Uganda

Pay it Forward Knowledge Management
Healthcare Past, Present & Future
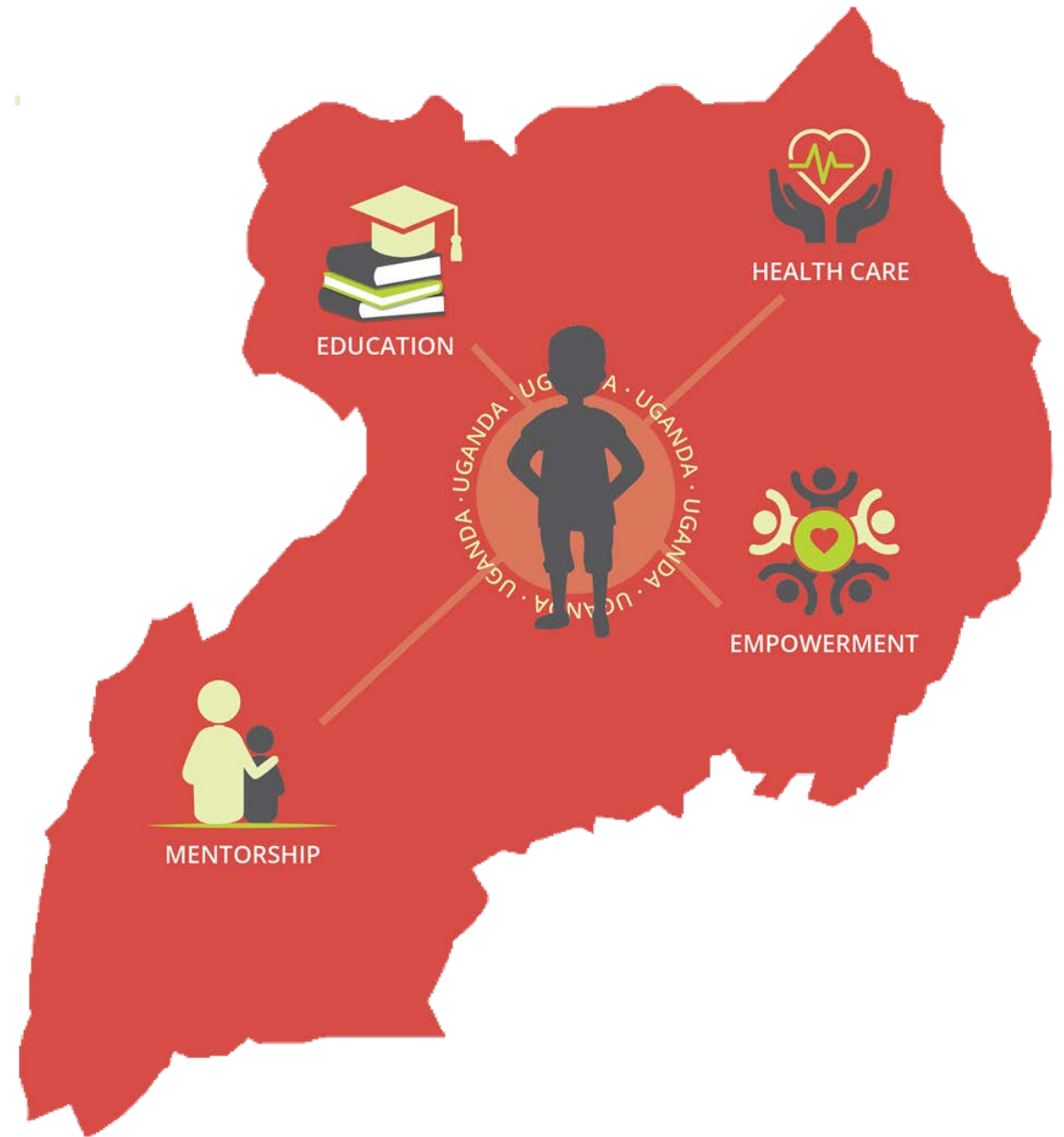
University of
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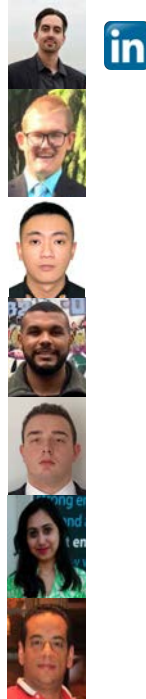
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Executive Summary

This presentation is an analysis of the challenges in Uganda regarding the improvement of citizens' health and wellbeing across the country. Using numerous research tools, sources, and methods, we aim to increase the probability of the HIVE creating a more effective virtual health and education network in the country. Uganda is in a unique situation with challenges in the areas of access, infrastructure and technology constraints and cultural boundaries. With one of the highest growth rates of any country and a strong desire for education and technology, there is huge potential to improve the quality of life for citizens in urban and rural areas alike. Throughout this presentation, we will review these challenges, the history of healthcare in Uganda and what to anticipate in the future.

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Five core areas of focus:

People:
Natives, refugees, rural, urban.
Cultural and ethnic groups.
Health conditions.

Process:
How do people seek out care?
What are the challenges to receiving care?

Structure:
How does the current model function and how should it improve?

Technology:
Are there constraints or gaps in knowledge or infrastructure?

Culture:
How do we build trust and create a positive impact in Uganda?

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Uganda Geography and Population

- **Total population of 42.76 million (2018)**

- **93,065 square miles**
  - 76% of the total population, approximately 30 million residents, reside in rural or remote areas with 70% of the doctors practicing in urban areas.
  - Diverse landscape and wildlife creates challenges for commuting for residents and visiting professionals.
  - Healthcare workers often take extraordinary measures to reach facilities or patients to include hiking miles or canoeing across bodies of water.

- **1.36 million refugees (2018)**
  - It is the third largest refugee-hosting country in the world.
  - More than 60% of the total refugee population, about 816,000, are under the age of 18.
  - Nearly 92% of these refugees reside in settlements along communities in northern Uganda or West Nile with smaller distributions throughout central and southern Uganda.

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Uganda Geography and Population

- **1,576,000 births per year**
  - There has been a 3.7% annual increase in births (2018) adding over 1 million people to its numbers every year.
  - Their birth rates are amongst the highest in the world for the past 40 years.
  - These rising birth rates continue driving up poverty among rural and urban residents alike.
  - This growth rate also puts strain on education and health services making the need for these services urgent.

- **Average life expectancy 62 years (2017)**
  - Life expectancy is lower than neighboring countries of Kenya and Rwanda by approximately 3 and 5 years respectively, though slightly higher than the Democratic Republic of the Congo and South Sudan.
  - Life expectancy increased since 1990 though the rate has slowed recently, possibly due to population increases without necessary education and healthcare access to sustain these levels.
  - This is directly related to rural population challenges such as poverty and health care access.

People, Cultural Boundaries, and Health Risks

Cultural Boundaries & Entry

- Research so far suggests that there may be many effective strategies to attract and retain health workers and citizens' engagement with health education.

- No single strategy will retain workers or their trust; the strategies will differ by region. Any form of incentives for retention should consider the four categories: human resource development, financial incentives, and personal and professional support mechanisms that are directly linked to productivity.
  - Professional and personal support together shows the best retention potential

- Education is an effective motivator for health workers in Uganda. HIVE access will be an effective medium for education.
  - This could be through virtual education and certification with transferability.
  - Many Ugandans seeking education must travel greater than 50 miles to facilities.
  - This is not only for clinicians or professionals, but also youth. See: Education Response Plan (ERP)

Culture & Identity

- Though the official language of Uganda is English, Swahili and Luganda are very widely used as no ethnic group forms a clear majority.

- The ethnic groups include Bantus, Swahili, Nilotic, and Lumasaba.

- The city of Kampala (population 1.5 million), the country's urban center, plays a significant role in healthcare, while also facilitating activities like religious medical treatment practices.

- Religious activities such as missionary deployment aided in bringing early medicine to Uganda and still plays a vital role today.

