Economics 172
Issues in African Economic Development

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Lecture 9 – February 12, 2007

Cost-benefit calculations

- Deworming as a human capital investment:
  Health gains → More schooling → Higher adult wages

- Deworming led to 7% gain in school participation
- Previous study: each year of school → 7% higher wages
- Take these gains in wages (7% x 7%) over 40 years in the workforce, discounted at 5% per year

  → Deworming benefits are at least three times (3x) as large as treatment costs (using the Tanzania costs)

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  -- Strong evidence people learned through their social network that the drugs were “not effective”

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  (2) Socio-cultural explanations / resistance to new technologies. Evidence from anthropologist Wenzel Geissler: “worms are our life”

The Impact of Higher Drug Costs

- In 1998, 1999, 2000 deworming was given for free
- In 2001, parents in 25 randomly chosen Group 1 and Group 2 schools paid US$0.10-0.30 per child

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  Free-treatment schools: 75%

  Cost-sharing schools: 18%

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- 2001 deworming take-up:

  Free-treatment schools: 75%

  Cost-sharing schools: 18%

  → Average private valuation for deworming is low

Switching to the next major topic in the course:
the economics of HIV/AIDS

Outline:

(1) The Economics of HIV/AIDS in Africa

(2) Labor productivity impacts (Fox et al 2004)

The Economics of HIV/AIDS in Africa

- Of the 42 million people worldwide thought to be infected with HIV, it is estimated that 25 million (!) are in Sub-Saharan Africa

Figure 1: HIV Prevalence & Incidence by Region[1]

Region	Total No. (%) Living with HIV/AIDS end of 2004	Newly Infected in 2004	Adult[9] Prevalence Rate
Global Total	**39.4 million (100%)**	**4.9 million**	**1.1%**
Sub-Saharan Africa	25.4 million (64%)	3.1 million	7.4%
South/South-East Asia	7.1 million (18%)	890,000	0.6%
Latin America	1.7 million (4%)	240,000	0.6%
Eastern Europe/Central Asia	1.4 million (4%)	210,000	0.8%
East Asia	1.1 million (3%)	290,000	0.1%
North America	1.0 million (3%)	44,000	0.6%
Western/Central Europe	610,000 (2%)	21,000	0.3%
North Africa/Middle East	540,000 (1%)	92,000	0.3%
Caribbean	440,000 (1%)	53,000	2.3%
Oceania	35,000 (<1%)	5,000	0.2%

