



DATA SYNERGY



SAS INSTITUTE: ZOE EMPOWERS

Brought to you by Data
Synergy (Team 31)

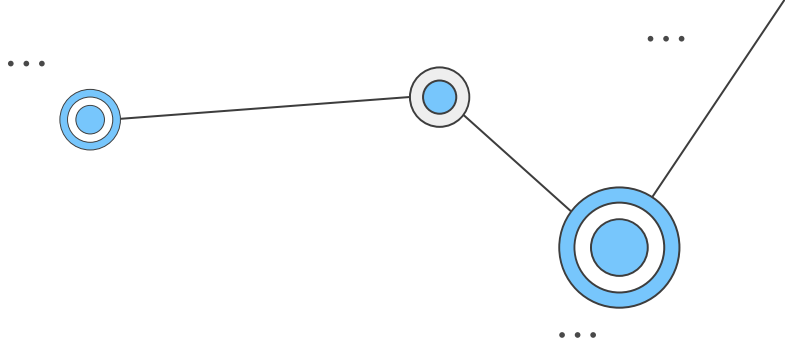


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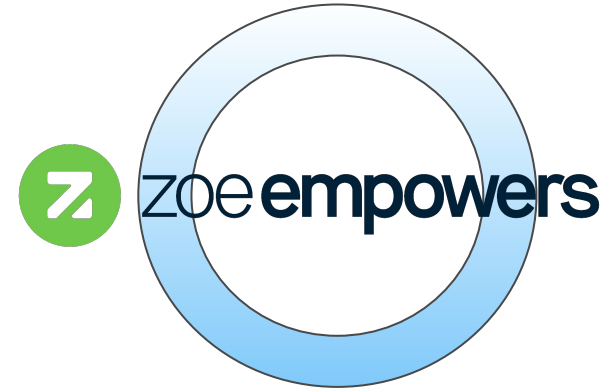
Economy & Housing examples

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05

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WHO IS SAS AND ZOE?

- Is the largest privately held software company in the world
- Over 45 Years in the business analytics space
- Ranks 61 on the Fortune 500 list (2022)
- Emphasises R&D and innovation through AI and data analytics

- Zimbabwe Orphan Empowerment began in 2004
- Was originally an initiative in response of the HIV and AIDS pandemic of Zimbabwe
- Was revised in 2007 by a group of Rwandan Social workers as a self-sufficiency program

...



Self Sufficiency Index (SSI)



- Summarises answers from questionnaires give to participants
- Built in collaboration between Zoe Empowers and SAS
- Ranges from 0 to 24
- Proved to be effective by Sociologist Kenneth Hinze

What makes up the SSI?



Health & Hygiene



Education

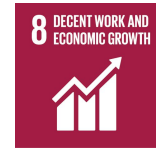


Housing

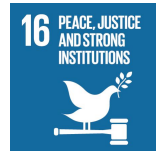


Community

Daily Food Security



Economy



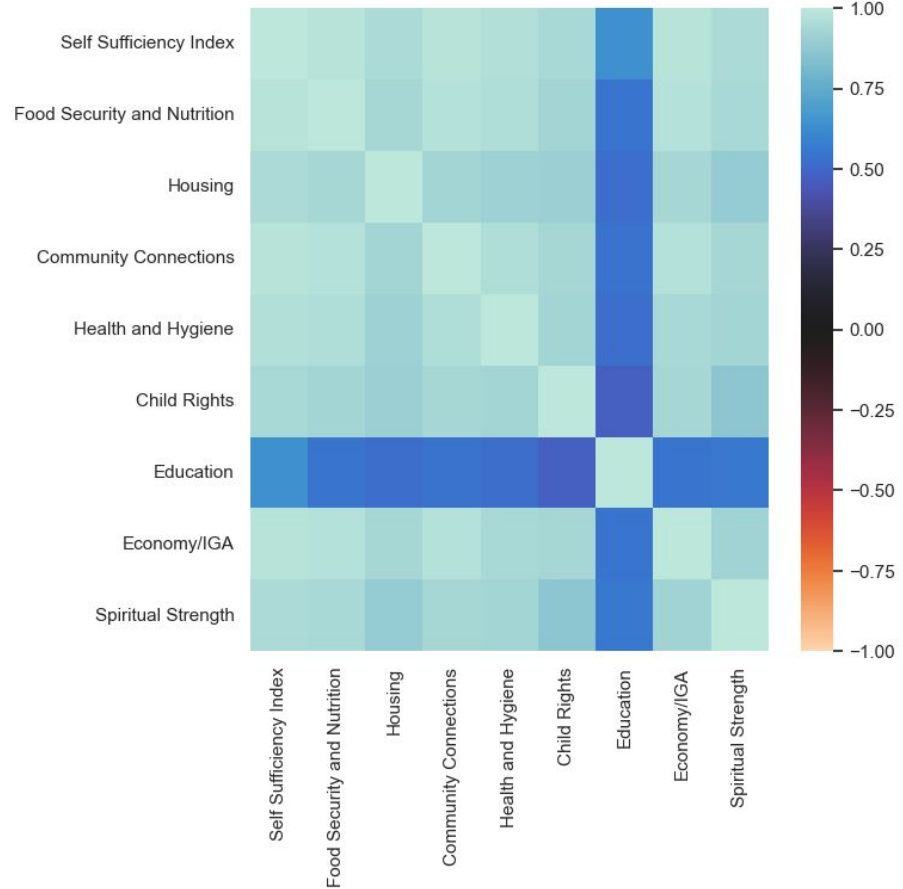
Child Rights



Spiritual Strength

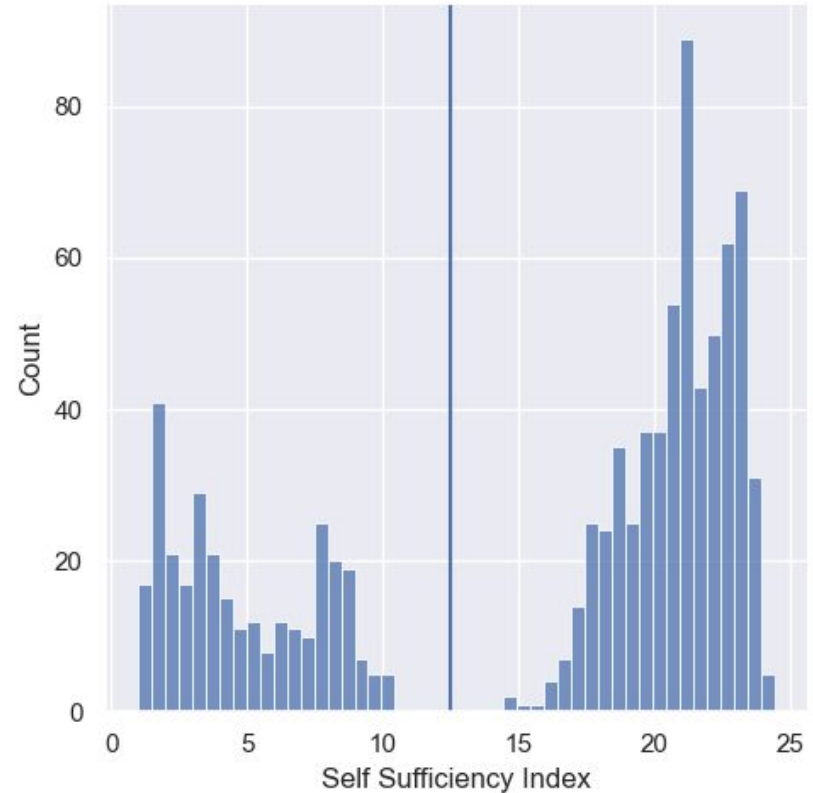
What makes up the SSI?

