

THE IMPORTANCE OF DIARRHOEAL DISEASE ATTRIBUTABLE TO UNSAFE WATER, SANITATION AND HYGIENE IN SOUTH AFRICA:

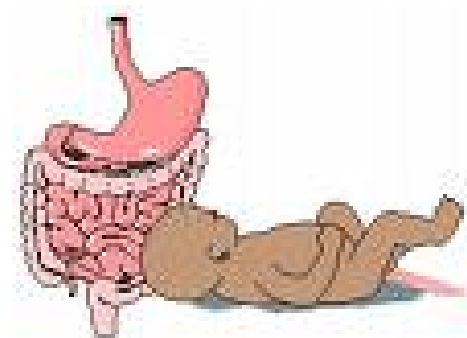
AN OVERVIEW OF THE BURDEN OF DISEASE APPROACH

M. Steyn and B.Genthe





"No, it's not your time yet...
I just need to use your bathroom!..."



CSIR
our future through science

History of Burden of Disease

- 1st Burden of Disease Study
 - India 1993
- 35 NBOD since then
- WHO and World Bank 1996
 - Global Burden of Disease Study
 - Summary measures of Population health

Burden of Disease continue

- Resources getting more scarce
 - Makes sense to make most of it
 - Prioritisation and decision making Important!
- We need to take morbidity into account



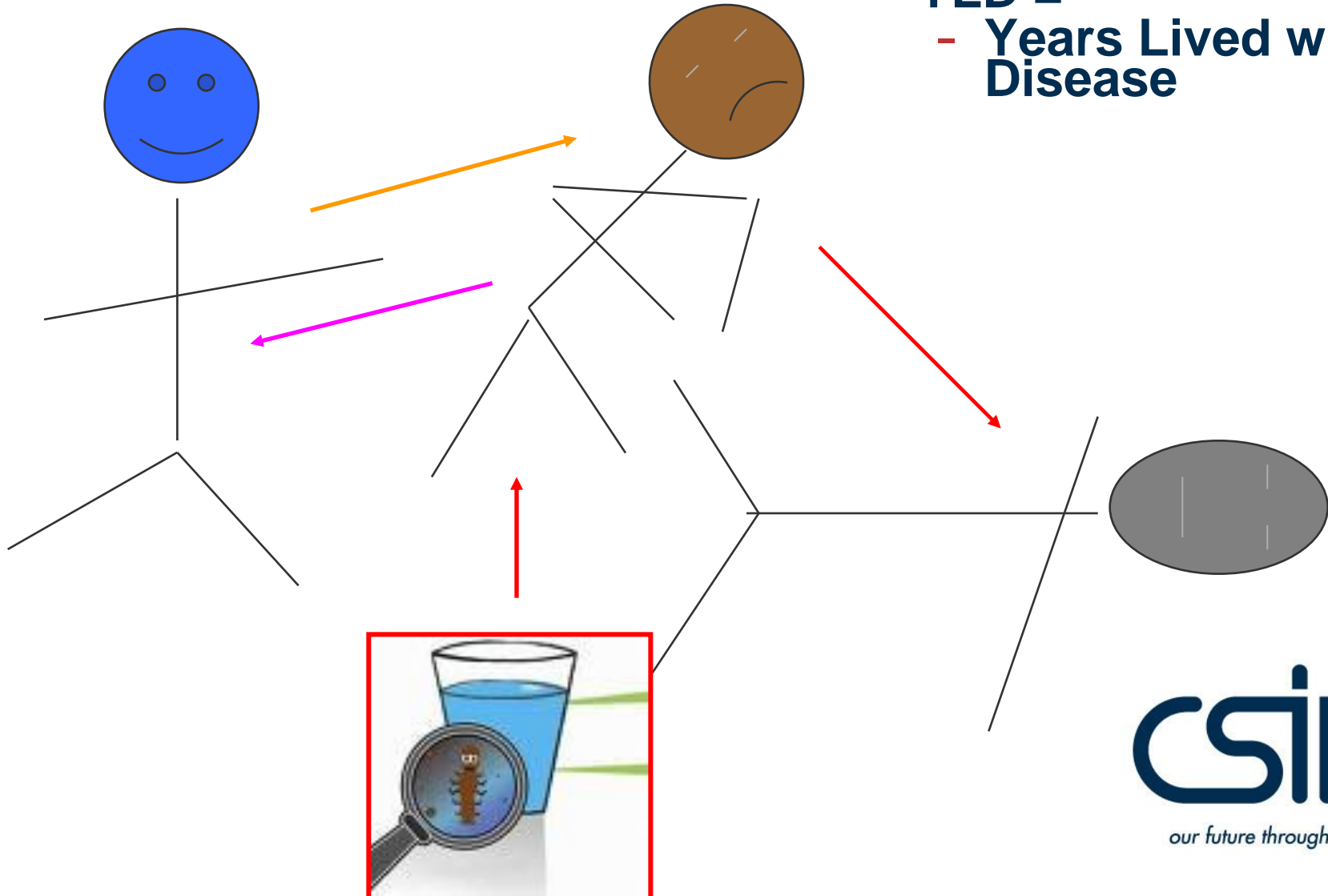
Albert Schweitzer “Pain is a more terrible lord of mankind than even death itself”

Disability Adjusted Life Years (DALYs)