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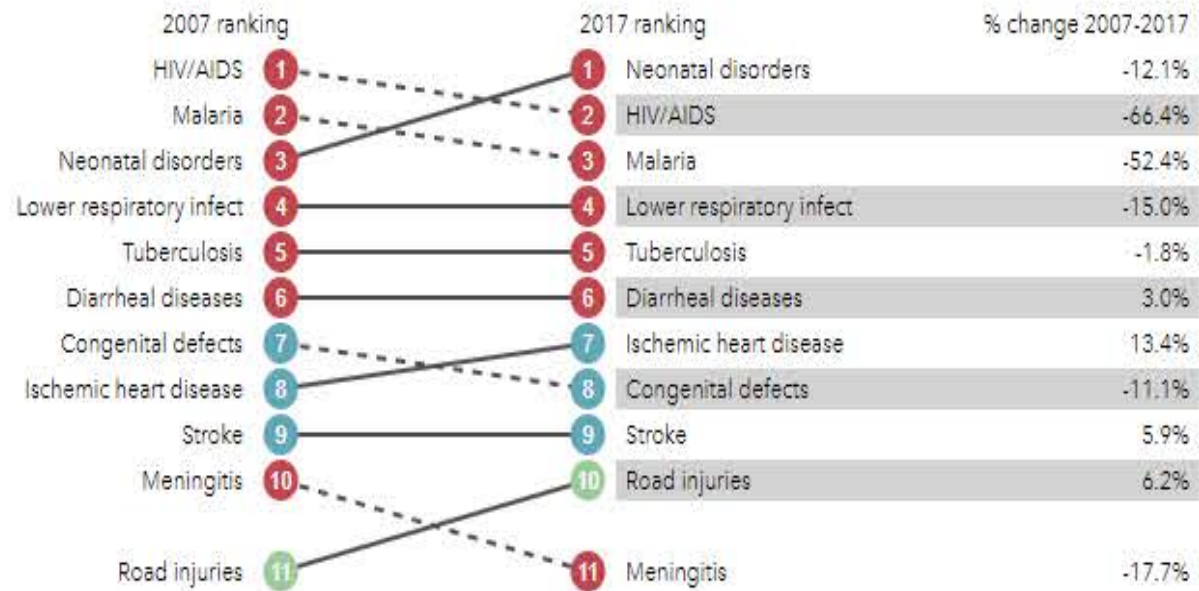HEALTHCARE INSTITUTE FOR VIRTUAL EDUCATION™

Personal Health Risks & Preventative Care Targets

- Neonatal disorders rank number one among causes of death as of 2019 data.
  - Many factors could be responsible including disease or poor hygiene/habits during pregnancy.
  - Some factors are preventable by education alone, others by proper care and consultation.

- Malaria (carried by mosquitos) ranks second in causes of death.
  - Supplies such as repellent and nets can decrease the infection rate.
  - Education on protection and detection can have a significant impact.

- HIV/AIDS ranks third among causes of death, down from rank one as of 2010.
  - Sexual awareness and education have been shown to have a clear positive impact on reducing transmission.

Personal Health Risks & Preventative Care Targets

What causes the most deaths?

2007 ranking			2017 ranking	% change 2007-2017
HIV/AIDS	1	1	Neonatal disorders	-12.1%
Malaria	2	2	HIV/AIDS	-66.4%
Neonatal disorders	3	3	Malaria	-52.4%
Lower respiratory infect	4	4	Lower respiratory infect	-15.0%
Tuberculosis	5	5	Tuberculosis	-1.8%
Diarrheal diseases	6	6	Diarrheal diseases	3.0%
Congenital defects	7	7	Ischemic heart disease	13.4%
Ischemic heart disease	8	8	Congenital defects	-11.1%
Stroke	9	9	Stroke	5.9%
Meningitis	10	10	Road injuries	6.2%
Road injuries	11	11	Meningitis	-17.7%

Top 10 causes of death in 2017 and percent change, 2007-2017, all ages, number

Personal Health Risks & Preventative Care Targets
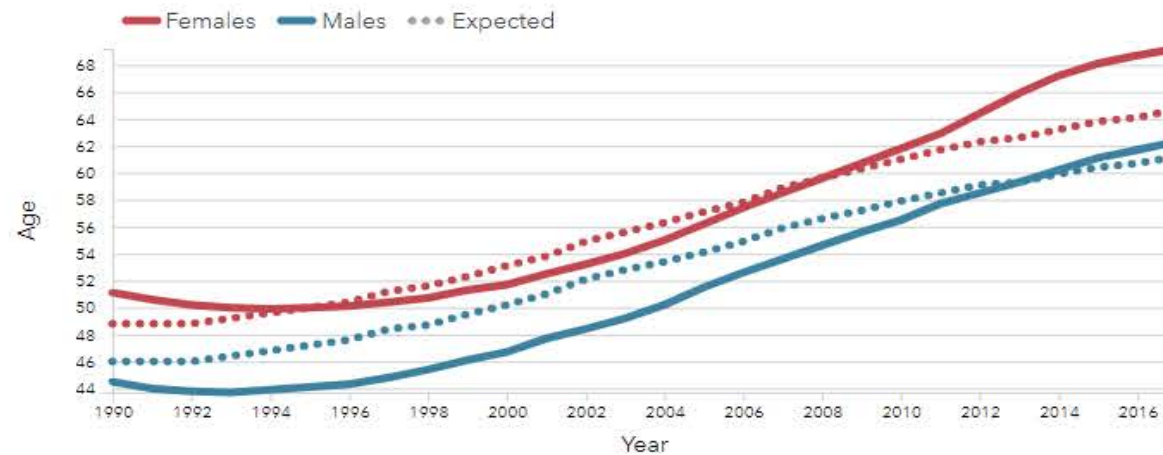
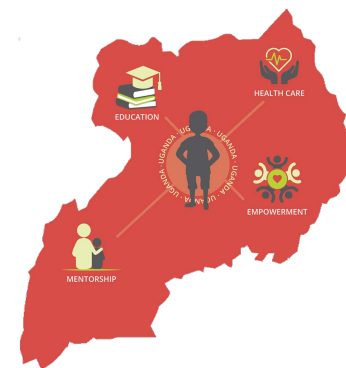| 2017 population	2017 per capita GDP	2017 fertility rate	2017 educational attainment (years)
39.1M	$1,903	5.2	6.0

How long do people live?

Females · Males · ··· Expected
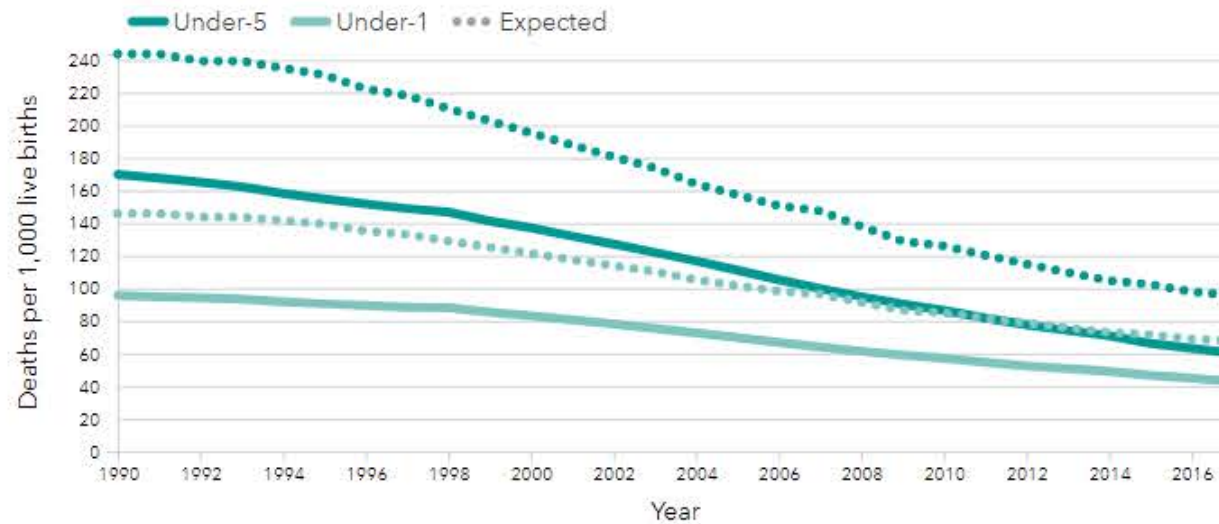

	Expected		Observed	
	1990	2017	1990	2017
Females	48.8	64.7	51.1	69.2
Males	46.0	61.2	44.5	62.3

Life expectancy, 1990-2017

Personal Health Risks & Preventative Care Targets

What is the mortality trend in the under-5 and under-1 age groups?

