Developing a Health Policy Domain Model for the Robert Wood Johnson Foundation

Joseph Busch
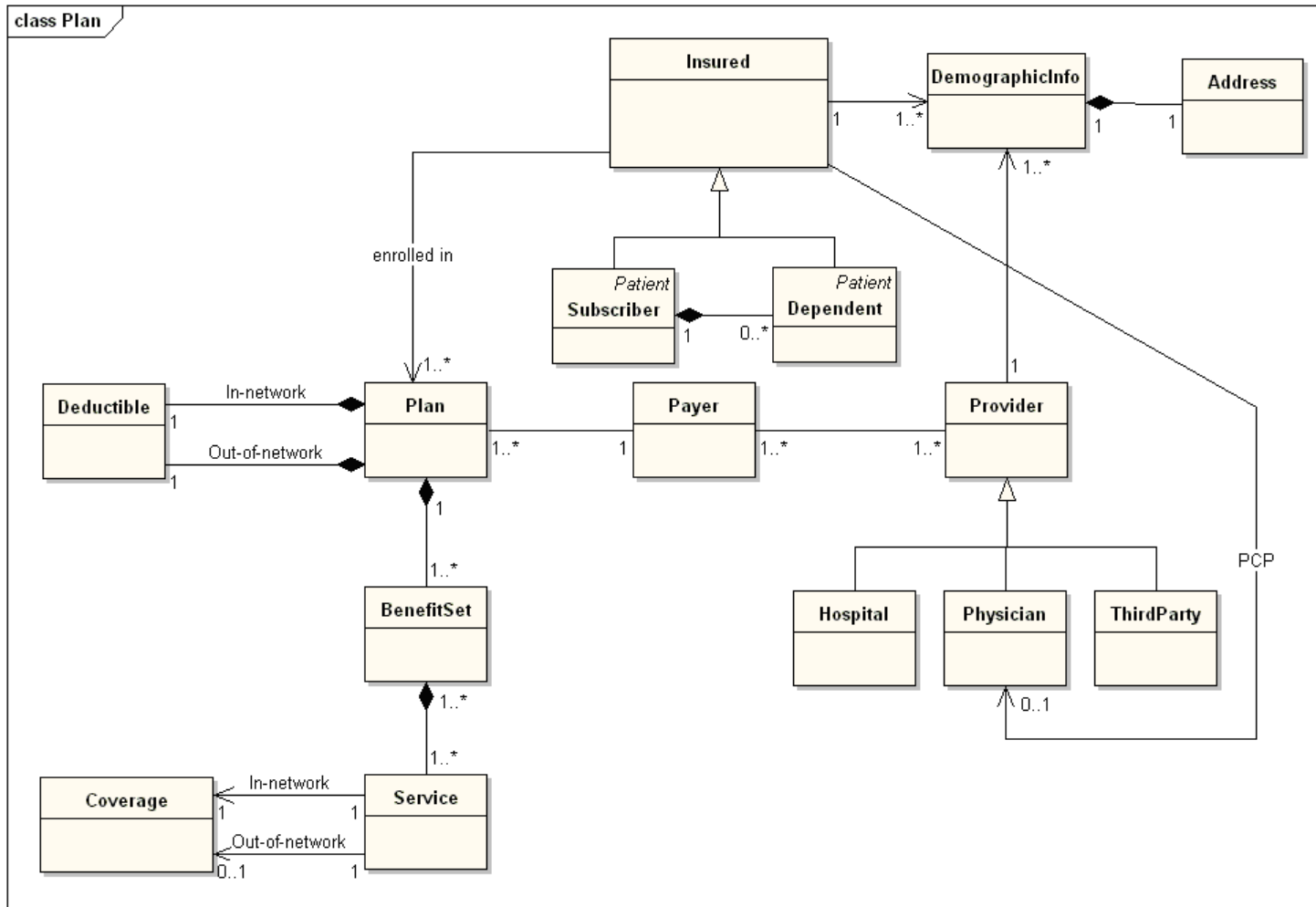
Agenda

❖ Domain modeling methodology

❖ Robert Wood Johnson Foundation

❖ Health equity theme

What is a domain model

❖ A domain model in problem solving and software engineering can be thought of as a conceptual model of a domain of interest (often referred to as a problem domain) which describes the various entities, their attributes and relationships, plus the constraints that govern the integrity of the model elements comprising that problem domain.

– Petri Kainulainen (https://www.petrikainulainen.net/software-development/design/thefive-characteristics-of-a-good-domain-model/)

Sample domain model

❖ Sample domain model for a health insurance plan.
– Kishorekumar 62
(https://commons.wikimedia.org/wiki/File:Domain_model.png)

Purpose of domain model

❖ Provide appropriate and useful contexts, such as a faceted method for subject description

❖ Domain modeling methodology limits the scheme to specific context, rather than all relevant contexts

❖ Constrained context provides useful frame for developing domain modeling best practices

Agenda

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- ❖ Robert Wood Johnson Foundation
- ❖ Health equity theme

About the Robert Wood Johnson Foundation

The Robert Wood Johnson Foundation (RWJF) is the nation's largest philanthropy dedicated solely to health.

Since 1972, we've supported research and programs targeting some of America's most pressing health issues—from substance abuse to improving access to quality health care.
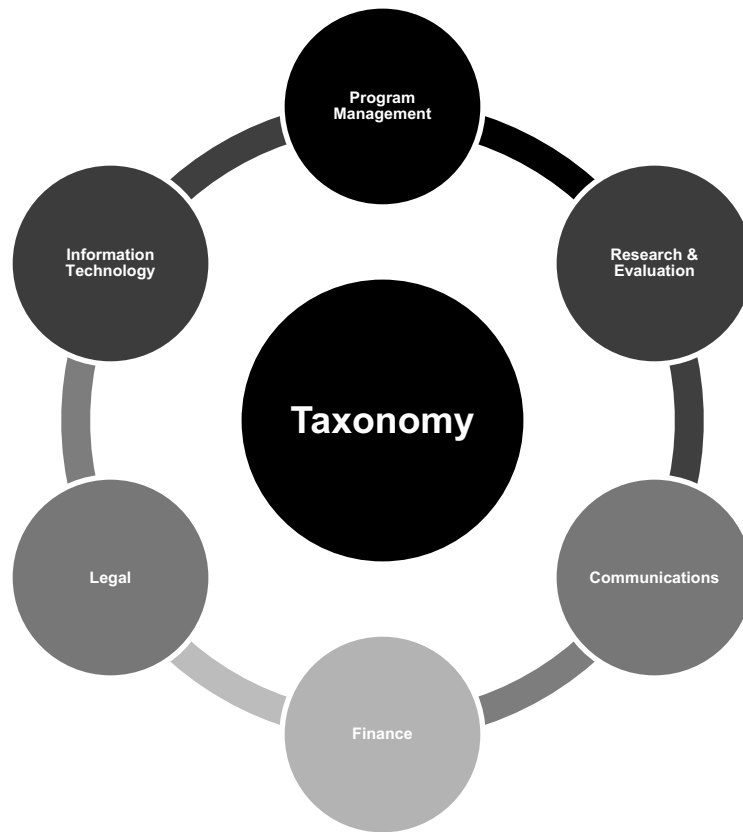
❖ More at rwjf.org