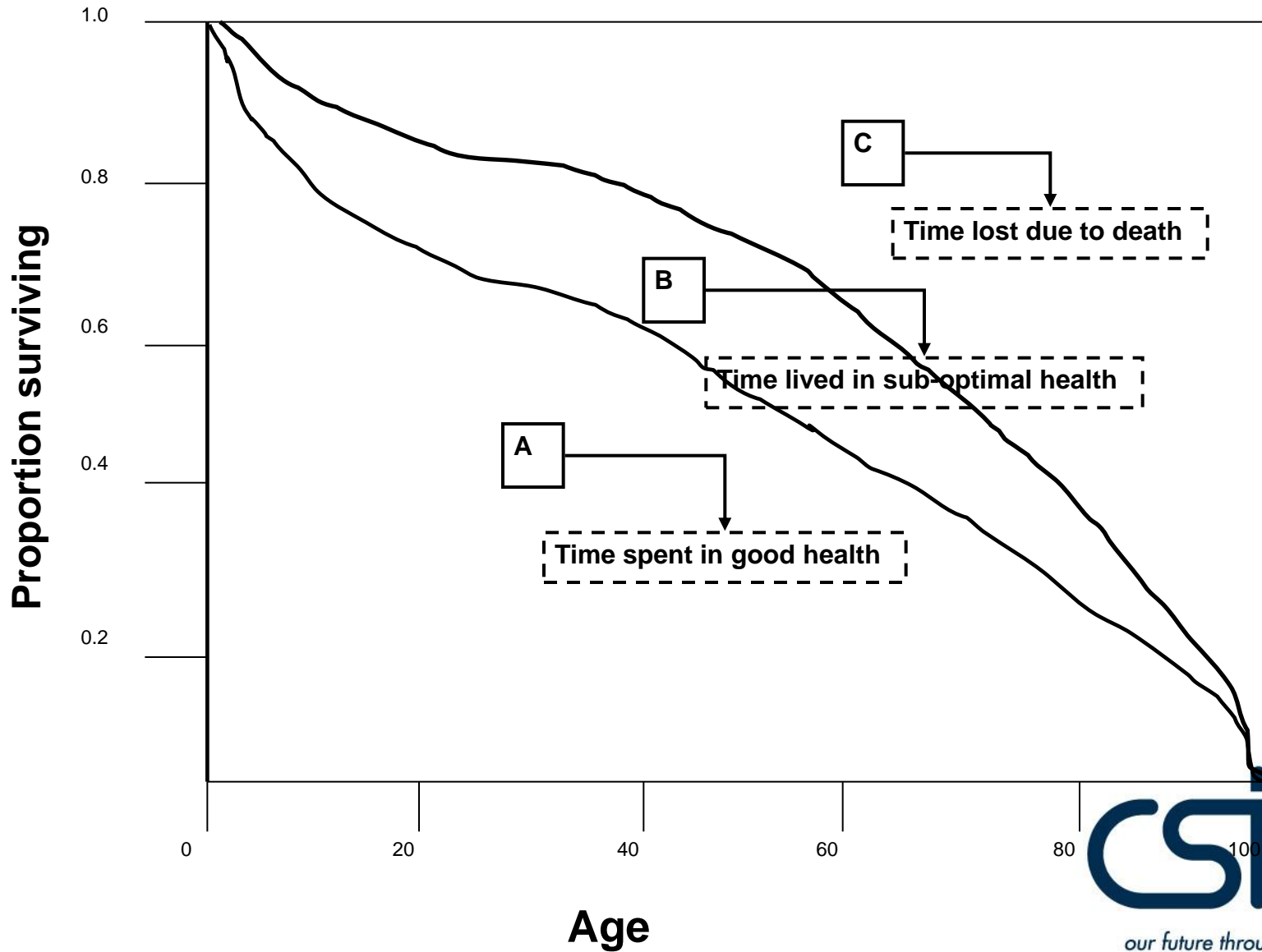
- Introduce new measure of population health
- Disability Adjusted Life Year (DALY)
- Single measure to summarise population health
- Combines information on
 - Morbidity (disease or disability)
 - Mortality (death)

Outcomes of Disease

- **DALY = YLL + YLD**
- **YLL =**
 - Years of Life Lost
- **YLD =**
 - Years Lived with Disease



Hypothetical survival curve (WHO, 2001)



Data required to calculate DALYs

- Incidence of disease or risk factor
- Prevalence of risk factor / disease
- Mortality of population per sex and age group
- Mortality due to particular cause / disease
- Population size per age and sex
- Relative Risk of Mortality
- Duration of Disease
- Remission (if applicable)

Sources of Info

- Disease/death registers
 - Population surveys
 - Epidemiological studies
 - Health facility data
-
- Uncertainty
 - Incomplete and inconsistent

Why use it?

- Allows for comparison of
 - Populations
 - Sex groups
 - Age groups
- Enable prioritisation
 - Decision making
- Allows for cost-effectiveness analyses by means of multiple criteria
 - Monetary and non-monetary costs

Who should/could use it?

- Department of Health
 - Prioritise actions in terms of health care
- DWAF
 - Risk based approach
 - Water Safety Plans
 - Decision making for water supply provision
- Decision makers
- Researchers

- "Access to improved water supply is not only a fundamental need and human right, it also has considerable health and economic benefits to households and individuals".

