Prevention Packages and Cost Effectiveness

November 9, 2010

PEPFAR Expert Consultation on Unresolved Issues in HIV Prevention Programming in Generalized Epidemics

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Prevention Programs

- Vulnerable populations
  - Sex workers
  - MSM
  - IDU (Outreach, NSEP, drug substitution)
  - Prisoners
  - Other special populations
  - Youth (in/out of school)
  - Formal sector employees
- Behavior change
  - Community mobilization
  - Mass media
  - Social marketing
  - VCT
  - Condoms
- Medical services
  - Blood safety
  - STI treatment
  - PMTCT
  - Male circumcision
  - Post-exposure prophylaxis
  - Safe medical injection
  - Universal precautions

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US$10-US$20 billion needed by 2015 to achieve universal access to all prevention interventions

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Key Question

- What could we achieve by focusing on cost-effective approaches to prevention?
- What would be included in a cost-effective approach?

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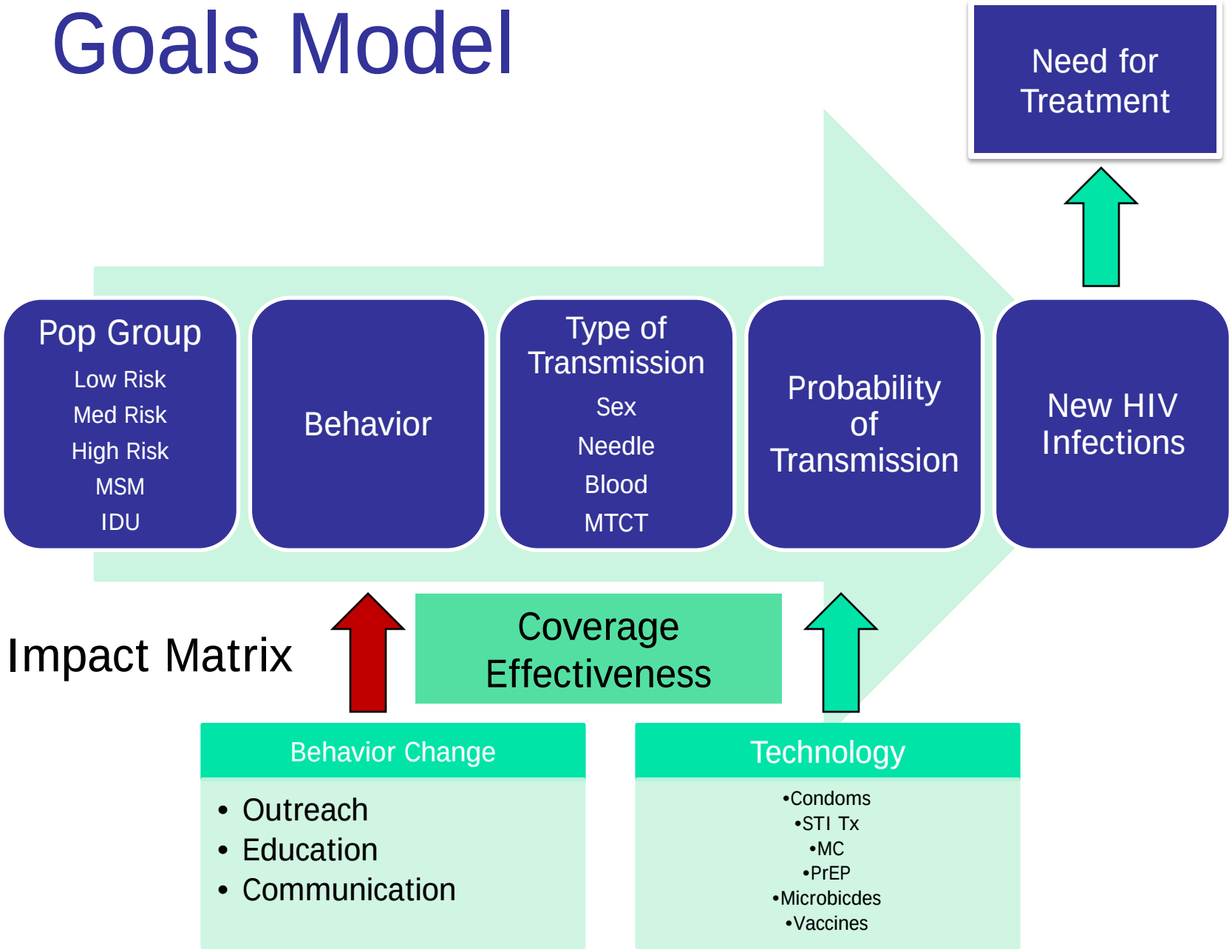
Goals Model


Need for Treatment
Pop Group
Low Risk
Med Risk
High Risk
MSM
IDU
Behavior
Type of Transmission
Sex
Needle
Blood
MTCT
Probability of Transmission
New HIV Infections
Impact Matrix
Coverage Effectiveness
Behavior Change
• Outreach
• Education
• Communication
Technology
•Condoms
•STI Tx
•MC
•PrEP
•Microbicdes
•Vaccines

Impact Studies: Behavior Change

Intervention	Age at 1st Sex	Number of Partners	Condom Use	Unsafe Injecting Behavior
Comm. Mob.	1	2	6	
BCC	1	3	8	
VCT		4	23	
Condom promotion		1	12	
Youth	3	4	18	
Employees		2	6	
SW		8	55	
MSM		2	20	
IDU				41