- Heat-map correlation matrix
- Factors are all very inter-related.
- All positively correlated variables
- Suggesting towards Zoe Empower's holistic approach.



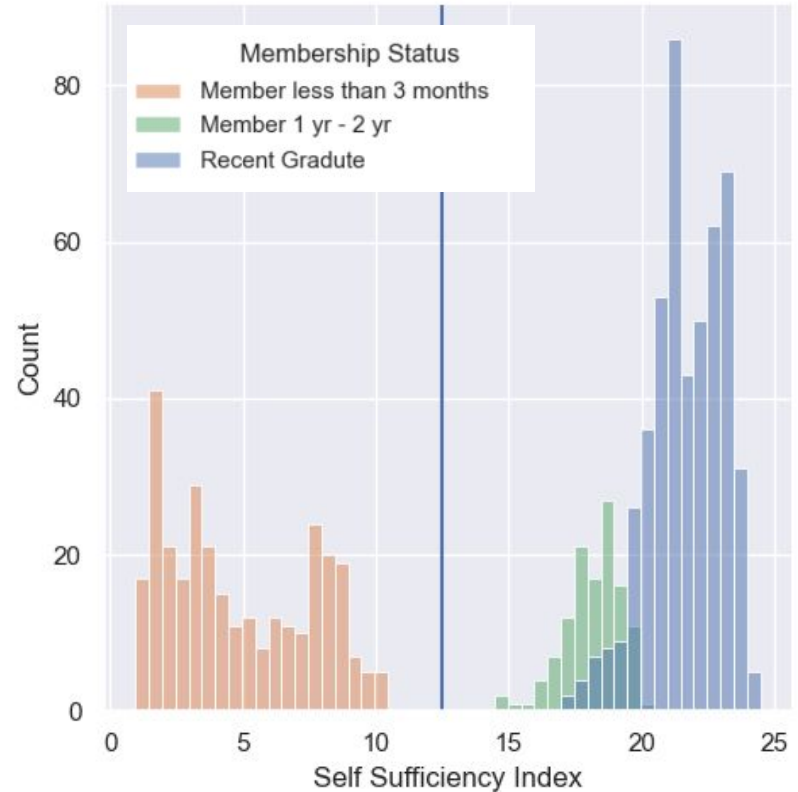
Full Overview

- Frequency of self sufficiency index
- Where abouts is the average person's self sufficiency?
- Strange middle section missing

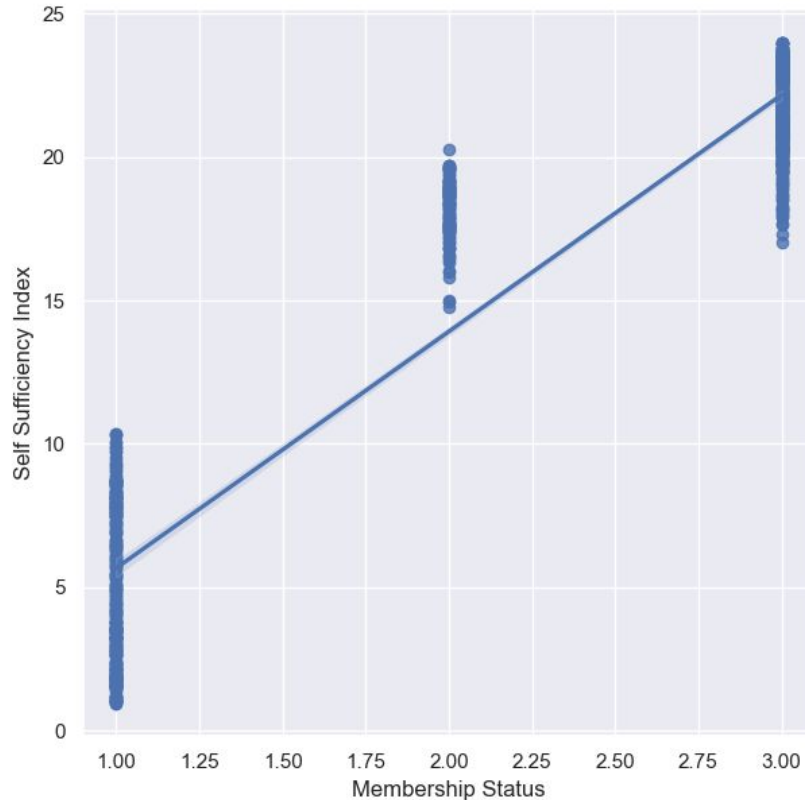


Full Overview

- Membership status demonstrates immediately where there is a gap
- Members of less than 3 months have a significantly lower SSI
- Long term members and recent graduates have a better SSI
- How real is this relationship between SSI and Membership Status?



SSI & Membership Status



- Encoded Membership Status:
 1. Less than 3 months
 2. 1 year - 2 years
 3. Recent Graduate
- Strong linear relationship
 - R-Square: 0.9
- As participants spend more time in the program they become more Self Sufficient.
- Zoe Empowers is effective!

SSI – Recommendations

DATA RECOMMENDATIONS

Data available both
before and after the
program.



MORE SPECIFIC QUESTIONS

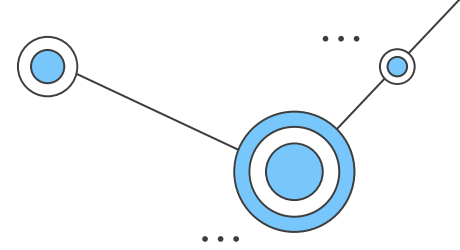
More in-depth and
correlated questions
directly related to the
SSI.





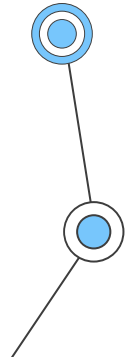
**Zoe Empower's
understands their
countries**

Daily Food Security

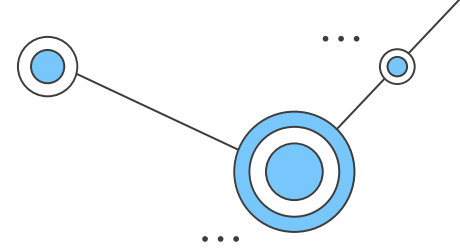


What would you think would be the most important factors to people's daily food security?

- A. Eating different types of food
- B. The number of meals they eat per day
- C. Having a business
- D. Knowing their rights and how to enforce them
- E. Health insurance
- F. Savings



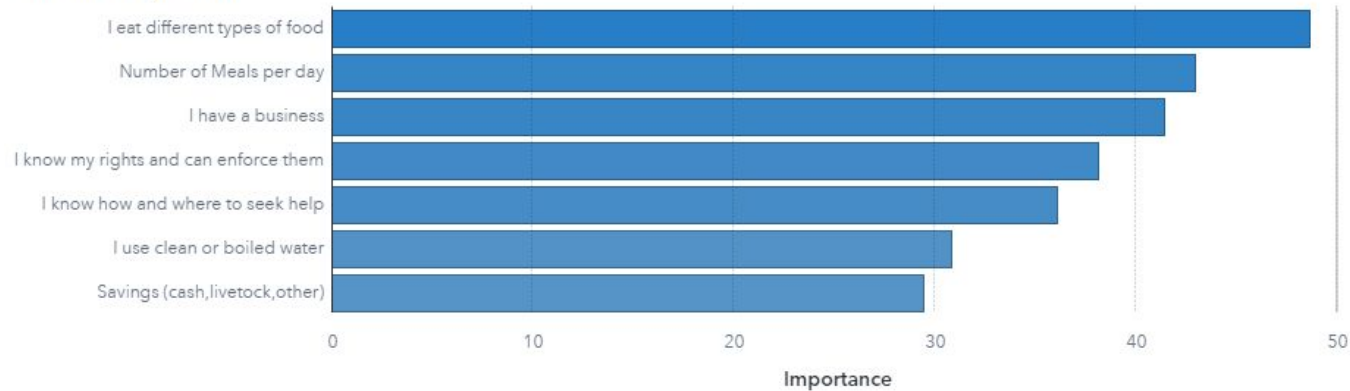
Daily Food Security



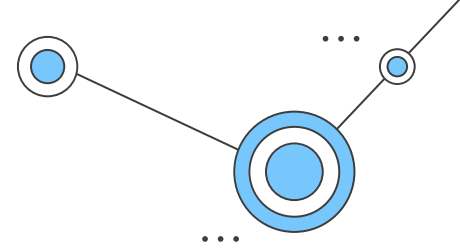
What would you think would be the most important factors to people's daily food security?

