

**University
of Basel**

In association with:



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

Addressing surveillance

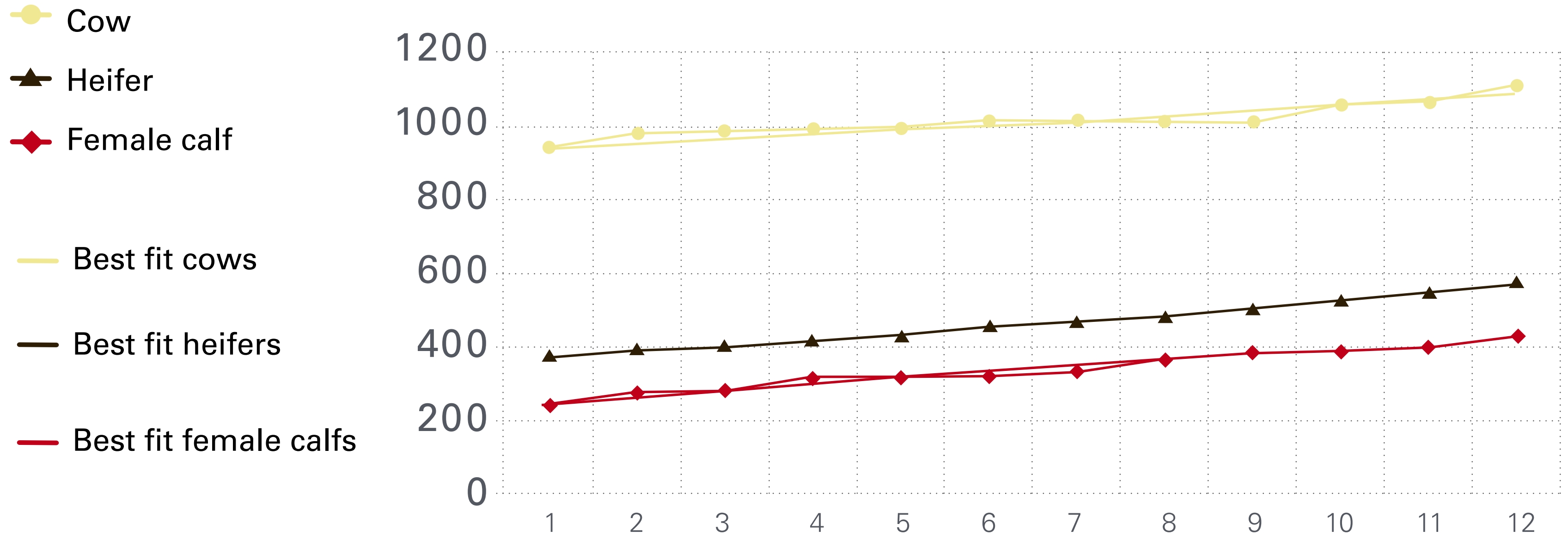
The screenshot shows the homepage of the INDEPTH Network. At the top left is the INDEPTH Network logo, a globe with the text 'INDEPTH Network' and 'Better Health Information for Better Health Policy'. To the right are links for 'DONATE' and 'CONTACT US', and social media icons for Facebook, Twitter, and YouTube. Below the logo is a navigation menu with links: 'ABOUT US', 'SECRETARIAT', 'MEMBER HDSSs', 'GROUPS', 'PROJECTS', 'DATA & STATS', 'RESOURCES', and 'NEWS & EVENTS'. The main content area features a large group photograph of people at a conference, with the caption 'ISC 2015, Addis Ababa, Ethiopia' and a progress indicator. Below the photo is a dark grey banner with the text: 'INDEPTH is a pioneer in health and population research, providing robust answers to some of the most important questions in development.' Underneath is a 'NETWORK PROJECTS' section with three project cards: 'AWI-Gen' (Genomic study of body composition and cardiometabolic disease risk), 'EVIDENCE' (Responding to challenges for scaling up quality family planning & reproductive health), and 'iHOPE' (Household Out-of-Pocket Health Expenditures - Tracking for Disease Specific Health...).

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)

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

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 |