WHO

- "Diarrhoea, which is spread easily in an environment of poor hygiene and inadequate sanitation, kills about 2.2 million people each year, most of them children under five"

UNICEF

Setting the scene.....DIARRHOEA

- Globally estimated 2.2 million deaths
 - 90% = children < 5 years
 - 88% attributable to unsafe water supply, sanitation and hygiene
- In SA
 - 8th leading cause of death for all age groups
 - 3rd leading natural cause of death



- For SA
- estimated 84% of all deaths due to diarrhoeal disease
- 13 368 deaths
- attributable to water, sanitation and hygiene

- 66.4% in children under five
- 8 871 deaths

- Diarrhoeal deaths 9.2% of all deaths in children under five - **WSH 3rd highest risk factor**

- 1st = HIV
- 2nd Undernutrition
- 3rd Diarrhoeal disease

- Diseases of poverty
- low birth weight, diarrhoeal diseases, lower respiratory infections, and high protein-energy malnutrition
- 30% of child deaths

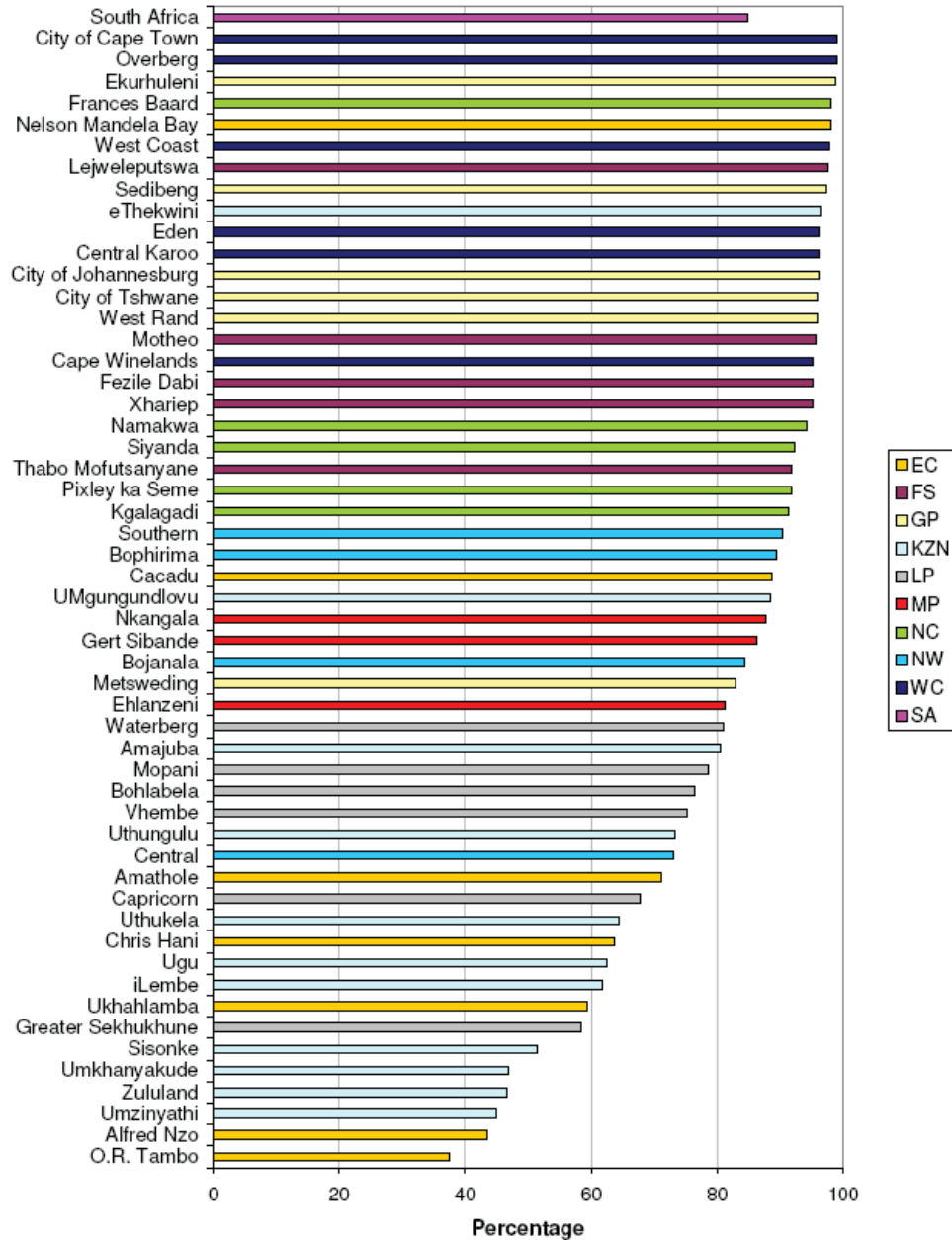
- HIV = 40% of child deaths

- Health challenges immense – with budgets extremely scarce
- Giving “wrong” priority to programs
- Unique health challenges in SA
- Social determinants play a huge role in disease burden

