

Investing in the Epidemic: The Impact of HIV/AIDS on African Workforces

**Center for International Health
Boston University School of Public Health**

*Sydney Rosen, Jonathon Simon, William MacLeod,
Donald Thea, Matt Fox, and Jeffrey Vincent*

with contributions by

*Eleanor Gouws and Brian Williams,
World Health Organization*

and financial support from

*The U.S. Agency for International Development and
the World Bank*

March 2002

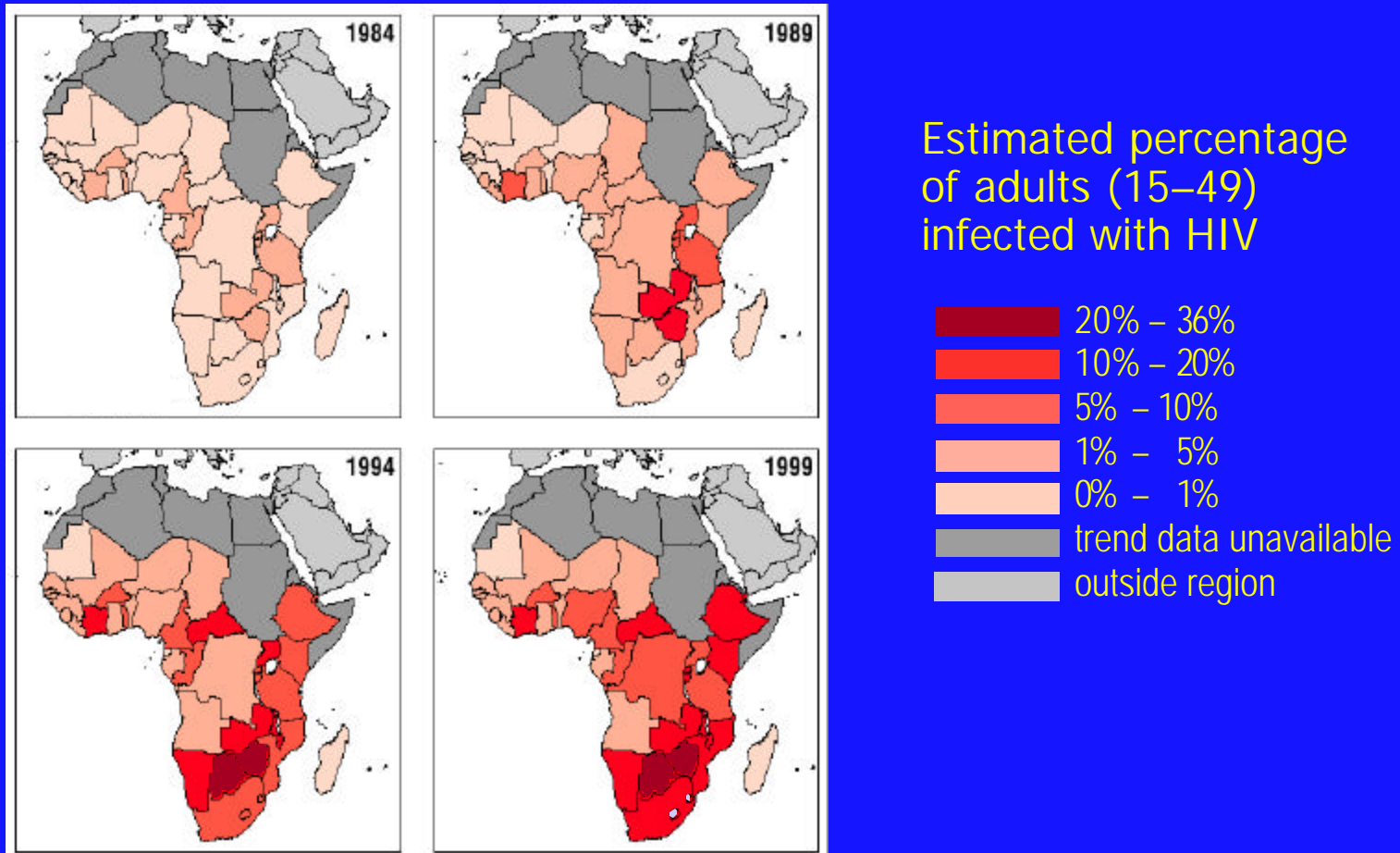
Overview of Presentation

- Part I — Introduction: The AIDS Epidemic in Sub-Saharan Africa
- Part II — Identifying the Costs of AIDS in the Workforce
- Part III — How is AIDS Affecting Businesses? Findings from Southern Africa
- Part IV — Why Do Businesses Respond to AIDS? Findings from Nigeria
- Part V — Conclusions: The Value of Intervention

Part I —

Introduction: The AIDS Epidemic in Sub-Saharan Africa

Spread of HIV in sub-Saharan Africa, 1984 to 1999



Source: UNAIDS

The AIDS Epidemic in Sub-Saharan Africa

- Adult HIV prevalence in sub-Saharan Africa overall was 8.8% at the end of 2000 and continues to increase.
- In many countries in southern and eastern Africa, 15-35% of working-aged adults are HIV-positive.
- AIDS is the leading cause of adult mortality in most sub-Saharan African countries.
- In southern Africa, life expectancy at birth has dropped by 20-30 years; The average loss for sub-Saharan Africa overall is 9 years.