A. Eating different types of food

Variable Importance

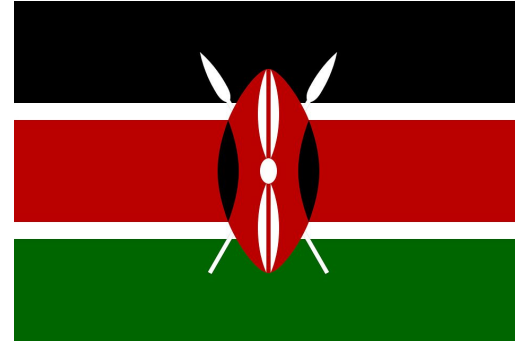


Daily Food Security in Kenya

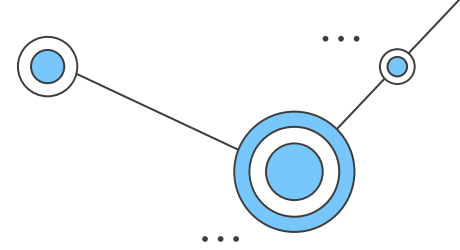


What would you think would be the most important factors to people's daily food security and nutrition?

- A. Eating different types of food
- B. The number of meals they eat per day
- C. Having a business
- D. Knowing their rights and how to enforce them
- E. Health insurance
- F. Savings



Daily Food Security in Kenya



What would you think would be the most important factors to people's daily food security and nutrition?

D. Knowing their rights and how to enforce them

Kenya

Forest Food Security and Nutrition

ASE

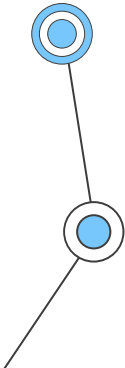
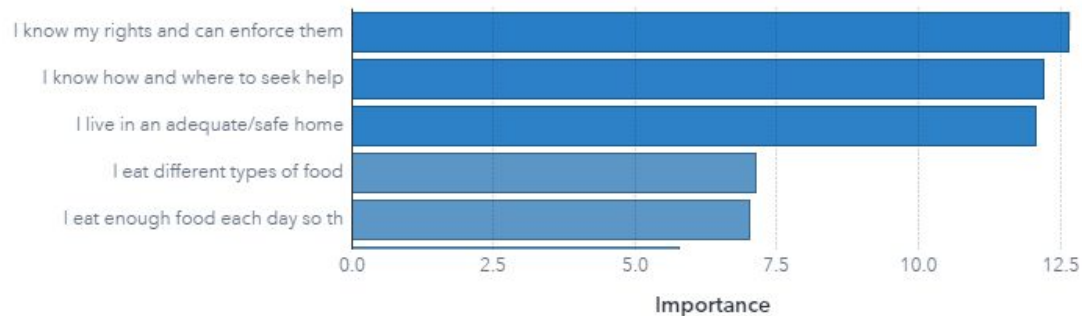
0.0125

Observations Used 411

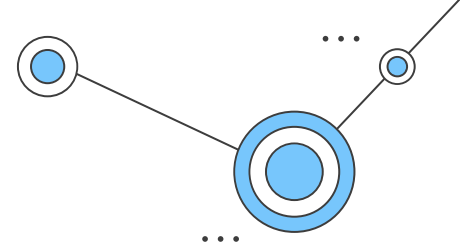
Create Pipeline

< Variable Importance Error Plot Assessment >

Variable Importance



Daily Food Security in Rwanda

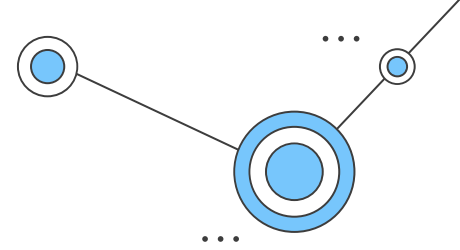


What would you think would be the most important factors to people's daily food security and nutrition?

- A. Eating different types of food
- B. The number of meals they eat per day
- C. Having a business
- D. Knowing their rights and how to enforce them
- E. Health insurance
- F. Savings



Daily Food Security in Rwanda



What would you think would be the most important factors to people's daily food security and nutrition?

E. Health insurance

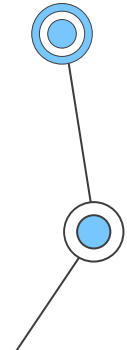
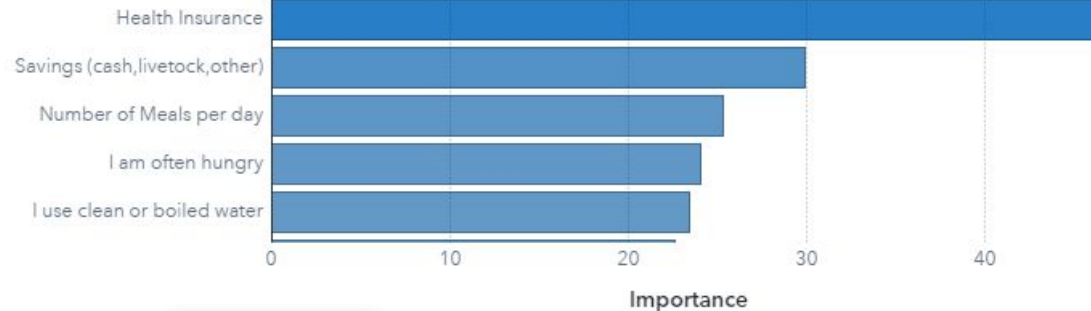
Rwanda

Forest **Food Security and Nutrition** ASE 0.0122 Observations Used 511

Create Pipeline

< Variable Importance Error Plot Assessment >

Variable Importance



Why?

Kenya

The Constitution of the Republic of Kenya **explicitly guarantees** the right to adequate food - *Food and Agriculture UN*

Knowing the right to food and enforcement of that right directly means that you can access food and help!

Rwanda

The Constitution of the Republic of Rwanda **does not explicitly guarantees** the right to adequate food - *Food and Agriculture UN*

Over 90% of Rwandans have health insurance. Poorer individuals gets it for free while wealthier pays \$8 USD/year.

When people get sick they can access help including malnourishment.

Zoe Empower's know these facts about the countries and has effective ways of educating their participants in how to access the type of help that is offered.