RWJF enterprise taxonomy project
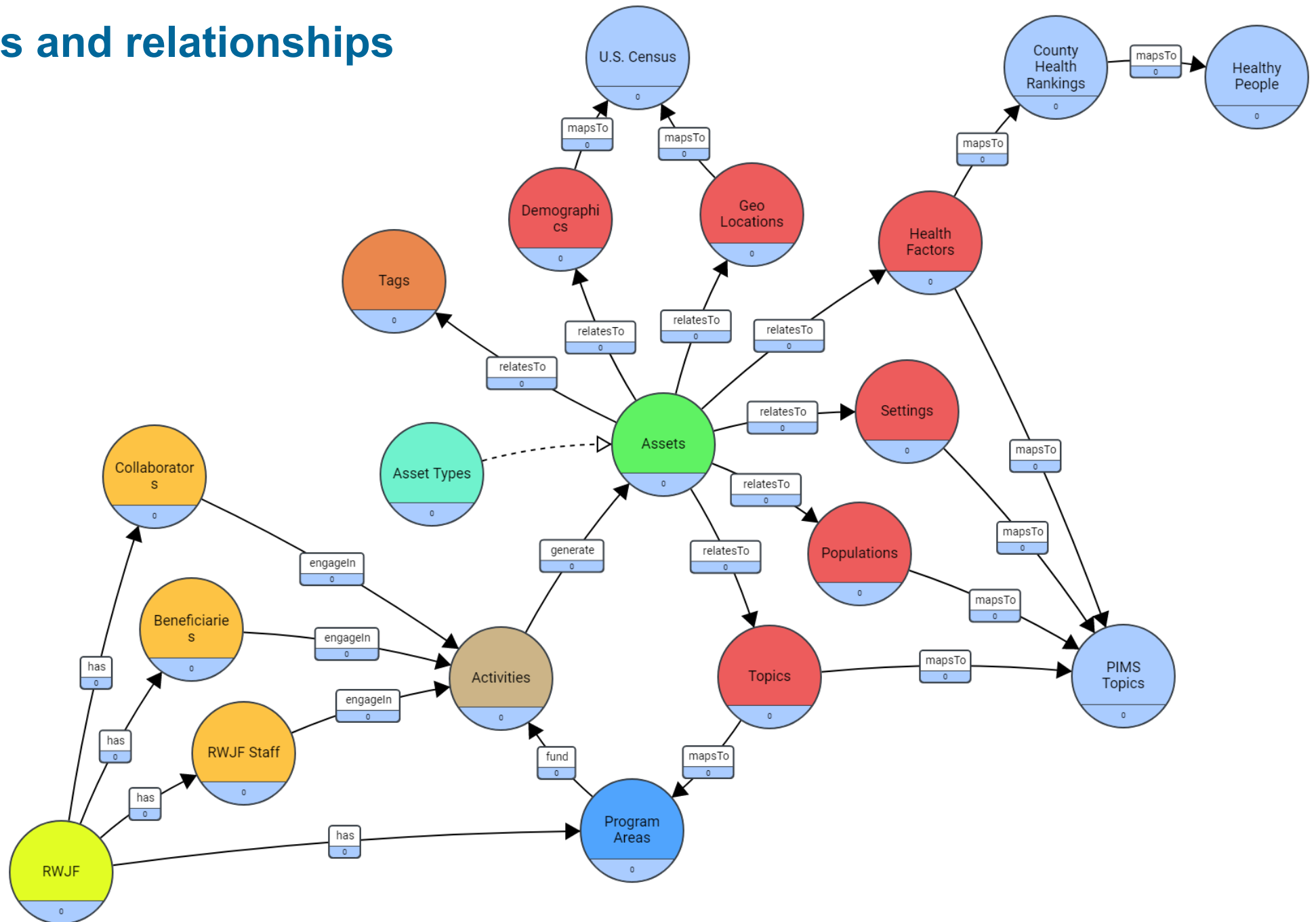
Stakeholders
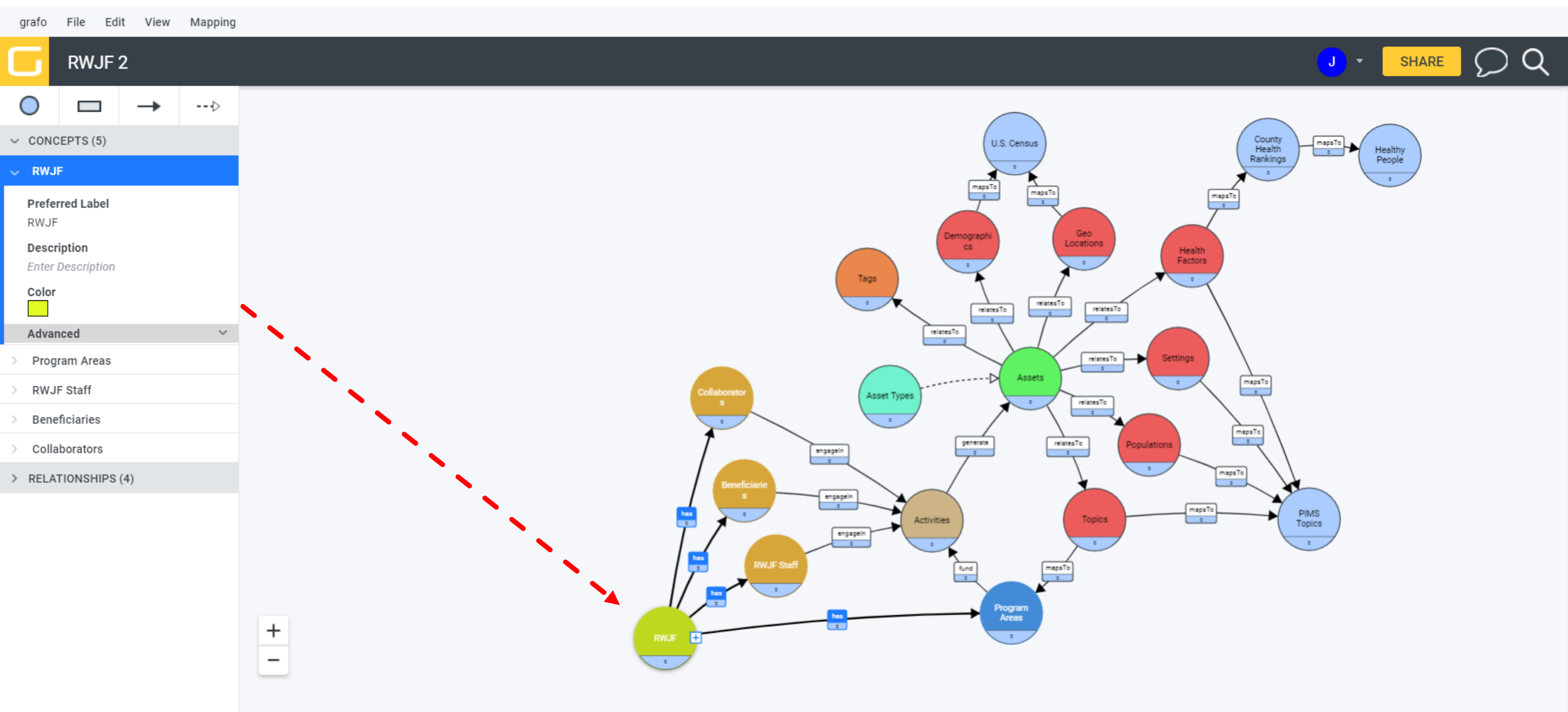