Source: UNAIDS, UN Population Division

Part II —

Identifying the Costs Of HIV/AIDS in the Workforce

Key Definitions

- Prevalence: the percentage of a population that is infected (HIV-positive) at any given time, no matter when the infections were acquired (i.e. the overall infection rate).
- Incidence: the percentage of the uninfected population that becomes infected (sero-converts) in a specific time period, usually a year (i.e. the new infection rate).

Costs to the Firm of Workforce HIV/AIDS

Direct Costs

Indirect Costs

From an Individual Employee with HIV/AIDS

- Benefits Payments
- Insurance Premiums
- Recruitment and Training
- Overtime and Casual Wages

- Reduced On-the-Job Productivity
- Increased Absenteeism
- Use of Supervisors' Time

From High HIV/AIDS Rates in the Workforce and Society

- Market Impacts on Wage Rates
- HIV/AIDS Programs and Analysis

- Management Burden
- Production Disruptions
- Loss of Workforce Cohesion and Experience
- Labor Disputes

Total Costs to Firms of HIV/AIDS in the Workforce

Timing of Cases, Costs, and Liability

Timeline	Progression of HIV/AIDS in the Workforce	Cost to Company	Liability Acquired by Company
Year 0	Employee becomes infected	No cost to company at this stage	Discounted sum of all costs from years 0-10
Year 0-8	Employee remains asymptomatic and fully productive	No cost to company at this stage	
Year 2-8	Morbidity begins (some early mortality, some long-term non-progressors)	Morbidity-related costs are incurred (absenteeism, productivity, management time, medical care)	
Year 6-12	Employee leaves workforce through death or retirement (some long-term survivors)	Termination-related costs are incurred (death and disability benefits, loss of morale, experience, & cohesion)	
Year 6-12	Company hires replacement employee	Turnover costs are incurred (vacancy, recruiting, training)	

