

Solution in Scarcity

Verbal autopsy and Verbal autopsy manager application

tools to increase coverage and availability of cause of
death information in resource-poor settings

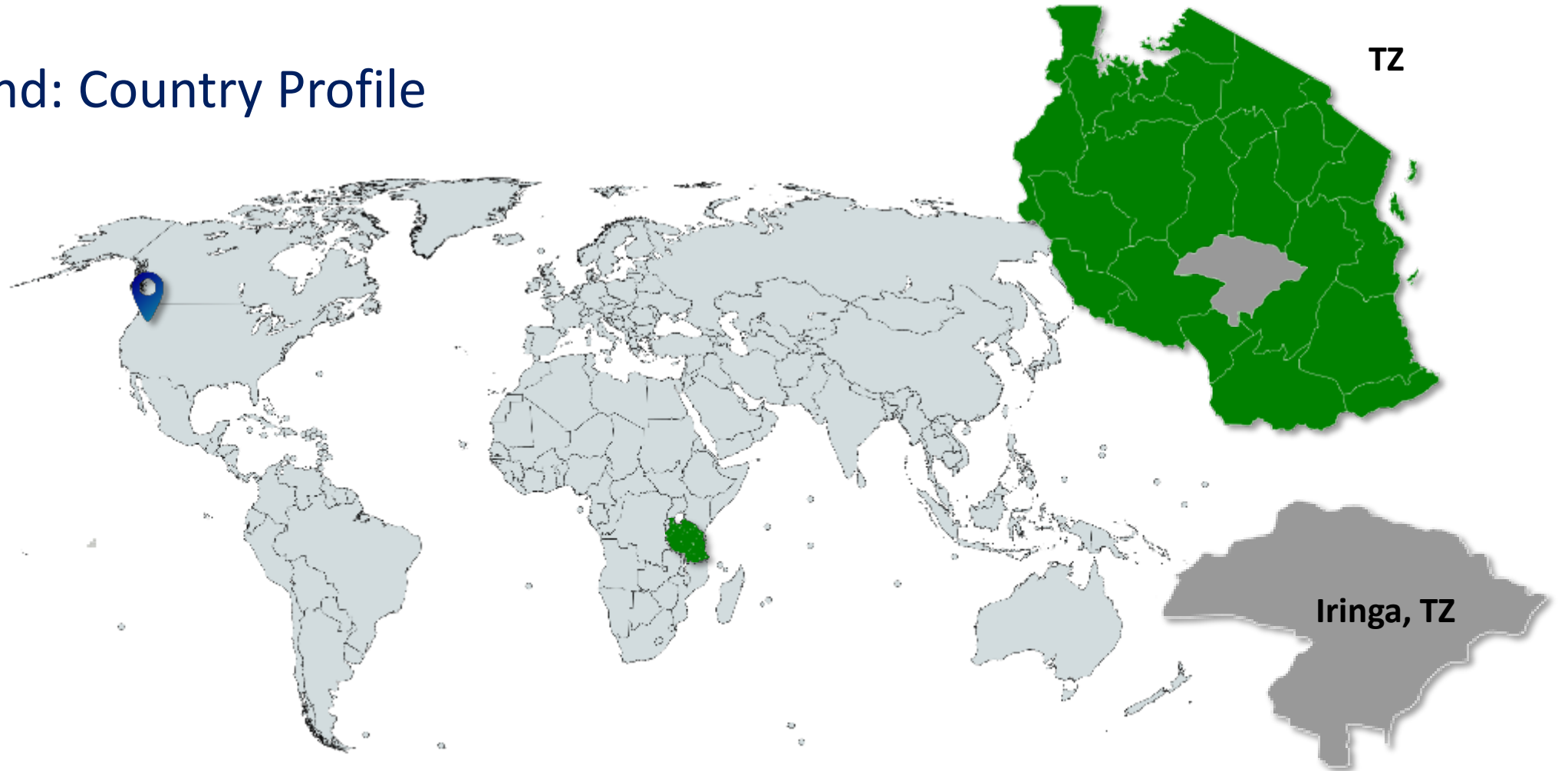
A case of Iringa Region in Tanzania

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Presented at IDM Annual Symposium, 2023