Risk groups: High-, medium-, low-risk heterosexual, MSM, IDU

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Countries in Analysis

Hyper-Endemic	Generalized	Concentrated
Lesotho	Cameroon	Brazil
Mozambique	Ethiopia	Cambodia
Lesotho	Kenya	China
Zambia	Malawi	India
Zimbabwe	Nigeria	Indonesia
	Sudan	Mexico
	Tanzania	Russia
	Uganda	Thailand
		Ukraine
		Viet Nam

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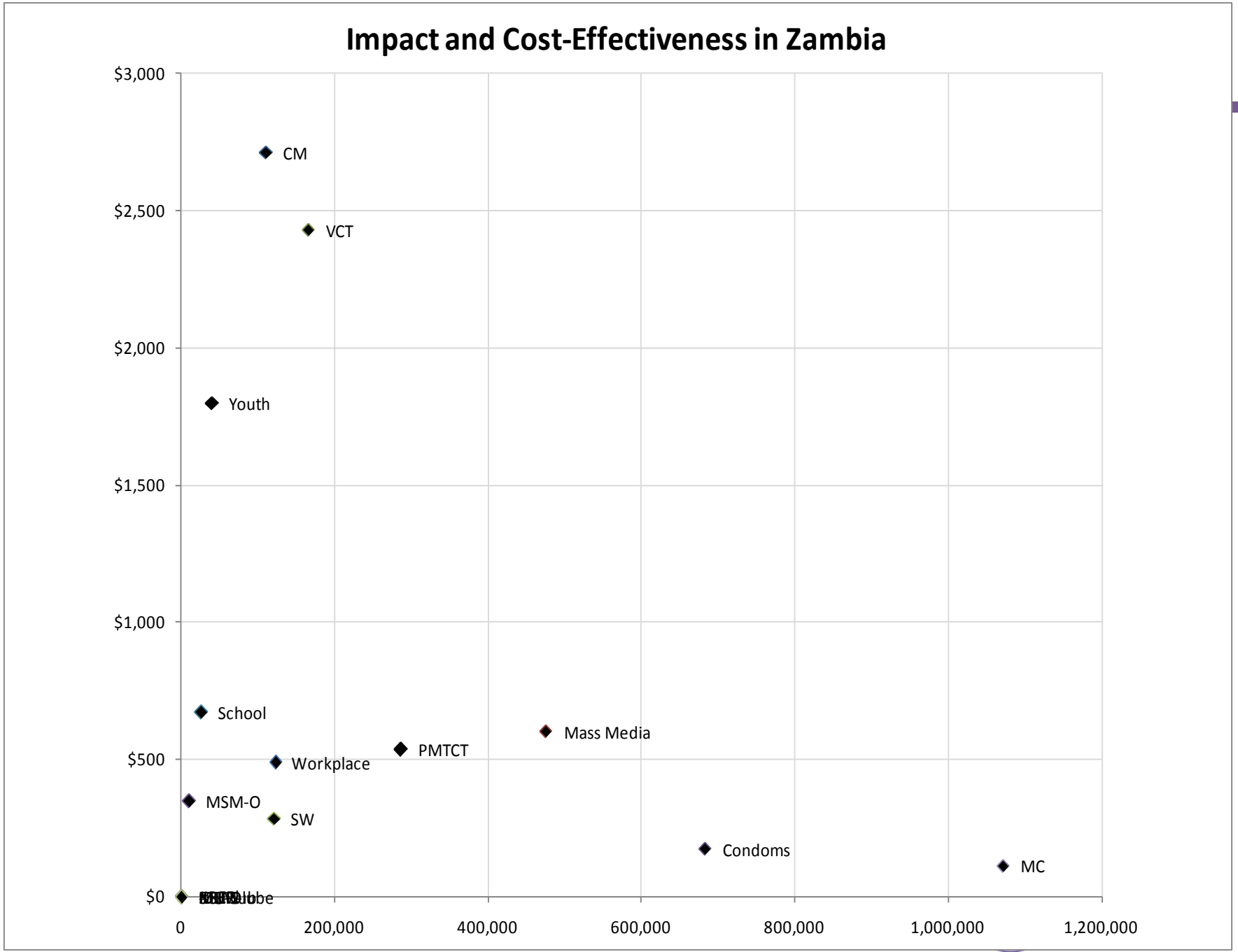
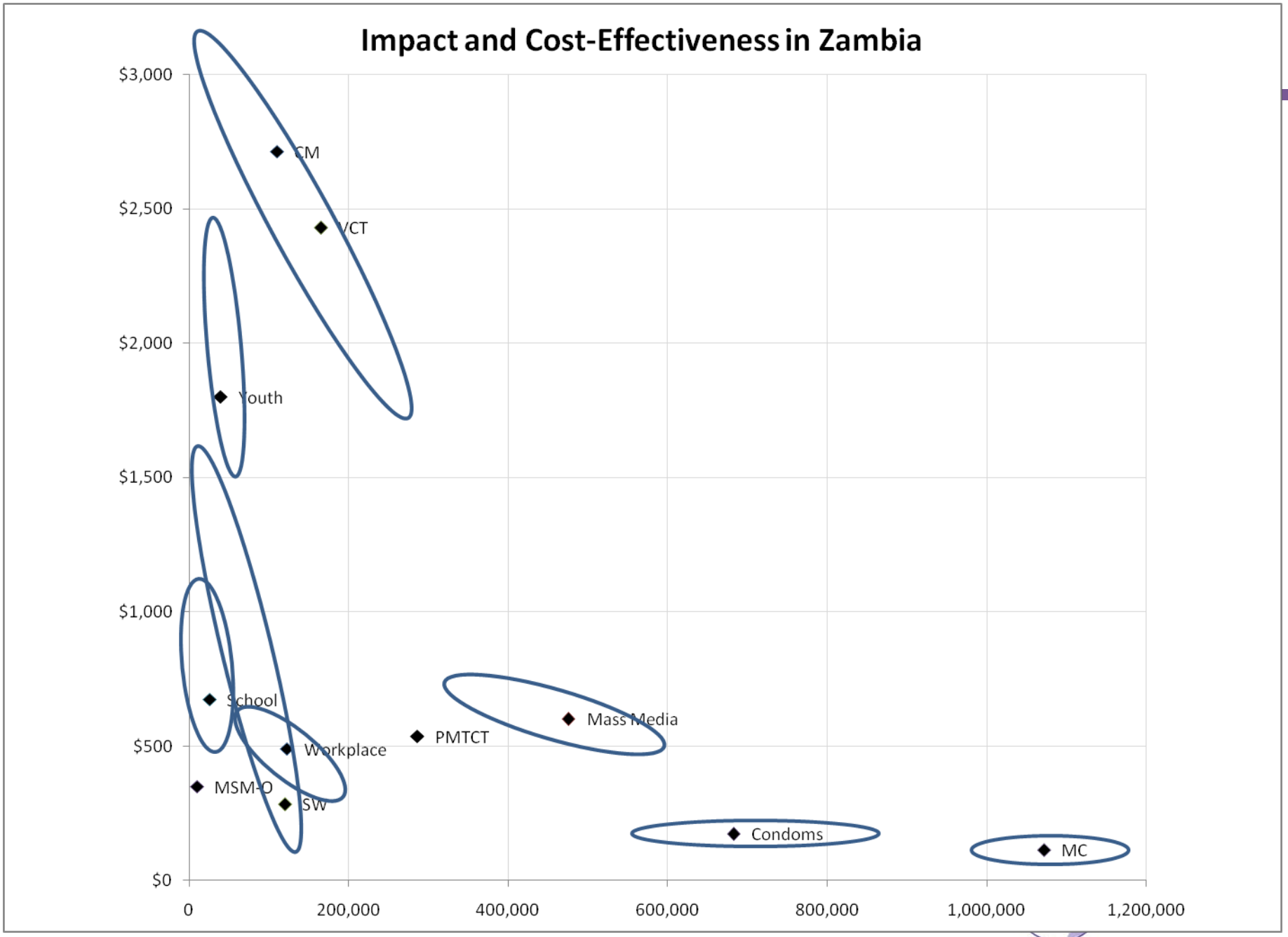
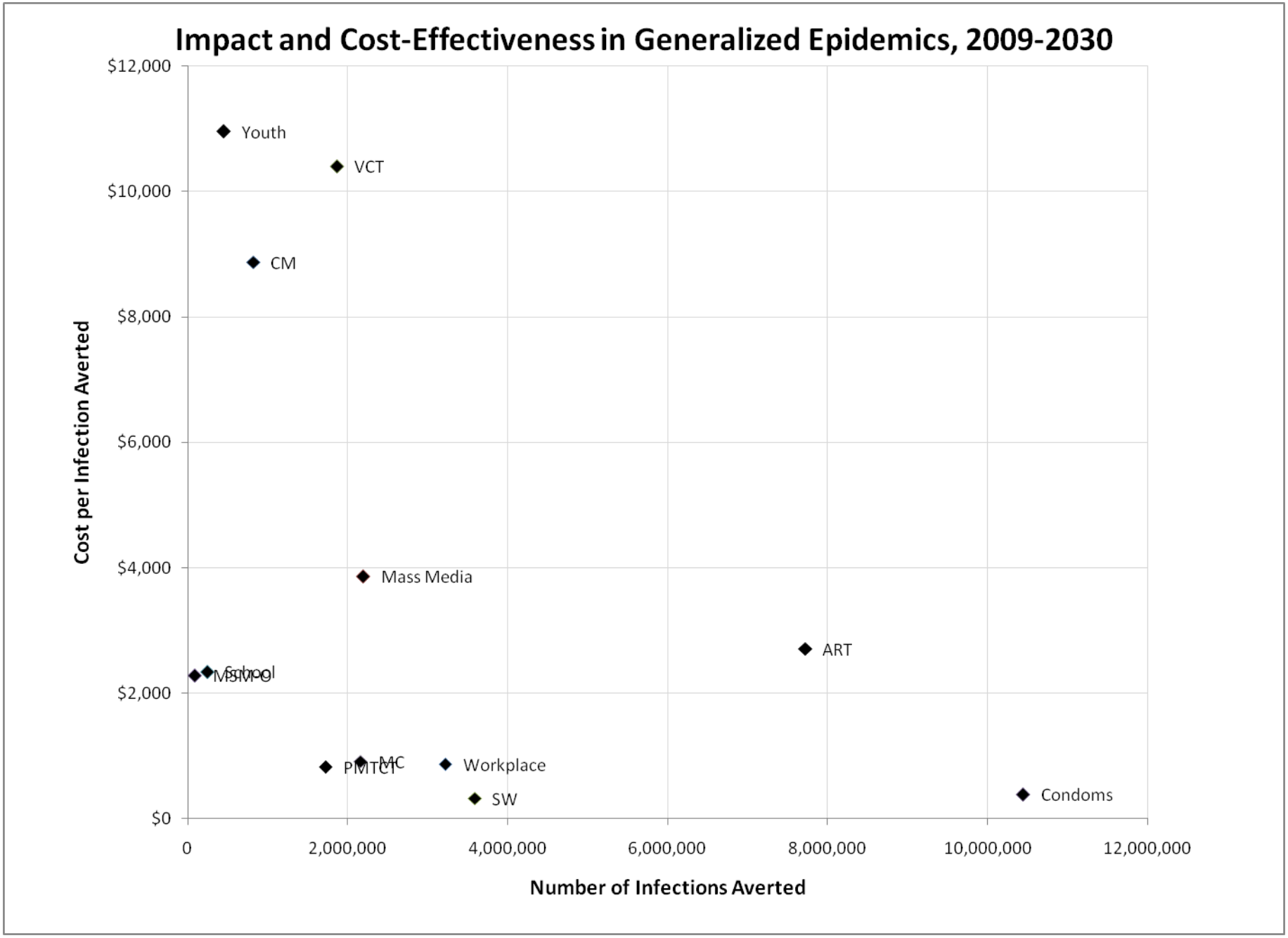
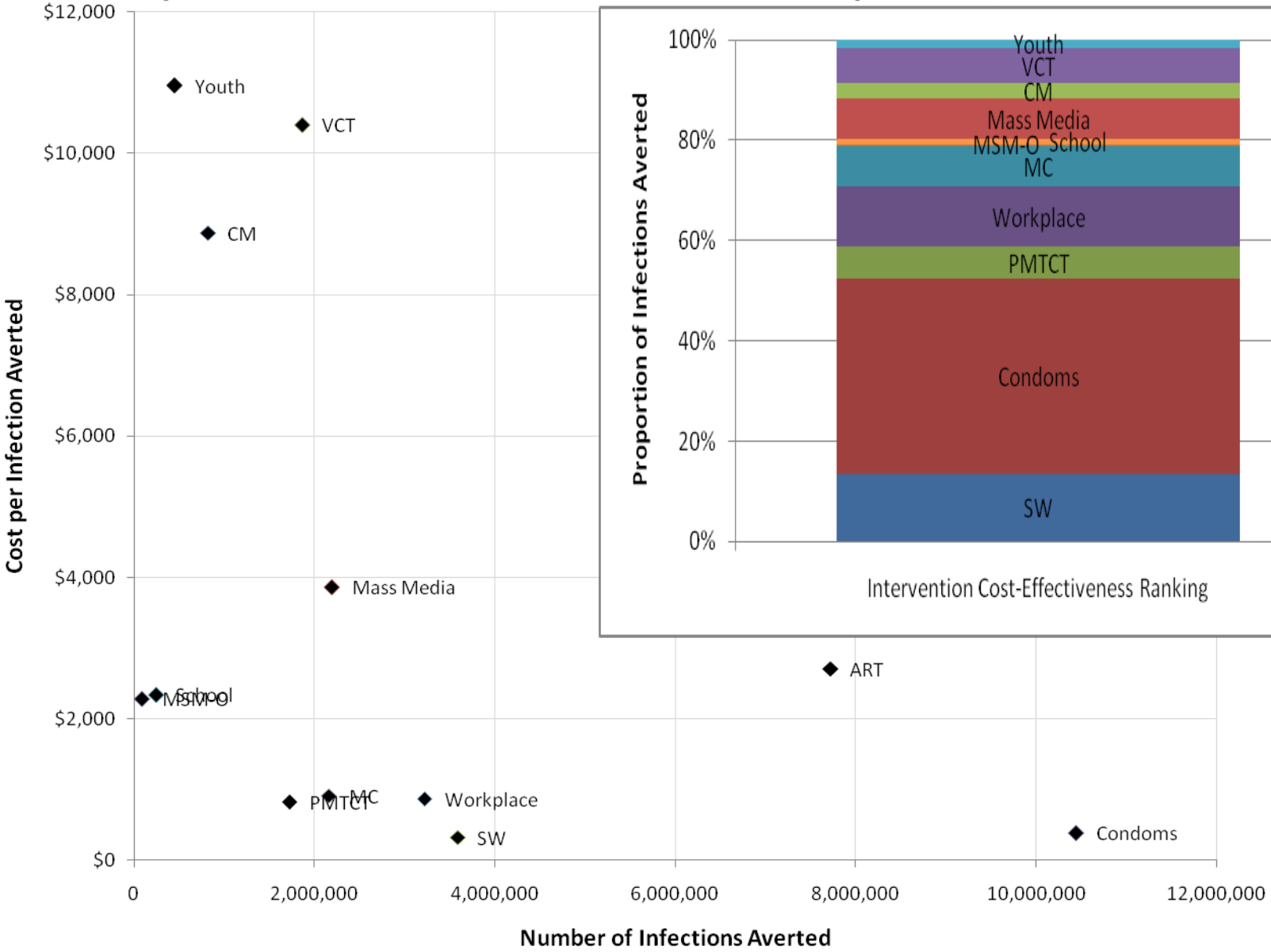