Basic Methodology

(A) Data input—
projections based on
company's human
resources data

**Number of
employees in the
workforce**

x

(B) Data input—
projections based on HIV
seroprevalence survey

**HIV incidence
(probability that an
employee is newly
infected)**

=

(C) Calculation—
product of A and B

**Number of new
HIV infections
among
employees**



**Number of new
HIV infections
among employees**

x

**Cost (present value)
to the company of a
new HIV infection**

=

**Total cost
(present value)
to the company
of new
HIV/AIDS
infections**

(D) Data input—analysis of
company and external data

(E) Calculation—
product of C and D

10

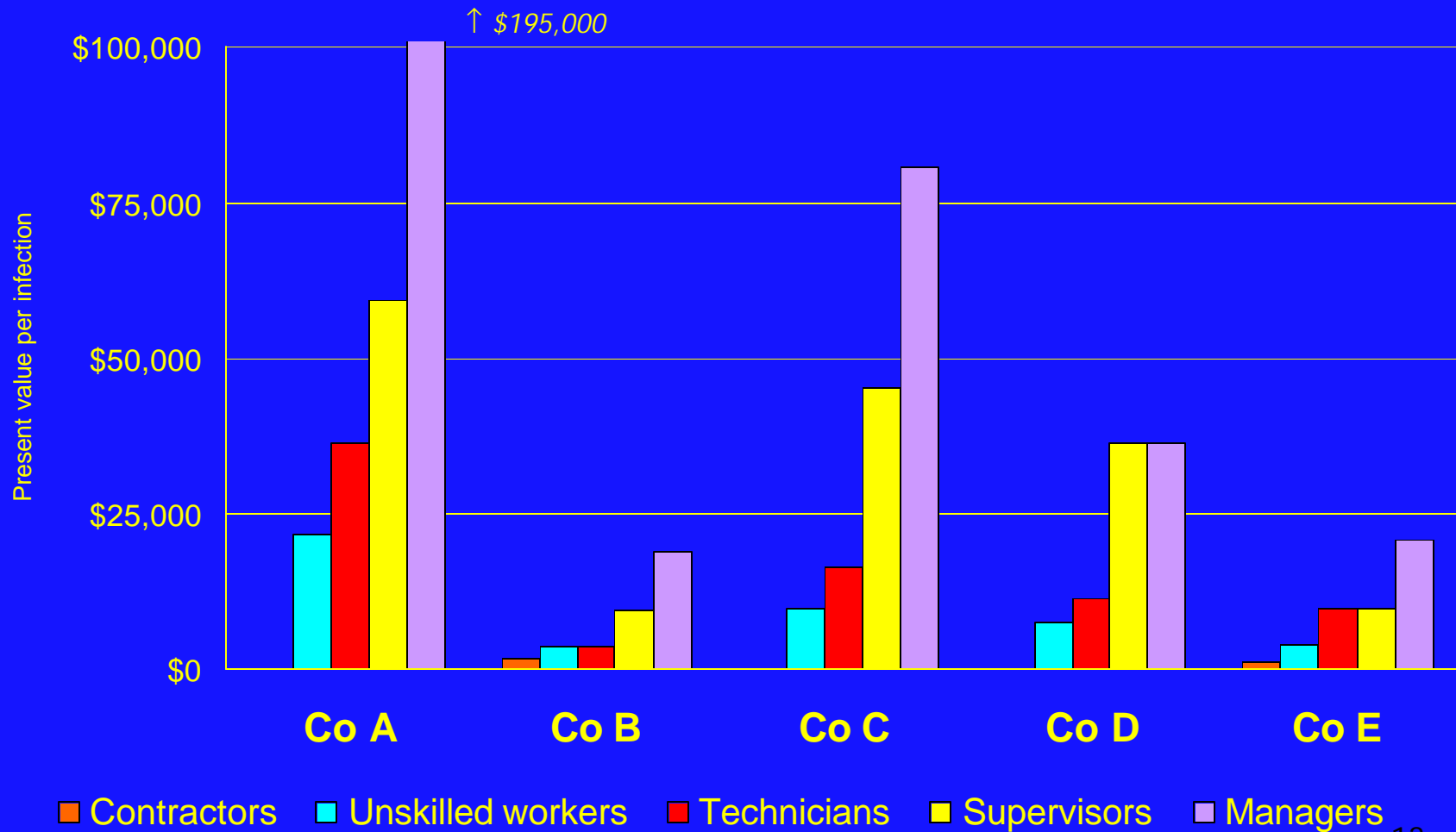
Part III —

How will HIV/AIDS Affect Businesses? Findings from Southern Africa

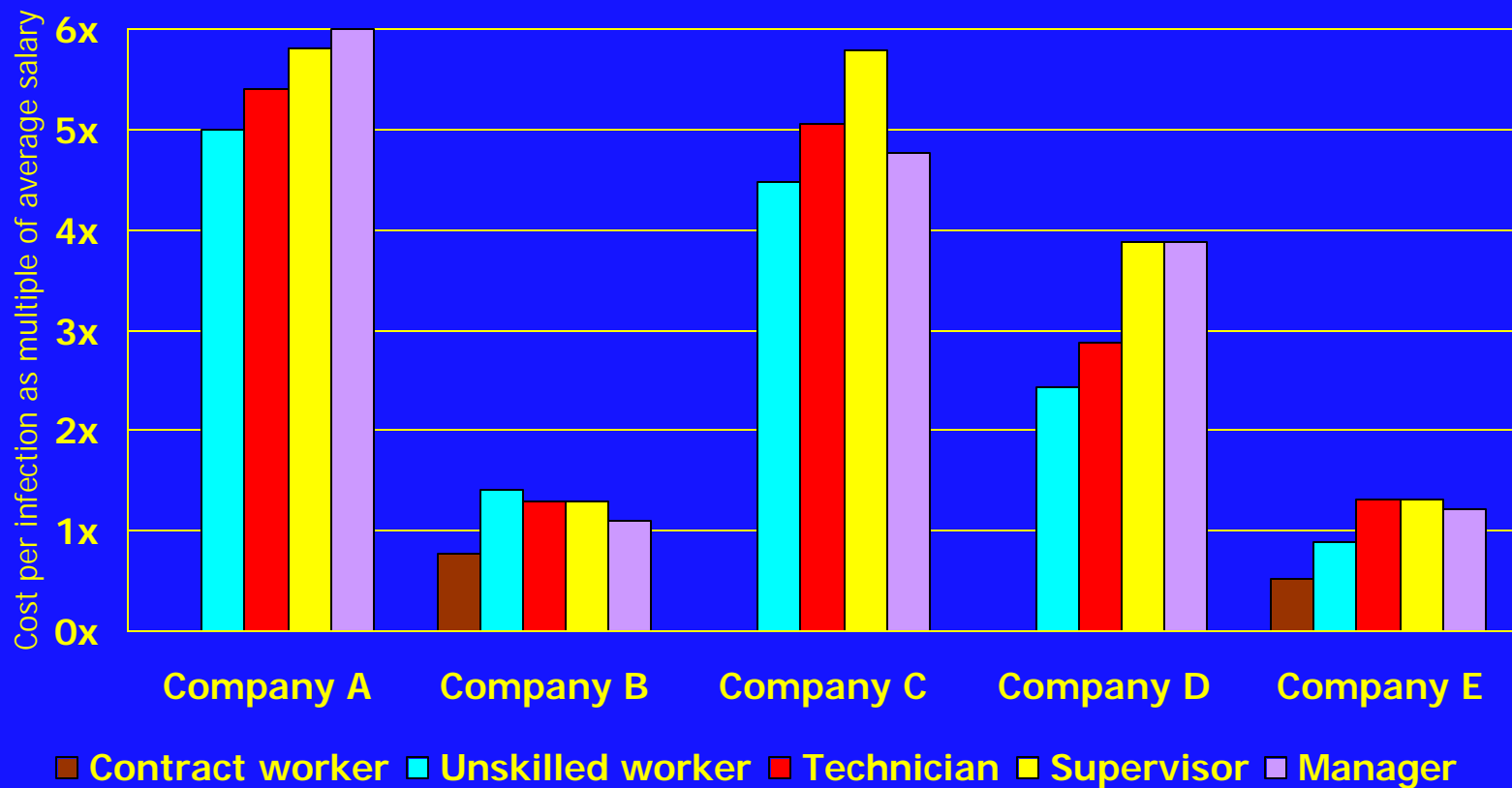
Companies in the Study

Site	Sector	Location	Workforce size	Overall HIV prevalence	Status
A	Heavy industry	SA national	>20,000	8.8% (1999)	Completed
B	Agriculture	KwaZulu Natal	5,000-10,000	22.9% (1999)	Completed
C	Mining	Botswana	<1,000	28.8% (2000)	Completed
D	Mining	KwaZulu Natal	<1,000	24.0% (2001) (estimated)	Completed
E	Retail	KwaZulu Natal	<1,000	7.9% (2001)	Completed
F	Media	SA national	1,000-5,000	TBD	Data analysis