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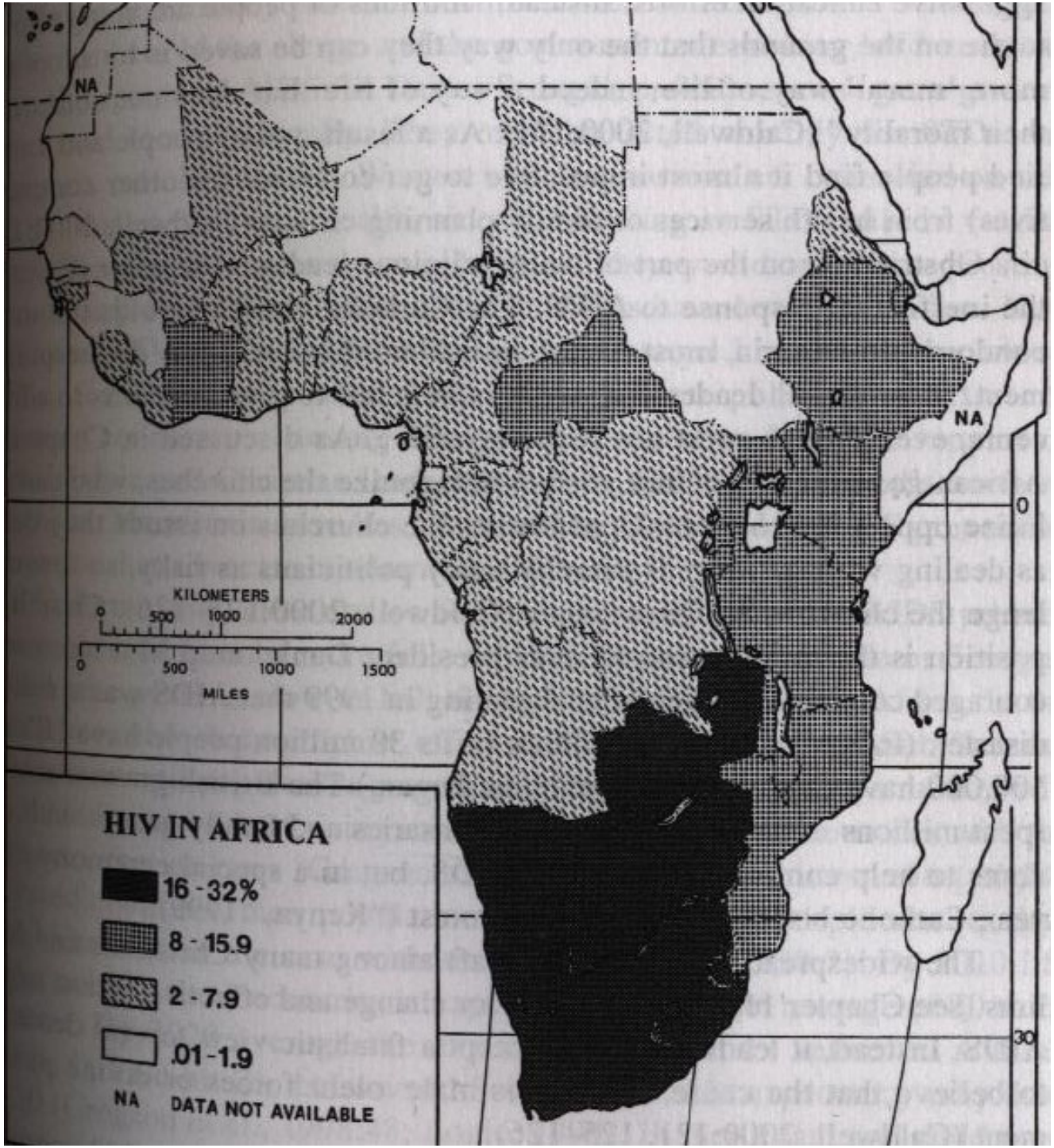
The Economics of HIV/AIDS in Africa

- Of the 42 million people worldwide thought to be infected with HIV, it is estimated that 25 million (!) are in Sub-Saharan Africa

- In some countries in southern Africa (e.g. Botswana, Swaziland), it is claimed that over 30% are HIV+


NA
NA
0
30
KILOMETERS
0 500 1000 2000
0 500 1000 1500
MILES
HIV IN AFRICA
16 - 32%
8 - 15.9
2 - 7.9
.01 - 1.9
NA DATA NOT AVAILABLE

Counting HIV+ people in Kenya

- Based on antenatal clinic survey data, the official UNAIDS estimate of HIV+ adults in Kenya by late 2001 was 15.0%