Impact and Cost-Effectiveness in Zambia
$3,000
$2,500
$2,000
$1,500
$1,000
$500
$0
0
200,000
400,000
600,000
800,000
1,000,000
1,200,000
CM
VCT
Youth
School
Mass Media
PMTCT
Workplace
MSM-O
SW
Condoms
MC

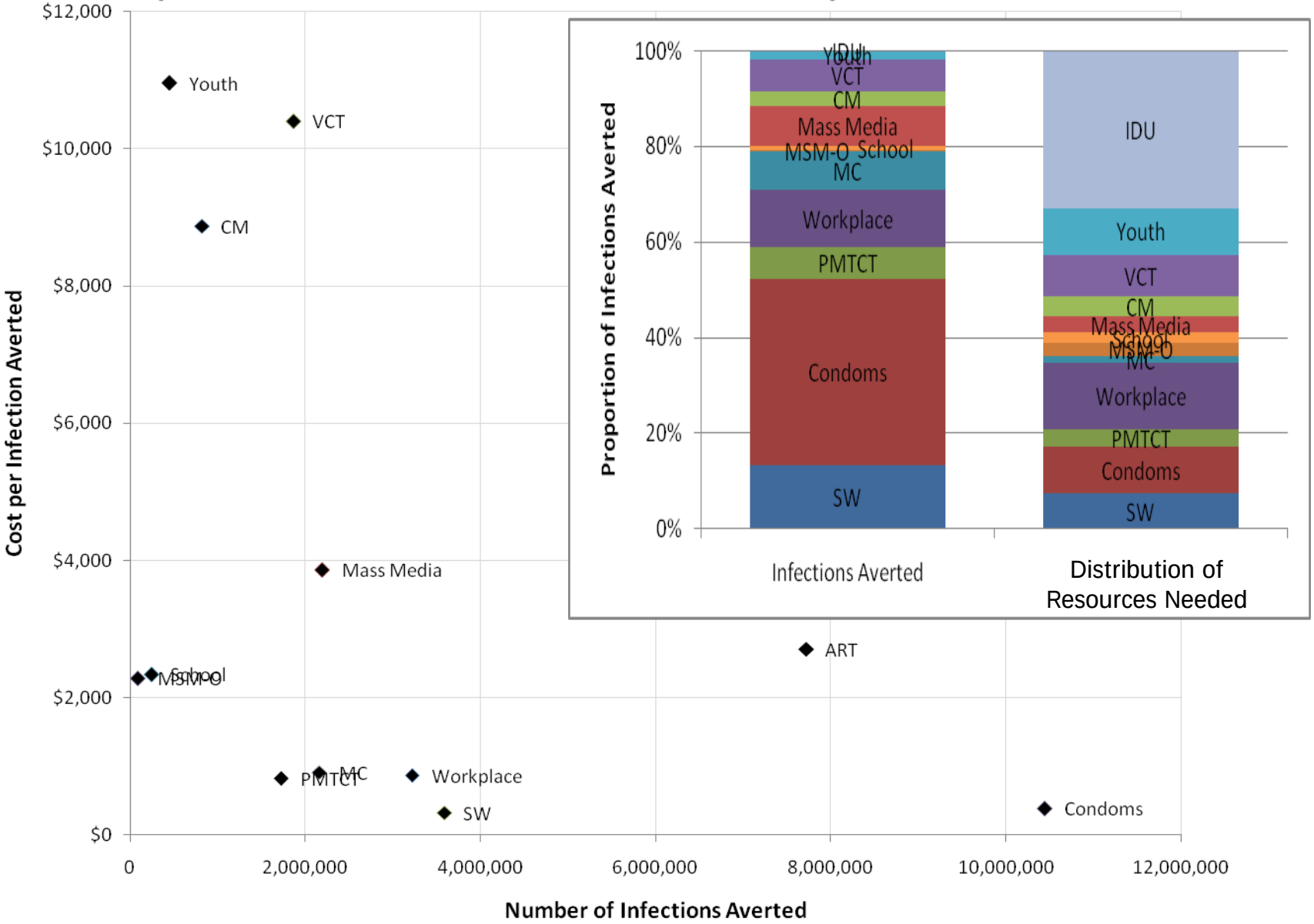

Impact and Cost-Effectiveness in Zambia
$3,000
$2,500
$2,000
$1,500
$1,000
$500
$0
0
200,000
400,000
600,000
800,000
1,000,000
1,200,000
CM
VCT
Youth
School
Workplace
MSM-O
SW
PMTCT
Mass Media
Condoms
MC