Cost (Present Value) Per New HIV Infection, Males 35-49



Cost Per Infection (Present Value) as a Multiple of Median Salary Males 35-49

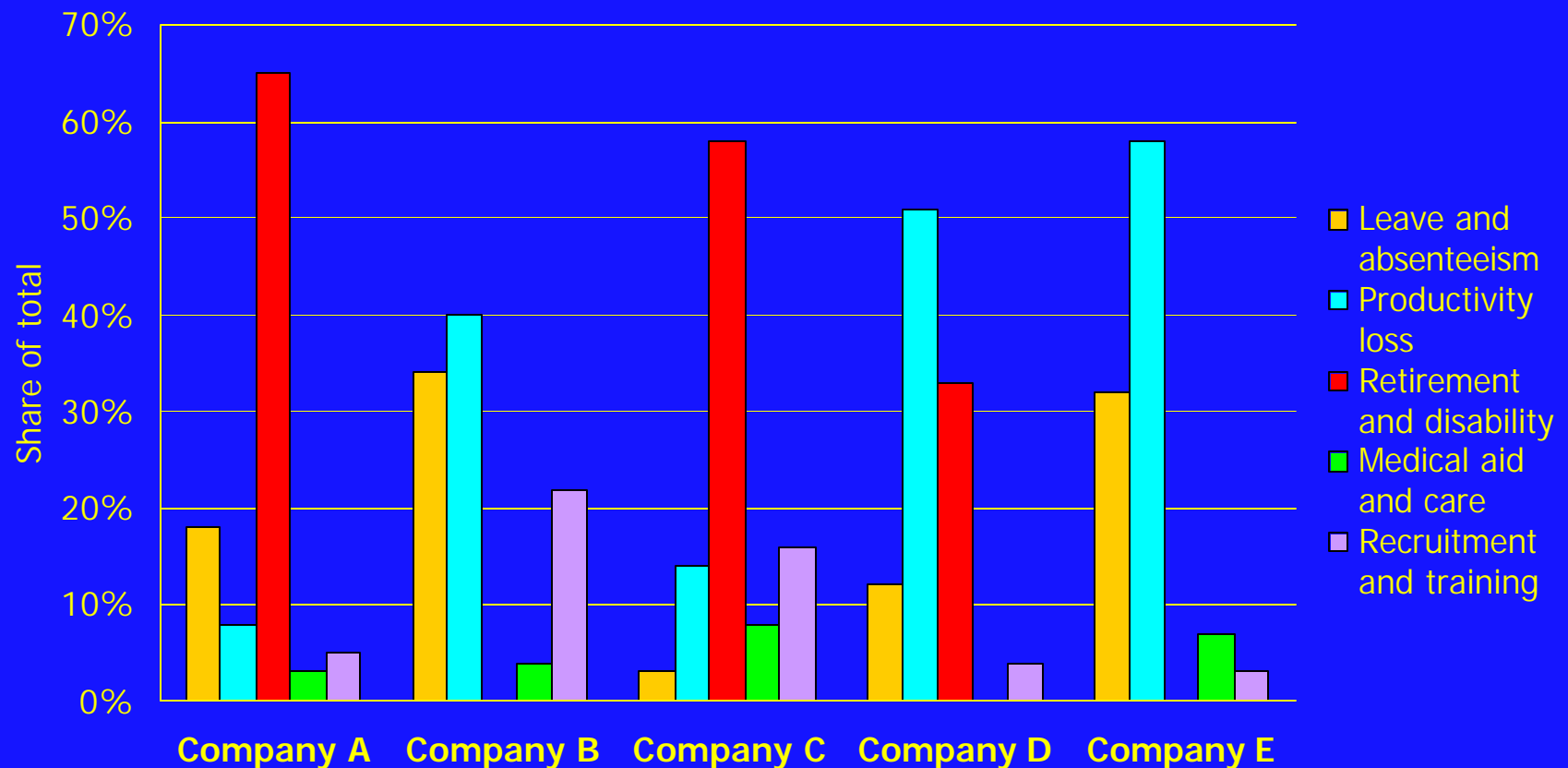


Why Are the Companies' Costs So Different?

Parameter	Company A	Company B	Company D	Company E
Level of death and disability benefits	Large and stable (for now)	Premiums capped; benefit levels falling	Large and stable (for now)	Premiums capped; benefit levels falling
Medical care for lower level employees	Medical aid coverage for all employees	Use company clinics and public hospital	Use company clinics and public hospital	Use company clinics and public hospital
Status of unskilled workers	Permanent employees with full benefits	Many are contractors with few benefits	Permanent employees with full benefits	Many are casuals with few benefits
Labor productivity	Higher, so salaries are higher and absences cost more	Lower, so salaries are lower and absences cost less	Higher, so salaries are higher and absences cost more	Lower, so salaries are lower and absences cost less
Discount rate	6%	10%	7.5%	6%