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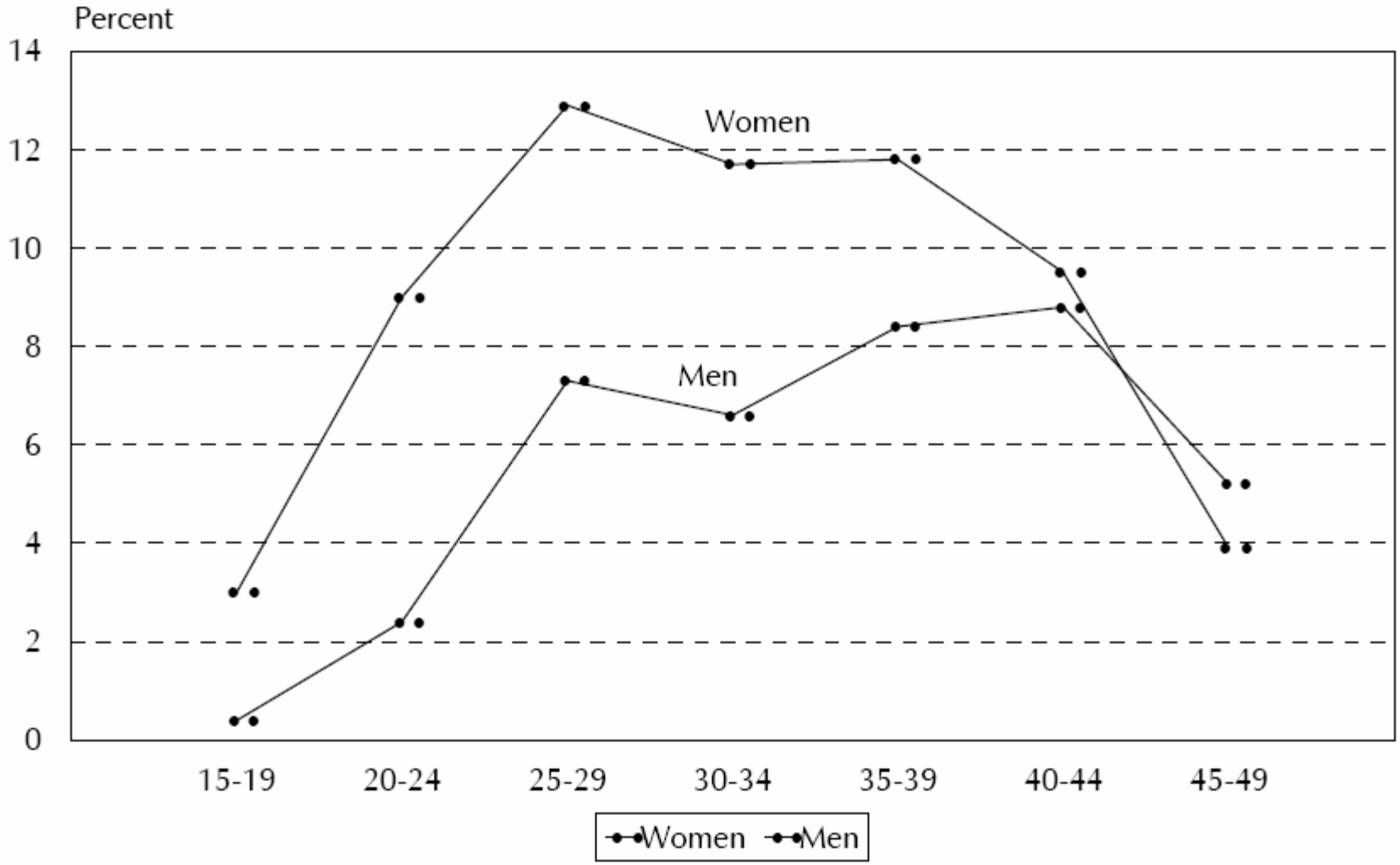
  - This data indicates that "only" **6.7%** of Kenyan 15-49 year olds tested are HIV+