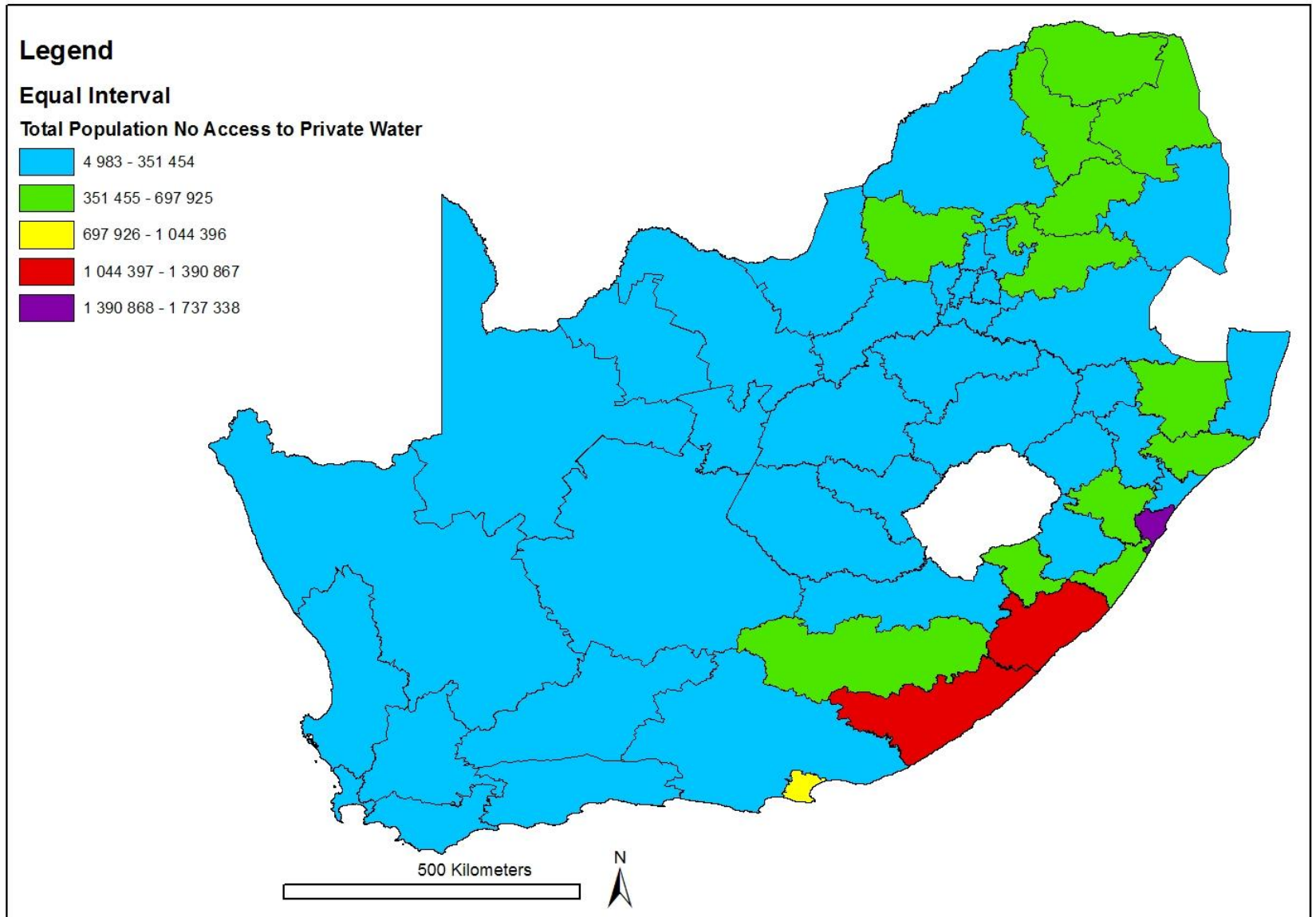
- SA only 4% health workers and 25% of global burden of disease
- America's have 37% of health workers and only 10% of disease burden
- South Africa have unique health challenges – Isaakidis et al 2002
- Meta – analysis making use of a burden of disease approach – diarrhoea received least attention (interaction between nutrition and diarrhoeal disease)

