



ART Resource Requirements and Potential Efficiency Gains in Tanzania

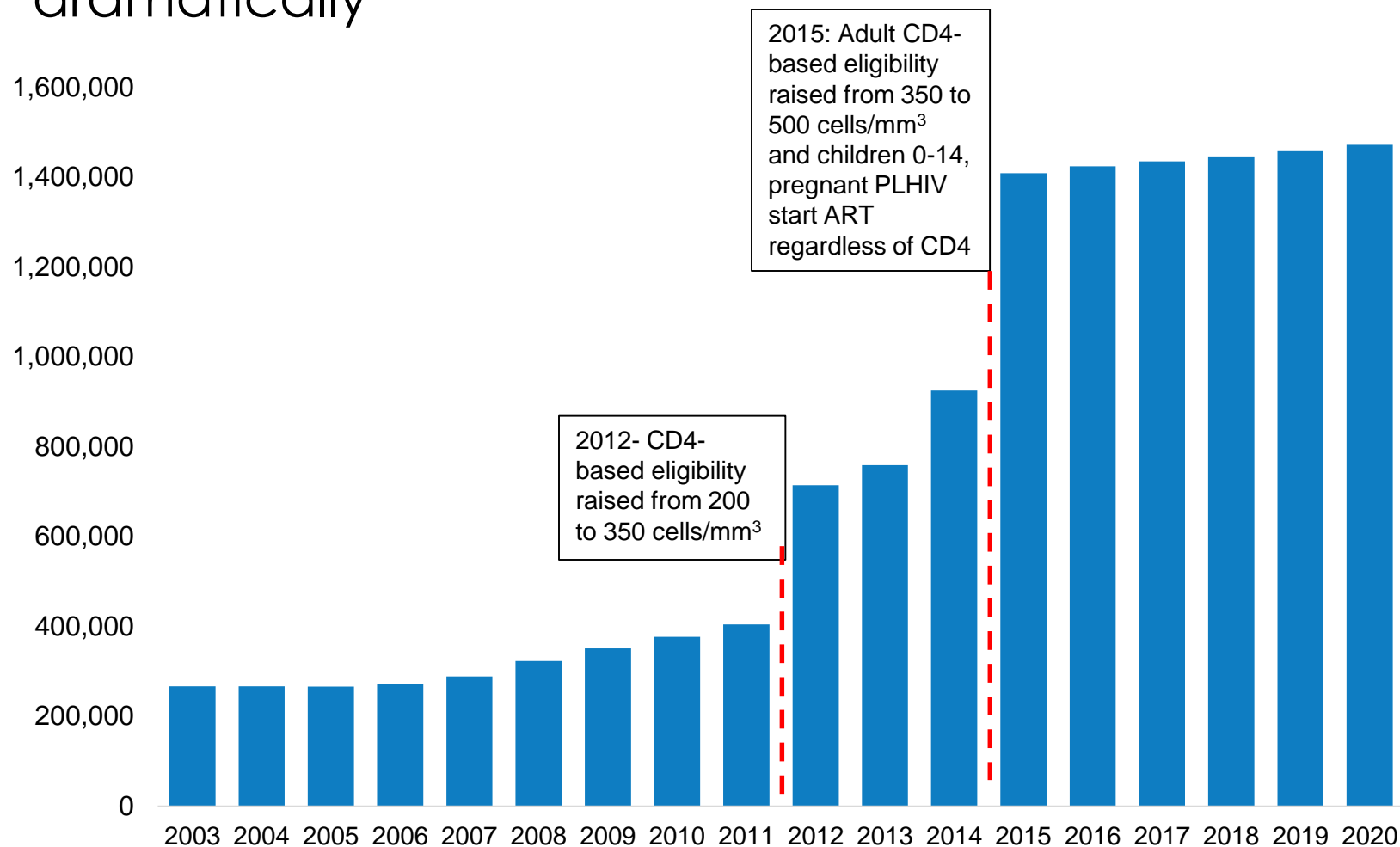
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Executive Summary

- The weighted average site-level cost of ART in Tanzania is estimated to be approximately \$279 per adult and \$307 per child treated, per year.
- The costs of achieving NACP targets are projected to rise from \$238 million in 2015 to \$451 million by 2020. This represents a 91% increase in treatment costs.
- With the most efficient service delivery model, NACP's targets could be achieved while, reducing the resource requirements to \$359 million by 2020.