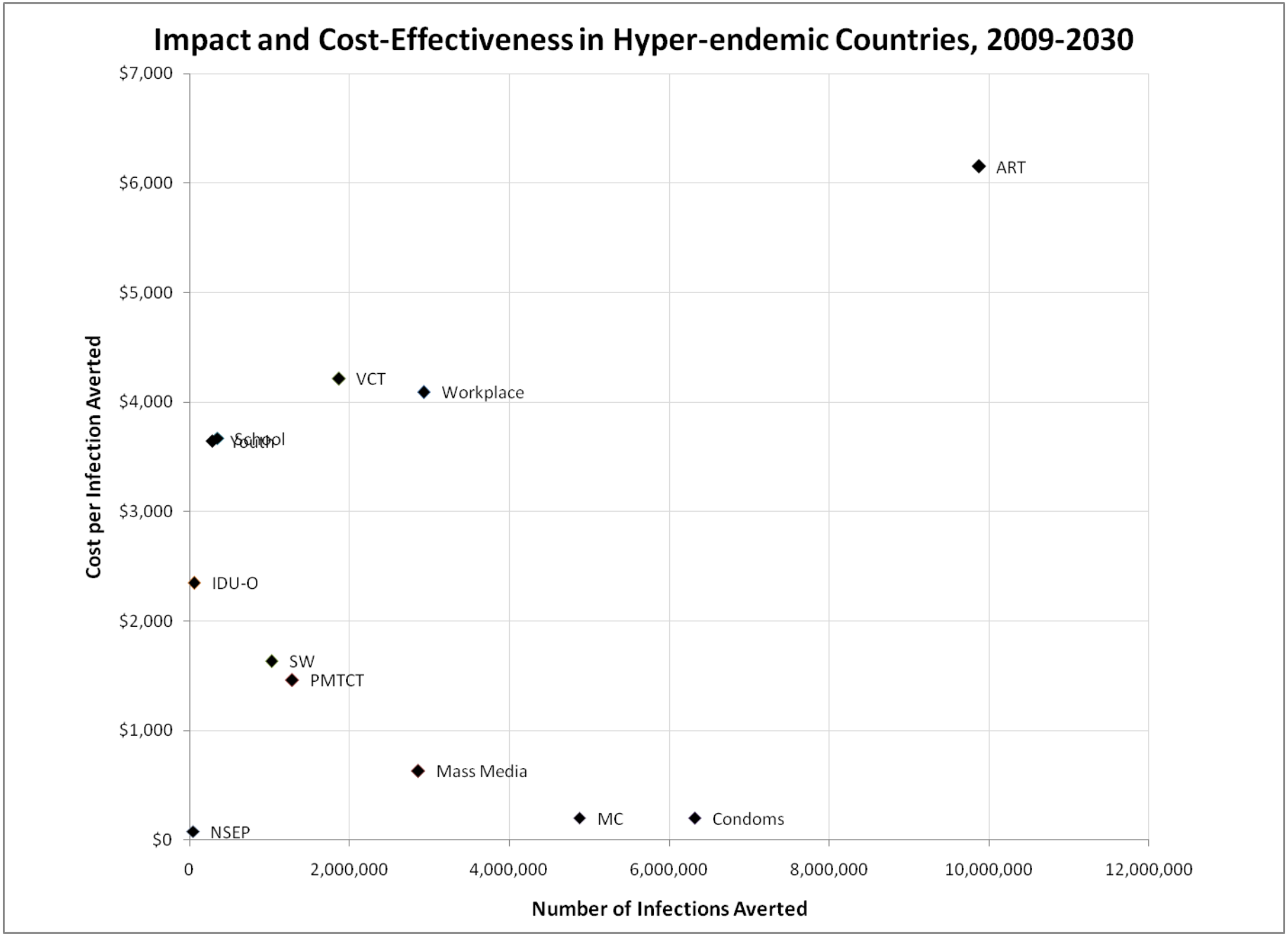

Impact and Cost-Effectiveness in Generalized Epidemics, 2009-2030
Cost per Infection Averted
Number of Infections Averted
$12,000
$10,000
$8,000
$6,000
$4,000
$2,000
$0
0
2,000,000
4,000,000
6,000,000
8,000,000
10,000,000
12,000,000
Youth
VCT
CM
Mass Media
ART
School
MSM-O
PMTCT
MC
Workplace
SW
Condoms