- Access of people to safe water and sanitation has increased

Percentage of households with access to piped water, 2005

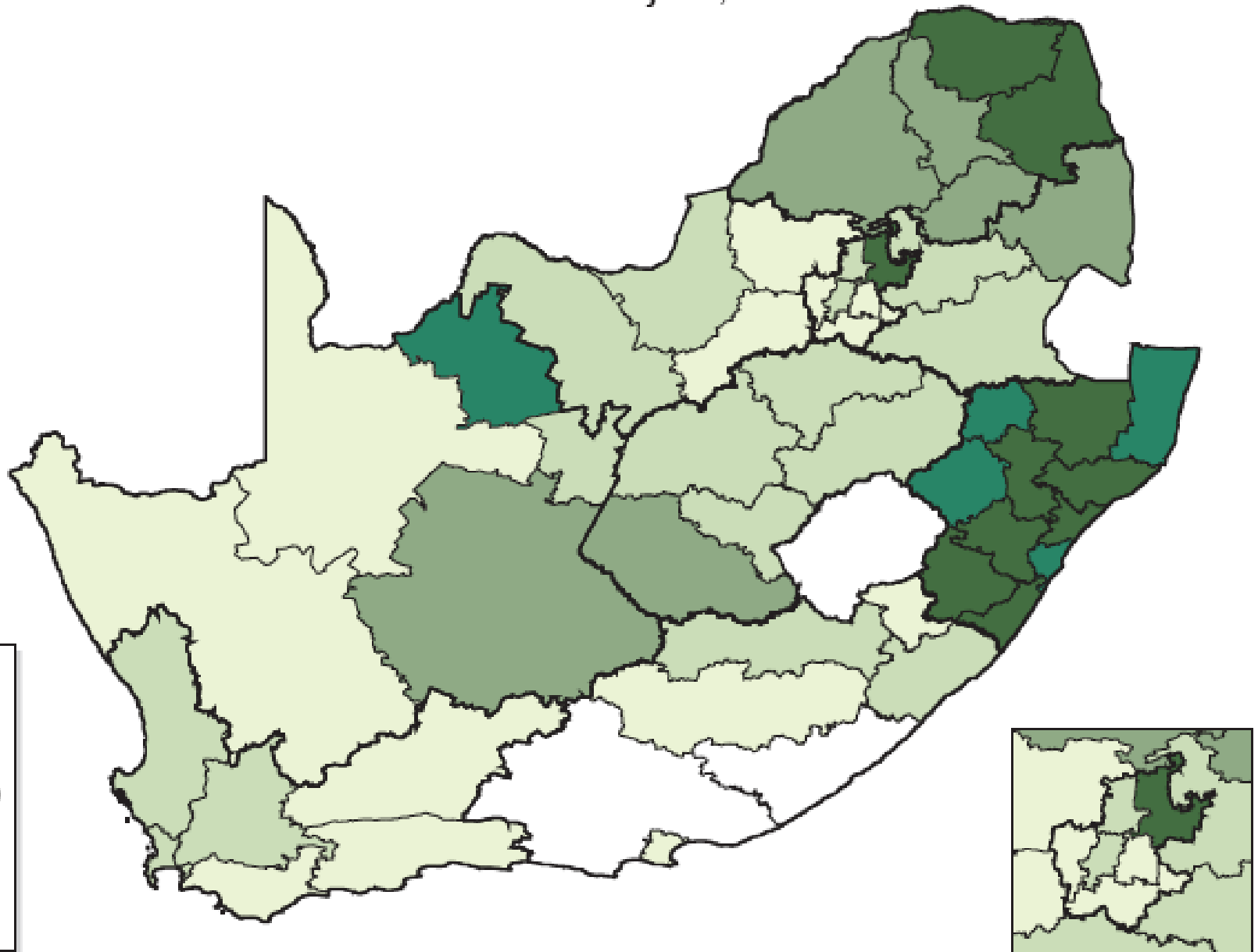


Total Population without access to PRIVATE water