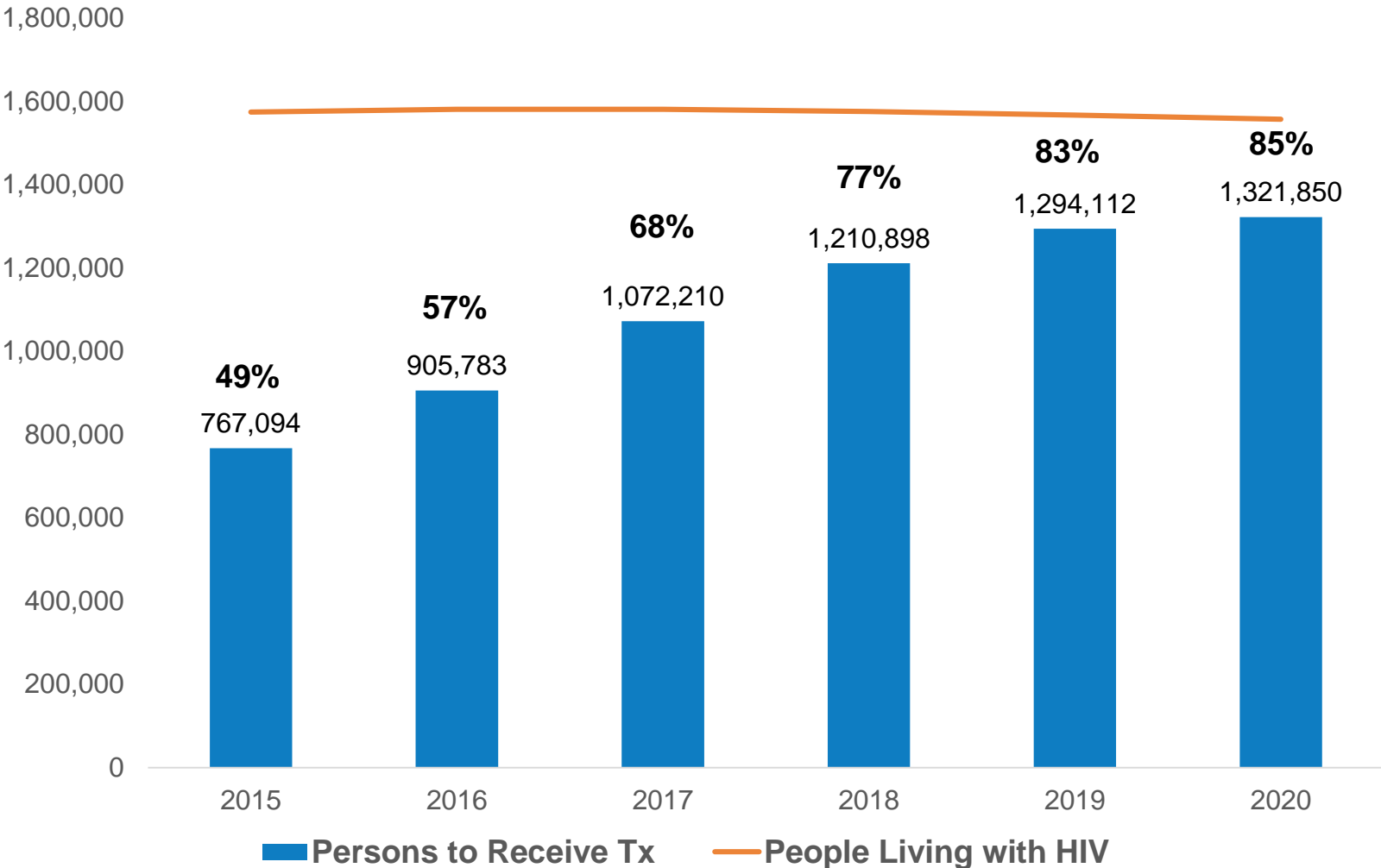
As the treatment eligibility criteria has changed, the number of people eligible for treatment has increased dramatically



Purpose of analysis

1. Calculate the cost of site-level ART service delivery to efficiently achieve the NACP targets in Tanzania
2. Assess potential monetary savings associated with delivering treatment services more efficiently

Tanzania's Planned Treatment Scale-Up Should Increase Coverage from 57% to 85% of Persons Needing Treatment by 2020



Source: National AIDS Control Program targets; Spectrum (2013) estimates of Persons Requiring Treatment in Tanzania.