Layout of the presentation

- Background: Country profile
- Problem definition
- Intervention (Digital tools)
- Outcomes & benefits
- Current & future development

Background: Country Profile

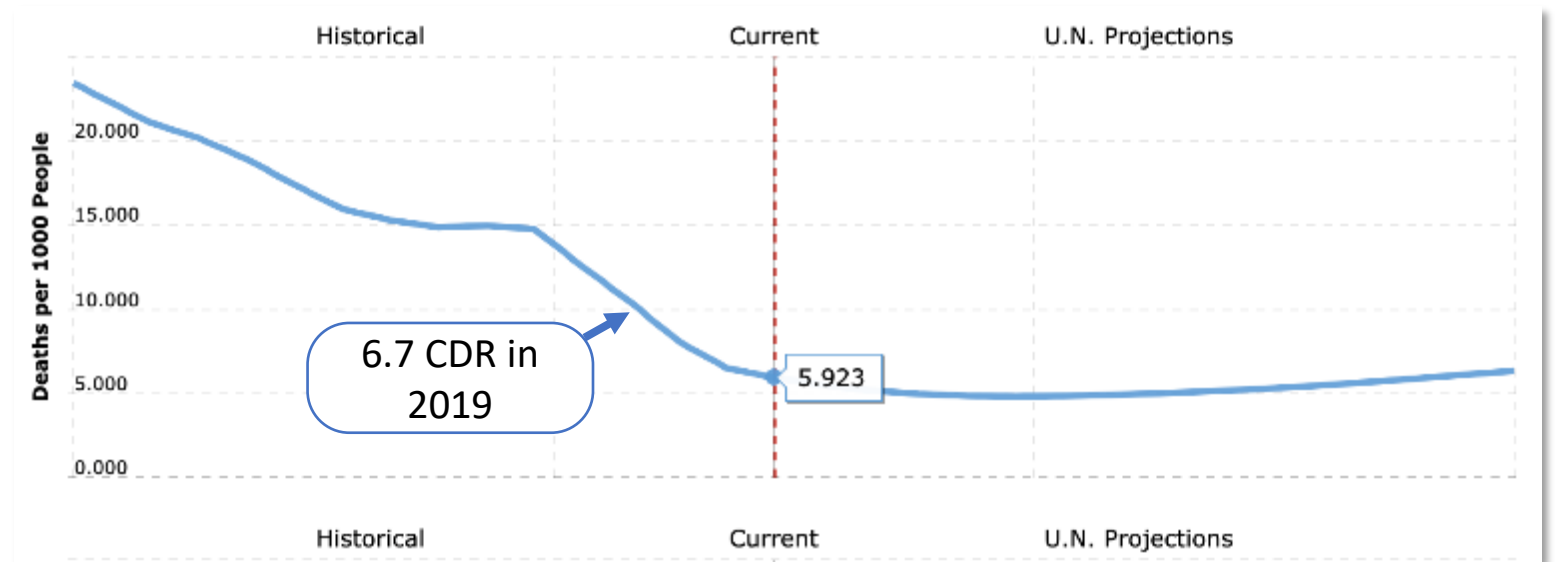
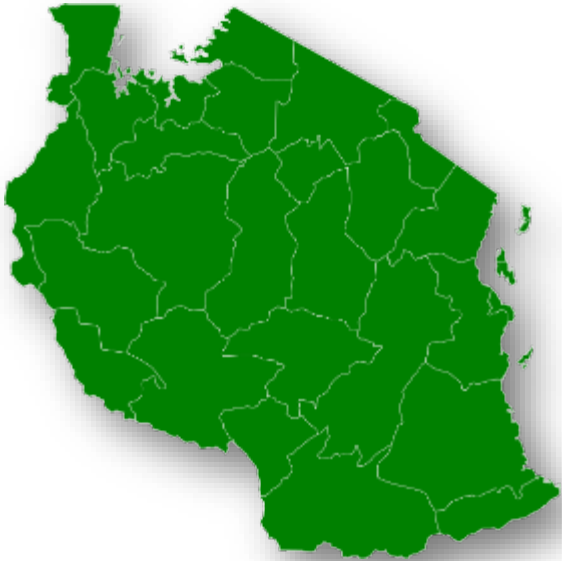