Distribution of the Costs of a New Infection

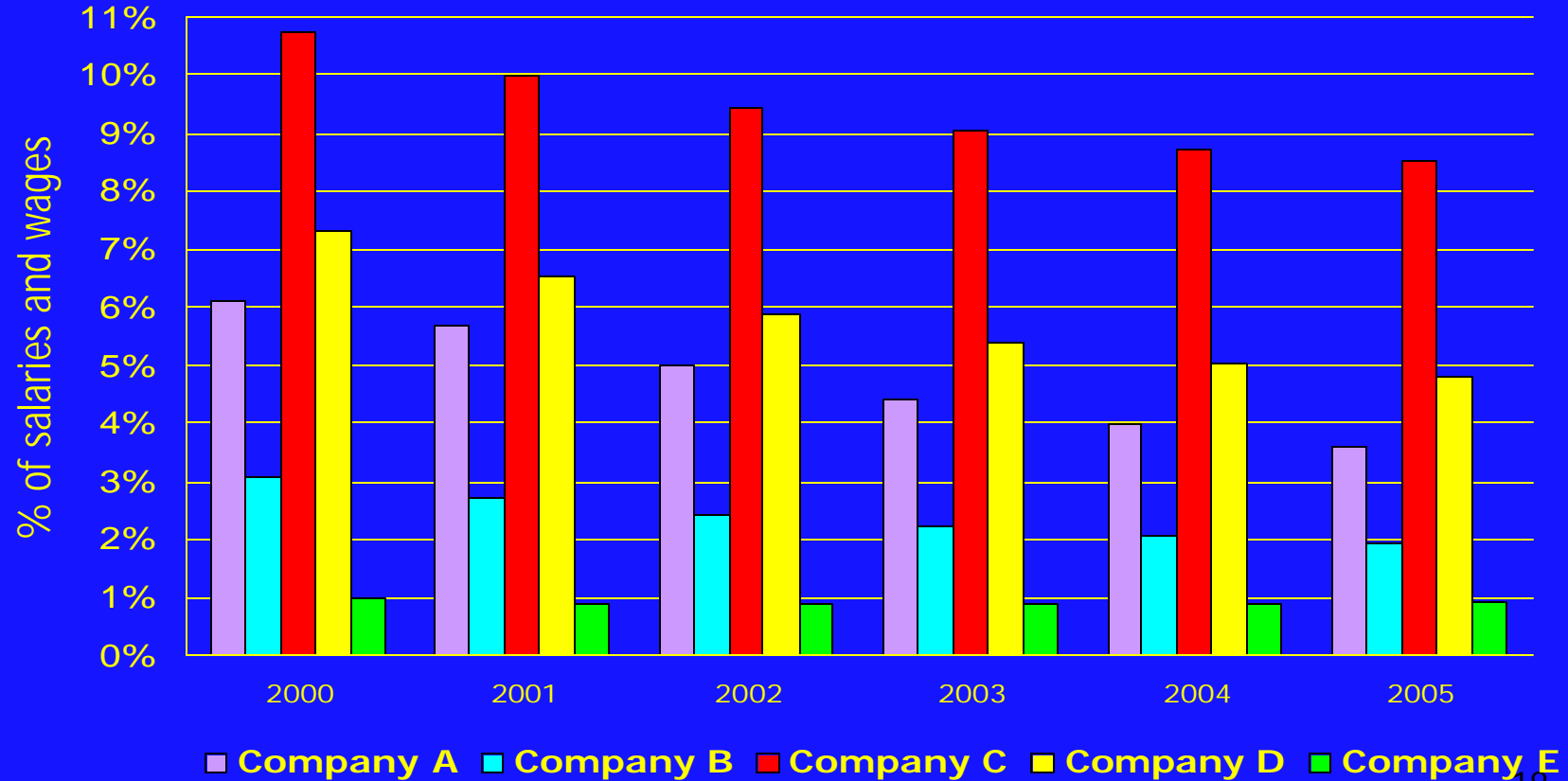
Technicians and artisans, males 35-49



Aggregate Cost of New HIV Infections Acquired in Study Year (Present Value)



The "AIDS Tax" on Business: Aggregate Cost of New HIV Infections Acquired Per Year (Present Value)



Shifting the Burden

- Companies B and E probably represent low-end estimates of the costs of workforce HIV/AIDS; Companies A and C are probably high-end.
- Company B is bearing less of the total (economic) cost to society of HIV/AIDS than is Company A.
- Since 2000 Company A has reduced benefits, outsourced unskilled tasks, and substituted capital for labor; Company B had already done this to a large extent.
- Businesses are systematically shifting the burden of HIV/AIDS to households, NGOs, and the public sector.

Part IV —

What Leads Businesses to Respond to AIDS? Findings from Nigeria

The RPED Survey

- World Bank survey of 232 Nigerian manufacturing companies.
- Located in all major industrial states.
- 5-5,000 employees.
- 2-3 hour interviews with senior managers.
- Survey carried out in March-April 2001.
- Population HIV prevalence by state vary widely in Nigeria, from 0.5% to 21%.
- No data on HIV prevalence in the labor force.

Why Do Companies Take Action? Overall Prevalence?

- Whether high (>10%) medium (5-10%) or low (<5%) no differences in:
 - Whether discussed AIDS as business concern
 - Provision of information/speakers
 - Provision of condoms
 - Training of peer educators/counselors
 - Use of pre-employment health check

Why Do Companies Take Action? Direct Experience with Infection?