Assumptions

Unit Costs and Mark-ups

- Drug commodity costs are fixed over time period of projection
- Supply chain costs will be 24.6% of ARV and lab costs
- The human resource and overhead costs are based on a Tanzania-specific facility-based costing study* (2013)

Targets

- Targets for scaling-up ART are as indicated by NACP, with dramatically increased coverage between 2015 and 2020.

Outcomes and “Stable Patients”

- 4% of patients per year will fail first line therapy and will switch to second line therapy
- 70% of all patients on treatment in a year are “stable”.

* Paxton, Dutta, et al. (2013). *Outcome-adjusted ART costing in Tanzania using IQSolutions data*. LEAD Project. Tanzania: Dar es Salaam (unpublished)

How many ART patients in Tanzania are “stable”?

- Who are “Stable patients”?
- 5th Ed. Tanzanian guidelines
 - No definition of ‘stable’ patient
 - Dichotomy of ‘On ART’ vs. ‘Treatment failure’ (VL>1000 copies/ml)
- OGAC guidance*
 - Stable=undetectable viral load
 - Or based on “simple clinical criteria”
- We assumed **70%** stable, which may be optimistic for Tanzania (table). We vary this in sensitivity analysis.

Study Populations & Findings for Tanzania	Source
Ped. & adolescent, 2-19 years. Optimal adherence \geq 80% of pills taken. 70% optimal in 2012	Nyogea et al. 2014
Pediatric cohort started 2008-09, follow-up 2012-13. Viral suppression. 76% suppressed.	Dow et al. 2014
New patients enrolled in 2010 in Temeke. Viral suppression at 12 months. Value: 69% females, 45% males	Mosha et al. 2013
First-line patients, DSM in 2007-08. Viral suppression. 41% suppressed after median 16.5 months of ART.	Mosha et al. 2014

* OGAC. “PEPFAR: Increasing program impact and efficiency through data analysis”. Presentation at the World Bank. February 2016. Washington, DC

Three scenarios for cost analysis

1. **Current Practice**: This scenario represents existing service delivery practice in Tanzania (as of late 2015) based on data collected from health workers and sites.
2. **Tanzanian Guidelines (5th Edition)**: This represents the recommended treatment practice in Tanzania, with specific laboratory tests performed and the number of visits planned for new and ongoing ART patients.
3. **Efficient Service Delivery (PEPFAR COP '16)**: This is aligned with the Tanzanian guidelines but improves the efficiency of service delivery based on some PEPFAR guidance. This includes a reduction of laboratory tests, clinical visits, and the use of pharmacy refill visits.

ART targets and costs: Three scenarios

	1. Current Practice	2. Tanzanian Guidelines (5th Edition)	3. Efficient Service Delivery (PEPFAR COP 2016)
Targeted number receiving ART	<ul style="list-style-type: none">• Eligibility for treatment will remain at current criteria (CD4<500)• Numeric annual targets developed by NACP - targets are based on program data on past enrollment & meeting the national coverage goals		
ARV costs	<ul style="list-style-type: none">• Regimen costs per person per year and percentage of patients receiving each regimen are according to NACP quantification (July 2015)		

Future laboratory management of new and continuing patients: three scenarios (needs refinement)

<i>Annual number of tests per patient</i>	1. Current Practice, all patients		2 & 3. Tanzanian Guidelines / Efficient Service Delivery		
	2015	2020	New*	Continuing	
			2015-20	2020 (Stable patients) ^c	2020 (Non-stable patients)
CD4	2 tests	2 tests	1 test	-	2 tests
Creatinine**	-	-	63% get 1 ^a	63% get 1 ^a	63% get 1 ^a
Clinical chemistry[#]	2 tests	2 tests	1 test	-	1 test
Hb**	-	-	36% get 1 ^b	36% get 1 ^b	36% get 1 ^b
Hematology	2 tests	2 tests	1 test	-	1 test
Viral load	0 tests	1 test	1 test	1 test	1 test

* Less than 12 months of ART. # Includes AST, ALT, glucose

** Hemoglobin is a part of full hematology. Creatinine clearance is part of a clinical chemistry panel.

- a. 63% of all 1st line patients are assumed to be on a TDF-containing regimen in 2020. 2nd line: 55%. Ped. ratios differ.
- b. 36% of all 1st line patients are assumed to be on an AZT-containing regimen in 2020. 2nd line: 25%. Ped. ratios differ.
- c. 70% of all patients are assumed to be stable in 2020 (varied in sensitivity analysis).