Problem definition

Death: Mortality Statistics

- When people die, It is within the interest of those who are alive to know **why**
- Knowing why helps us prevent future deaths, design interventions & formulate better policies

Problem definition

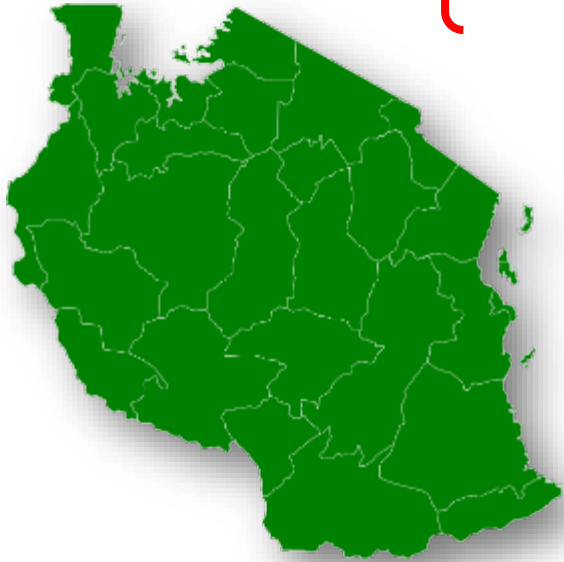


<https://www.macrotrends.net/countries/TZA/tanzania/death-rate>

Among deaths at community, majority are buried without official paperwork or reporting

Problem definition

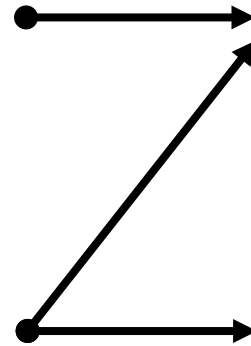
Among deaths at community, majority are buried without official paperwork or reporting



H Facility



Community



30%

- Captured in routine HMIS

70%

- The Government isn't aware of these deaths
- Policies are made with 30% of the picture
- The same goes to health budgets & interventions, i.e., focuses on the 30% of the picture

Intervention (Setup)

Past



Version: 2007



Aggregate



Java, JavaScript, R,
HTML, CSS



Basic statistics &
data visualization

1 Use standard VA
Instrument

2 Data
Collection

3 Data
management

4 Support data
science

Current



Version: 2016
1.5.3



Central



Python, JavaScript,
HTML, CSS
Customizable, Scalable



Advanced statistics
Dynamic
visualization

Intervention (Data processing)