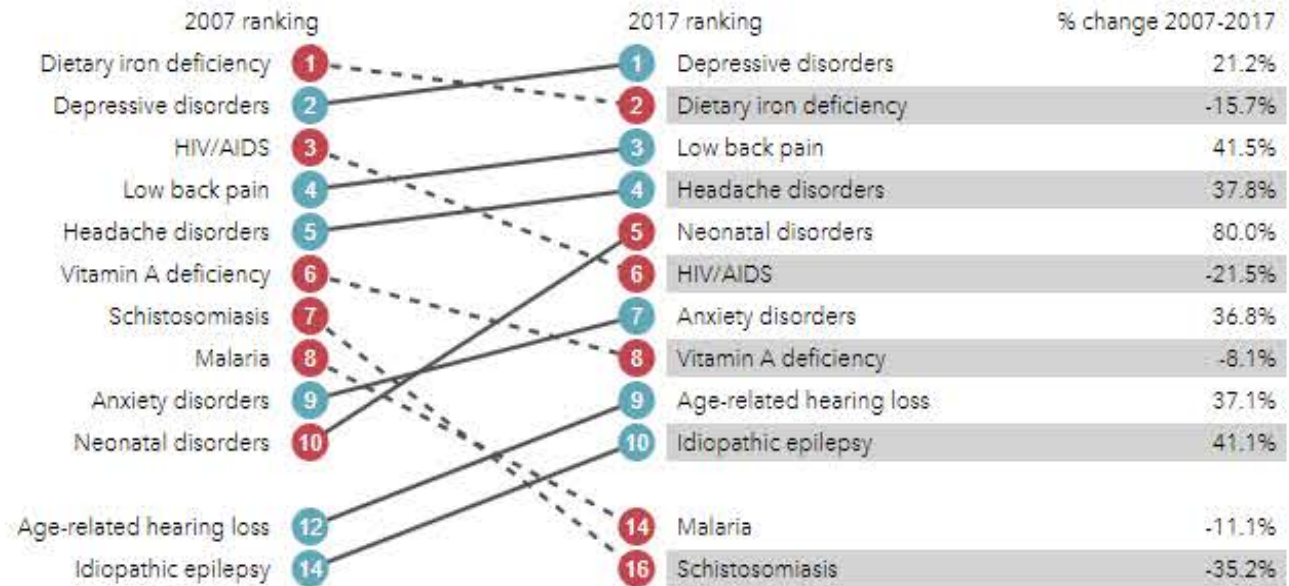|	Expected		Observed	
	1990	2017	1990	2017
Under-5	243.7	95.7	169.9	60.1
Under-1	145.9	67.6	95.7	42.8

Child mortality, 1990-2017

Personal Health Risks & Preventative Care Targets

What health problems cause the most disability?

● Communicable, maternal, neonatal, and nutritional diseases
● Non-communicable diseases
● Injuries

2007 ranking		2017 ranking		% change 2007-2017
Dietary iron deficiency	1	1	Depressive disorders	21.2%
Depressive disorders	2	2	Dietary iron deficiency	-15.7%
HIV/AIDS	3	3	Low back pain	41.5%
Low back pain	4	4	Headache disorders	37.8%
Headache disorders	5	5	Neonatal disorders	80.0%
Vitamin A deficiency	6	6	HIV/AIDS	-21.5%
Schistosomiasis	7	7	Anxiety disorders	36.8%
Malaria	8	8	Vitamin A deficiency	-8.1%
Anxiety disorders	9	9	Age-related hearing loss	37.1%
Neonatal disorders	10	10	Idiopathic epilepsy	41.1%
Age-related hearing loss	12	14	Malaria	-11.1%
Idiopathic epilepsy	14	16	Schistosomiasis	-35.2%

Top 10 causes of years lived with disability (YLDs) in 2017 and percent change, 2007-2017, all ages, number

Healthcare
Past to Present

- The country healthcare system began with the practice of traditional medicine that involved the combination of activities, beliefs, and customs such as healing rituals.

- Traditional healers played a crucial role in ensuring the resident's comfort. However, there were still many deaths with the non-scientific treatment being performed.

- The introduction of missionary care and modern medicine in the nation came during the colonization period in the 1890's and helped to ensure citizens receive proper medical care.

- With lots of women becoming midwives and nurses, there was the creation of many maternal centers and mission referral hospitals.

- The missionaries' type of care later transitioned with the emergence of governments, becoming public centers that service residents and households.

Healthcare
Past to Present

- The presence of Africa Medical and Research Foundation (AMREF) and Farm-Africa have been working hard to improve the health of residents. This has become increasingly difficult due to challenges such as lack of trained personnel and poor distribution or supply chain management.

- Currently, the nation is eyeing e-health as it looks to enhance the delivery of healthcare by allowing doctors to remotely consult and diagnose a patient by analyzing and accessing their medical information, providing the county's health information through data centers and facilities.

- Uganda has had many notable transitions in healthcare which have had varied successes rates with some assistance coming from their own government as well as outside entities.

- Actively seeking better virtual care models as they are the most efficient in a diverse country and landscape such as Uganda.
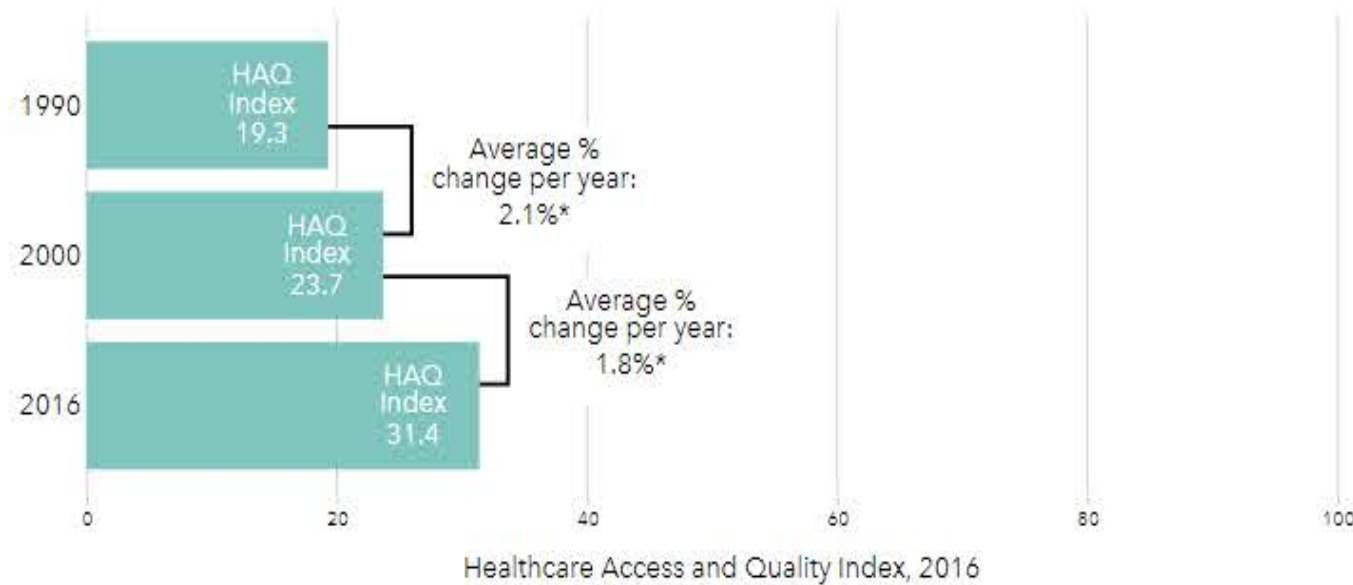
Access to Care:
The Healthcare Access and Quality Index?

- The Healthcare Access and Quality Index (HAQ Index) is a standardized measure of death rates ranging from 0 (worst) to 100 (best) encompassing 32 causes of death in the amenable or "avoidable" categories such as:
  - Vaccine-preventable diseases
  - Maternal and child health
  - Diabetes and other non-communicable diseases
  - Treatable cancers

Access to Care:
A Visualization of the HAQ Index for Uganda

How does personal healthcare access and quality measure up?