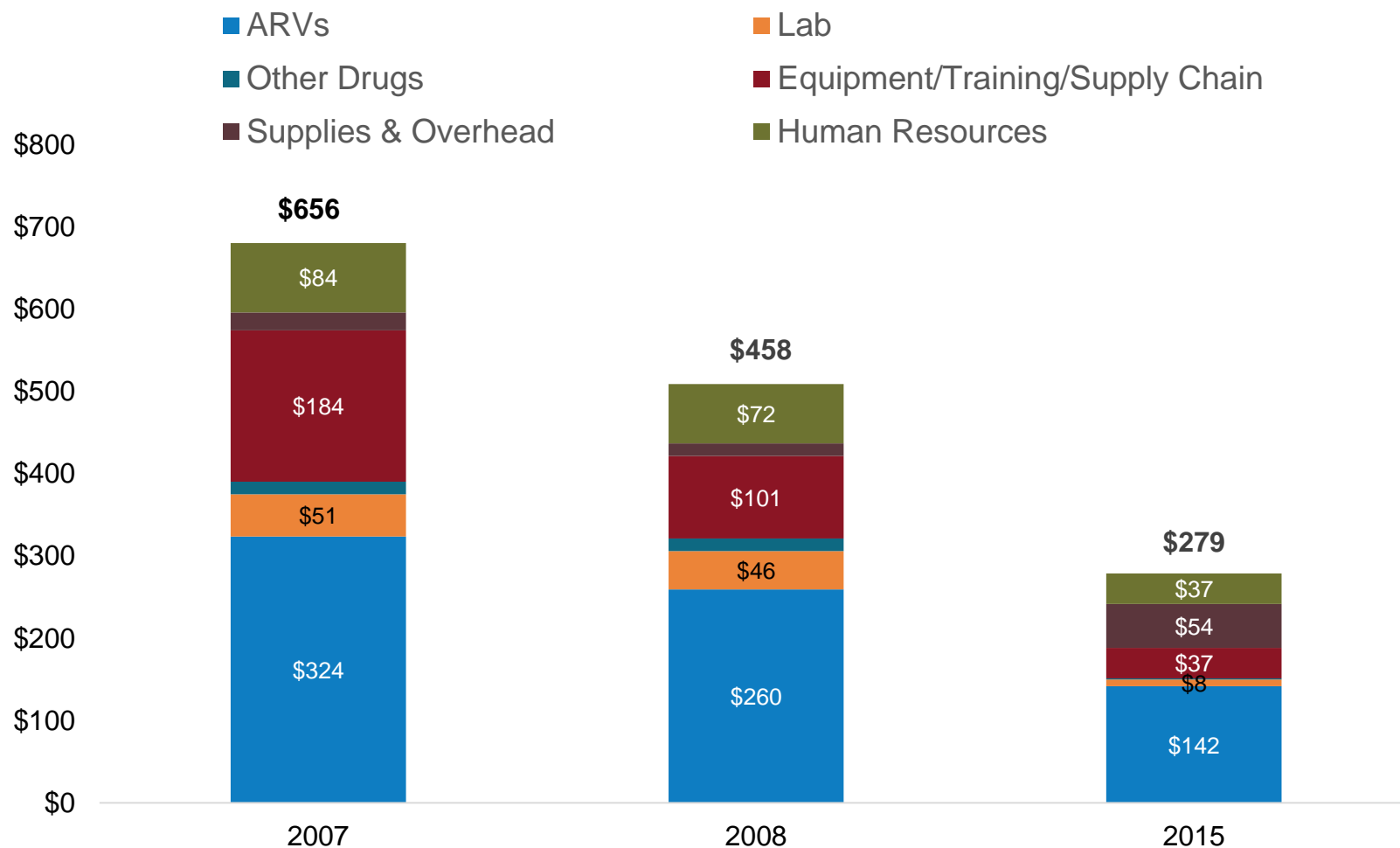
Facility visits: clinical and refill

<i>Assumptions</i>	1. Current Practice*	2. Tanzanian Guidelines (5th Edition)	3. Efficient Service Delivery (PEPFAR COP 2016)
Clinical visits for new clients	13 visits per year**	5 visits per year	3 visits per year
Clinical visits for stable, continuing clients	12 visits per year	4 visits per year	2 visits per year