TABITHA PHILIP (46347763)

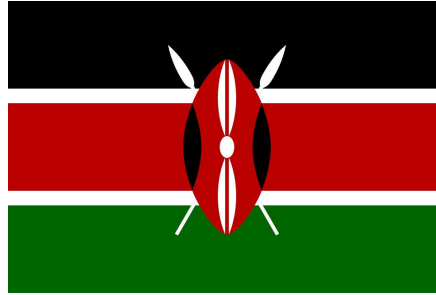
AVA GARDINER (46410961)

(Nations, 2016)

Across the board Kenya

Housing

- 1st: Adequate home
- 2nd: **Rights and Enforcement**



Community Connection

- 1st: **Rights and Enforcement**
- 2nd: Adequate home

Economy

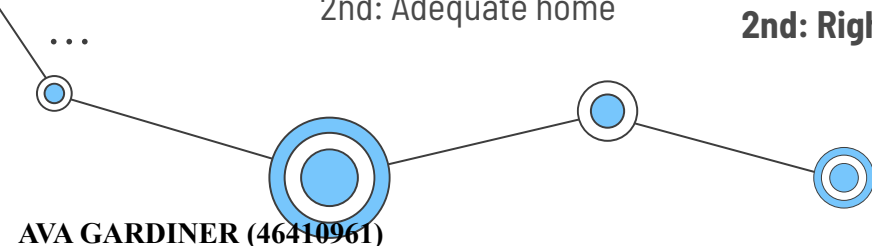
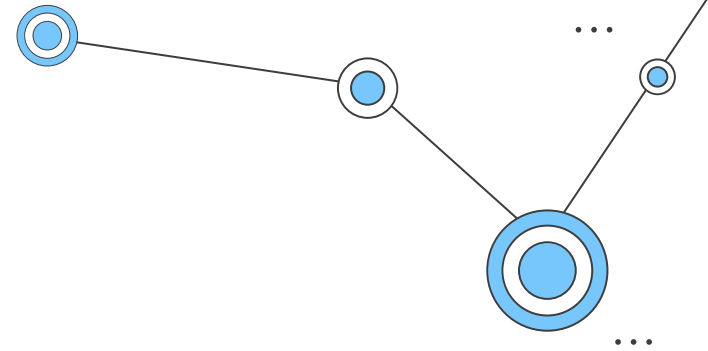
- 1st: **Rights and Enforcement**
- 2nd: Adequate home

Health & Hygiene

- 1st: **Rights and Enforcement**
- 2nd: Adequate home

Child Rights

- 1st: How and Where to seek help
- 2nd: **Rights and Enforcement**



Across the board Rwanda

Housing

1st: Adequate home
2nd: I am often hungry



Community Connection

1st: Health Insurance
2nd: Savings

Health & Hygiene

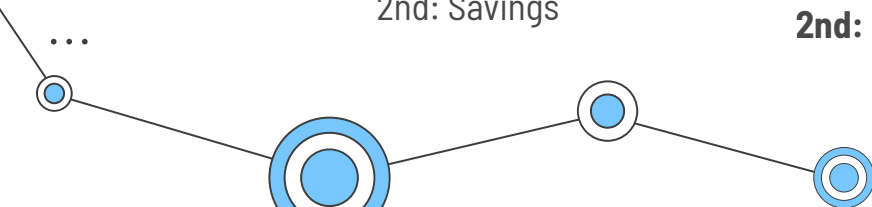
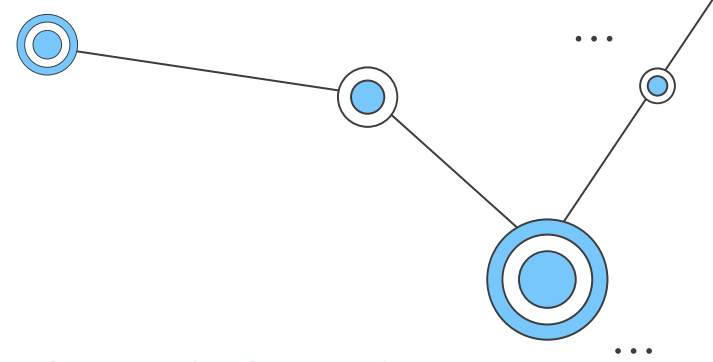
1st: Health Insurance
2nd: Savings

Child Rights

1st: Attend Community Events
2nd: Health Insurance

Economy

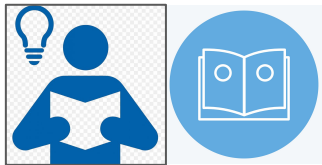
1st: Health Insurance
2nd: Savings



Recommendations

POLITICAL EDUCATION

1. Educating participants in understanding political rights.
2. Educating participants in understanding government structure.

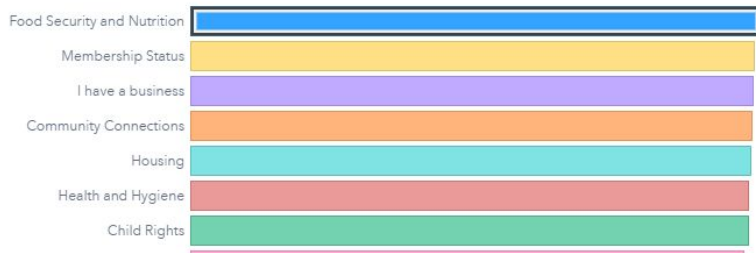


Economy

What are the characteristics of Economy/IGA?

Economy/IGA ranges from .14 to 3. Average Economy/IGA is 2. Most cases (737 of 922) have an Economy/IGA between .14 and 3. Membership Status best differentiates the highest (top 10%) and the lowest (bottom 10%) Economy/IGA cases.

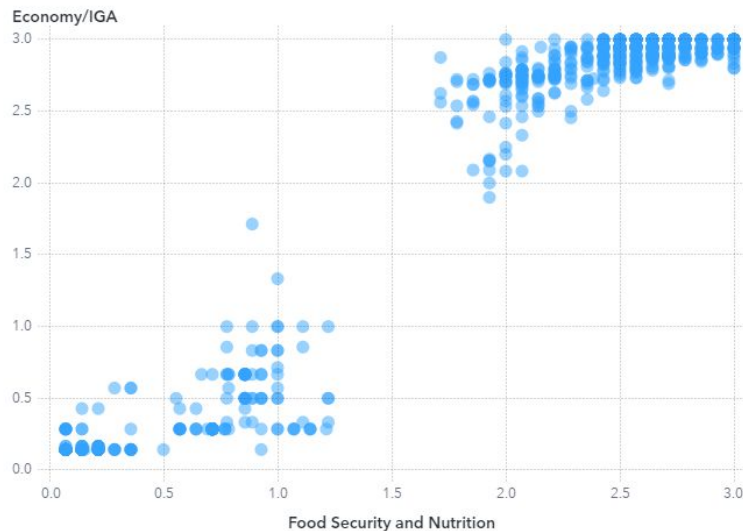
What factors are most related to Economy/IGA?



What are the groups based on Food Security and Nutrition by the average value of Economy/IGA?

<	High	Low	>
3	If Food Security and Nutrition is between 2.7 and 2.8, then the 79 cases have a predicted Economy/IGA of 3.		
3	If Membership Status is N/A or Recent Graduate (less than 3 months), Food Security and Nutrition is between 2.7 and 2.8, then the 79 cases have a predicted Economy/IGA of 3.		
3	If Number of Meals per day is I can afford 3 meals if I want them, Food Security and Nutrition is between 2.7 and 2.8, then the 77 cases have a predicted Economy/IGA of 3.		

What is the relationship between Economy/IGA and Food Security and Nutrition?



Economy/IGA may have a strong positive relationship with Food Security and Nutrition. It appears to be a cubic relationship. Average Food Security and Nutrition is 1.8, and it ranges from .07 to 3.