Methodologies

- ❖ Rhetorical analysis
- ❖ Usage analytics
- ❖ Use cases
  - ▪ Stakeholder interviews
  - ▪ Focus groups
- ❖ Authoritative resources
- ❖ Iterative review & refinement
- ❖ Validation
  - ▪ Card sorting
  - ▪ Walk-throughs
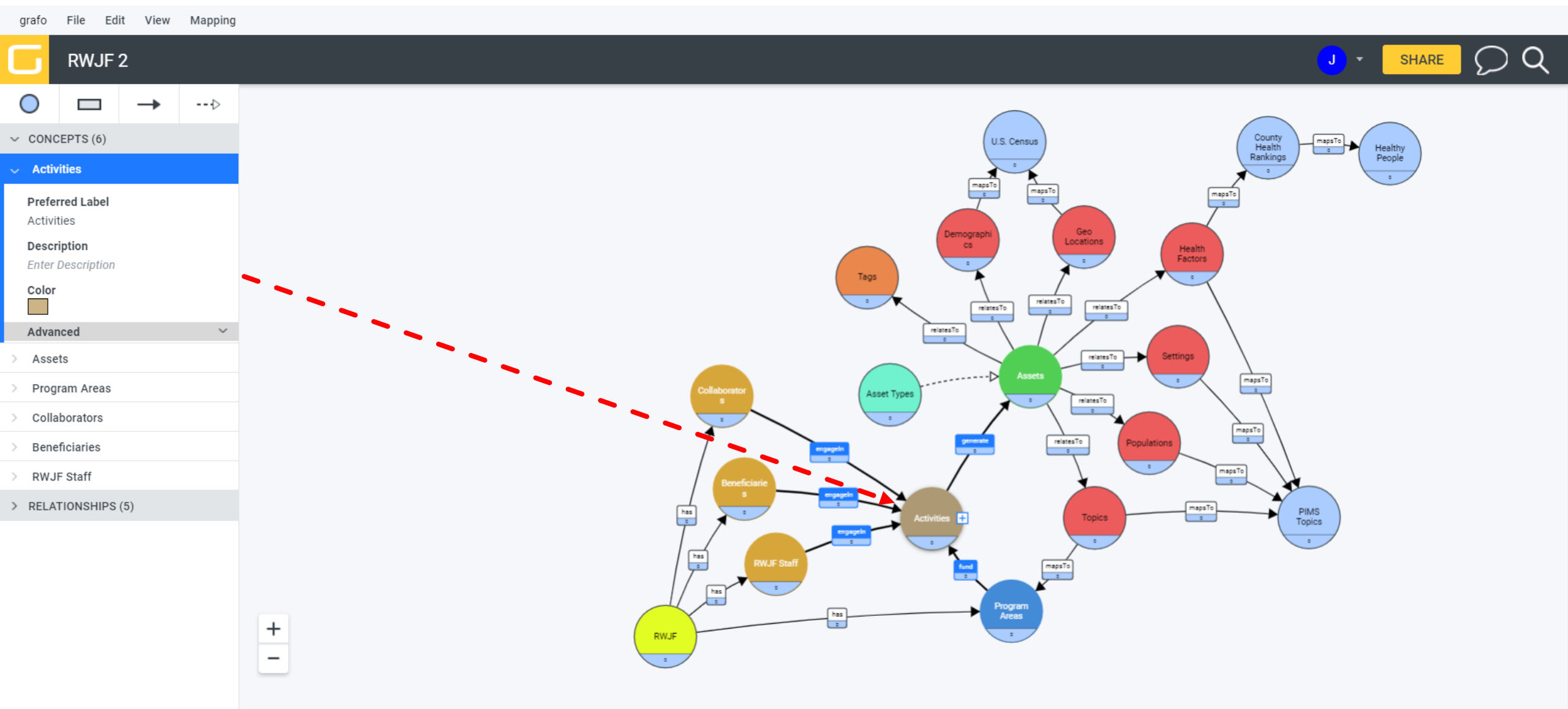
RWJF entities and relationships
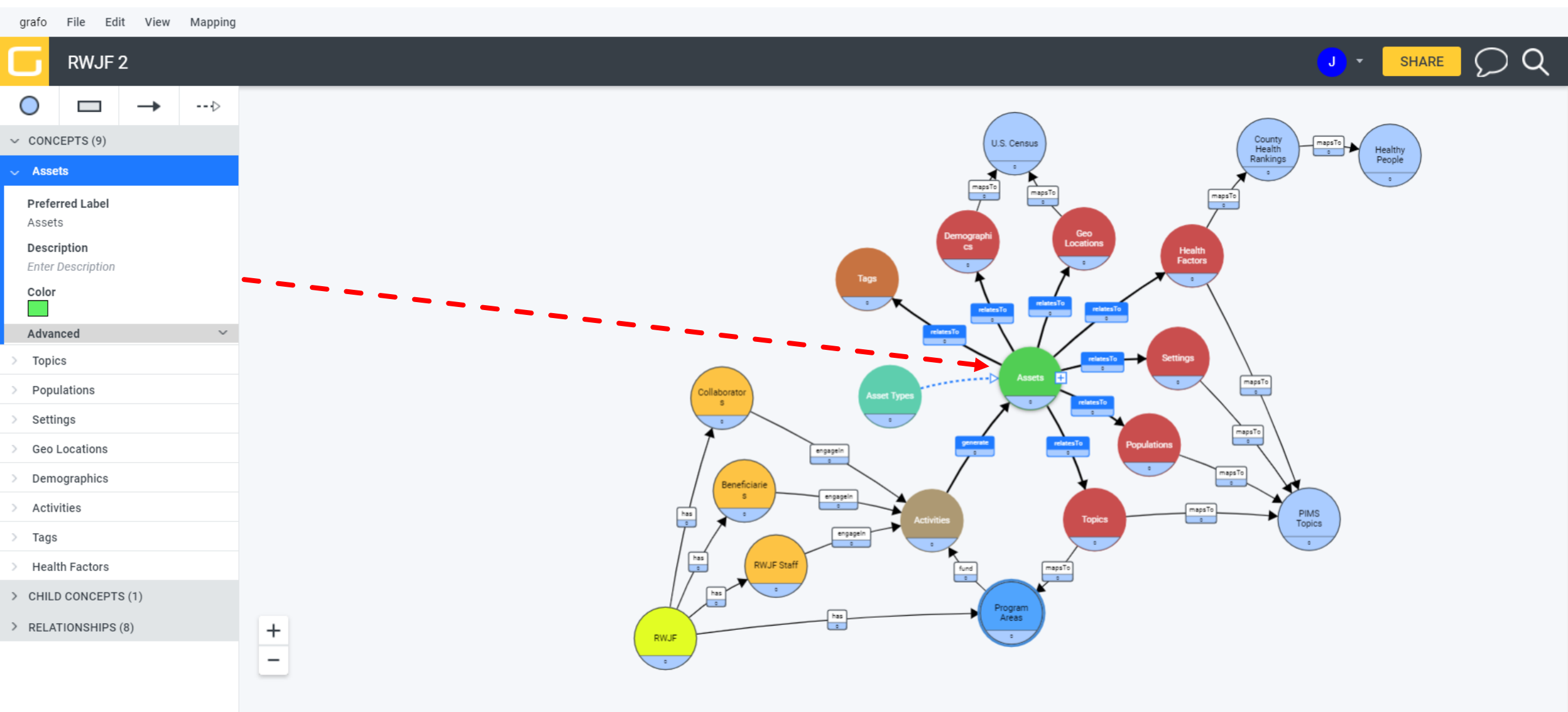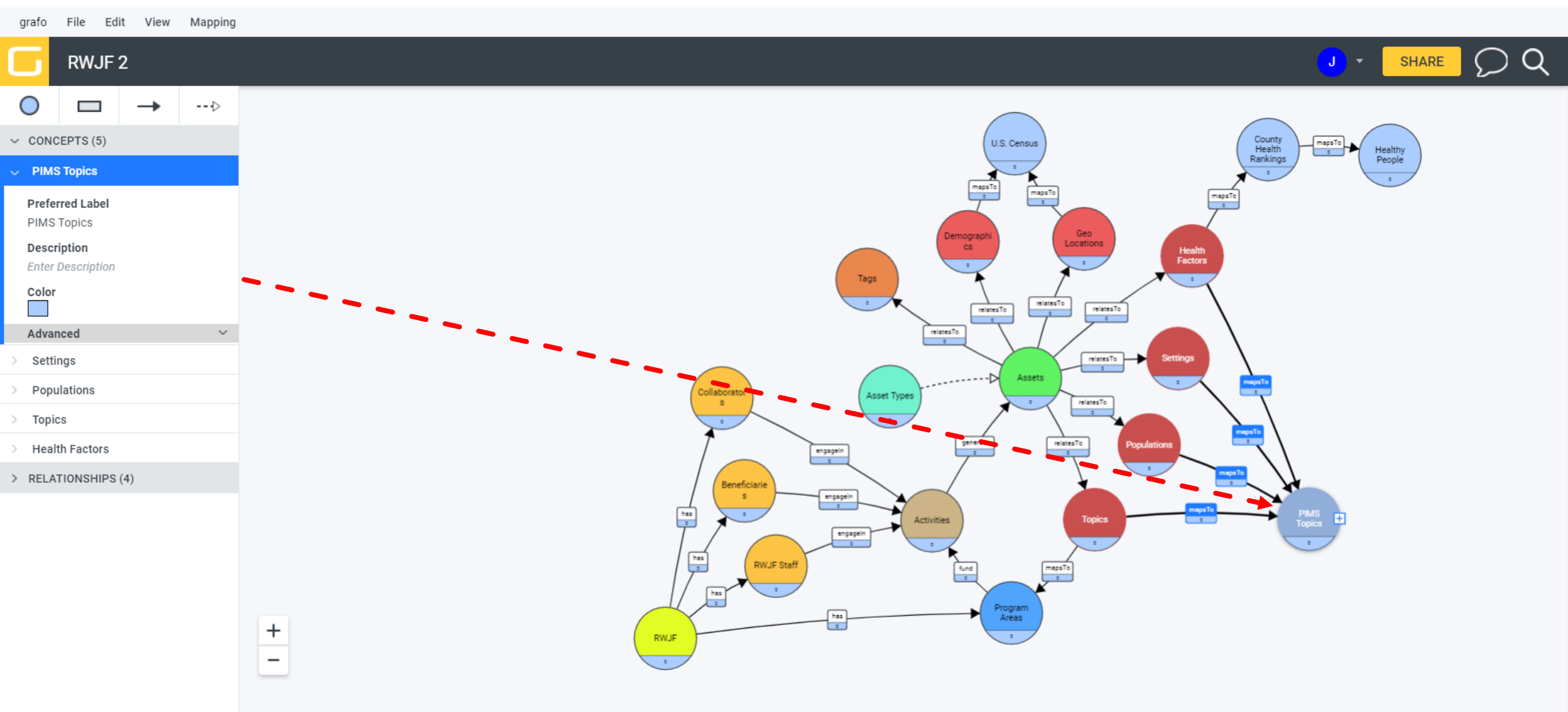
RWJF "has" relationships
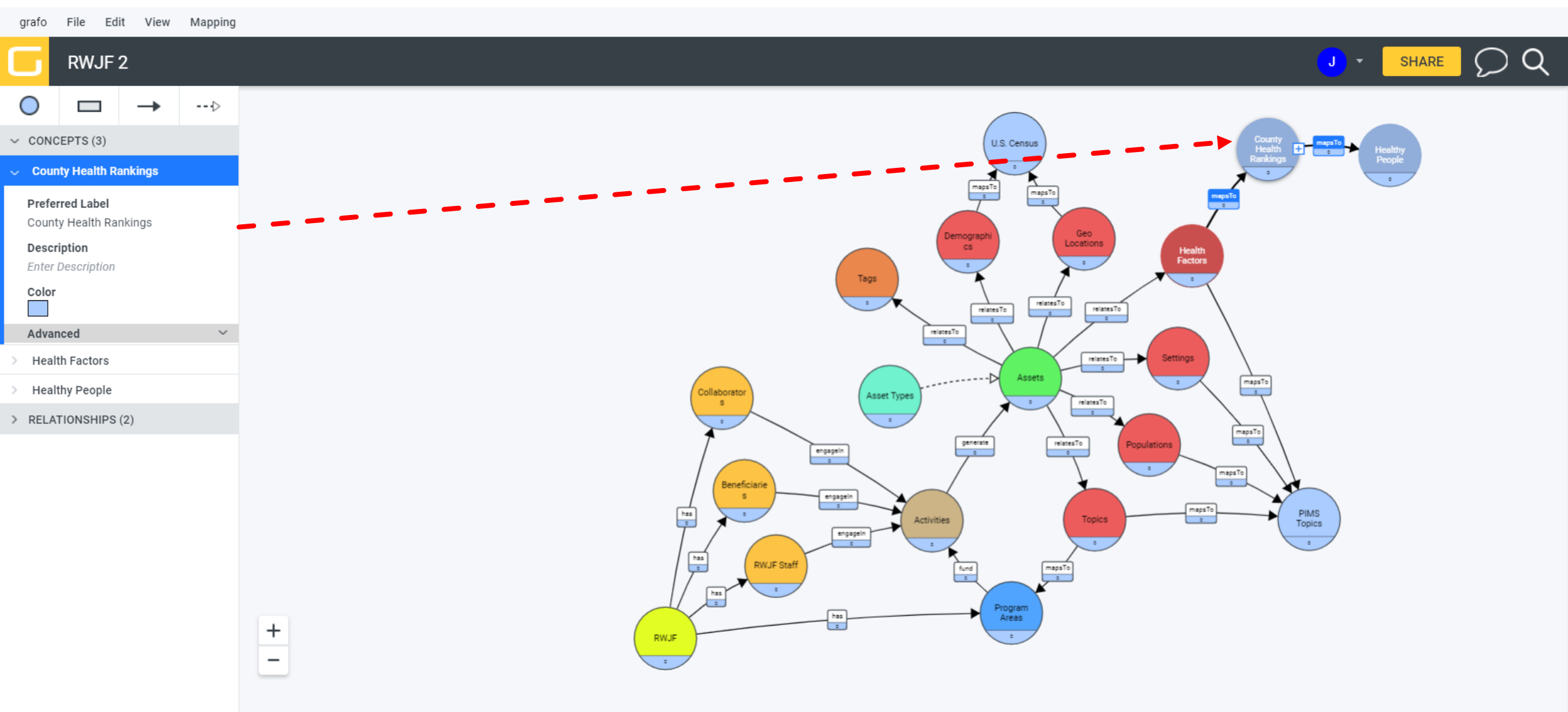
"engageIn" Activities and "generate" relationships