1990 — HAQ Index 19.3

Average % change per year: 2.1%*

2000 — HAQ Index 23.7

Average % change per year: 1.8%*

2016 — HAQ Index 31.4

Healthcare Access and Quality Index, 2016

Stars indicate the average rate of change was statistically significant for that time period.
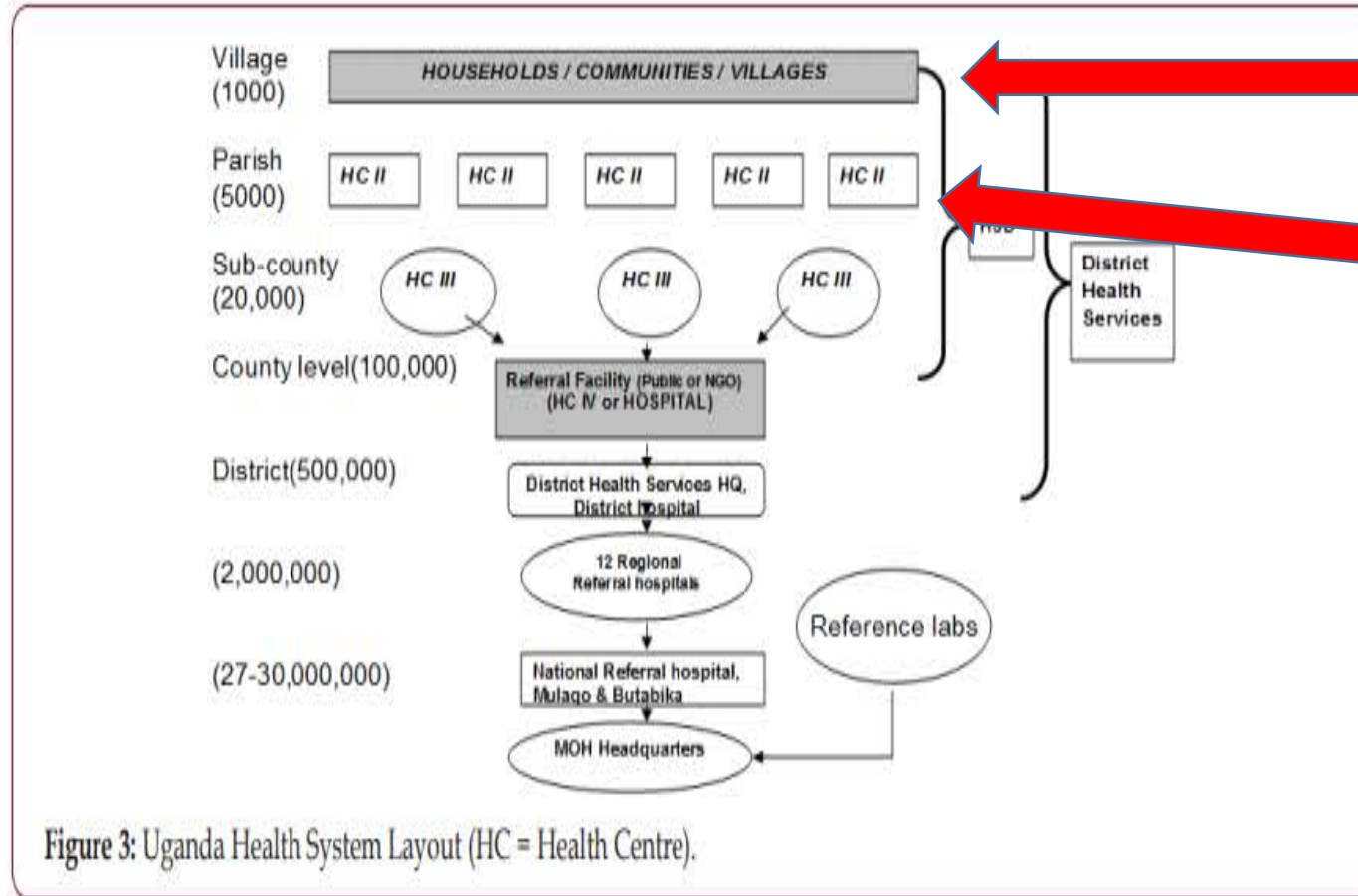
Source: bit.ly/HAQ-GBD2016

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Healthcare System

Figure 3: Uganda Health System Layout (HC = Health Centre).

- Community medicine distributors in rural areas are typically the first stop for someone seeking care, but many villages do not have volunteers.

- Health Centre II (HC II) is the first official facility and are supposed to be found in every parish.
- Lead by an enrolled nurse, working with a midwife, two nursing assistants and a health assistant:
  - These centers serve a few thousand people and should be equipped to treat common diseases such as malaria or some neonatal disorders.
  - Run as an out-patient clinic not always equipped with a laboratory.

Healthcare System
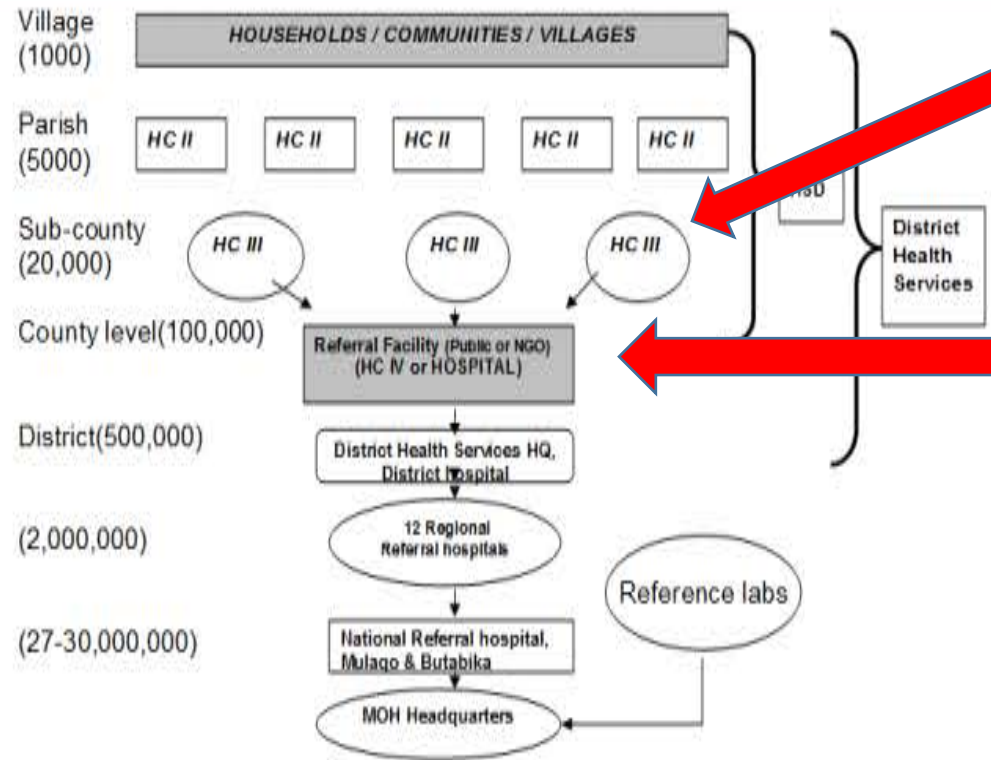
Figure 3: Uganda Health System Layout (HC = Health Centre).