Figure 13.1 HIV Prevalence by Age Group and Sex



KDHS 2003

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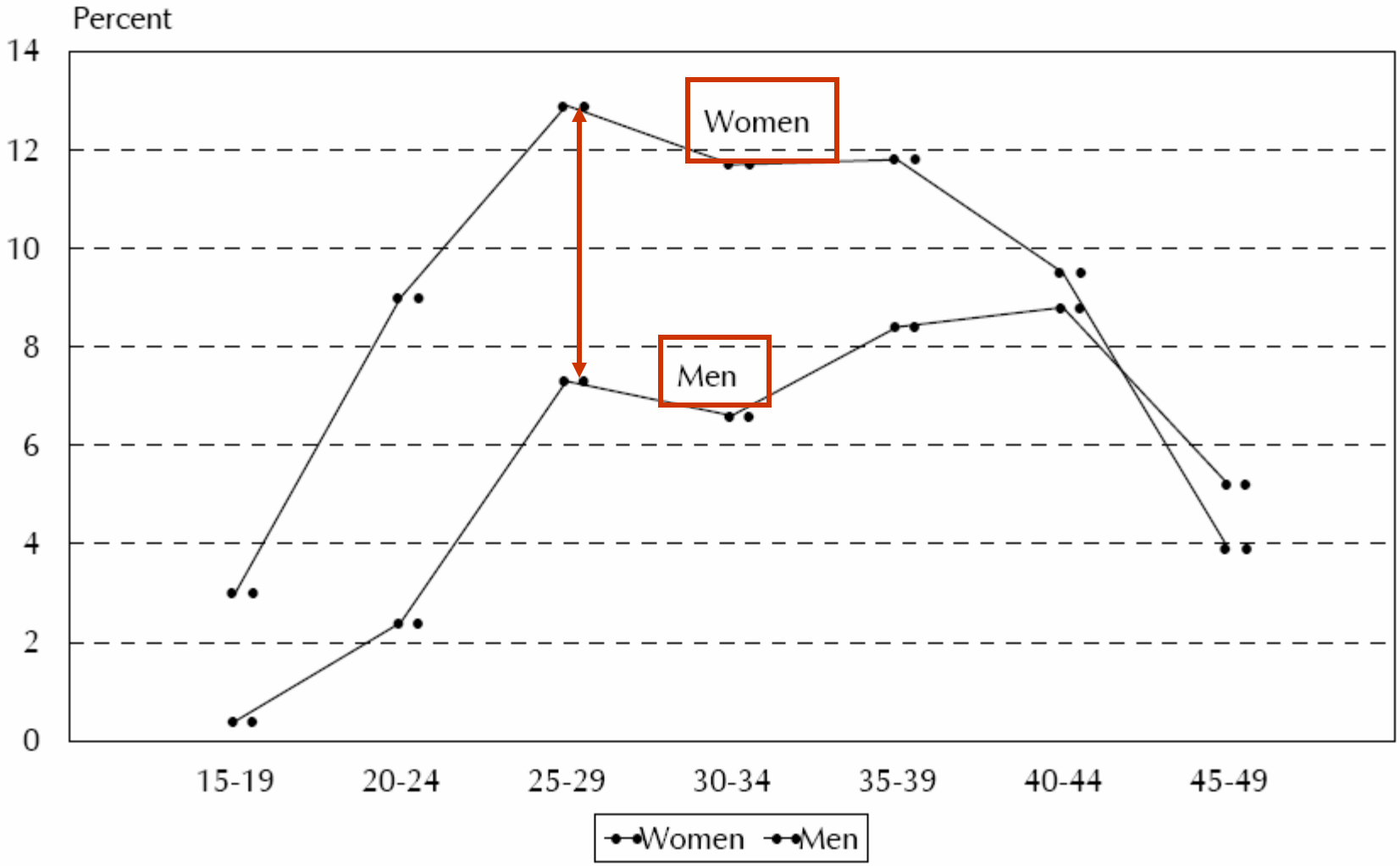