Use standard VA Instrument

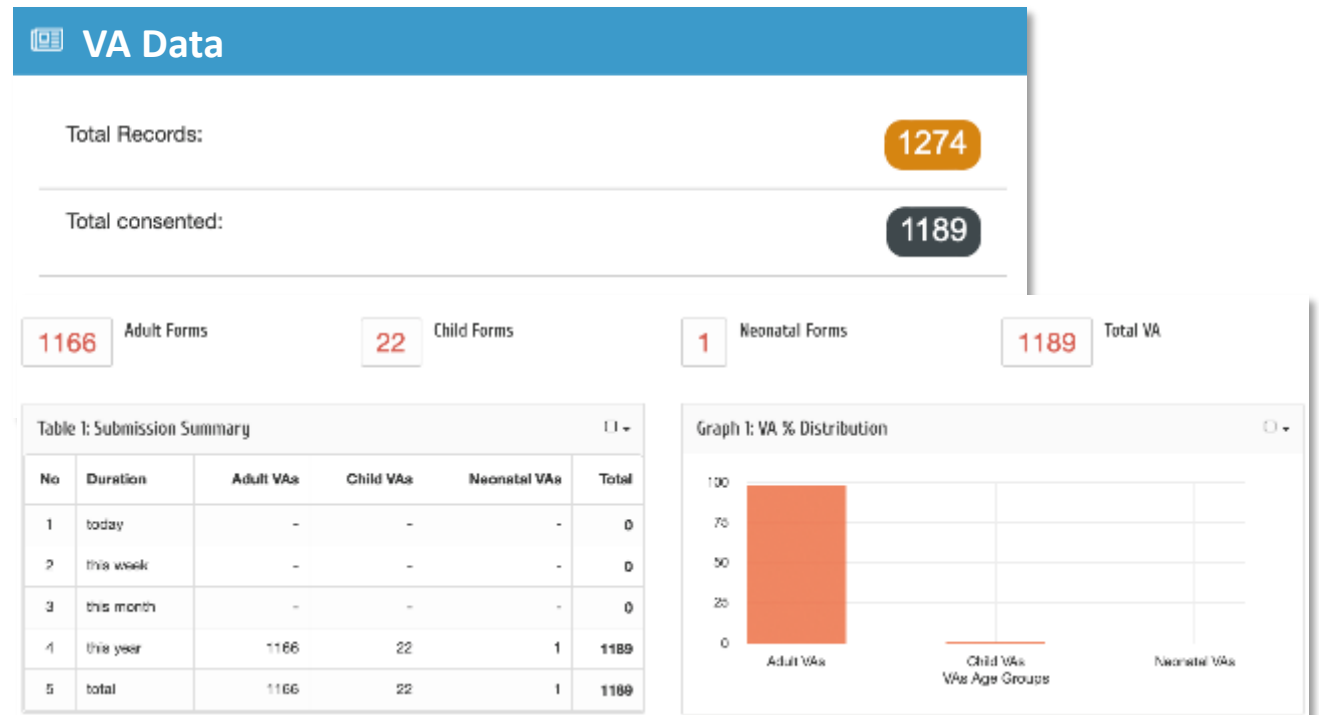
Data Collection

Data management

Support data science



1. Manage VA submission processes (who, what, when, at what intervals)
2. Review the VA document (pattern of responses, consistence)
3. Data visualization (tables, graphs, maps)
4. Online PCVA (to obtain CoD information)



Intervention (Data processing)