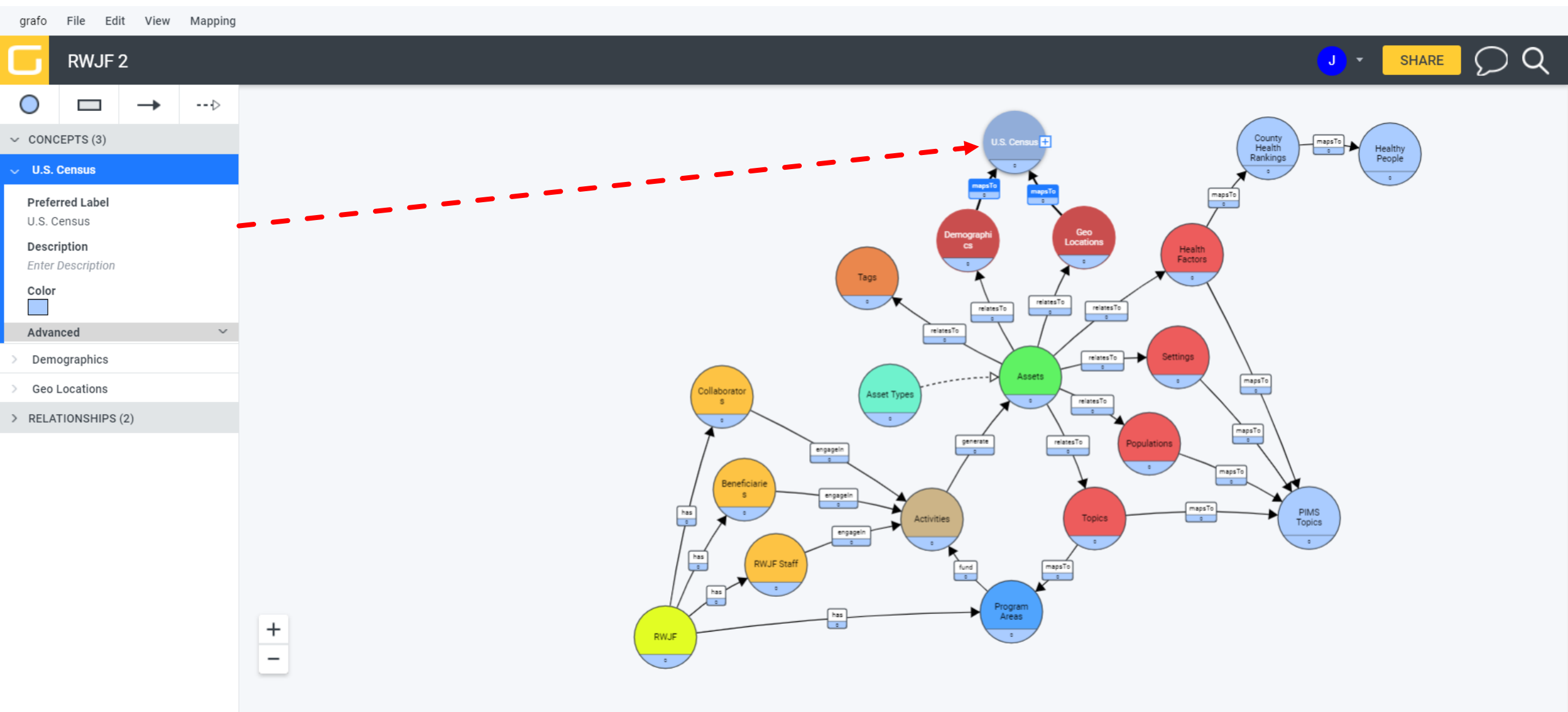# Assets "relatedTo" relationships

PIMS topics "mapsTo" relationships

County Health Rankings "mapsTo" relationships

U.S. Census "mapsTo" relationships

RWJF facetted taxonomy for subject description

Facet	Description
Topics	Use to identify the broad topic that is the primary focus of a grant or asset (what it is generally 'about').
Activities	Use to identify the major type of activity that an RWJF grant is supporting, or the type of activity that an RWJF grant or asset is primarily about.
Geo Locations	Use to identify the geographic location(s) that are the primary focus of an RWJF grant or asset, and/or where RWJF-supported activities are taking place.
Health Factors	Use to identify the health factor (i.e., determinant of health) that is the primary focus of an RWJF grant or asset.
Settings	Use to identify the primary type of environmental setting in which RWJF-supported activity will be occurring.
Populations	Use to identify groups of people, not captured by demographics, who are the primary collaborators and/or intended beneficiaries of an RWJF grant or asset.
Demographics	Use to identify demographic characteristics associated with any major aspect of an RWJF grant or asset.