Clinical visits for non-stable continuing clients	12 visits per year	12 visits per year	12 visits per year
Refill visits (non-clinical) for stable, continuing clients	-	8 visits per year	2 visits per year

* Visits include ARV pick-up/refills.

** Twice in the first month

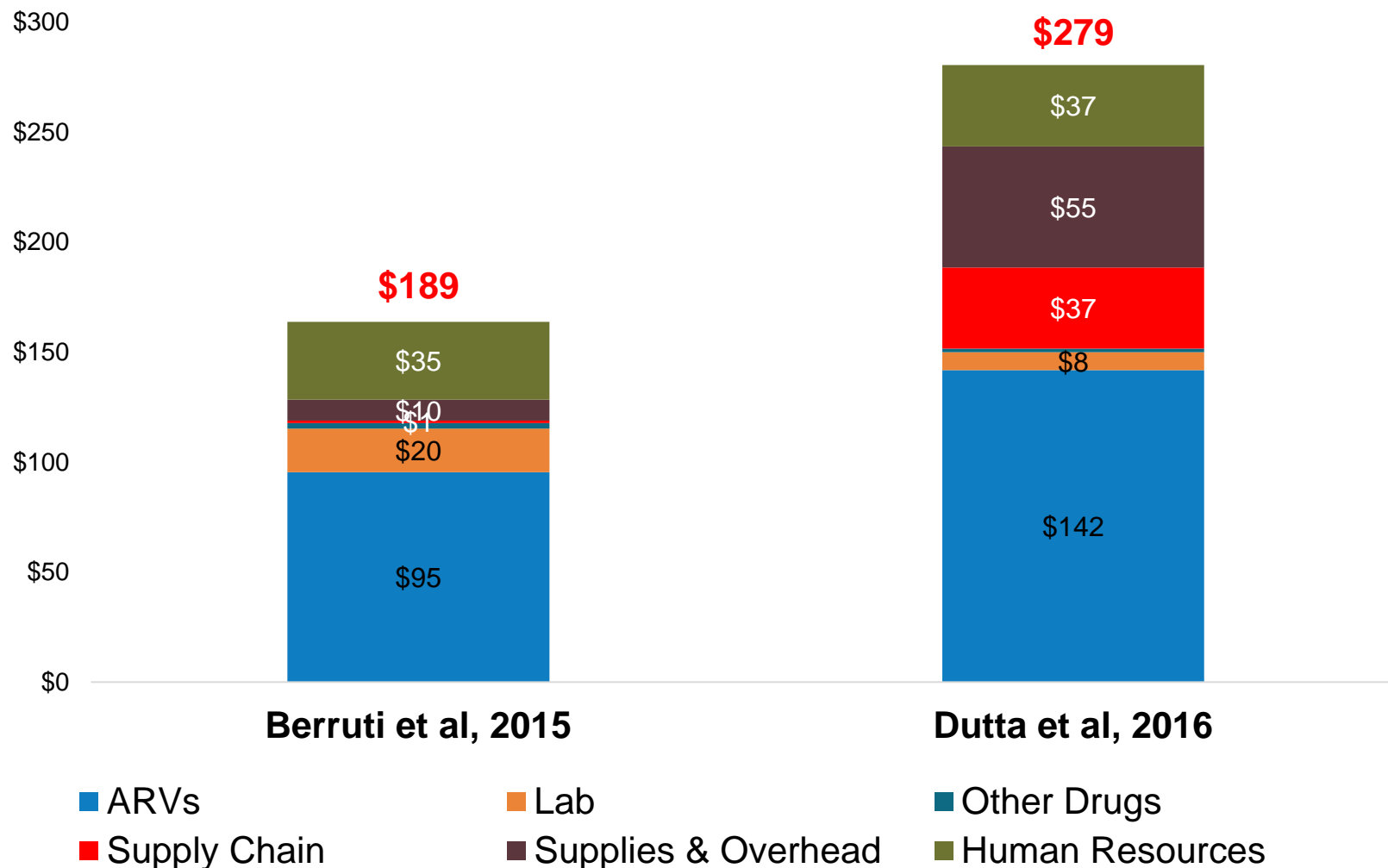
Changes in ART unit cost over time in Tanzania