Impact and Cost-Effectiveness in Generalized Epidemics, 2009-2030

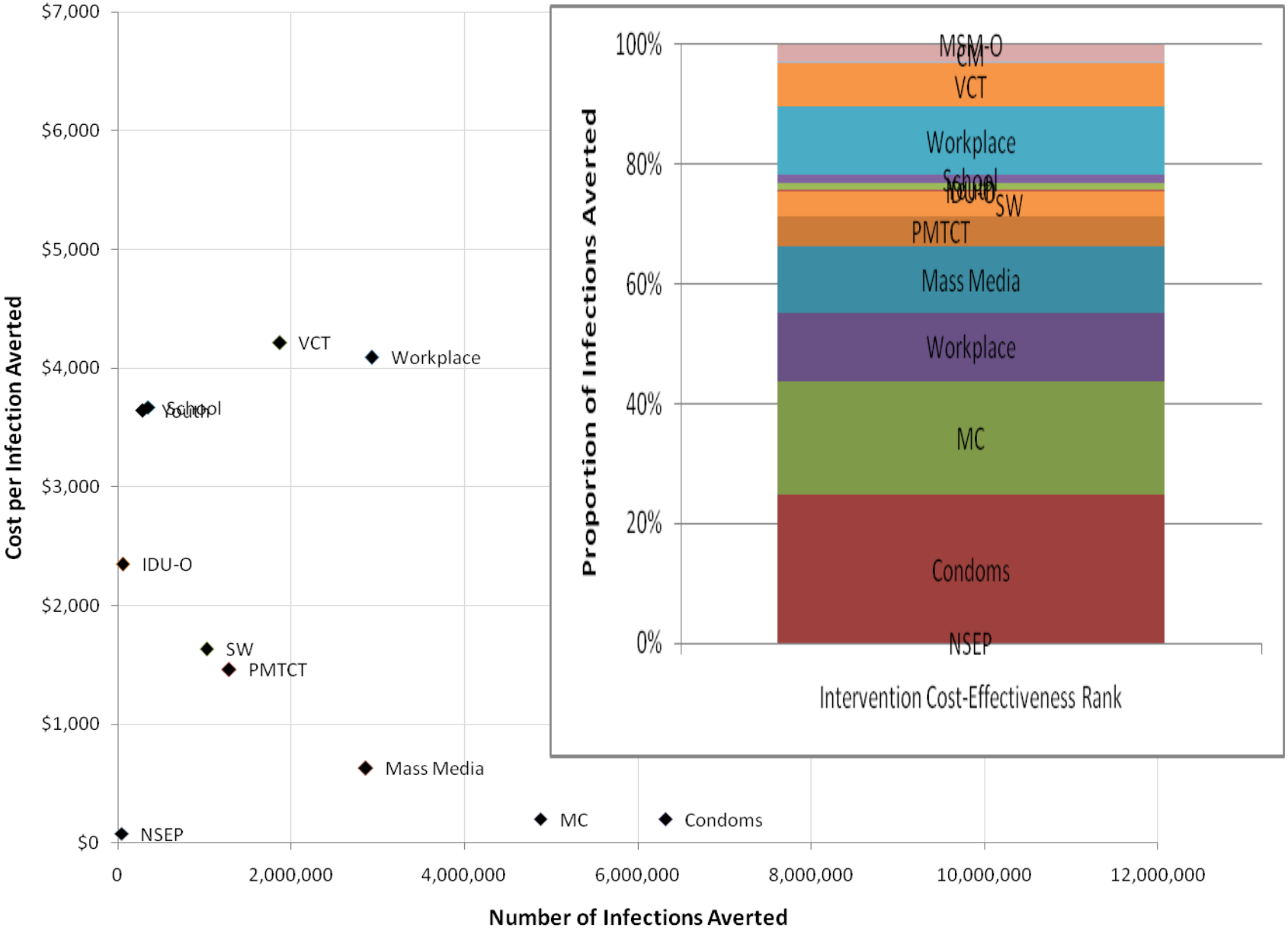


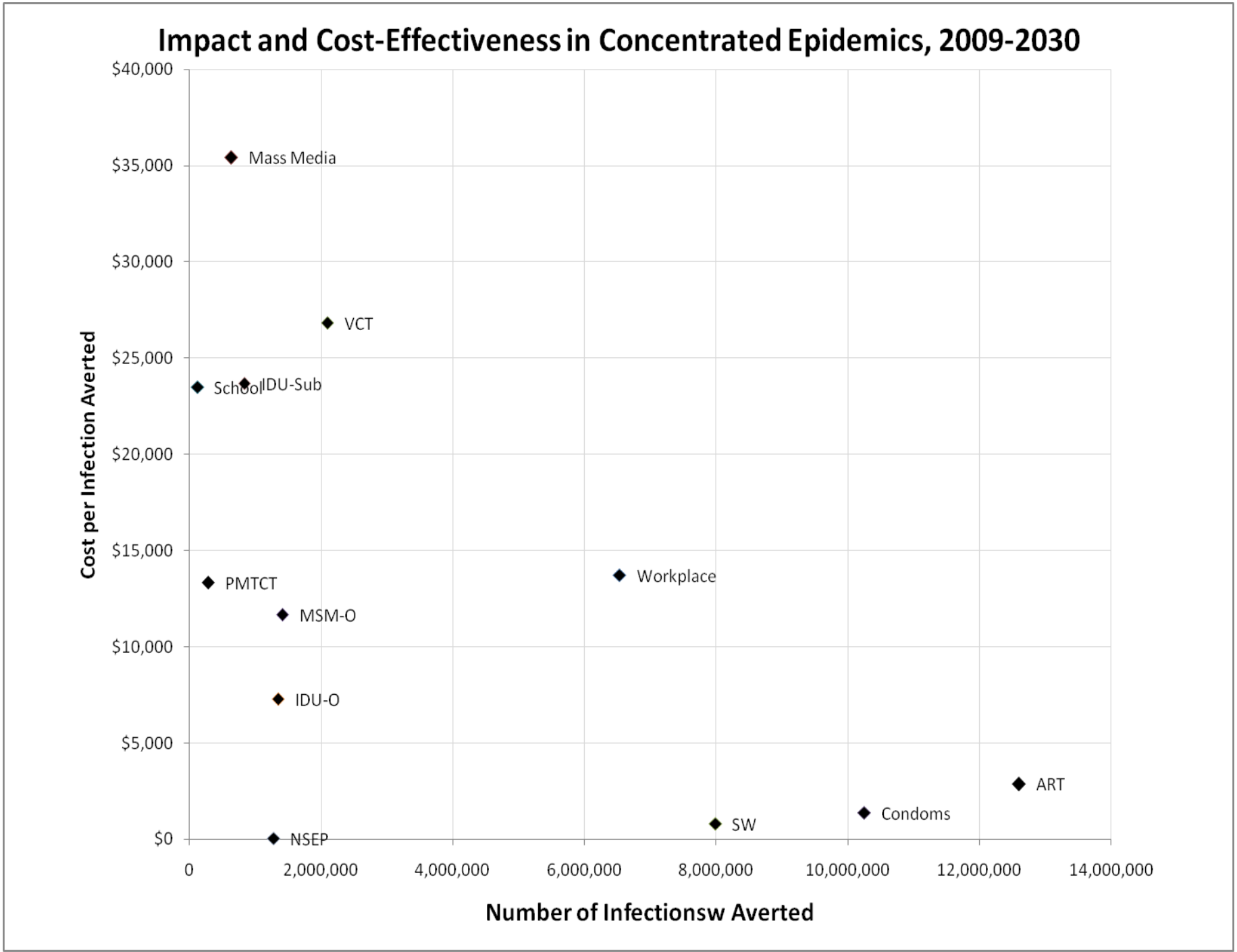
Impact and Cost-Effectiveness in Generalized Epidemics, 2009-2030