RWJF facetted taxonomy model

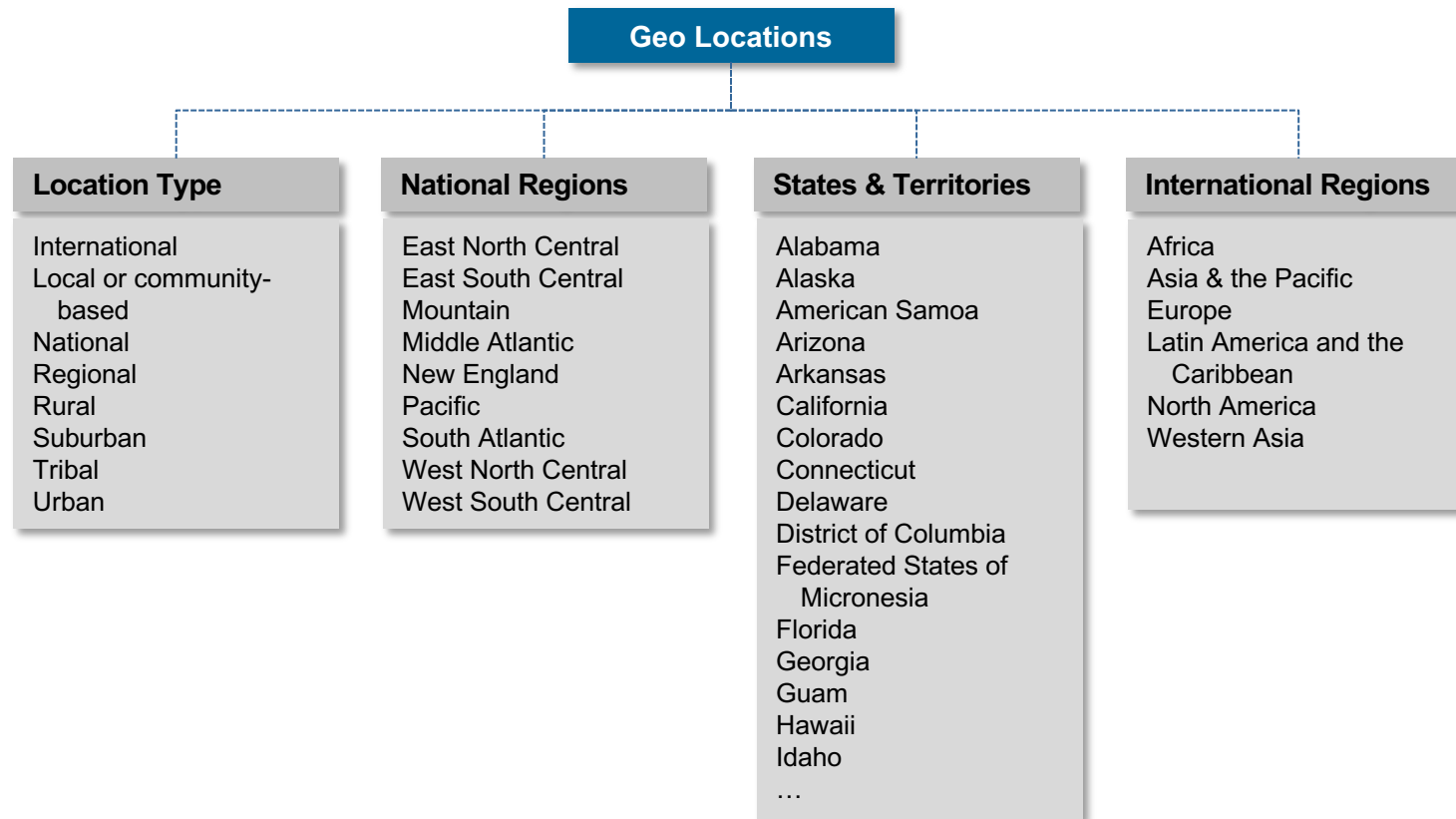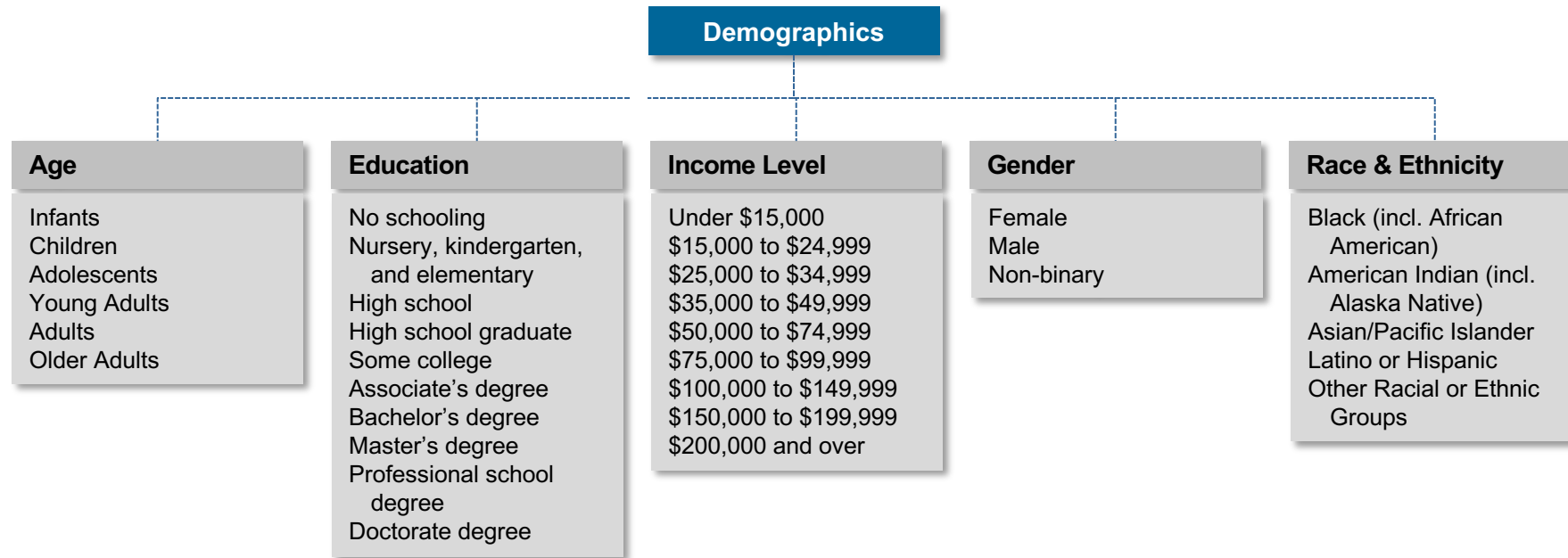| Topics	Activities	Geo Locations	Health Factors	Settings	Populations	Demographics
Child & Family Well-being	Advocacy	+ Location Type	Access to Care	American Indian Tribal Government	Activist/Advocate	+ Age
Childhood Obesity	Capacity & Organizational Development	+ Regions	Air & Water Quality	Business (General)	Administrative/ Managerial	+ Gender
Disease Prevention & Health Promotion	Coalition & Network Building	+ States & Territories	Alcohol & Drug Use	Child Care	Caregiver	+ Education
Early Childhood	Communications & Media		Community & Interpersonal Safety	Community (General)	Faith-based	+ Income Level
Health Care Coverage & Access	Evaluation		Diet & Exercise	Correctional Facility	Health Professional	+ Race & Ethnicity
Health Care Quality & Value	Idea Sourcing		Education	Federal Government	Immigrant or Migrant	
Health Disparities	Leadership, Education & Training		Employment & Income	Health Care/Clinical	Inmate or Former Inmate	
Health Leadership Development	Pilot Project		Family & Social Support	Home/Household	LGBTQ	
Nurses and Nursing	Policy & Law		Genetics	Local Government	Child	
Public & Community Health	Research & Analysis		Housing, Transit & Infrastructure	Nonprofit/ Philanthropy (General)	Non-Health Professional	
Social Determinants of Health			Quality of Care	School (General)	Parent	
			Tobacco Use	State Government	Person with Disability	
					Person with Disease or Illness	
					Policymaker	
					Student	

Geographic locations

❖ Use to identify the geographic location(s) that are the primary focus of an RWJF grant or asset, and/or where RWJF-supported activities are taking place.

Geo Locations

Location Type	National Regions	States & Territories	International Regions
International Local or community-based National Regional Rural Suburban Tribal Urban	East North Central East South Central Mountain Middle Atlantic New England Pacific South Atlantic West North Central West South Central	Alabama Alaska American Samoa Arizona Arkansas California Colorado Connecticut Delaware District of Columbia Federated States of Micronesia Florida Georgia Guam Hawaii Idaho …	Africa Asia & the Pacific Europe Latin America and the Caribbean North America Western Asia

Demographics

❖ Use to identify demographic characteristics associated with any major aspect of an RWJF grant or asset.

Demographics

Age	Education	Income Level	Gender	Race & Ethnicity
Infants	No schooling	Under $15,000	Female	Black (incl. African American)
Children	Nursery, kindergarten, and elementary	$15,000 to $24,999	Male	American Indian (incl. Alaska Native)
Adolescents	High school	$25,000 to $34,999	Non-binary	Asian/Pacific Islander
Young Adults	High school graduate	$35,000 to $49,999		Latino or Hispanic
Adults	Some college	$50,000 to $74,999		Other Racial or Ethnic Groups
Older Adults	Associate's degree	$75,000 to $99,999		
	Bachelor's degree	$100,000 to $149,999		
	Master's degree	$150,000 to $199,999		
	Professional school degree	$200,000 and over		
	Doctorate degree			

RWJF Taxonomy objectives

❖ **Enterprise-wide.** Common vocabulary to categorize different types of content, across RWJF information systems.

❖ **Practical.** Supportive of a wide range of organizational priorities and needs, from informational, to design-oriented, to analytical.

❖ **Accessible.** Intuitive and easily useable to staff in all departments and roles.

❖ **Flexible.** Built and managed in way that can offer stability through times of change, and adapt as necessary as RWJF interests evolve

Agenda

❖ Domain modeling methodology

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❖ Health equity theme

What is health equity

❖ The study and causes of differences in the quality of health and healthcare across different populations.

❖ It refers only to the absence of disparities in controllable or remediable aspects of health such as access to healthcare.

❖ Populations which lack access to housing, transportation, food education, employment and healthcare have a lower quality of health.

❖ Disparities in the quality of health across populations are well-documented globally in both developed and developing nations.

– Wikipedia (https://en.wikipedia.org/wiki/Health_equity)

Health equity as a public policy goal

❖ *Healthy People 2020*, a key U.S. government public health policy document, defines health equity as the "attainment of the highest level of health for all people."

❖ "Achieving health equity requires valuing everyone equally with focused and ongoing societal efforts to address avoidable inequalities, historical and contemporary injustices, and the elimination of health and health care disparities." – *National Stakeholder Strategy for Achieving Health Equity*.