Use standard VA
Instrument

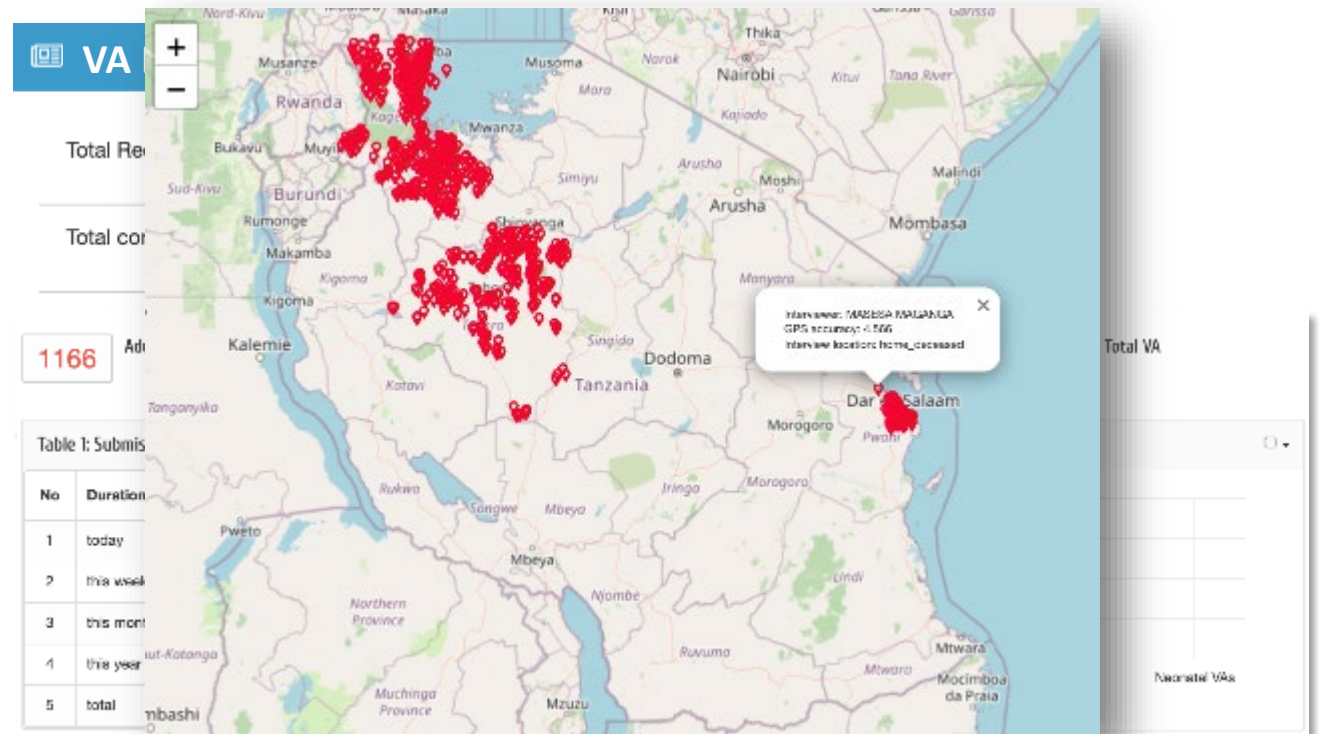
Data
Collection

**Data
management**

Support data
science



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Intervention (Data processing)

Use standard VA Instrument

Data Collection

Data management

Support data science



1. Manage VA submission processes (who, what, when, at what intervals)
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The screenshot shows the VMan dashboard for The United Republic of Tanzania. The page title is 'The United Republic of Tanzania Verbal autopsy Management dashboard Release version 2.0 2023'. The user is logged in as 'Dr. Innocent Yusufu'. The dashboard includes a sidebar menu with options: Menu, Tables, Graphs, Maps, Coding (highlighted), Not Codied VA (3), All Assigned VA (48), Concordant VA (41), Disconcordant VA (4), and Settings. The main content area shows 'Individual Data' with a search bar and a table of VA records.

VA ID	Date Assigned	Cause A	Cause B	Cause C	Cause D	Contributory CoD	Options
Uuid:8e21631a-591e-4a6a-a337-b90e71832a2	2023-03-08 15:46:42.0	-	-	-	-	-	🔍 🔄
Uuid:7db959d0-da16-427e-bb5b-eeb791a75a14	2023-03-08 15:48:42.0	-	-	-	-	-	🔍 🔄
Uuid:da1a459f-cac8-44fa-a8fd-55ac69098266	2023-03-08 15:15:44.0	-	-	-	-	-	🔍 🔄

Assign Cause of Death Information

VA ID : 8e21631a-991e-4a6a-a337-890fe71852b2

ID10128	Did (s)he have a recent positive test by a health professional for malaria?	no
ID10129	Did (s)he have a recent negative test by a health professional for malaria?	yes
ID10130	Was there any diagnosis by a health professional of dengue fever?	no
ID10131	Was there any diagnosis by a health professional of measles?	no
ID10132	Was there any diagnosis by a health professional of high blood pressure?	yes
ID10133	Was there any diagnosis by a health professional of heart disease?	no
ID10134	Was there any diagnosis by a health professional of diabetes?	no
ID10135	Was there any diagnosis by a health professional of asthma?	no
ID10136	Was there any diagnosis by a health professional of epilepsy?	yes
ID10137	Was there any diagnosis by a health professional of cancer?	yes
ID10138	Was there any diagnosis by a health professional of Chronic Obstructive Pulmonary Disease (COPD)?	no
ID10139	Was there any diagnosis by a health professional of dementia?	no
ID10140	Was there any diagnosis by a health professional of depression?	dk
ID10141	Was there any diagnosis by a health professional of stroke?	yes
ID10142	Was there any diagnosis by a health professional of sickle cell disease?	no
ID10143	Was there any diagnosis by a health professional of kidney disease?	no
ID10144	Was there any diagnosis by a health professional of liver disease?	no
ID10147	Did (s)he have a fever?	yes