Diarrhoeal incidence under 5 years, 2006/07



Legend

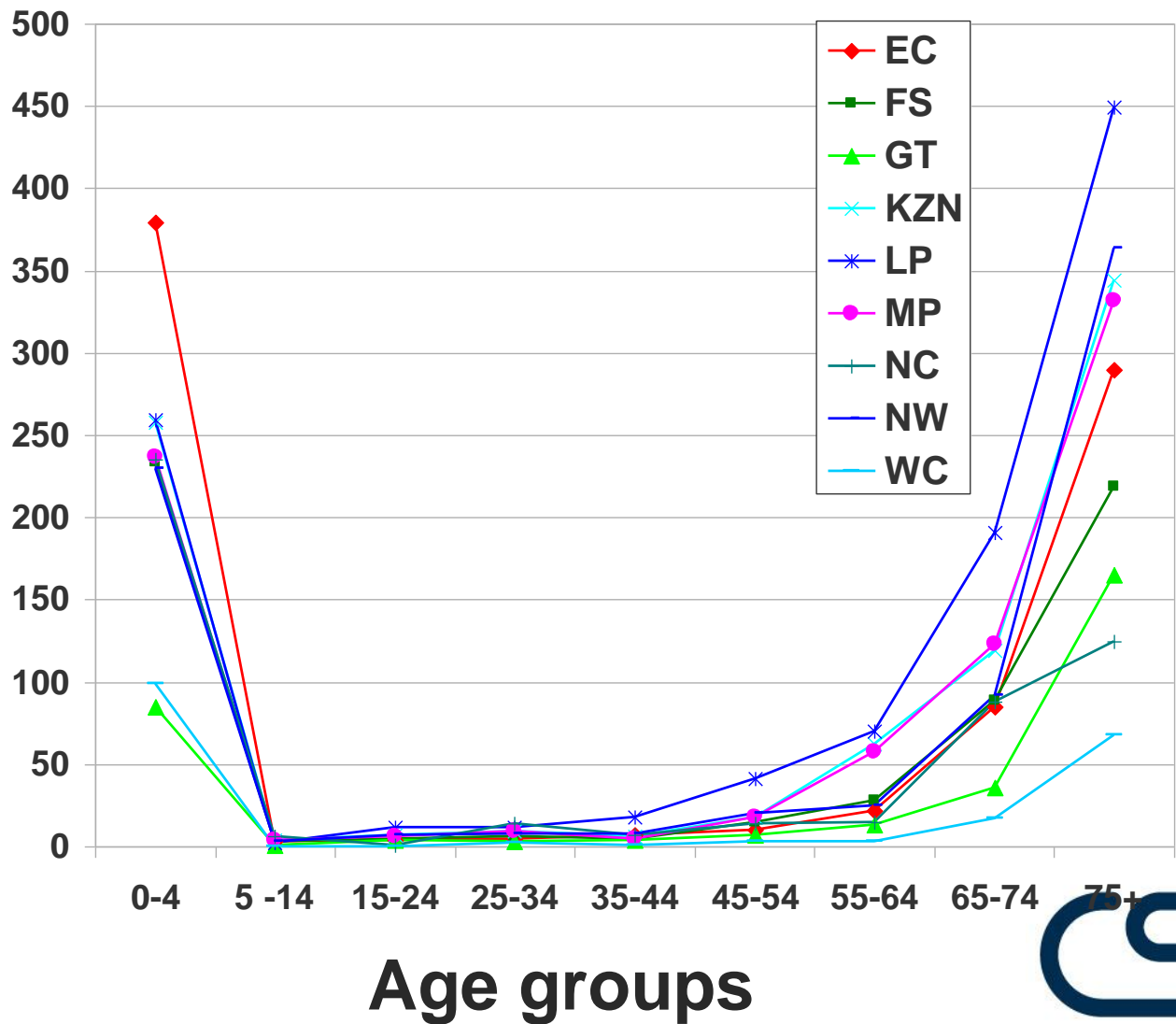
Per 1000

DIAR_06

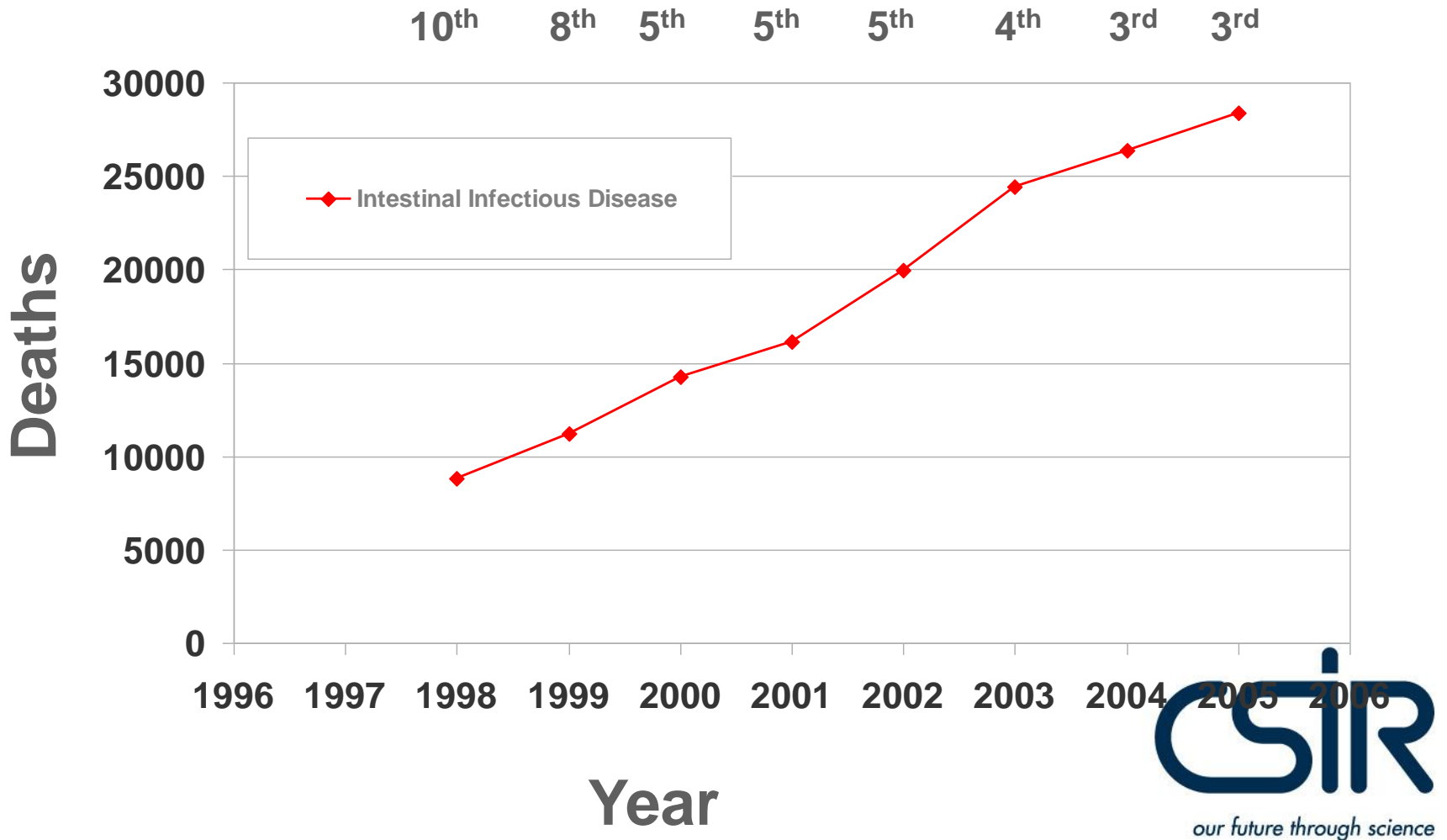
- no data
- under 100
- 100 - 199
- 200 - 299
- 300 - 399
- over 400