Measuring health equity

County Health Rankings model © 2014 UWPHI
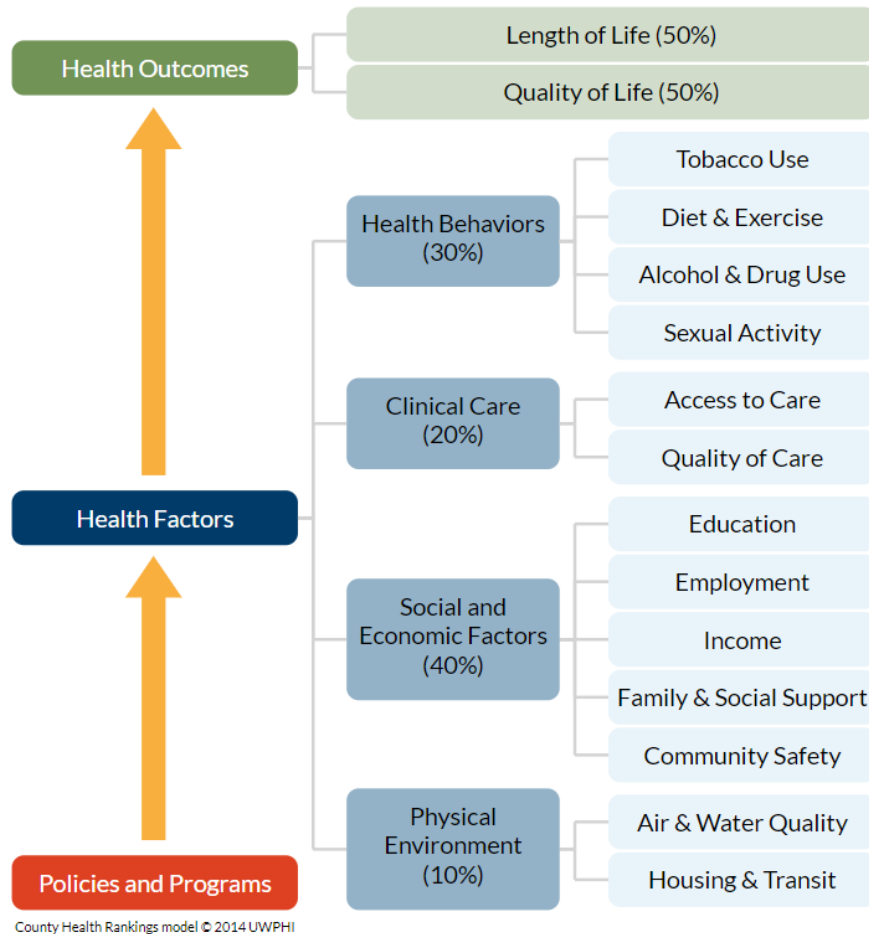
County Health Rankings

- ❖ Collaboration between the RWJF and the University of Wisconsin Population Health Institute.
- ❖ Measures vital health factors, including high school graduation rates, obesity, smoking, unemployment, access to healthy foods, the quality of air and water, income inequality, and teen births in nearly every U.S. county.
- ❖ Snapshot of how health is influenced by where we live, learn, work and play.

Health equity is an RWJF programmatic focus

Measuring impact

❖ How many grants have been made?

❖ How much has been funded?

❖ What are the programmatic areas (topics)?

❖ What are the types of activities?

❖ What health factors are being targeted?

❖ What are the engaged settings?

❖ What are the engaged populations?

❖ What demographics?

Taxonomy Model with health equity-related categories in bold

Topics
Built Environment & Health
Child & Family Well-being
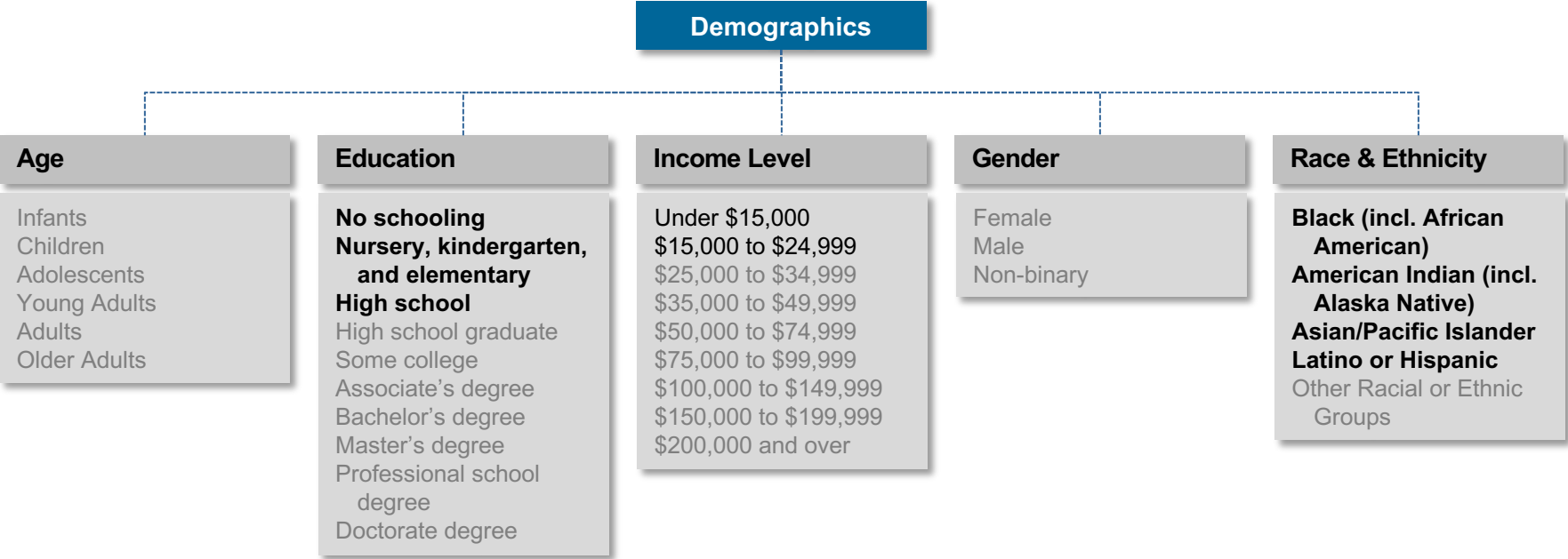Childhood Obesity
Disease Prevention & Health Promotion
Early Childhood
Health Care Coverage & Access
Health Care Quality & Value
Health Disparities
Health Leadership Development
Nurses and Nursing
Public & Community Health
Social Determinants of Health

Activities
Advocacy
Capacity & Organizational Development
Coalition & Network Building
Communications & Media
Evaluation
Idea Sourcing
Leadership, Education & Training
Pilot Project
Research & Analysis

Geo Locations
+ Location Type
+ National Regions
+ International Regions
+ States & Territories
+ Countries

Health Factors
Access to Care
Air & Water Quality
Alcohol & Drug Use
Community Safety
Diet & Exercise
Education
Employment
Family & Social Support
Genetics
Housing, Transit & Infrastructure
Income
Quality of Care
Tobacco Use

Settings
American Indian Tribal Government
Business (General)
Child Care
College/University
Community (General)
Correctional Facility
Federal Government
Health Care/Clinical
Home/Household
Local Government
Nonprofit/ Philanthropy (General)
Public Health
School (Primary/ Secondary)
State Government
Workplace (General)

Populations
Activist/Advocate
Administrative/ Managerial
Caregiver
Faith-based
Health Professional
Immigrant or Migrant
Inmate or Former Inmate
LGBTQ Person
Non-Health Professional
Parent
Person with Disability
Person with Disease or Illness
Policymaker
Student

Demographics
+ Age
+ Gender
+ **Education**
+ **Income Level**
+ **Race & Ethnicity**

New Taxonomy demographics with health equity-related categories in bold

Demographics

Age	Education	Income Level	Gender	Race & Ethnicity
Infants	**No schooling**	Under $15,000	Female	**Black (incl. African American)**
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	Doctorate degree			

Simple health equity dashboard with combined categories

❖ Topics = ("Health Disparities" OR "Social Determinants of Health")

❖ Health Factors = ("Access to Care" OR "Air & Water Quality" OR "Community Safety" OR Education OR Employment OR "Family & Social Support" OR "Housing, Transit & Infrastructure" OR Income)

❖ Settings = ("American Indian Tribal Government" OR "Correctional Facility")

❖ Populations = ("Immigrant or Migrant" OR "LGBTQ Person" OR "Person with Disability")

❖ Education Level = ("No schooling" OR "Nursery, kindergarten, and elementary" OR "High school")

❖ Income = ("Under $15,000" OR "$15,000 to $24,999")