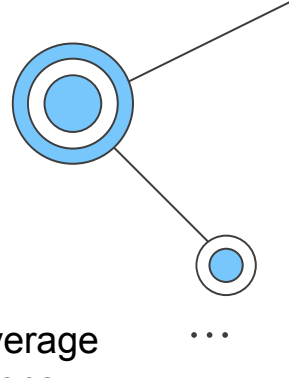


BILL & MELINDA
GATES *foundation*



Healthy People, Wealthy Nation

Economy

- 
- External Gates foundation studies through partnered outreach and research companies reveal to us the average economic status of small business within the two nations.
 - Average small business earning around \$48 a month with over 98% being solely operated by the owner, i.e no employees
 - How is this relevant?

Economy



Chance and Samuel opened a training center to teach woodworking and basket weaving to orphaned children in their community.

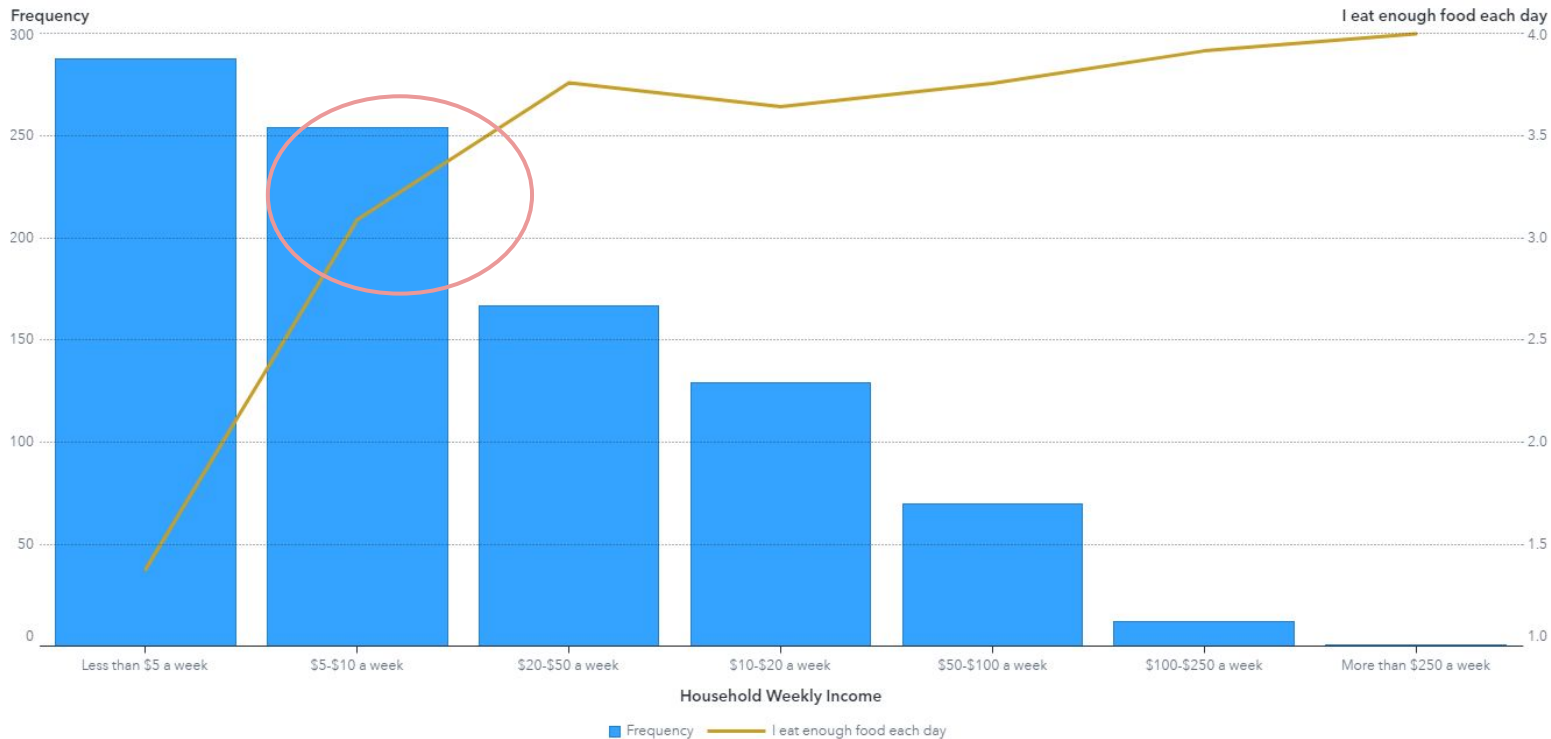
Vocational Training

Youth are encouraged to pursue individualized training in their vocation of choice using resources from their group. Zoe graduates often become mentors in their community and/or employ other vulnerable youth, amplifying the ripple effect of empowerment.

(Empowers, 2023)

Economy

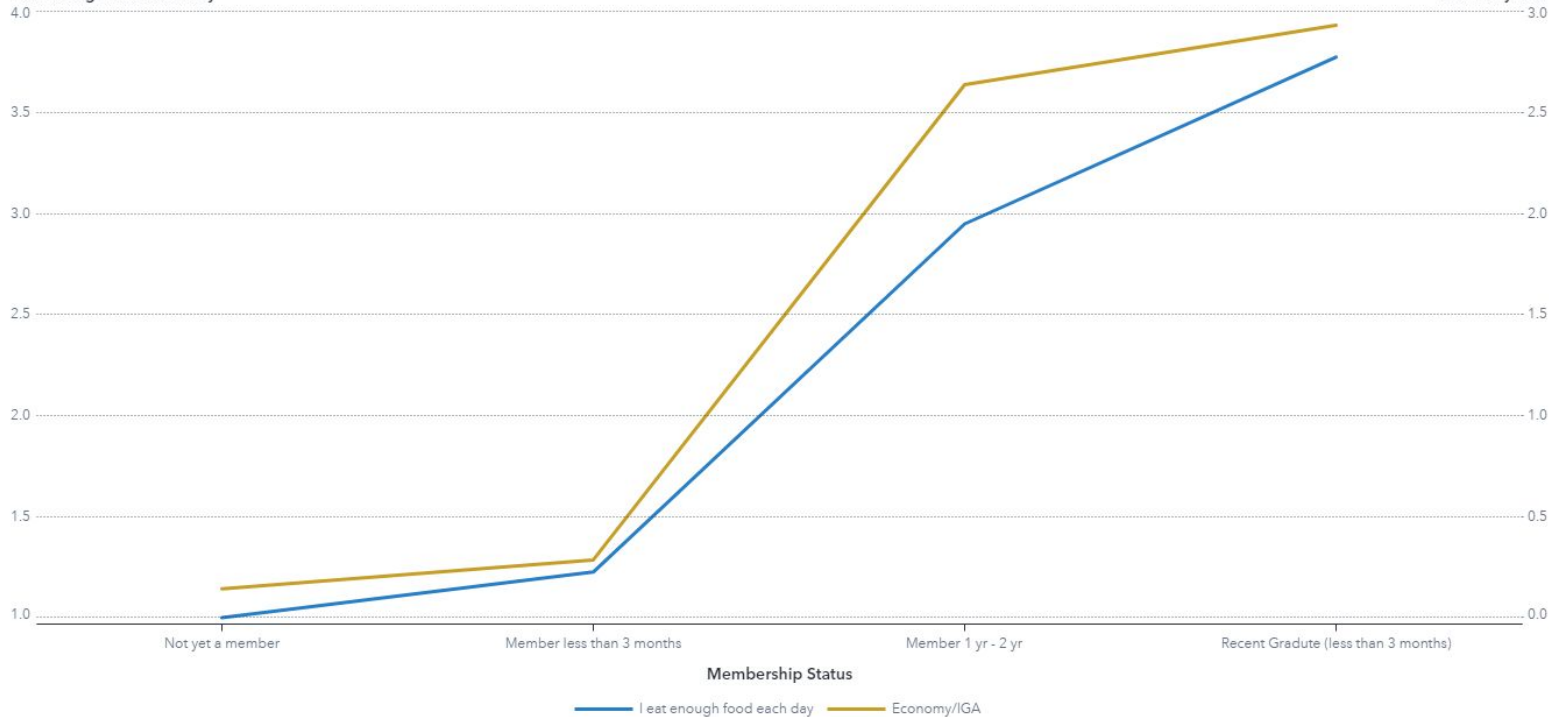
Frequency, I eat enough food each day by Household Weekly Income