- Health Centre III can be found in any sub-county, equipped with a staff of 18 lead by a senior clinical officer.
  - The units should have a functioning laboratory and maternity ward
- Health Centre IV (HC IV) serves at the county level and acts as a mini hospital with a senior medical officer and another doctor to conduct emergency operations.
  - Includes all services found at HC III
  - Should have wards for men, women, and children with the ability to admit patients
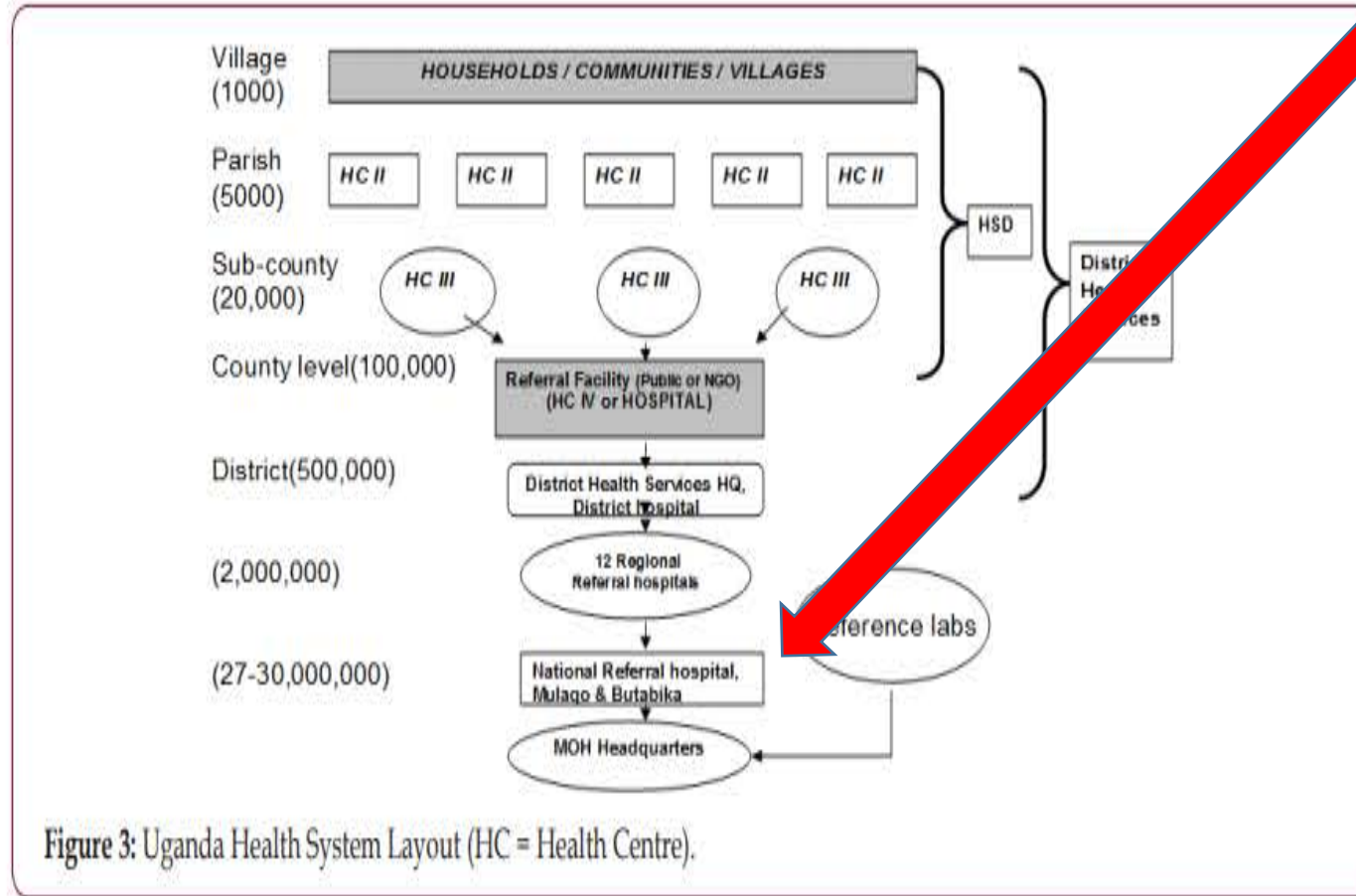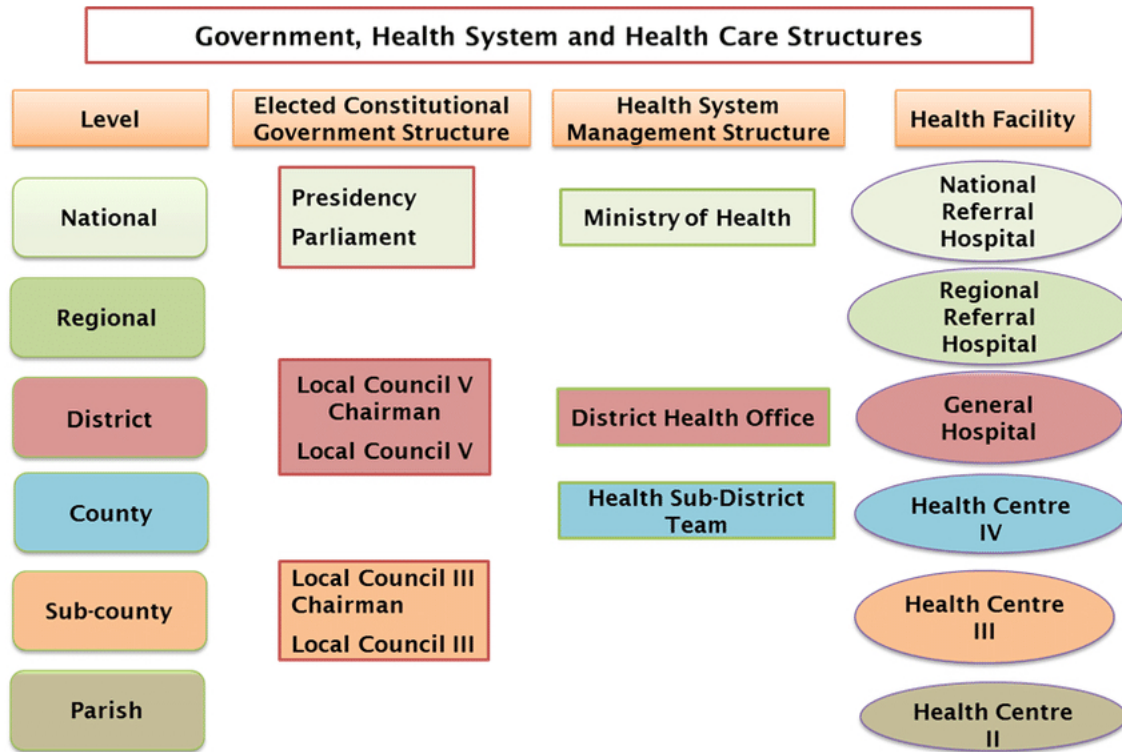
Healthcare System

Figure 3: Uganda Health System Layout (HC = Health Centre).

- At the top of the healthcare chain is national referral hospital which should cover all services of previous tiers including specialized clinics.
  - Where the best professionals can be found, typically splitting their time between private and government positions
  - Not all medical professionals work full time in these facilities

Healthcare System

Government, Health System and Health Care Structures

Level	Elected Constitutional Government Structure	Health System Management Structure	Health Facility
National	Presidency / Parliament	Ministry of Health	National Referral Hospital
Regional			Regional Referral Hospital
District	Local Council V Chairman / Local Council V	District Health Office	General Hospital
County		Health Sub-District Team	Health Centre IV
Sub-county	Local Council III Chairman / Local Council III		Health Centre III
Parish			Health Centre II

- Citizens have had free universal access to state health facilities since 2001, though the country only spends approximately 1/3 of what it should on health care.

- Uganda's healthcare system works on a referral basis, starting from HC II and if the unit cannot handle the case, it refers the case to a higher lever and so on.