Sources: For older unit costs: "The Cost of Comprehensive HIV Treatment in Tanzania," Report of a Cost Study of HIV Treatment Programs in Tanzania, 2007-2008 (Berruti et al. 2012). Estimates for 2015 unit cost based on this analysis.

Note: Total unit costs (in bold) for 2007 and 2008 are median estimates and therefore don't match the sum of each component.

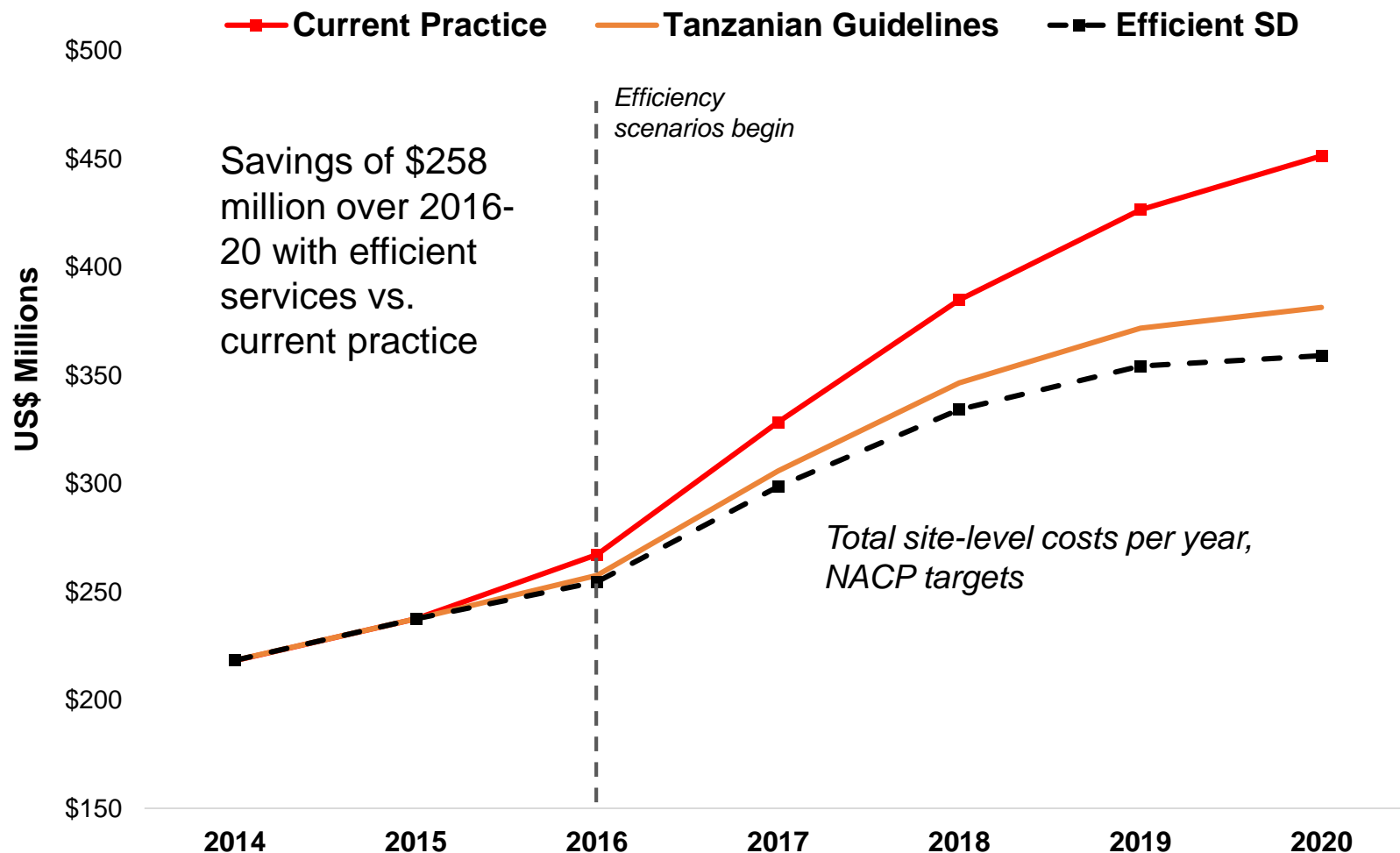
Comparison of This Unit Cost Calculations and Berruti et al analysis