Economy

I eat enough food each day, Economy/IGA by Membership Status

I eat enough food each day



Recommendations

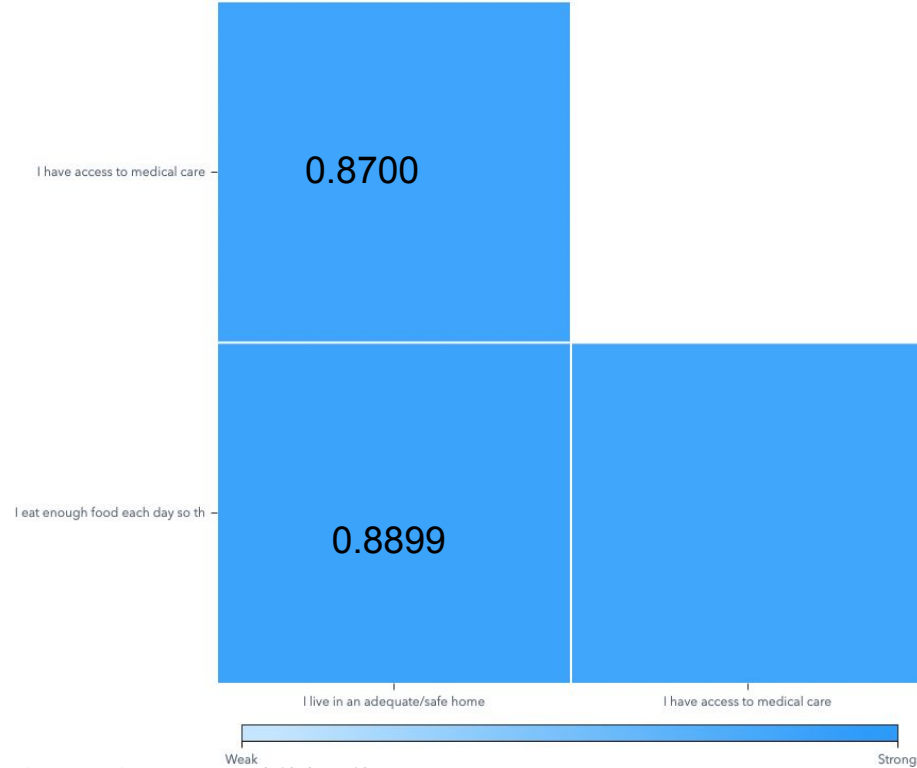
Increase Zoe Empowers
visibility to larger
organizations, initiatives,
charities.

