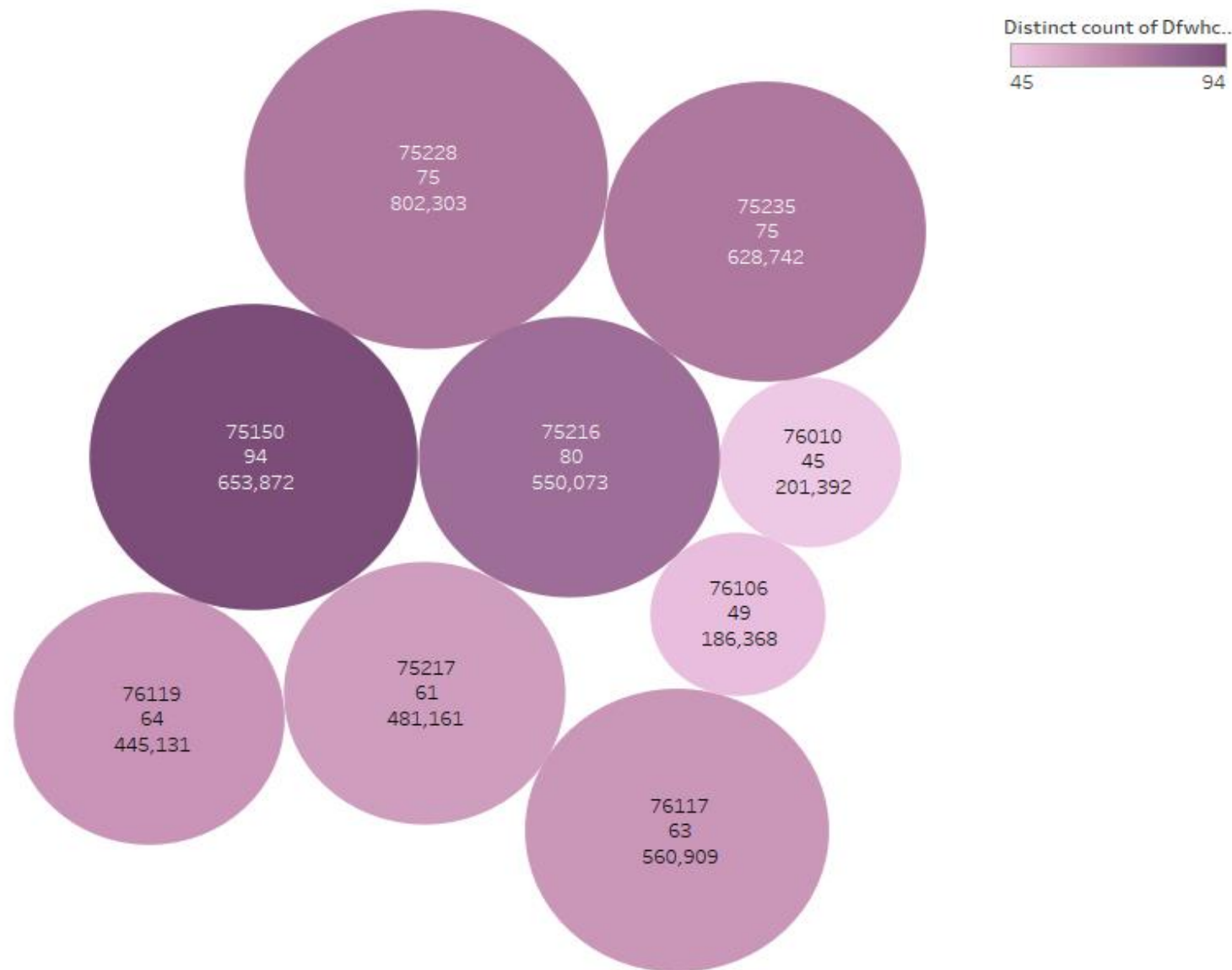
Total Charges for Top 9 ZIP Codes by SNI Sum

Should also stratify by race, gender, and primary payer

Total Charges and Pt Count for Top 9 ZIP Codes by SNI Sum

Distinct count of Dfwhc..
45   94

75228
75
802,303

75235
75
628,742

75150
94
653,872

75216
80
550,073

76010
45
201,392

76106
49
186,368
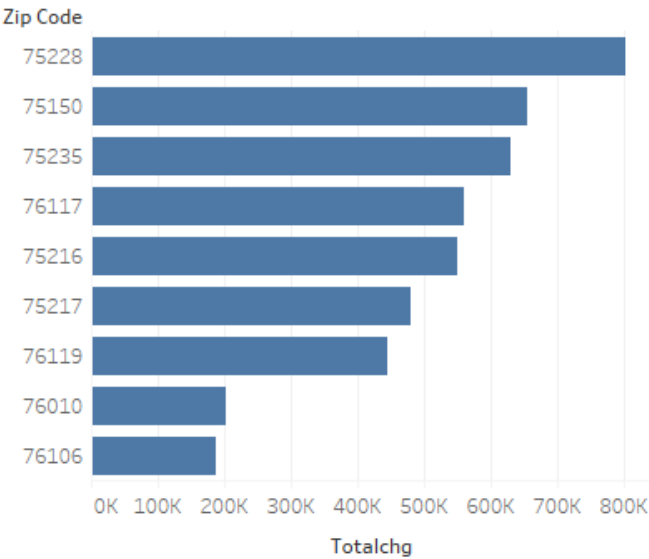
76119
64
445,131

75217
61
481,161

76117
63
560,909

Zip Code, distinct count of Dfwhcid and sum of Totalchg. Color shows distinct count of Dfwhcid. Size shows sum of Totalchg. The marks are labeled by Zip Code, distinct count of Dfwhcid and sum of Totalchg. Details are shown for Zip Code. The data is filtered on sum of Index, which ranges from 4,411 to 7,840.

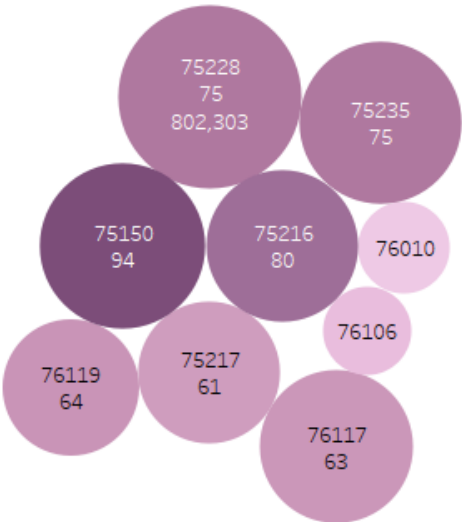Degree of total charges may be a proxy for care delivery amount and intensity

Diabetes Diagnoses [Type 1 and II]

SocioNeeds Index (SNI) with patient count and *Total Charges* for services rendered

TEACHING & LEARNING

Nurses/HCP Roles in Health Care Equity

Examples of nursing/Health Care Professional's (HCP) roles in acute, community, and public health settings include:

1. Care Coordinator
2. Policy Maker
3. Clinician
4. Advocate
5. Educator
6. Researcher/Scientist
7. Administrator
8. Informaticist

Objectives Reviewed

- Describe an ecosystem

- Associate the SDoH to the ecosystem

- Illustrate the step-by-step approach to analyze SDoH outcomes

- Questions

Questions?

Contact Information

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$1 + 1 = 3$