- 41% of expenses are still out of pocket:
  - This increases the value of self-care.
  - 70% of doctors practice in urban areas, where only 20% of the population lives.
  - The coverage in rural areas is much worse: one doctor for every 22,000 people.
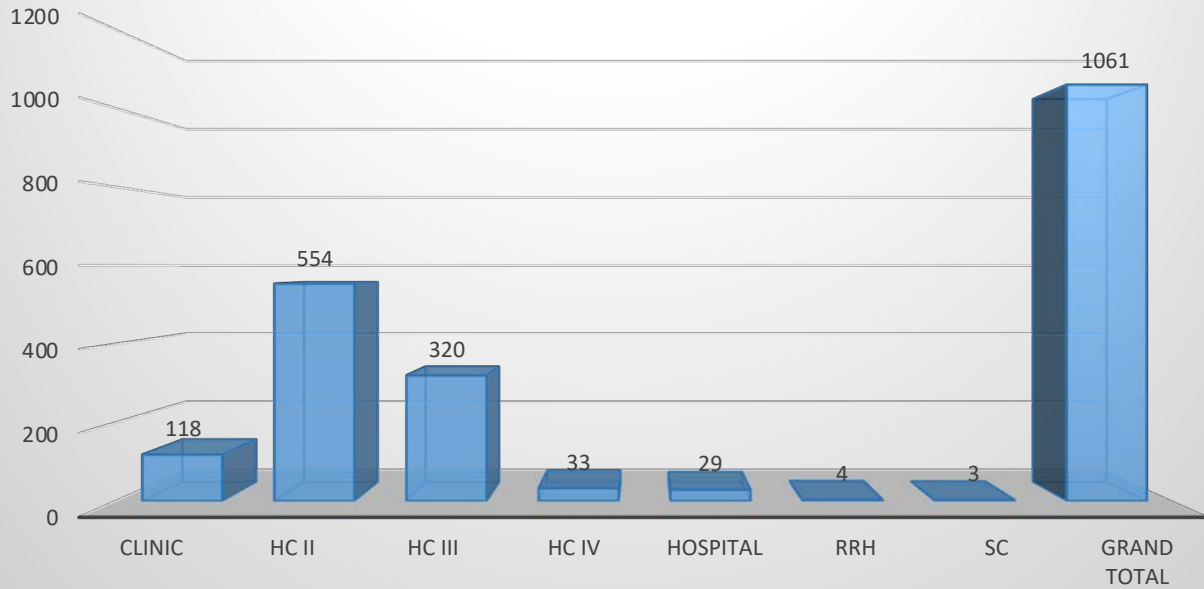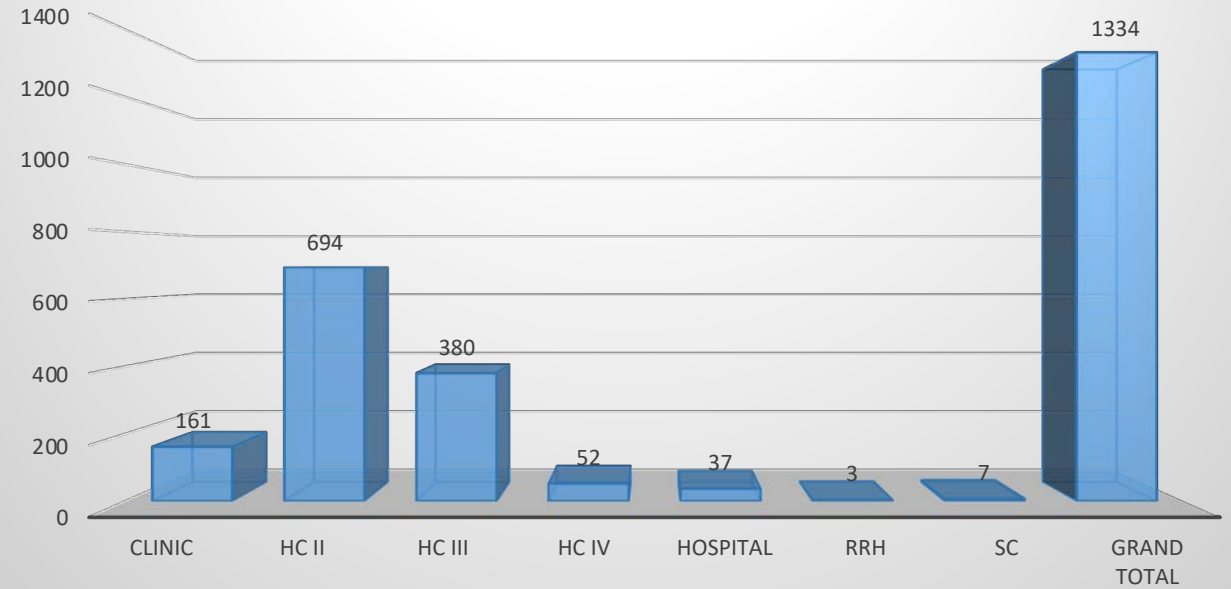
Healthcare Services

- Uganda HC facilities and services are divided into four regions:
  - Eastern Region
  - Western Region
  - Northern Region
  - Central Region
- Each region has 19 health facilities falling into these categories:

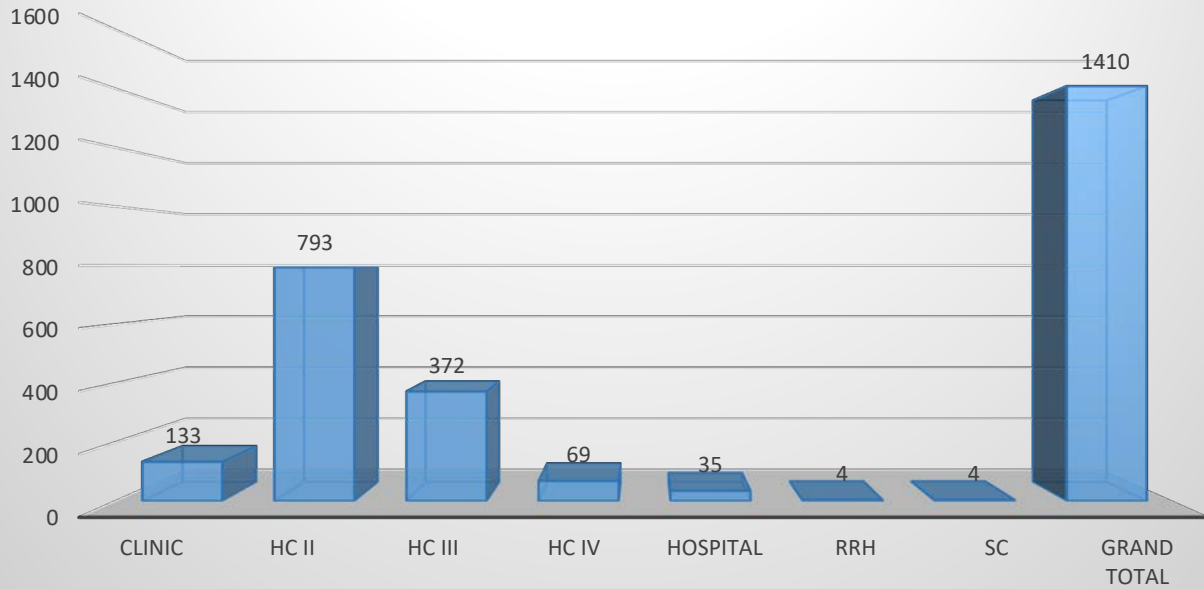 Govt, PEP   (Private-for-profit)
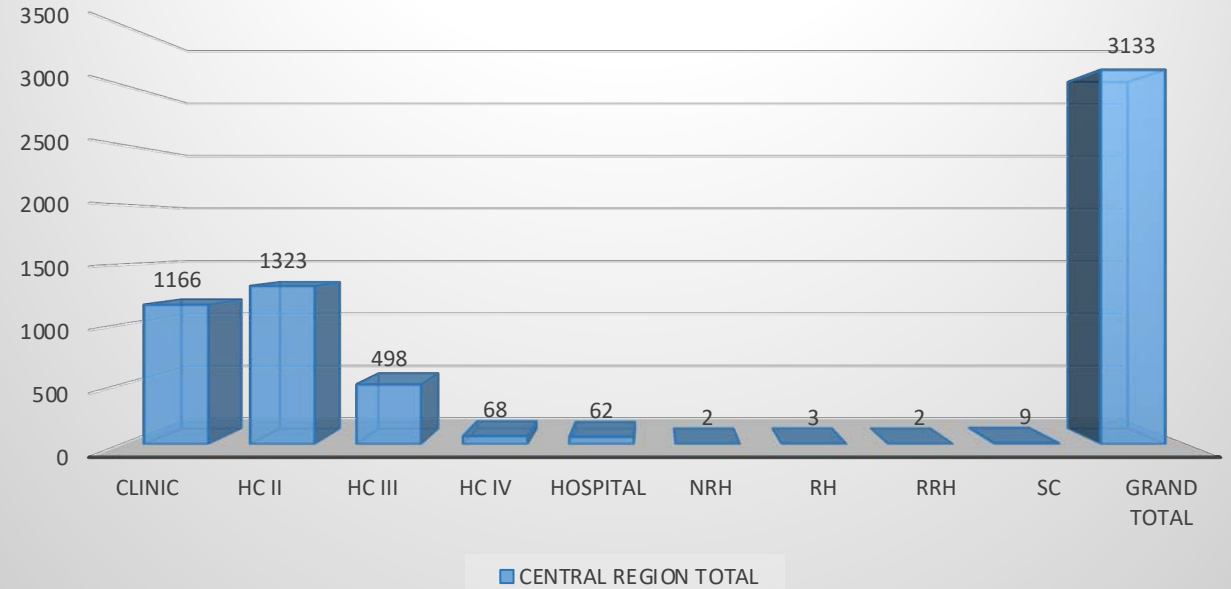
  PNEP   (Private-not-for-profit)