BILL & MELINDA
GATES foundation

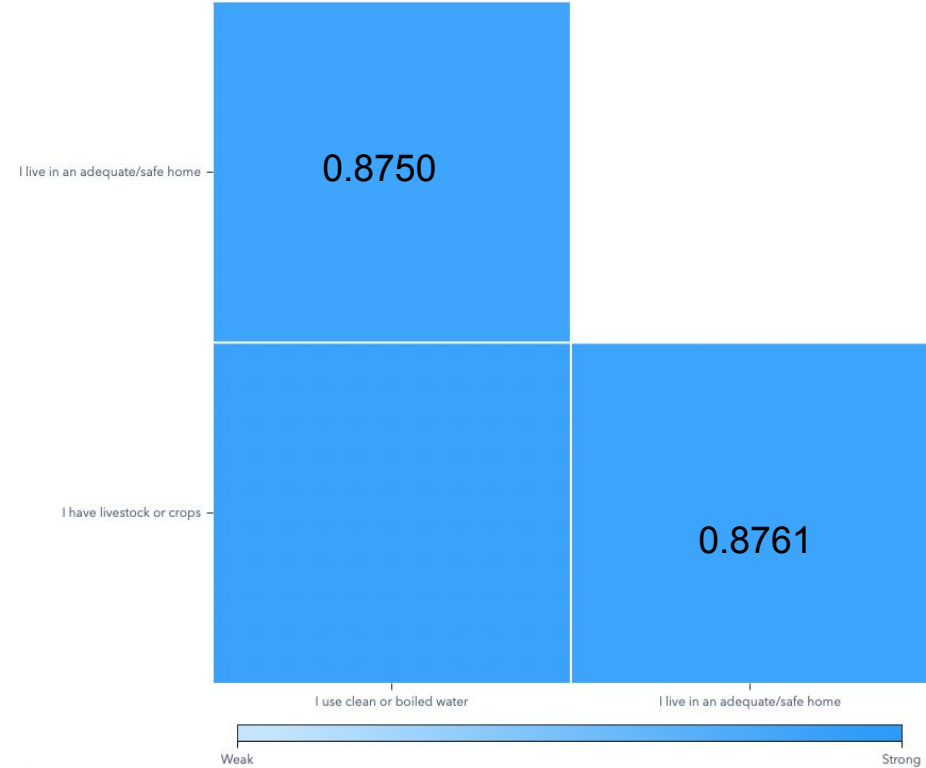


Housing

Live in an adequate/safe home vs Selected Measures

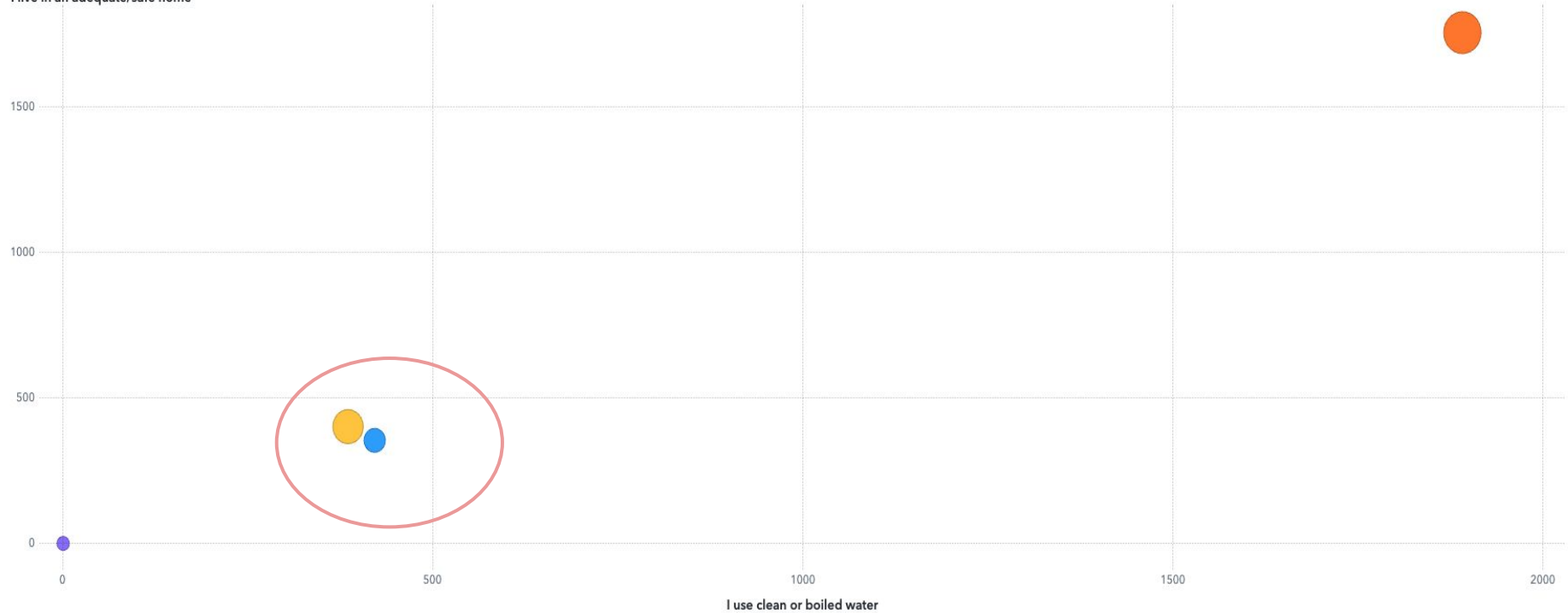


Live in an adequate/safe home vs Selected Measures



I live in an adequate/safe home by I use clean or boiled water sized by Frequency Percent

I live in an adequate/safe home



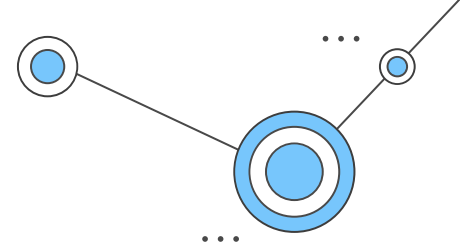
Frequency Percent



Membership Status



HOUSING ANALYSIS



31 March 2017



Children in northern Kenya are severely impacted by a drought that has plagued the region since late 2016. Learn how UNICEF is helping families treat malnutrition, thirst and disease.

MOYALE, Kenya, 31 March 2017 – Dust mercilessly cuts its way through the air, meandering across the pathways of Badanrero Village, Kenya, located 100 km from the border town of Moyale near Ethiopia. The terrain is flat and desolate, with nothing but dried up shrubs for miles.

(Oloo, 2017)

- Drought began October - December 2016
- Declared a national emergency April 2017
- 20% of the country received regular rainfall

(Global, 2017)

Recommendations

UNDERSTANDING ENVIRONMENTAL TRENDS

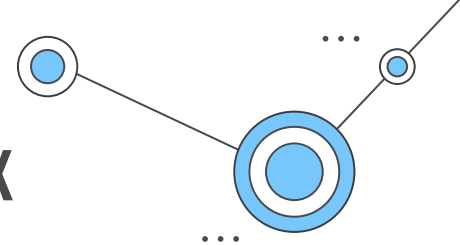
Increase understanding of environmental trends.



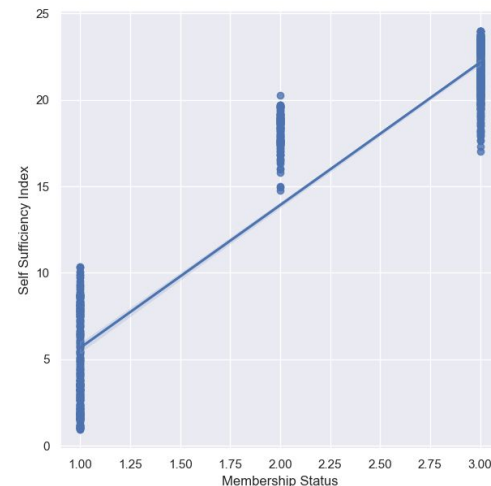
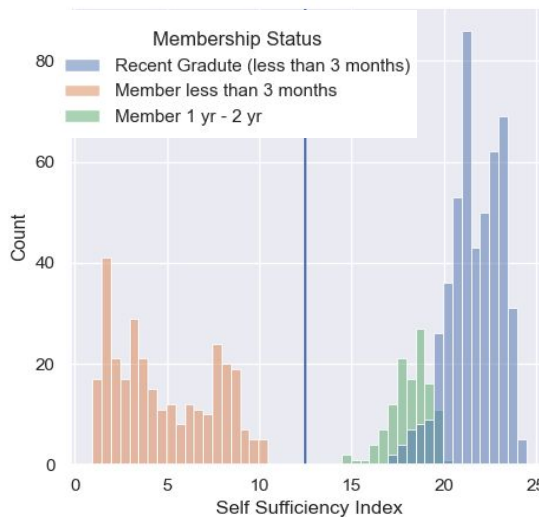
Development of disaster recovery/environmental action plan.



CONCLUSION – Self Sufficiency Index

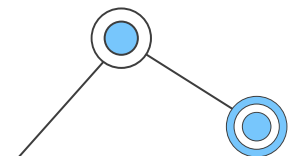


- Zoe Empower's is effective.
- Participants Self Sufficiency increases with participation

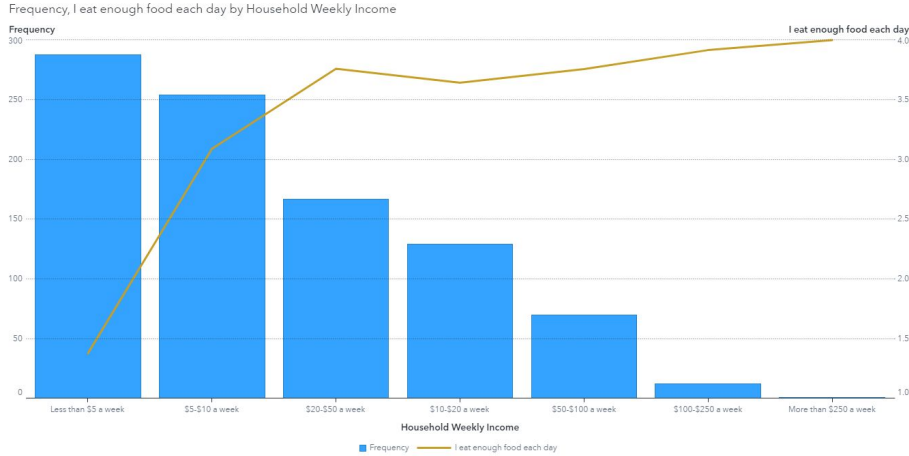
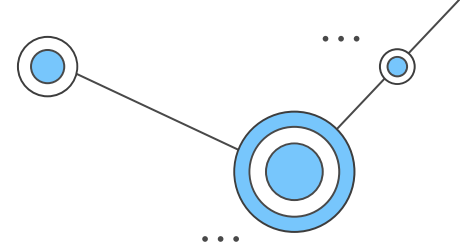


Conclusion – Constitutional Differences

- This is due to their effectiveness in understanding on the ground what they're working with in each country
- In Kenya your rights are the most important to know
- In Rwanda making sure you understand the health insurance and its capacities



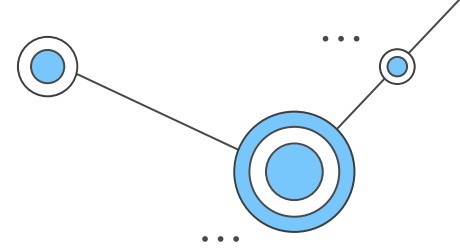
CONCLUSION – ECONOMY



- Correlation with SSI and time involved proves the effectiveness of the program.
- Zoe empowers could expand their program massively through collaboration with larger institutes with a common goal
- Clear that participants involved in the program will eventually make more than national averages