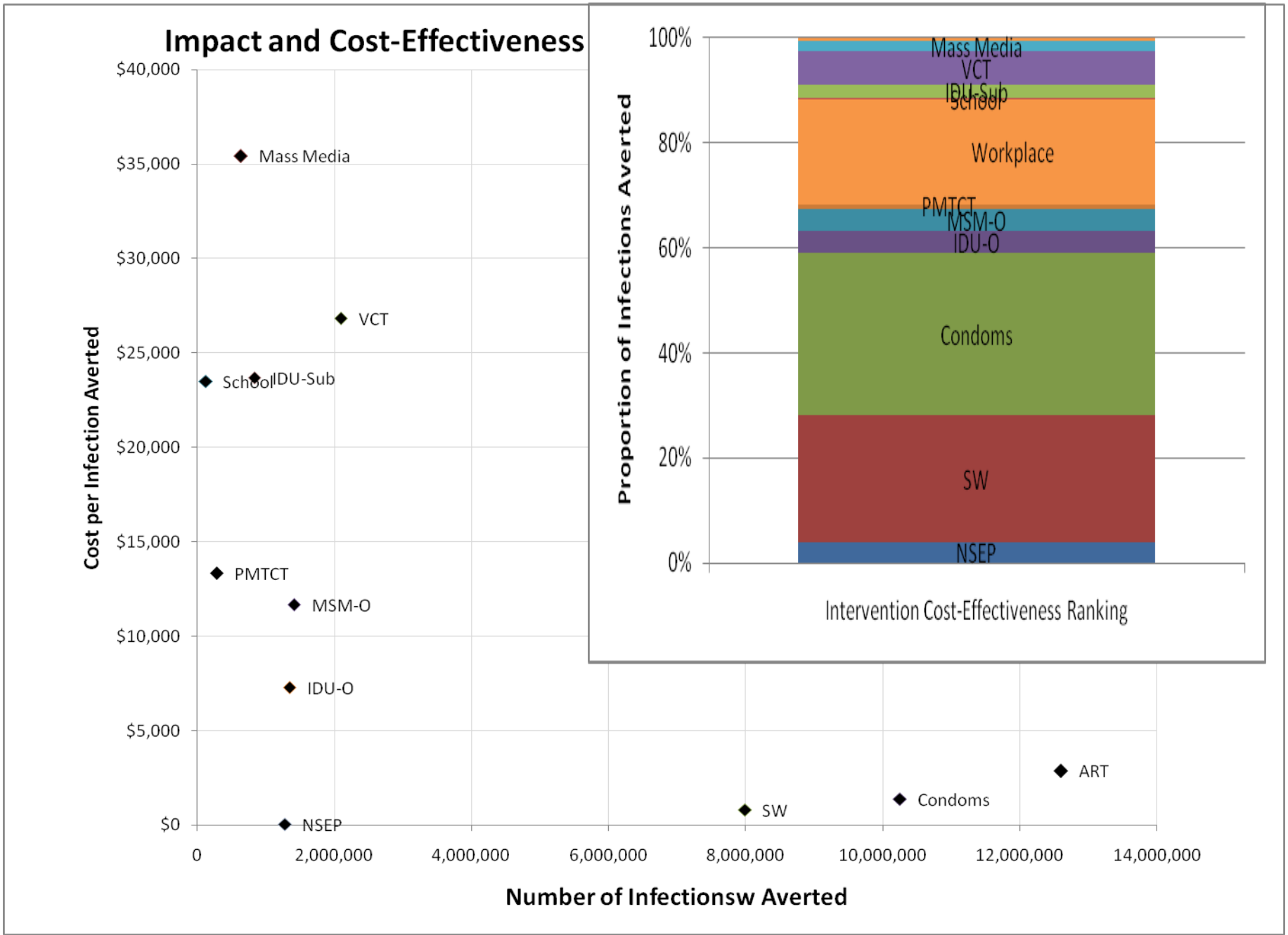



Impact and Cost-Effectiveness in Hyper-endemic Countries, 2009-2030
Cost per Infection Averted
$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0
ART
VCT
Workplace
School
Youth
IDU-O
SW
PMTCT
Mass Media
MC
Condoms
NSEP
0
2,000,000
4,000,000
6,000,000
8,000,000
10,000,000
12,000,000
Number of Infections Averted

Impact and Cost-Effectiveness in Hyper-endemic Countries, 2009-2030




Impact and Cost-Effectiveness in Concentrated Epidemics, 2009-2030
Cost per Infection Averted
$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$0
Mass Media
VCT
School
IDU-Sub
PMTCT
MSM-O
IDU-O
NSEP
Workplace
SW
Condoms
ART
0
2,000,000
4,000,000
6,000,000
8,000,000
10,000,000
12,000,000
14,000,000
Number of Infectionsw Averted


Impact and Cost-Effectiveness
Cost per Infection Averted
$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$0
Mass Media
VCT
School
IDU-Sub
PMTCT
MSM-O
IDU-O
NSEP
SW
Condoms
ART
0
2,000,000
4,000,000
6,000,000
8,000,000
10,000,000
12,000,000
14,000,000
Number of Infectionsw Averted
Proportion of Infections Averted
100%
80%
60%
40%
20%
0%
Mass Media
VCT
IDU-Sub
School
Workplace
PMTCT
MSM-O
IDU-O
Condoms
SW
NSEP
Intervention Cost-Effectiveness Ranking

Benefits and limitations

- Benefits
  - Stimulating dialogue about policy
  - Rank-ordering/relative cost-effectiveness calculations
- Limitations
  - Self-reported behavior
  - Data limitations

Data requirements

- Initial application
  - Target populations
  - Unit costs
  - Current and future coverage (policy lever)
- Full application
  - Risk group populations
    - Size & HIV/STI prevalence rates
  - Default epi parameters

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Conclusions

- A focus on the most cost-effective programs could produce significant prevention impact with fewer resources
- The mix of interventions must be tailored to the context
- Other activities will be needed to support successful scale up of these interventions
- ART scale-up will contribute importantly to prevention success

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