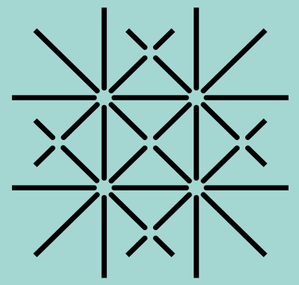


University
of Basel

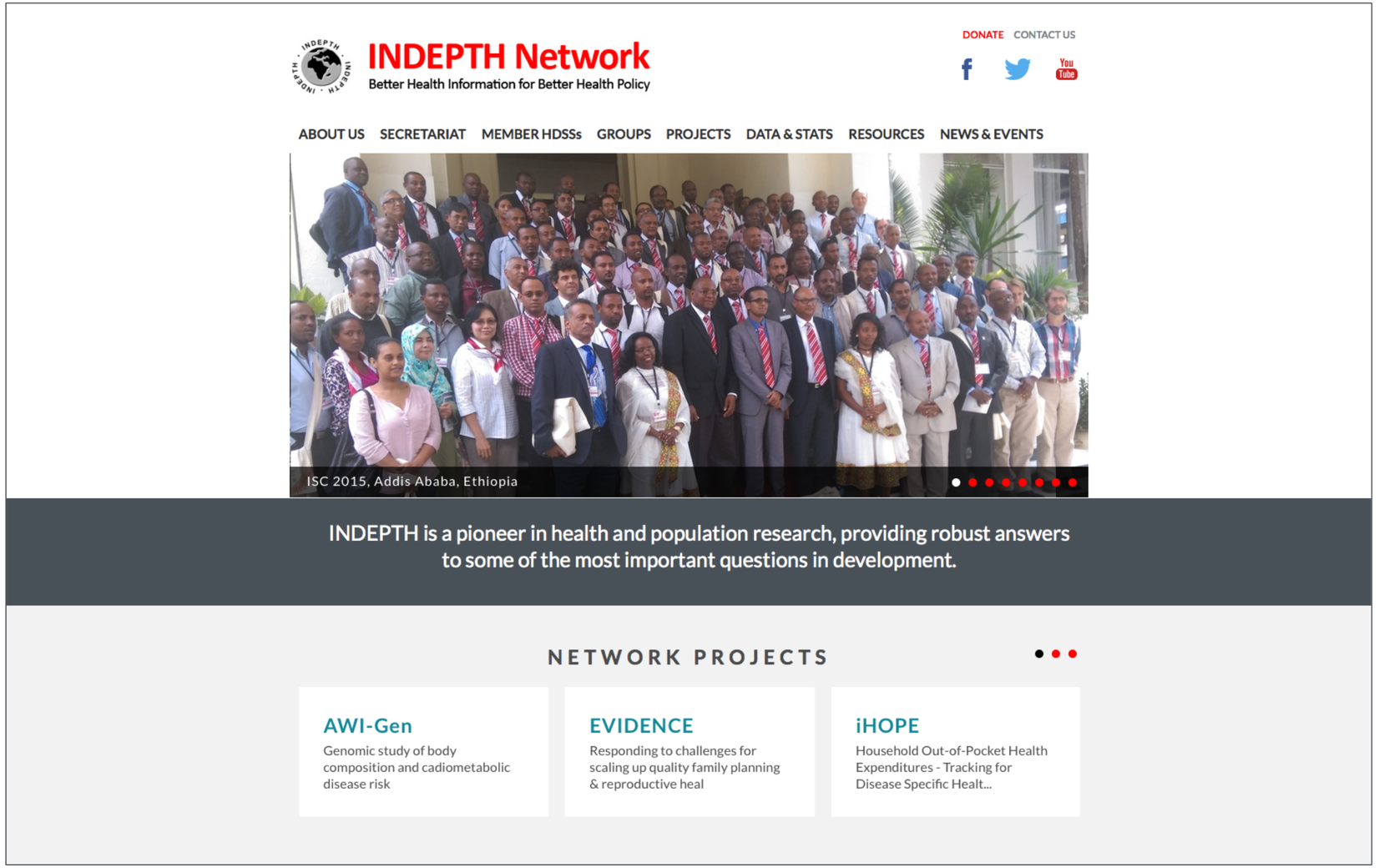
In association with:

Swiss TPH

Swiss Tropical and Public Health Institute
Schweizerisches Tropen- und Public Health-Institut
Institut Tropical et de Santé Publique Suisse