❖ Race & Ethnicity = ("Black (incl. African American)" OR "American Indian (incl. Alaska Native)" OR "Asian/Pacific Islander" OR "Latino or Hispanic")
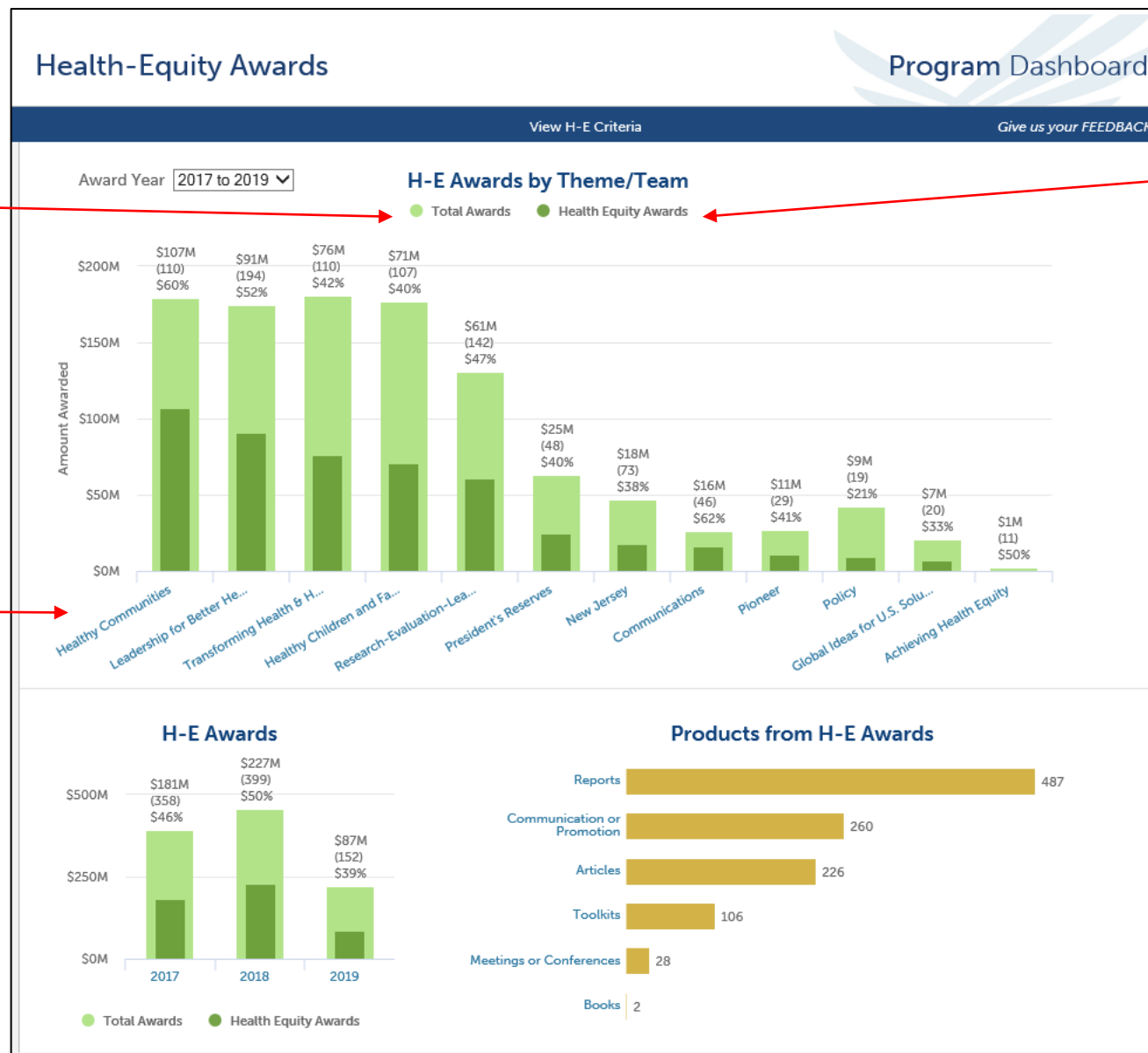
RWJF dashboards
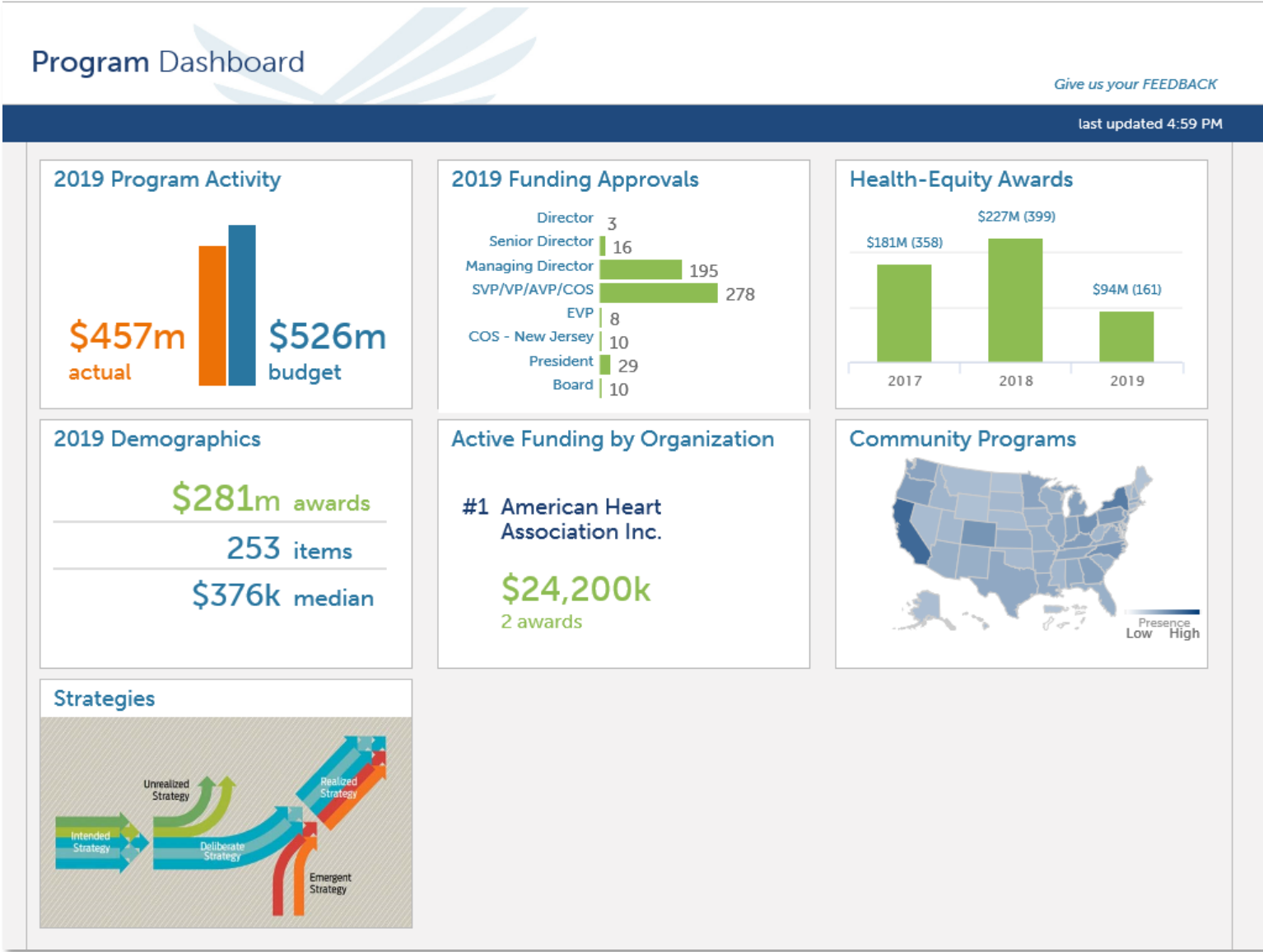
Semantic STAFFING Experts placing experts

Health-equity dashboard 2017-2019

Health-equity dashboard 2019
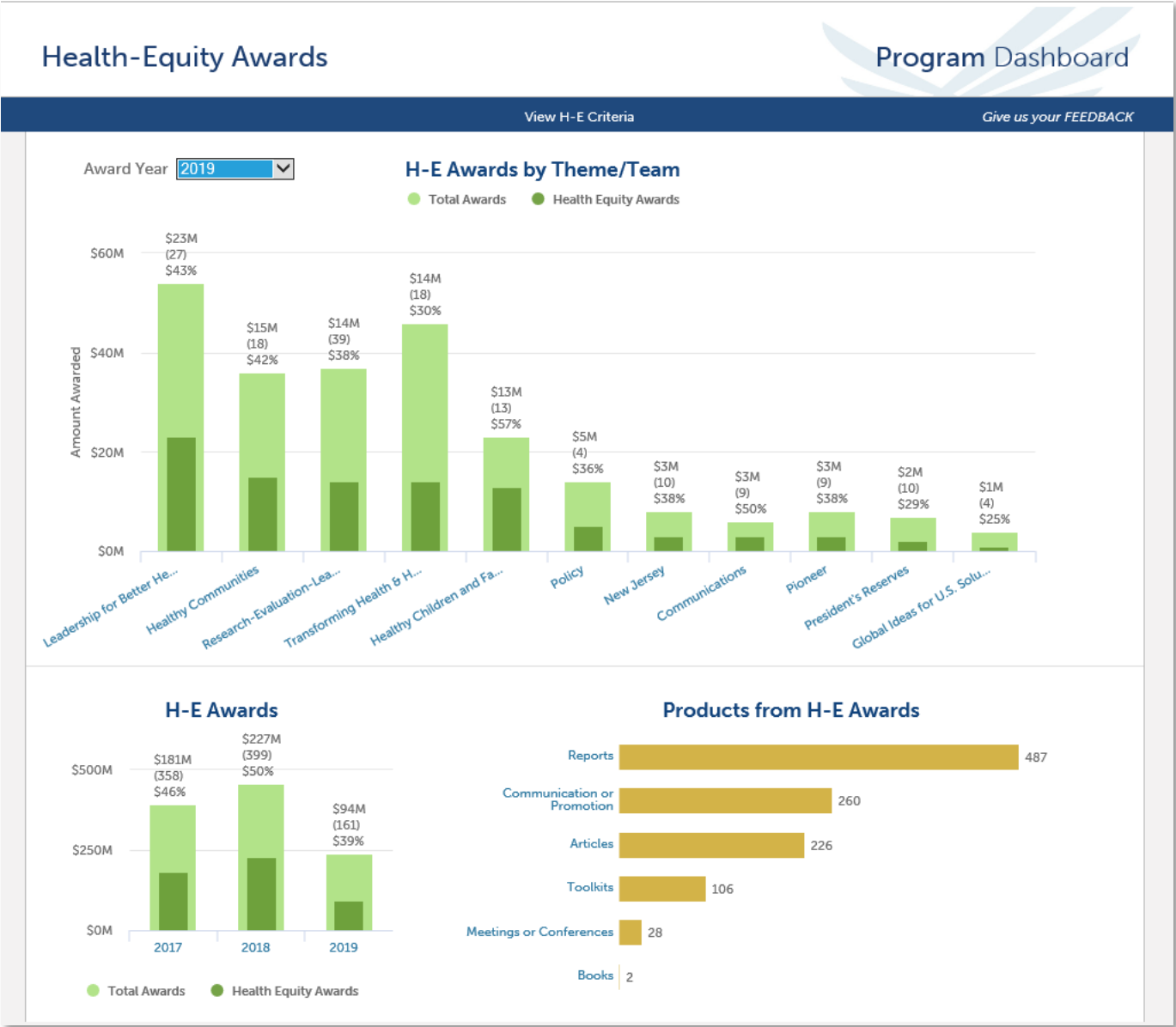
Health-equity dashboard 2019 Healthy Community awards