- If known HIV + workers in labor force then company is more likely to:
 - Provide information/speakers
 - Provide condoms
 - Train peer educators/counselors

Why Do Companies Take Action? Direct Experience with Death?

- If worker is known to have died or retired due to HIV/AIDS then company is more likely to:
 - Discuss AIDS as business concern
 - Provide information/speakers
 - Provide condoms
 - Train peer educators/counselors
 - Use pre-employment health checks

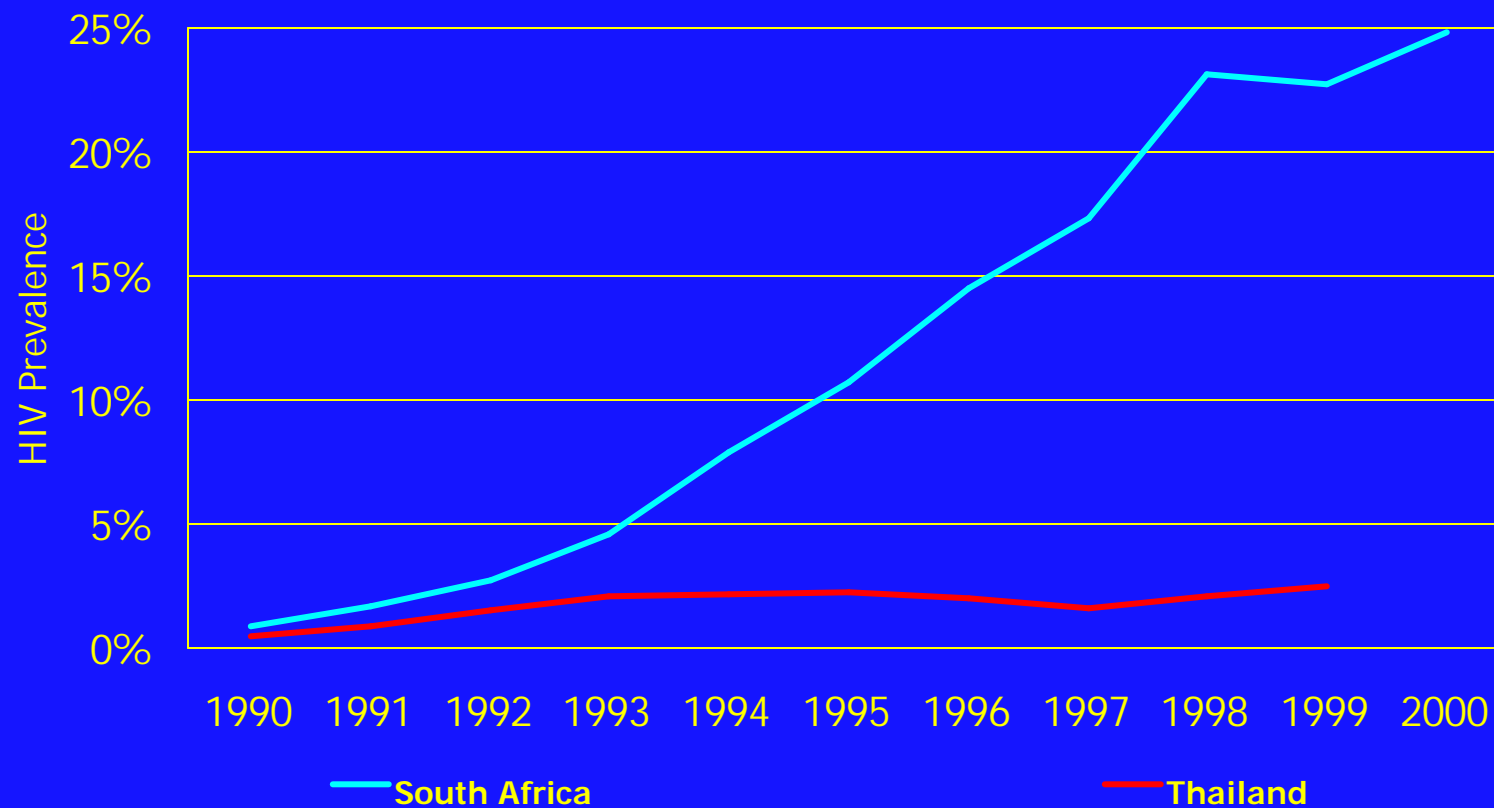
Why Do Companies Take Action? Other reasons.

- Being part of an industrial group or family of firms (often multinationals)
- Having on-site medical clinics and medical staff on payroll
- Receiving external information

Part V —

Conclusions: The Value of Intervention

The Potential for Progress — HIV Prevalence in Thailand and South Africa, 1990-2000