Addressing surveillance

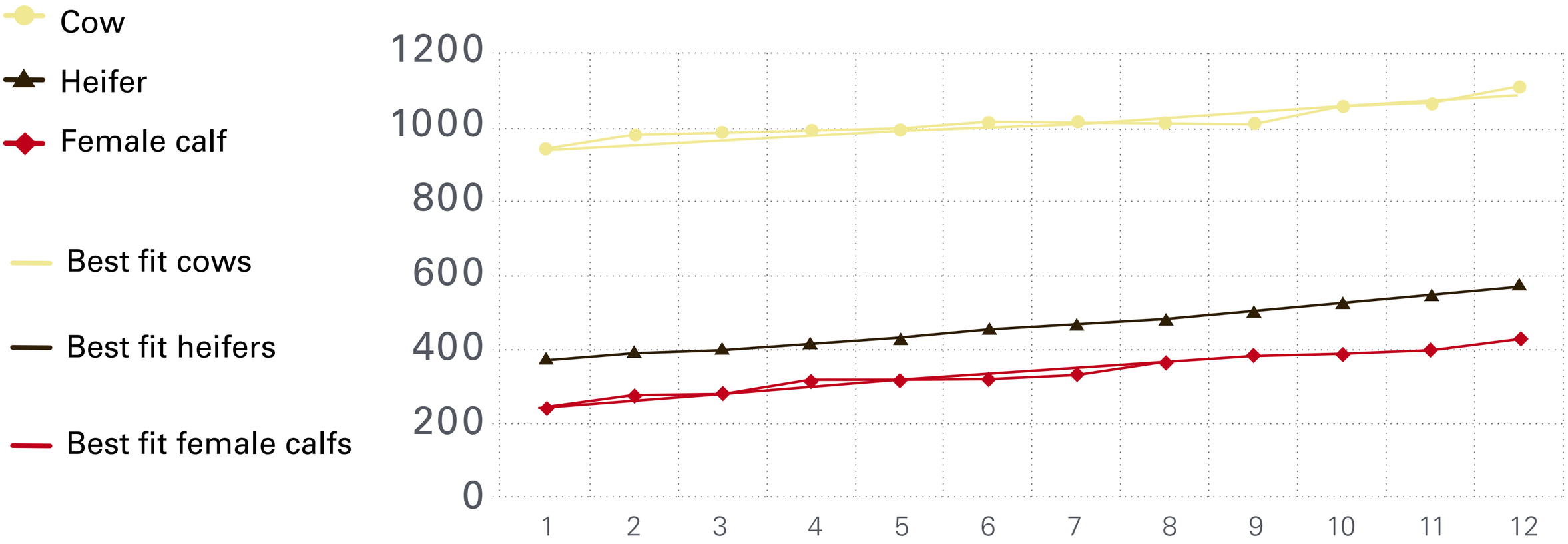
www.indepth-network.org



Indepth Network estimates 2016

- 1 billion people: are not registered – neither at birth nor when they die.
- 50 million newborns per year won't be registered worldwide.
- Only one third of the countries outside North America and Europe are able to obtain usable mortality statistics.

Demographic model fit for female cattle



Petersen Formula (1890)

$$\frac{M}{N} = \frac{m}{n} \Rightarrow N = \frac{Mn}{m}$$

Bailey (1951)

$$N = \frac{M(n+1)}{m+1} \qquad SE = \sqrt{\frac{M^2(n+1)(n-m)}{(m+1)^2(m+2)}}$$

Recapture samplesize according to Petersen-Bailey

Population	Initially marked	Vacc coverage	Sample	Marked Sample	Estimated Population	S. E. of Estimate
N	M		n	m		
						5% S. E.
200	100	50	147	73	205	10
327	196	60	190	114	331	16
280	196	70	149	105	284	14
245	196	80	114	91	249	12
						10% S. E.
800	400	50	236	118	809	80
667	400	60	179	107	675	67
571	400	70	136	95	579	57
500	400	80	99	79	508	50

Population	Initially marked	Vacc coverage	Sample	Marked Sample	Estimated Population	S. E. of Estimate
N	M		n	m		
						5% S. E.
497	427	86	278	243	492	25
1333	800	60	477	286	1340	67
1143	800	70	364	255	1149	57
1000	800	80	269	216	1006	50
						10% S. E.
1600	800	50	352	176	1611	160
1333	800	60	265	159	1343	133
1143	800	70	200	140	1153	114
1000	800	80	145	116	1010	100