Healthcare Facility Breakdown

| LEVEL COUNT PERCENTAGE		
Health Facility Level	COUNT	PERCENTAGE
Clinic	1578	22.75%
HC II	3364	48.49%
HC III	1569	22.62%
HC IV	222	3.20%
Hospital	163	2.35%
RH	3	0.04%
NRH	2	0.03%
RRH	13	0.19%
SC	23	0.33%

Health Facility Level

- Clinic 23%
- HC II 49%
- HC III 23%
- HC IV 3%
- Hospital 2%
- RH 0%
- NRH 0%
- RRH 0%
- SC 0%

Legend: Clinic, HC II, HC III, HC IV, Hospital, RH, NRH, RRH, SC
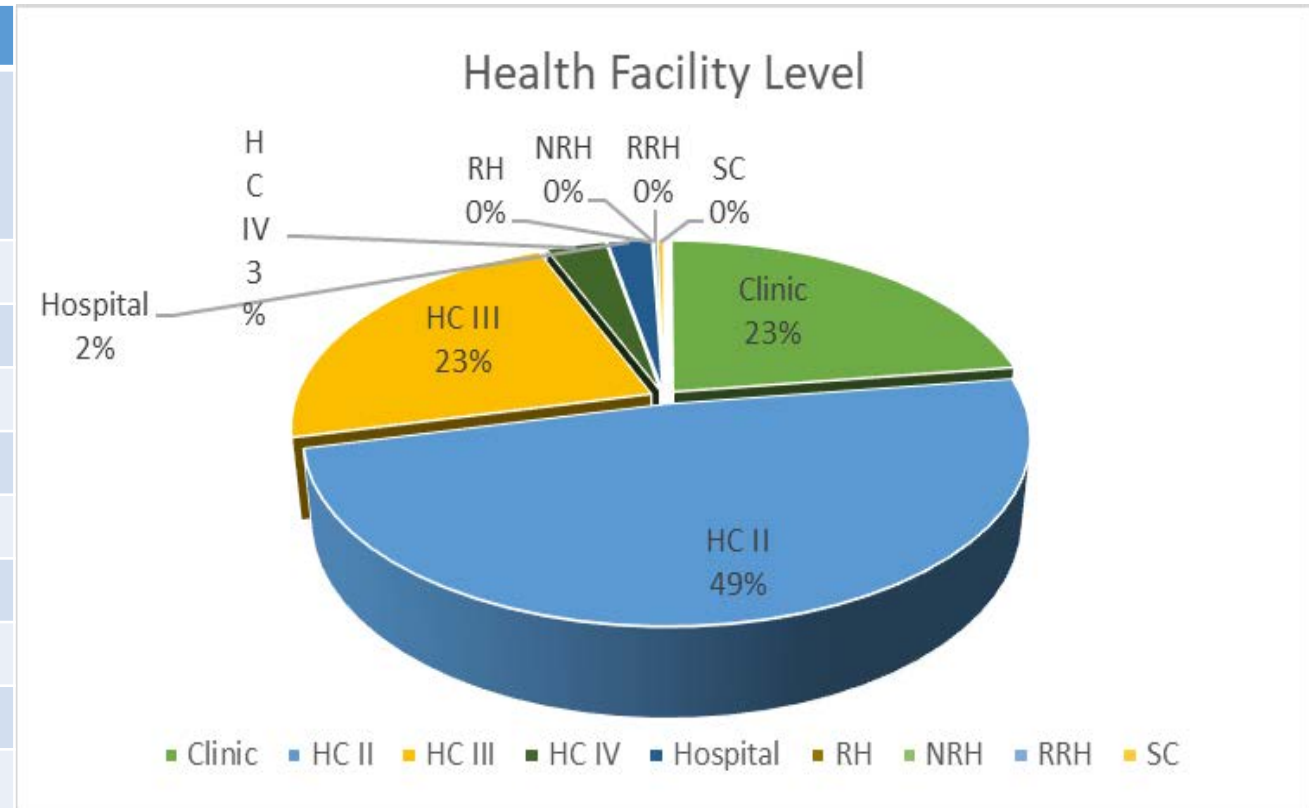
Health Facility Authorities
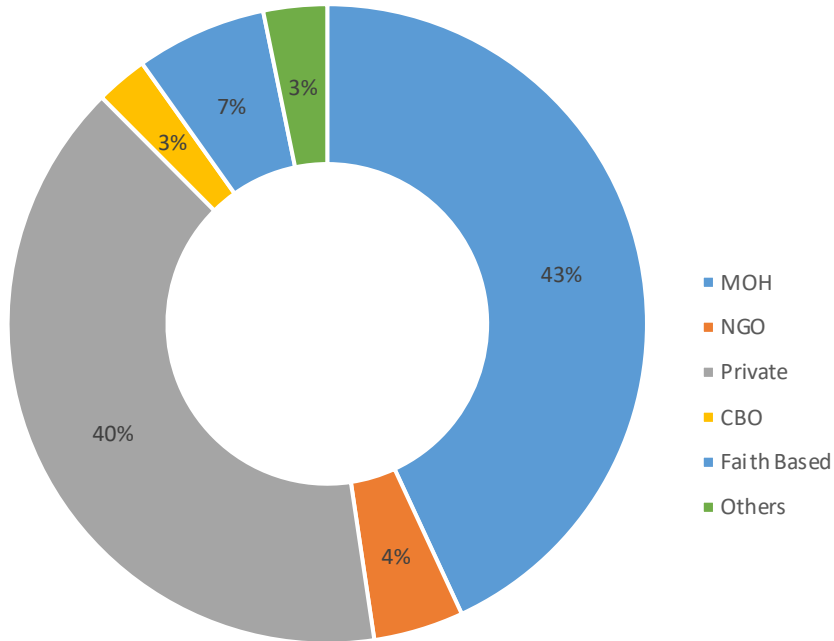
ACRONYMS	Health Facility Authorities	COUNT	PERCENTAGE
AIDS Information Centre	AIC	8	0.12%
Children's AIDS Fund Uganda	CAFU	5	0.07%
Community-Based Organisation	CBO	182	2.62%
Ministry of Education and Sports	MOES	3	0.04%
Ministry of Health	MOH	2978	42.93%
Non-Govermental Organisation	NGO	315	4.54%
Private	Private	2757	39.74%
Seventh-day adventist	SDA	13	0.19%
Sufficiency of Scripture	SOS	1	0.01%
The AIDS Support Organisation	TASO	11	0.16%
Uganda Community Based Health Care Association UCMB	UCBHCA	51	0.74%
Uganda Catholic Medical Bureau	UCMB	245	3.53%
Uganda Muslim Medical Bureau UOMB	UMMB	59	0.85%
United Nations High Commissioner for Refugees	UNHCR	10	0.14%
Uganda Orthodox Medical Bureau UPDF	UOMB	10	0.14%
Uganda People's Defence Force	UPDF	33	0.48%
Uganda Police Force	UPF	64	0.92%
Uganda Protestant Medical Bureau UPS	UPMB	130	1.87%
Uganda Prisons Service	UPS	62	0.89%