Source: UNAIDS

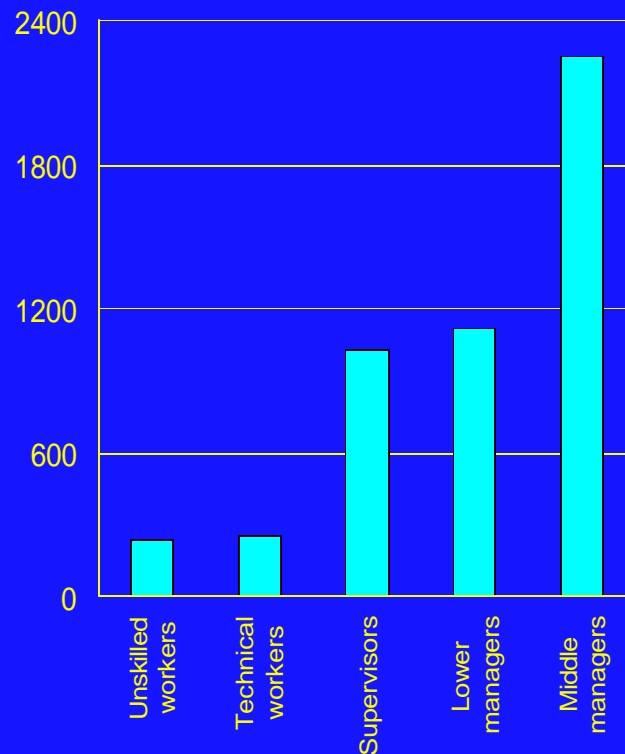
Net Present Value of Investments in Prevention

For an STD-management intervention that...

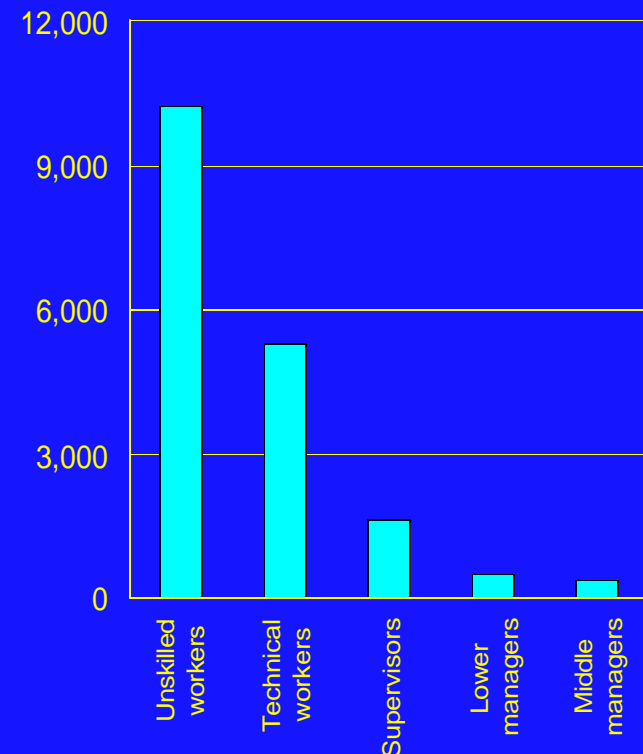
- Costs \$230 per infection averted per year or \$3/employee/year.
- Reduces HIV incidence by 48% for each year the intervention is implemented.

Source: Lesedi Project- Steen et al. (1996), UNAIDS (2000).

The NPV per infection averted per year is (\$)...



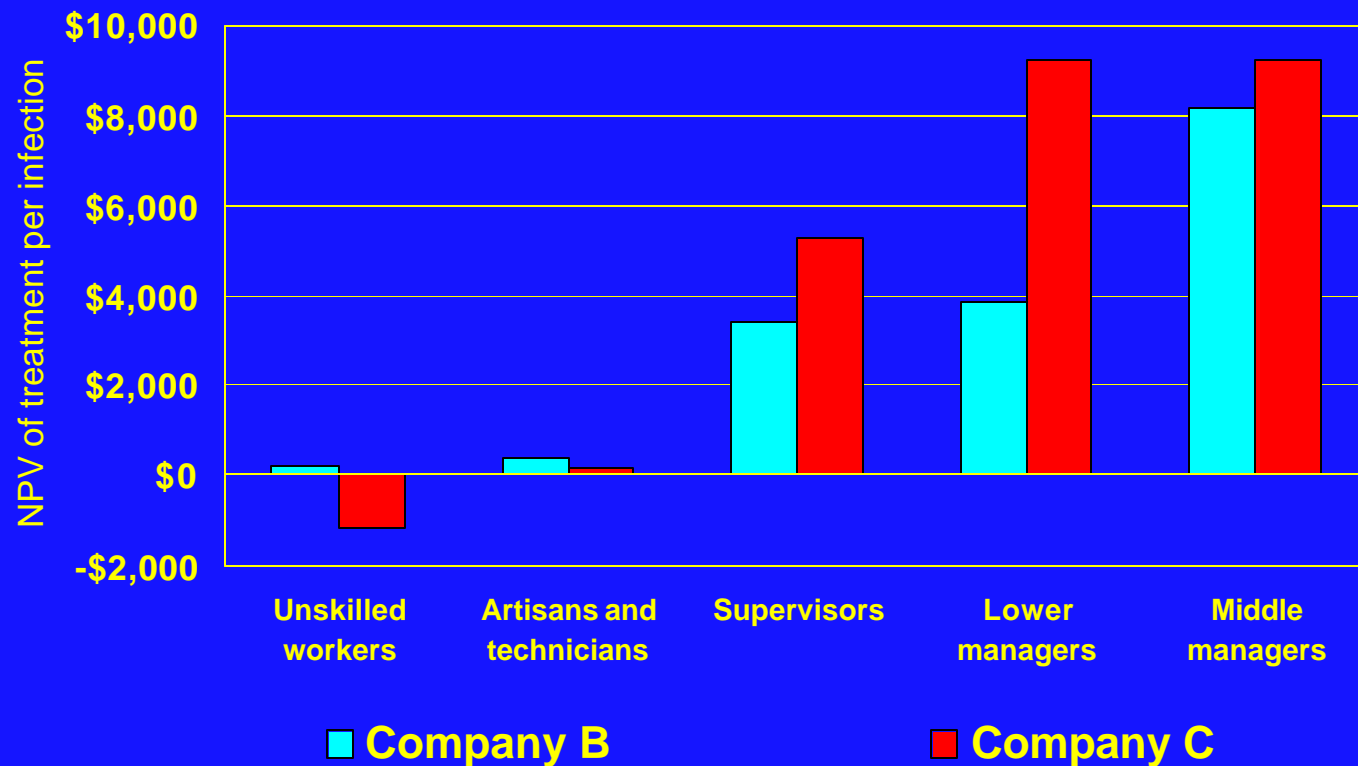
The annual NPV of the intervention is (\$)...