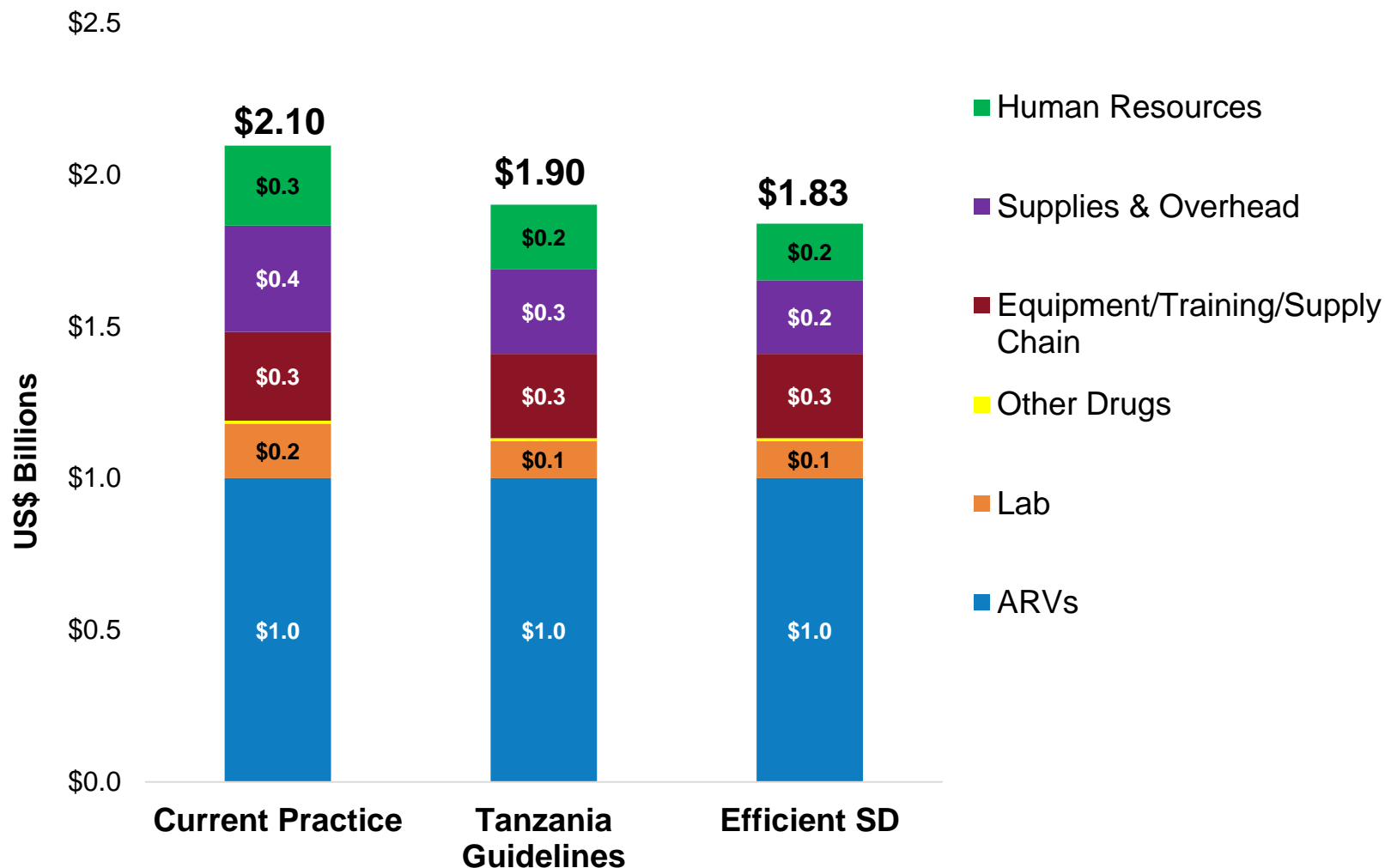
Sources: Berruti et al 2015 are based on the unpublished data currently under review. The Dutta et al 2015 estimates are based on this study. In both cases, the estimates are based on stable patients only.