Health Facilities Ownership
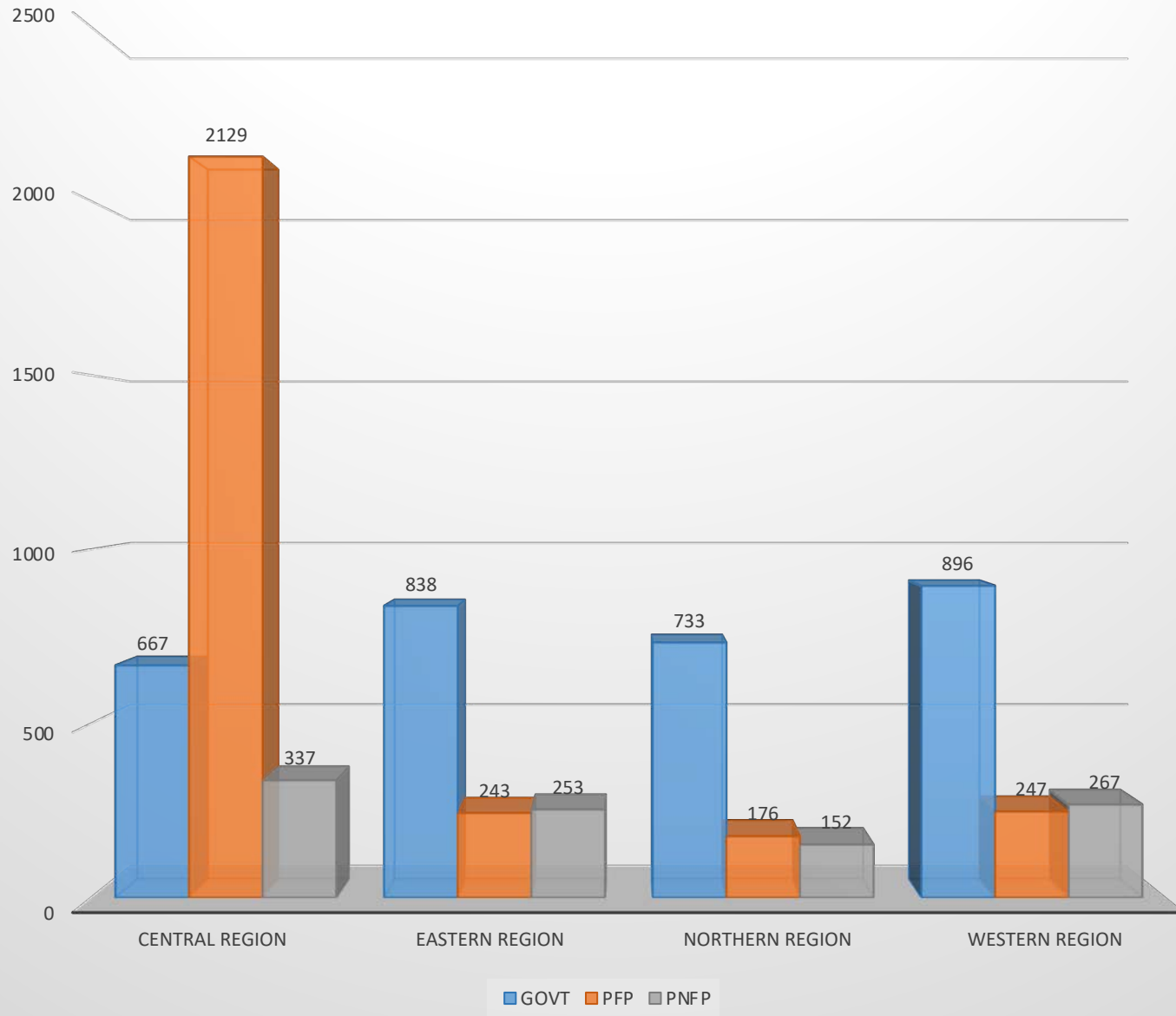
REGION	GOVT	PFP (Private-For-Profit)	PNFP (Private-Not-For-Profit)	GRAND TOTAL
CENTRAL REGION	667	2129	337	3133
EASTERN REGION	838	243	253	1334
NORTHERN REGION	733	176	152	1061
WESTERN REGION	896	247	267	1410
GRAND TOTAL	3134	2795	1009	6937

Technology and Privacy Needs

- A qualitative study showed low confidence, poor knowledge and skills in ICT (Information and Communication Technology) usage but positive perceptions about the benefits and contributions of ICT. These findings suggest the need for specific investment in ICT infrastructural development for health care providers in remote rural areas of northern Uganda. (Source: Yagos, W.O., Tabo Olok, G. & Ovuga, E. Use of information and communication technology and retention of health workers in rural post-war conflict Northern Uganda: findings from a qualitative study. *BMC Med Inform Decis Mak* 17, 6 (2017).

- This represents a challenge for Hippo. Education and ease-of-use is of the utmost importance.

- Modern healthcare models require either technical expertise or accessibility.
  - Cellular phone use has proven to be the best method of delivery in areas with challenges similar to Uganda.
  - Many citizens own more than one kind of cellular phone to reach across providers due to costs.
  - Cell phone usage continues to increase in urban and rural areas alike.

Challenges

- There is no standardization system in Uganda for health care.

- The knowledge and methods in treating diseases vary, so the probability of appropriate treatment is lower, especially in remote and rural areas.

- Lack of nurses and doctors or health assistants to take care of patients, normally family members will be the caregivers and monitors. They carry out this role with little or no health knowledge or essential skill to navigate health information and services.

- Nurses, health assistant and caregivers have relatively low knowledge about medical field, and this creates many difficulties in communication with doctors or patients, increasing the number of morbidities due to preventable disease in Uganda.

- Uneven distribution of limited professional human resources in Uganda create difficulty for patients to get adequate medical care in rural areas.

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COVID-19
Impact and Recommendations

- Since COVID-19 hit Uganda there are number of problems arising, including lack of professional medical officers and a shortage of PPE for medical workers leading to a direct impact on their health and safety.
  - With limited workers in most areas already, this exacerbates the issues at hand discussed previously.

- Discrimination against COVID-19 patients has also had an impact on the quality and extent of care.
  - Being COVID-19 positive is a stigma in Uganda and has led to poor treatment by health workers and communities alike.
  - Adverse reactions to COVID occur mainly due to lack of education and personal concern (scared citizens).

- Raising public awareness about COVID-19 by providing education to Uganda's citizens about the methods to reduce transmission and how to properly treat and isolate those with symptoms would likely have an immediate positive impact on Uganda's ability to reign in this pandemic.
  - Providing a more positive platform for education and awareness could lessen the adverse reactions in communities dealing with positive cases of the virus.

HIVE Recommendations

- Enabling health workers and caregivers by providing education about common health risks and professional knowledge of medical field as much as raise the awareness of Uganda's citizen on healthcare or individual sanitation.

- Providing access to seminars for health workers to learn from expertise around the world through a wide range of partners and medical corporations.

- Increasing access to virtual training to exchange knowledge, answer questions, and voice concerns.

- Creating real-time lines of communication between healthcare units to assisst other medical officers and remote workers in the exchange of information to improve the quality of healthcare.

- Creating a conversation about the distribution of human resouces of major hospitals while establishing these virtual healthcare networks to reach patients in rural areas.

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Insights:
What can the HIVE facilitate?

- Educating the population on preventable causes of death or disability.
  - HIV/AIDS education, malaria prevention, neonatal disorders and care.
- Bringing virtual care and diagnosis to citizens in rural areas of Uganda.
  - Working with professionals across the health network in and out of country.
  - Emphasis on providing access through mobile networks and formats.
- Engaging with clinicians to utilize the strand.
  - Keeping interest by providing education and support to include certifications and transferability.
- Using information on culture to build trust.
  - Understanding boundaries set by ethnic groups and regions and the importance of religion and family.
- Establishing value among Ugandans.
  - Providing equal access to resources while encouraging self-care methods to reduce the impact of geographical and technological barriers within Uganda.

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Summary

- Though there are many challenges facing the diverse country of Uganda, like the rest of the world there is a hunger for knowledge among professionals and citizens alike. This presents a unique opportunity for services such as the HIVE to establish a network of educators and providers among the rural and urban districts to improve quality of life and quality of care for all.

- Through a combination of delivery methods and opportunities, there are clear areas that could see an immediate impact from education and virtual care, lessening the severity of diseases in the neonatal categories, malaria, and HIV/AIDS while reducing the impact of geography and poor infrastructure.

- With the current population trajectory and its impact on poverty, improvement in these sectors is becoming increasingly necessary. With the HIVE platform's delivery and affordability coupled with Uganda's desire for a more comprehensive virtual care model, there is no better time than now to start creating these pathways that will lead Uganda into a healthier future.

Resources

- https://reporting.unhcr.org/sites/default/files/Uganda%20Country%20RRP%202019-20%20%28January%202019%29.pdf

- https://bulamuhealthcare.org/healthcare-in-uganda/#:~:text=Uganda's%20Biggest%20Healthcare%20Challenges,doctor%20for%20every%208%2C300%20Ugandans.

- https://www.afro.who.int/news/ugandas-health-sector-grows-despite-challenges

- https://www.mediceastafrica.com/content/dam/Informa/mediceastafrica/2019/downloads/universal-health-coverage-uganda.pdf

- https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(06)68204-4/fulltext

- https://ourworldindata.org/coronavirus/country/uganda?country=~UGA

- http://www.healthdata.org/uganda

- https://stanfordhealthcare.org/medical-conditions/primary-care/malaria/treatments/prevention.html

- https://www.theguardian.com/katine/2009/apr/01/uganda-healthcare-system-explained

- http://library.health.go.ug/publications/health-infrastructure-physical-infrastructure/health-facility-inventory

- http://library.health.go.ug/publications/health-facility-inventory/national-health-facility-master-facility-list-2018