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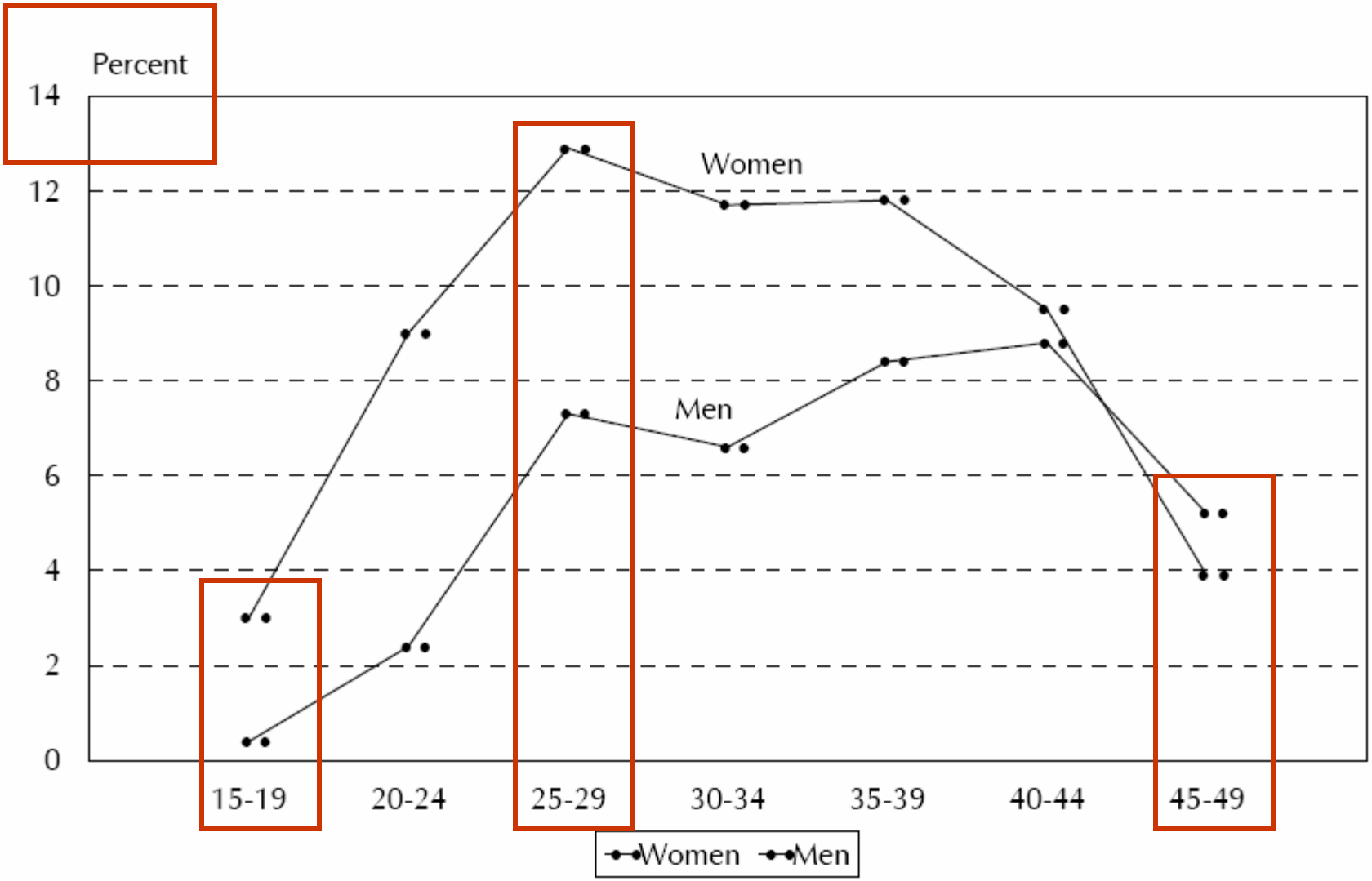

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  - This data indicates that “only” 6.7% of Kenyan 15-49 year olds tested are HIV+!

- Which of the two numbers is closer to the truth?

Table 13.4 HIV prevalence by selected socioeconomic characteristics

Percentage HIV positive among women and men age 15-49 who were tested, by socioeconomic characteristics, Kenya 2003

Socioeconomic characteristic	Women		Men		Total	
	Percent HIV positive	Number	Percent HIV positive	Number	Percent HIV positive	Number
Residence						
Urban	12.3	779	7.5	716	10.0	1,495
Rural	7.5	2,372	3.6	2,135	5.6	4,507
Education						
No education	4.4	396	2.7	156	3.9	552
Primary incomplete	9.3	1,052	3.4	982	6.4	2,034
Primary complete	10.6	784	5.9	660	8.5	1,444
Secondary+	8.2	918	5.2	1,053	6.6	1,972
Employment						
Currently working	9.6	1,844	5.9	2,007	7.6	3,851
Not currently working	7.4	1,307	1.5	844	5.1	2,151
Wealth quintile						
Lowest	3.9	505	3.4	431	3.6	937
Second	8.5	580	4.2	501	6.5	1,082
Middle	7.1	597	2.2	528	4.8	1,125
Fourth	9.7	663	4.3	624	7.1	1,287
Highest	12.2	806	7.3	765	9.8	1,571