Health-Equity Funding

Program Dashboard

Back

Awards by Healthy Communities

	Fund ID	Title	Organization	Amount	Start Date	End Date
1	76239	Ensuring the Strong Families Fund's success in...	Corporation for Supportive Housing	1,166,912	01/15/2019	12/14/2028
2	76339	Advancing the practice of pooled community h...	Georgia State University Research Foundation I...	925,000	04/01/2019	03/31/2021
3	76345	Producing a white paper examining the role of...	Brookings Institution	50,000	03/15/2019	08/14/2019
4	76359	Advancing the Build Healthy Places Network's i...	Public Health Institute	2,700,000	04/15/2019	04/14/2022
5	76360	Exploring the role of impact capital in creating...	Common Counsel Foundation	281,250	03/01/2019	02/29/2020
6	76392	Supporting the Convergence Partnership's 201...	Tides Foundation	636,563	04/15/2019	04/14/2020
7	76405	Changing mindsets of business leaders through...	Living Cities, Inc.	40,000	04/15/2019	07/14/2019
8	76408	Supporting the Asset Funders Network's 2019 g...	Philanthropy New York, Inc.	25,000	04/15/2019	06/30/2019
9	76410	Engaging small and midsize cities to participate...	National League of Cities Institute Inc.	2,499,795	05/15/2019	11/14/2021
10	76463	Advancing health equity through mixed-incom...	Case Western Reserve University, Jack, Joseph...	600,000	05/01/2019	04/30/2021
11	76464	Supporting workshops for quitline professional...	North American Quitline Consortium	5,000	06/01/2019	10/31/2019
12	76507	Finalizing planning for the Improving Health by...	Corporation for Supportive Housing	150,000	07/01/2019	10/31/2019
13	76629	Promoting health equity in the tobacco-contro...	Tandeka, LLC	504,650	08/15/2019	10/14/2020
14	76657	Strengthening and expanding the Purpose Built...	Purpose Built Communities Foundation, Inc.	2,244,190	09/15/2019	09/14/2022
15	76664	Completing and disseminating a resource man...	National Housing Law Project	20,000	08/01/2019	10/31/2019
16	76688	Monitoring the rollout of IQOS in Atlanta to pr...	Georgia State University Research Foundation I...	358,678	08/15/2019	08/14/2020
17	76761	Supporting systematic learning and coordinati...	Aspen Institute Inc.	2,000,000	09/15/2019	09/14/2021
18	76821	Informing rural-development investments and...	Urban Institute	500,000	09/15/2019	09/14/2021

A more precise dashboard would combine health equity Demographics with any other categories …

Demographics
- **Education Level =** ("No schooling" OR "Nursery, kindergarten, and elementary" OR "High school")
- **Income =** ("Under $15,000" OR "$15,000 to $24,999")
- **Race & Ethnicity =** ("Black (incl. African American)" OR "American Indian (incl. Alaska Native)" OR "Asian/Pacific Islander" OR "Latino or Hispanic")
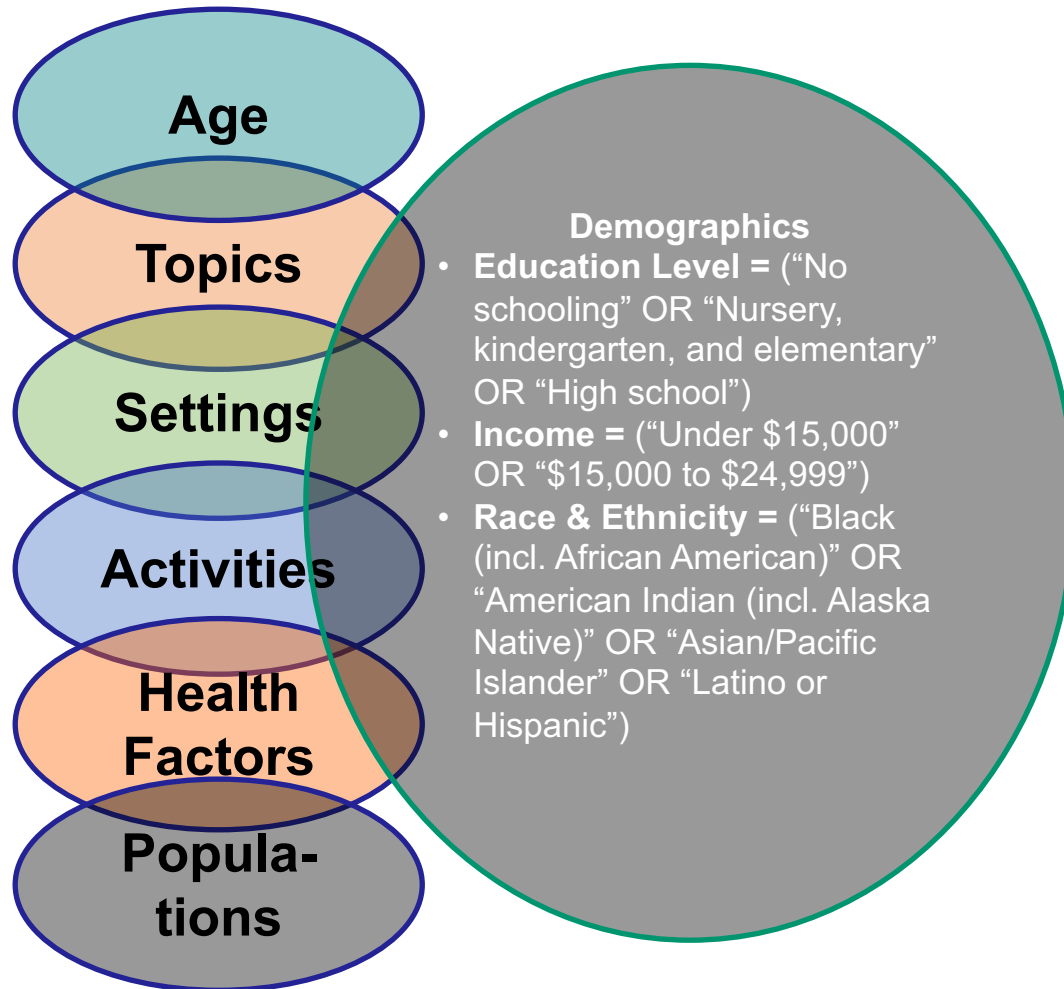
For example:

Education Level = ("No schooling" OR "Nursery, kindergarten, and elementary" OR "High school")

Income = ("Under $15,000" OR "$15,000 to $24,999")

Race & Ethnicity = ("Black (incl. African American)" OR "American Indian (incl. Alaska Native)" OR "Asian/Pacific Islander" OR "Latino or Hispanic")

Questions about contextualizing outcomes for further research and development

❖ When should outcomes be measured and calculated as the difference between before and after?

❖ When are outcomes too subjective and should be left to the users to make independent assessments?

❖ Should subjective user assessments be captured as annotations and potentially used as additional subject description?

Resources

- ❖ *County Health Rankings*. https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources.

- ❖ Healthy People 2020. "Disparities." https://www.healthypeople.gov/2020/about/foundation-health-measures/Disparities.

- ❖ Petri Kainulainen. "What is a domain model." https://www.petrikainulainen.net/software-development/design/thefive-characteristics-of-a-good-domain-model/

- ❖ Mariana Curado Malta, et al. "Validation of a metadata application profile domain model." Proc. Int'l Conf. on Dublin Core and Metadata Applications 2018. http://dcpapers.dublincore.org/pubs/article/download/3964/2162.

- ❖ Taxonomy Strategies. "Taxonomy Glossary." https://taxonomystrategies.com/wp-content/uploads/2016/01/Taxonomy_Glossary.pdf.

- ❖ U.S. Department of Health and Human Services. Office of Minority Health. National Partnership for Action to End Health Disparities. National Stakeholder Strategy for Achieving Health Equity. "Section 1: Development of the Stakeholder Strategy." [2011]. https://minorityhealth.hhs.gov/npa/files/Plans/NSS/NSS_05_Section1.pdf.

- ❖ Wikipedia. "Domain model." https://en.wikipedia.org/wiki/Domain_model.

- ❖ Wikipedia. "Health Equity." https://en.wikipedia.org/wiki/Health_equity.

Questions

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