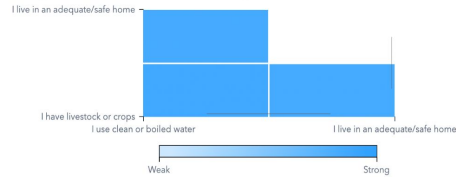


CONCLUSION – HOUSING

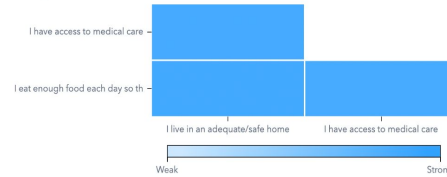


- Zoe Empowers is effective as observed by:
 - The increased linear relationship between membership status and the measures of access to water and living situations
 - Supported by the correlation coefficients
- Zoe contributes to Number 6 & 11 of the UN's SDG

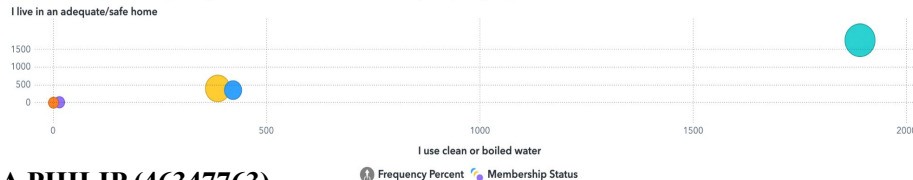
Safety vs Water and Livestock Ownership

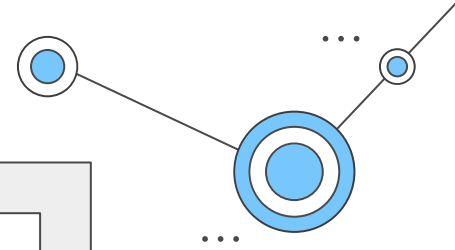
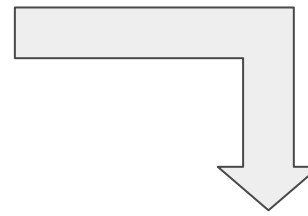
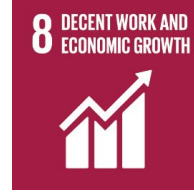
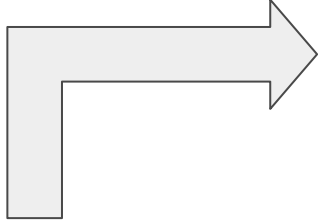


Safety vs Medical and Food

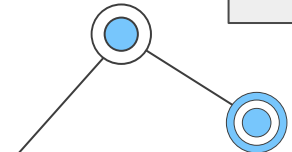
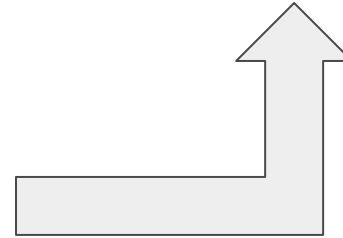
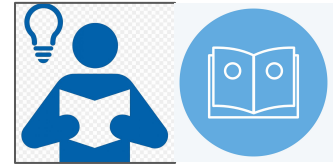


I live in an adequate/safe home by I use clean or boiled water sized by Frequency Percent





Recommendations – Conclusion

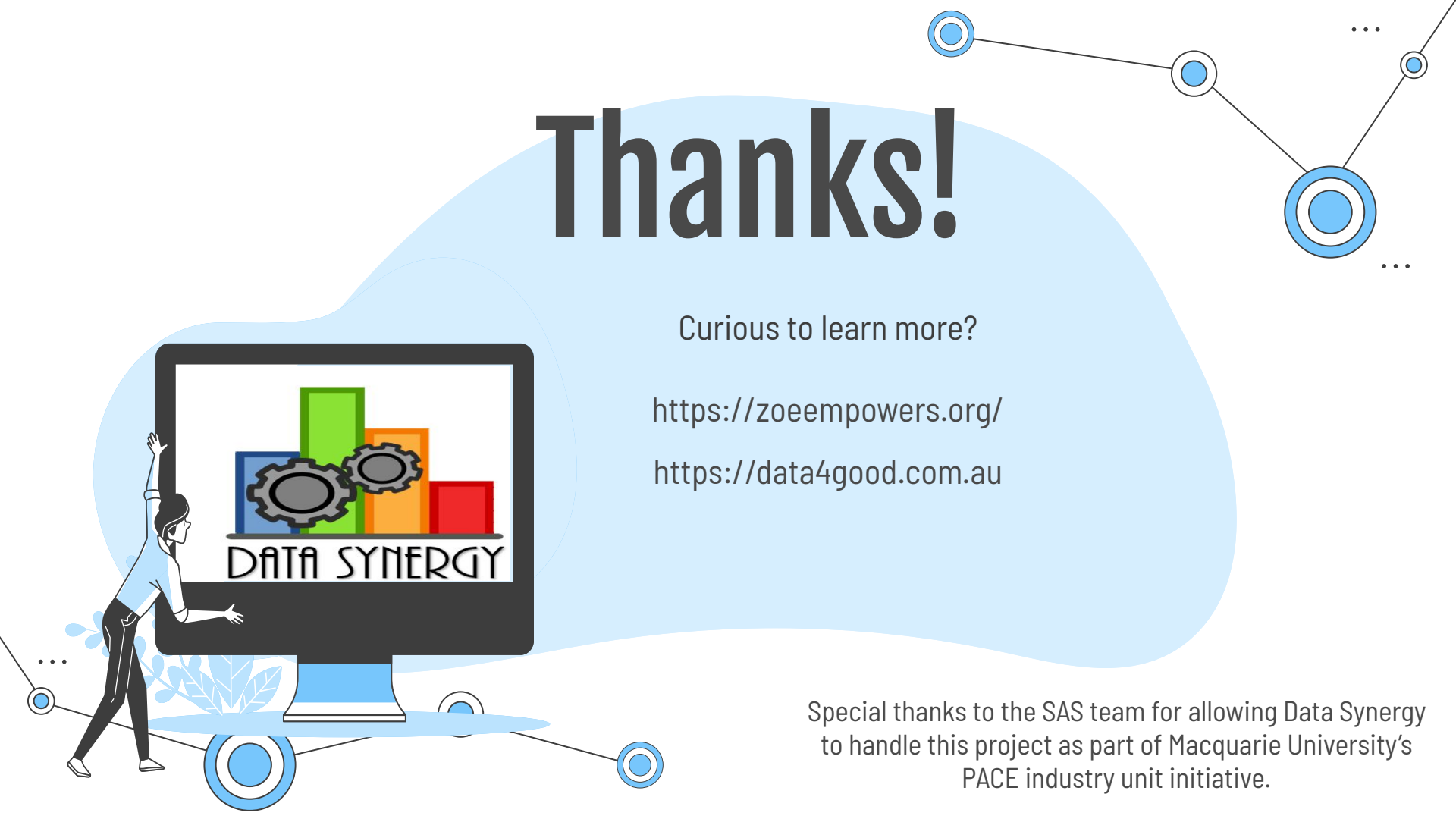


Thanks!

Curious to learn more?

<https://zoeempowers.org/>

<https://data4good.com.au>



Special thanks to the SAS team for allowing Data Synergy to handle this project as part of Macquarie University's PACE industry unit initiative.

Resources

Oloo, D. (2017) *In Kenya, severe drought threatens to leave 4 million food insecure*, UNICEF. Available at: <https://www.unicef.org/stories/kenya-severe-drought-threatens-leave-4-million-food-insecure> (Accessed: 29 May 2023).

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