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Key questions in the study of HIV/AIDS

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-- Labor productivity / labor turnover

-- Human capital accumulation (orphans)

-- Investment and savings (as time horizons change)

Key questions in the study of HIV/AIDS

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(1) What impact does HIV/AIDS have on economic development in Africa?

(2) Why does HIV/AIDS continue to spread in Africa?

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(2) Why does HIV/AIDS continue to spread in Africa?

(3) What can / should public policy do about HIV/AIDS?

HIV/AIDS and labor productivity in Kenya

- Fox et al (2004) study the impact of HIV/AIDS illness on labor productivity on tea plantations in Kenya, 1997-2002

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- They compare the labor productivity – the kilograms of tea leaves picked per day – of workers who became sick with HIV/AIDS during the study period to workers who remained healthy
  - The total sample is 271 workers. 54 died or retired due to HIV/AIDS

Table I Study population

Parameter	Cases		Comparison pluckers		
	Value	SD	Value	SD	*P*-value
n	54		217		
Age (mean)*	35.74	7.26	37.33	8.17	0.21
Years of service (mean)*	5.15	3.37	6.20	2.42	0.06
Sex (proportion male)	61%		71%		0.16

* Dates computed as date on last day of observation.

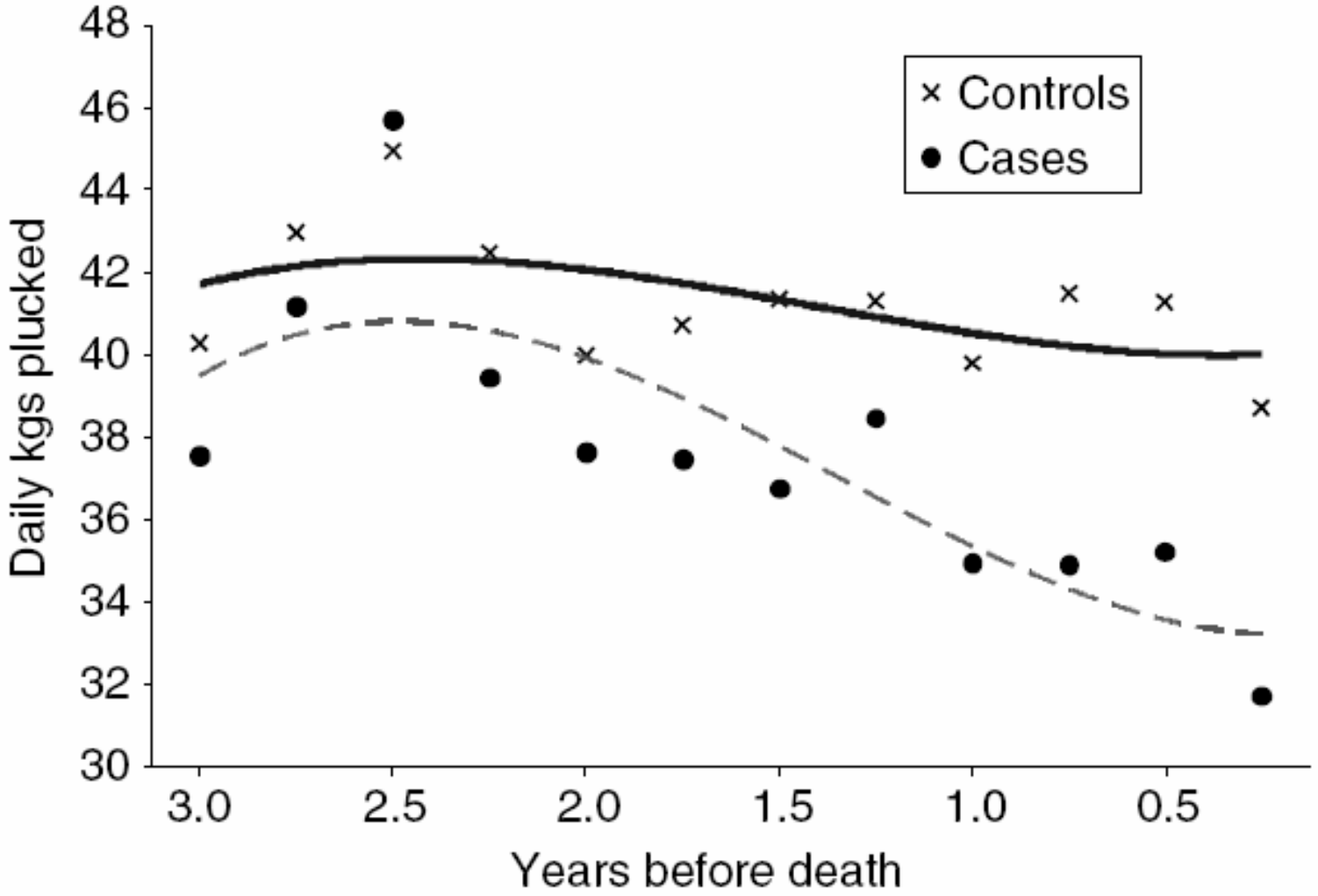

Figure 1 Mean kilograms of tea plucked per day on days of plucking for cases and controls (univariate analysis – curves are trend lines fit using polynomial regression for each group. Note that vertical access scale begins at 30 kg/day).