Diarrhoeal deaths per province per age

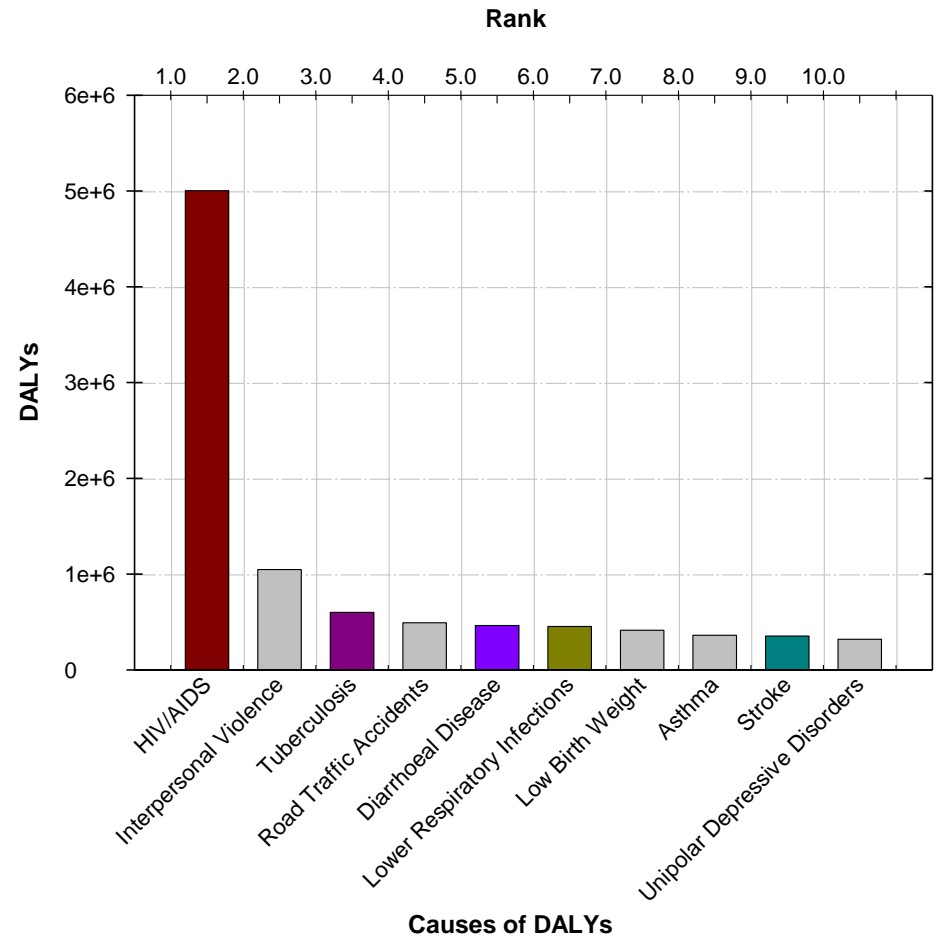
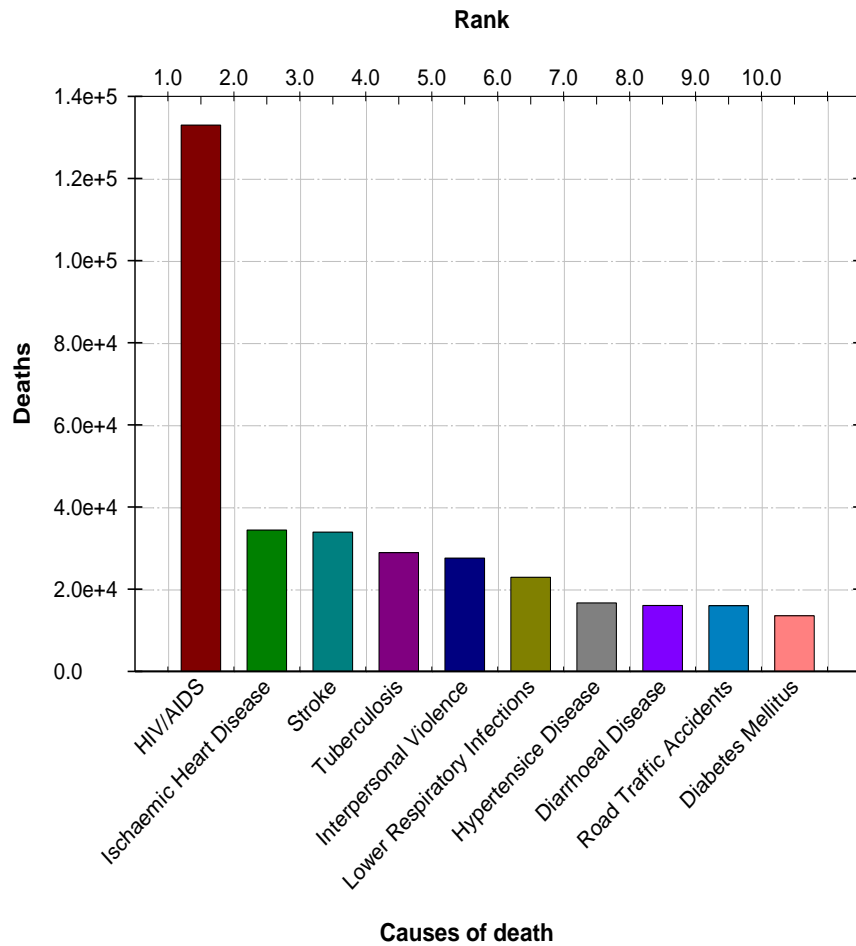
Diarrhoeal Deaths



Diarrhoea as underlying natural cause of death for people of all ages 1997 – 2005 (STATS SA, 2005)