Company B, males aged 35-49

Net Present Value of Investments in Treatment

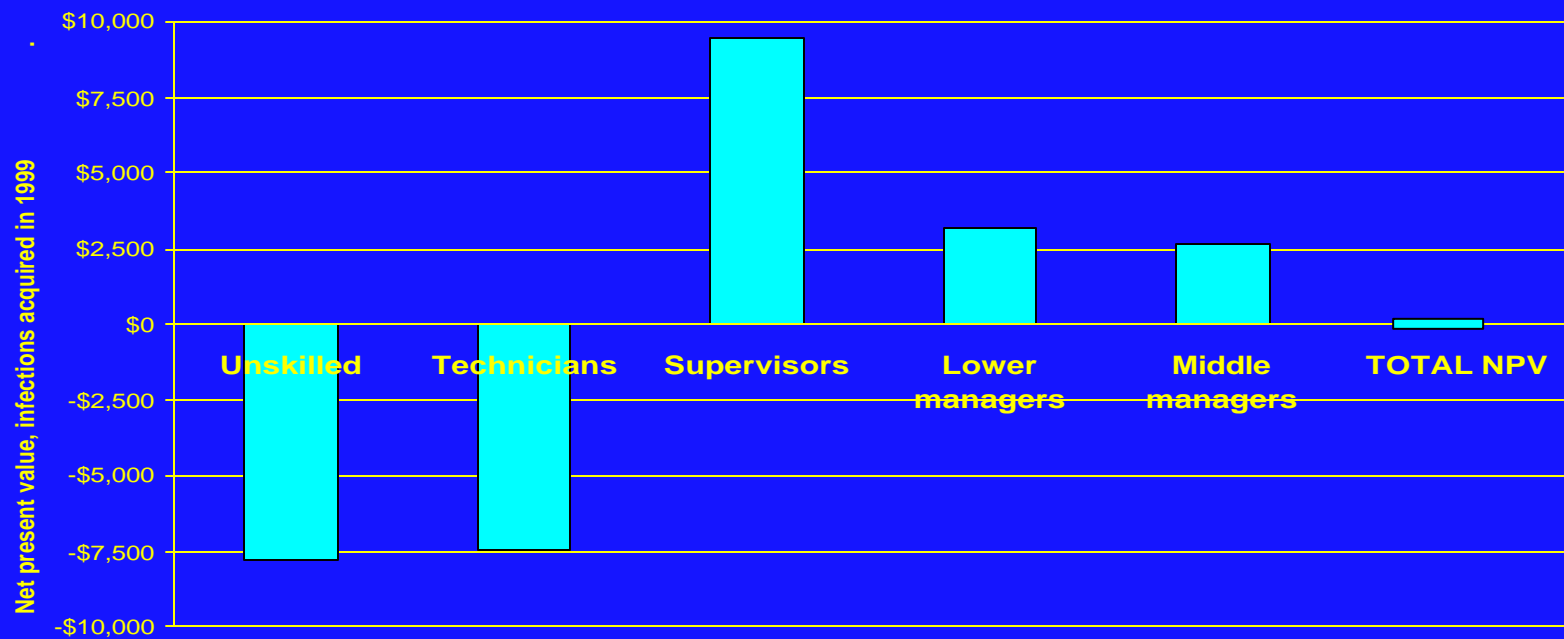
NPV Per Infection if Treatment Cost = \$600/Year



- Survival time without treatment = 7 years.
- Survival time with treatment = 12 years.
- Treatment begins at year 6.
- Results shown are for males 35-49 for Company B and <35 for Company C.

How Much Can Treatment Cost and Still Have a Positive NPV? Company B, Males 35-49

Average Survival Time = 12 Years (5 Additional)



Company B can provide treatment for all eligible HIV+ employees and break even at a treatment cost of \$730/year.

The Value of Intervention

- Even for low-cost companies, investments in HIV/AIDS prevention, treatment, and support can have positive returns.
- If treatment costs \$730/year, Company B can pay for it for all employees and break even financially.
- Prevention and treatment have other, hard-to-quantify benefits: retaining workforce experience; reducing impacts on morale and cohesion; maintaining social stability in the surrounding community.
- Both businesses and governments face the challenge of balancing their financial, social, and ethical responsibilities.