Table 2 Adjusted differences between cases and comparison pluckers on days plucking at 6-month intervals prior to AIDS-related termination*

Years before termination	Difference†	Percentage difference‡	SE	*P*-value
3.0 years	−1.689	−4%	2.732	0.536
2.5 years	0.466	1%	2.224	0.834
2.0 years	2.400	6%	1.956	0.220
1.5 years	4.113	10%	1.871	0.028
1.0 years	5.605	13%	1.940	0.004
0.5 years	6.876	16%	2.191	0.002
Near termination	7.927	19%	2.684	0.003

* The final regression model included age, a dummy variable for matched group, the variables for time and a dummy variable to indicate pluckers who went on to an AIDS-related termination.
† Difference in kilograms.
‡ Expressed as a per cent of the average kilograms plucked by comparison pluckers, 41.

- For next time: continue the HIV/AIDS readings

Whiteboard #1

Whiteboard #2

Whiteboard #3

Whiteboard #4

Whiteboard #5


Map of Africa
TUNISIA
Mediterranean Sea
MOROCCO
IRAQ
IRAN
Canary Islands (SPAIN)
ALGERIA
LIBYA
EGYPT
Persian Gulf
WESTERN SAHARA
SAUDI ARABIA
MAURITANIA
MALI
NIGER
Red Sea
CHAD
ERITREA
SENEGAL
GAMBIA
Lake Chad
BURKINA
SUDAN
DJIBOUTI
GUINEA BISSAU
GUINEA
GHANA
BENIN
SOMALIA
NIGERIA
SIERRA LEONE
IVORY COAST
Lake Volta
TOGO
ETHIOPIA
CENTRAL AFRICAN REPUBLIC
LIBERIA
CAMEROON
Lake Rudolf
EQUATORIAL GUINEA
UGANDA
KENYA
SAO TOME & PRINCIPE
GABON
CONGO
ZAIRE
RWANDA
Lake Victoria
BURUNDI
TANZANIA
Lake Tanganyika
ANGOLA (Cabinda)
MALAWI
Lake Nyasa
ANGOLA
ZAMBIA
Lake Kariba
MOZAMBIQUE
MADAGASCAR
ZIMBABWE
NAMIBIA
BOTSWANA
SOUTH AFRICA (Walvis Bay)
SWAZILAND
LESOTHO
SOUTH AFRICA

Map of Africa