Leading causes of death and DALYs



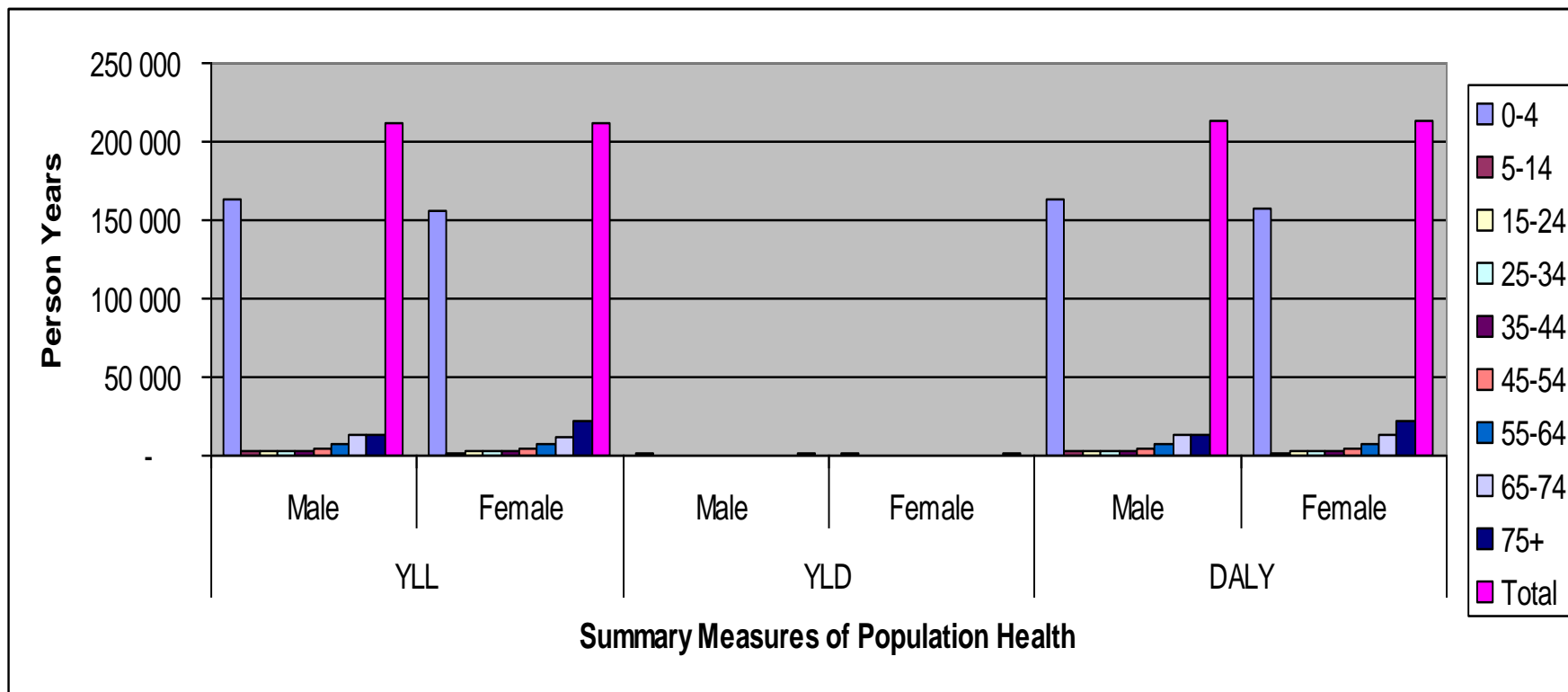
Summary Measures of Population Health for Diarrhoea, South Africa 2005

Age group	YLL		Age group	YLD		Age group	DALY		Total
	Male	Female		Male	Female		Male	Female	
0-4	162 899	155 940	0-4	922	853	0-4	163 820	156 792	320 613
5-14	2 534	1 241	5-14	32	15	5-14	2 566	1 255	3 822
15-24	2 599	3 028	15-24	35	40	15-24	2 634	3 068	5 702
25-34	3 587	3 356	25-34	49	43	25-34	3 636	3 400	7 035
35-44	2 764	2 438	35-44	30	27	35-44	2 795	2 465	5 259
45-54	4 621	4 966	45-54	48	53	45-54	4 669	5 019	9 688
55-64	7 059	6 813	55-64	69	69	55-64	7 128	6 881	14 009
65-74	12 842	12 447	65-74	115	120	65-74	12 957	12 568	25 525
75+	13 097	21 413	75+	93	200	75+	13 191	21 613	34 803
Total	212 002	211 642	Total	1 393	1 419	Total	213 395	213 061	426 456

BUT

Records of people ill with diarrhoea are not kept in South Africa, except for administering oral rehydration solution or therapy to children below the age of five years.

Diarrhoeal DALYs



Correlation between number of diarrhoea episodes and possible causes of diarrhoea

	# diarrhoea episodes in < 5 yrs	Surface Water Quality	Water supply backlog	Total HIV	Deprivation Index	No Access to Piped Water
Number of diarrhoea episodes in children under 5 yrs	1.000	0.185	0.131	0.683	0.202	-0.068
Surface Water Quality	0.185	1.000	-0.053	0.423	-0.174	0.159
Water supply backlog	0.131	-0.053	1.000	0.156	0.669	-0.782
Total number HIV+	0.683	0.423	0.156	1.000	-0.030	0.057
Deprivation Index	0.202	-0.174	0.669	-0.030	1.000	-0.868
No access to piped water	-0.068	0.159	-0.782	0.057	-0.868	1.000
No access to private water	0.669	0.182	0.542	0.617	0.400	-0.365
Access to private water supply AND HIV+	0.785					

Conclusion

- BoD valuable tool
- Aid in decision making process
- Although access to water supply has improved
- Prioritisation needed in terms of access to PRIVATE access
- Still far in terms of reducing the unnecessary burden / avoidable burden of death and disease due to easily preventable causes
- Although HIV major factor and contributor to death – preventing disease is even more important now
- Diarrhoeal DALYs high in spite of incomplete data

Thank you