Coding Sheet

Coder's Name: Dr. Innocent Yusufu

Notes

Part I: Disease or condition directly leading to death

Cause of Death	Approximate interval between onset and death
a. Select probable cause of death 1	Unknown or min./hrs./days,...
b. Select probable cause of death 2	Unknown or min./hrs./days,...
c. Select probable cause of death 3	Unknown or min./hrs./days,...
d. Select probable cause of death 4	Unknown or min./hrs./days,...

Part II: Other significant conditions contributing to the death but not related to the disease or conditions causing it (That is, not resulting in the underlying cause given in Part I)

Contributory cause of death	Unknown or min./hrs./days,...
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Assign CoD Info

Dismiss

Support data science

Dr. Innocent Yusufu

VA UUID Search Word Q F

Cause C	Cause D	Contributory CoD	Options
-	-	-	
-	-	-	 
-	-	-	 

Intervention (Data processing) : CCVA



CCVA

Inter
VA

IHME | SmartVA-Analyze

openVA

Modern techniques ?

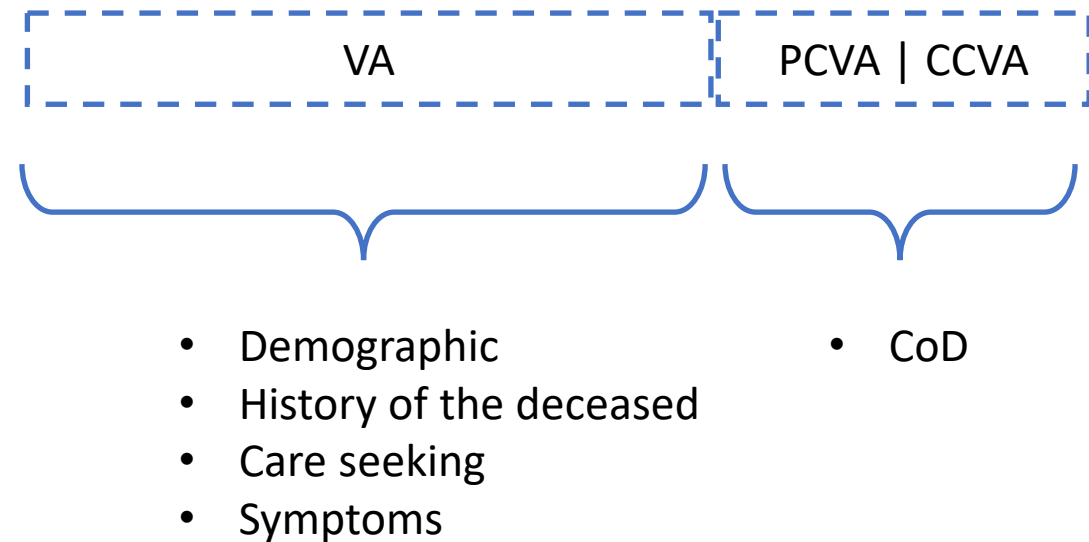
Artificial Intelligence

Machine Learning

Deep Learning

Outcomes & Benefits

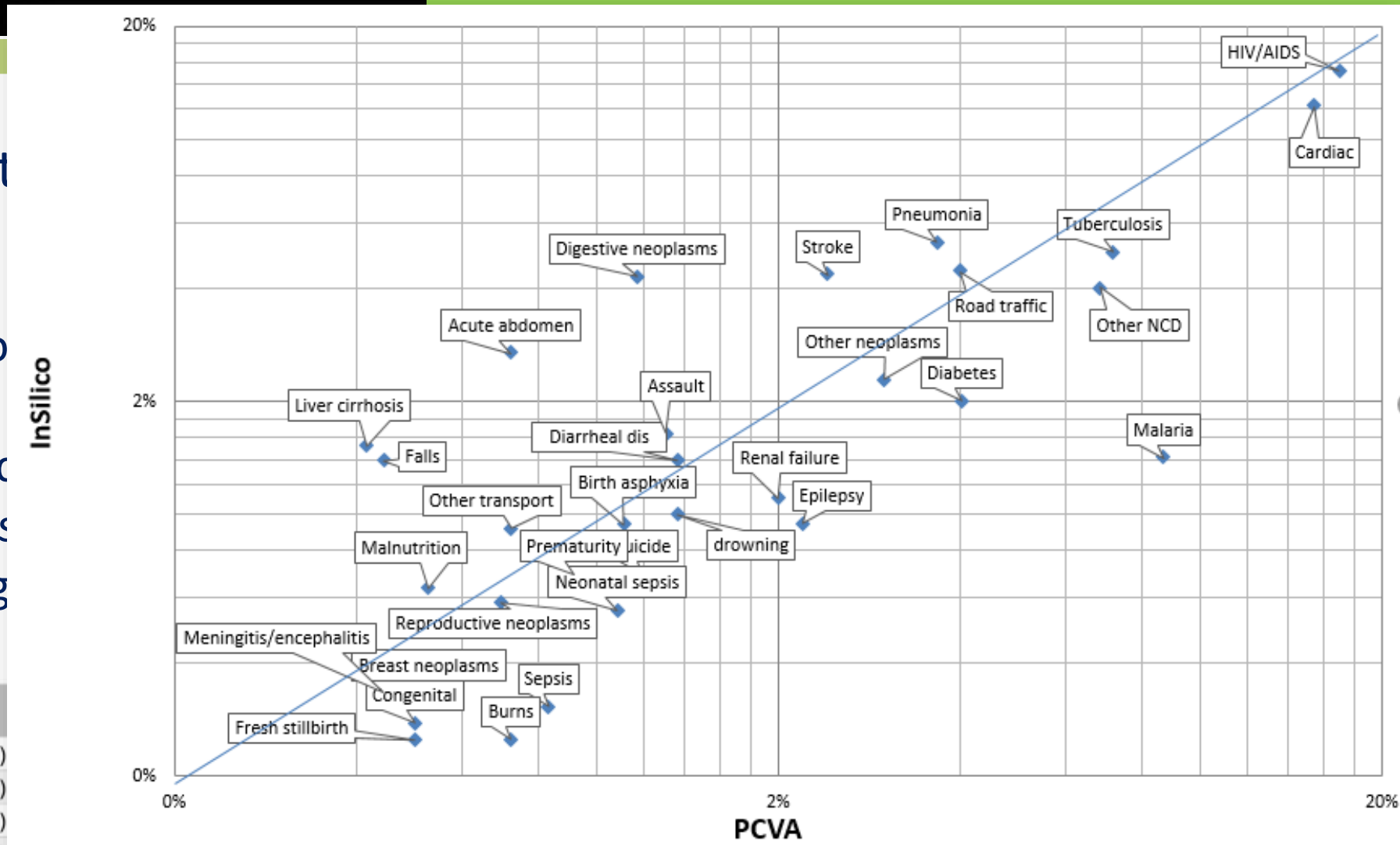
- Data (VA + CoD) →
- Different presentations (tables, graphs, maps) by
 - age, sex, residency, disease categories, disease ranking
- Contribute to writing the national reports
- Testing different algorithms
- Capacity building for data science



Outcomes & Benefit

- Data (VA + CoD)
- Different presentation (graphs, maps) by
 - age, sex, residence categories, diseases
- Contribute to writing reports

Broad group	neonate (% total)								
Group 1 Com	139 (3.9%)								
Group 2 NCDs	6 (0.2%)								
Group 3 Injuries	0 (0.0%)								
Undetermined & ill defined	9 (0.2%)								
Total	154 (4.3%)	137 (3.8%)	123 (3.4%)	113 (3.1%)	124 (3.4%)	1469 (40.8%)	1480 (41.1%)	1 (0.0%)	3601



Acknowledgement

- MoH Tanzania
- Vital Strategies
- Ifakara Health Institute

Questions / Comments