Note: Total unit costs (in bold) for 2007 and 2008 are median estimates and therefore don't match the sum of each component.

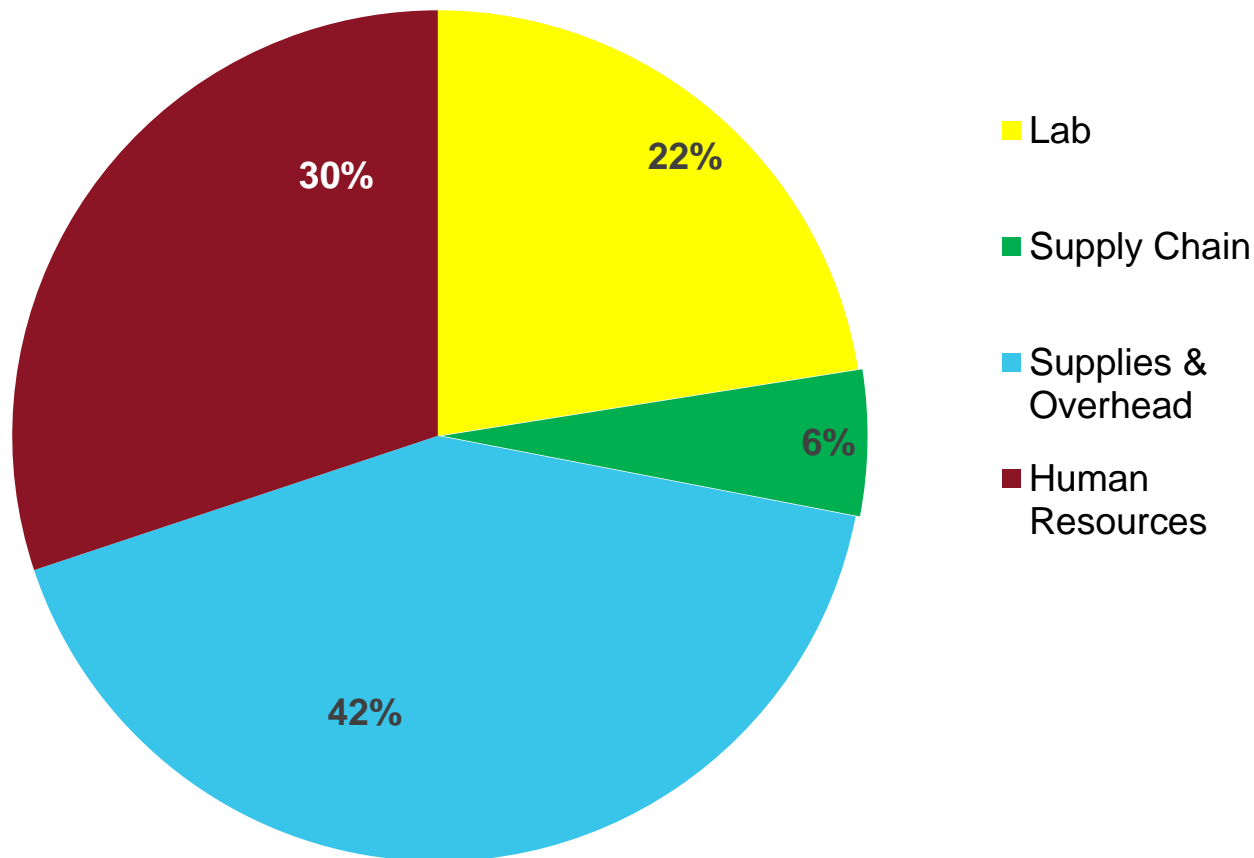
A more efficient delivery of services can make Tanzania's ART program less expensive and more sustainable, predominantly through the reduced need for human resources



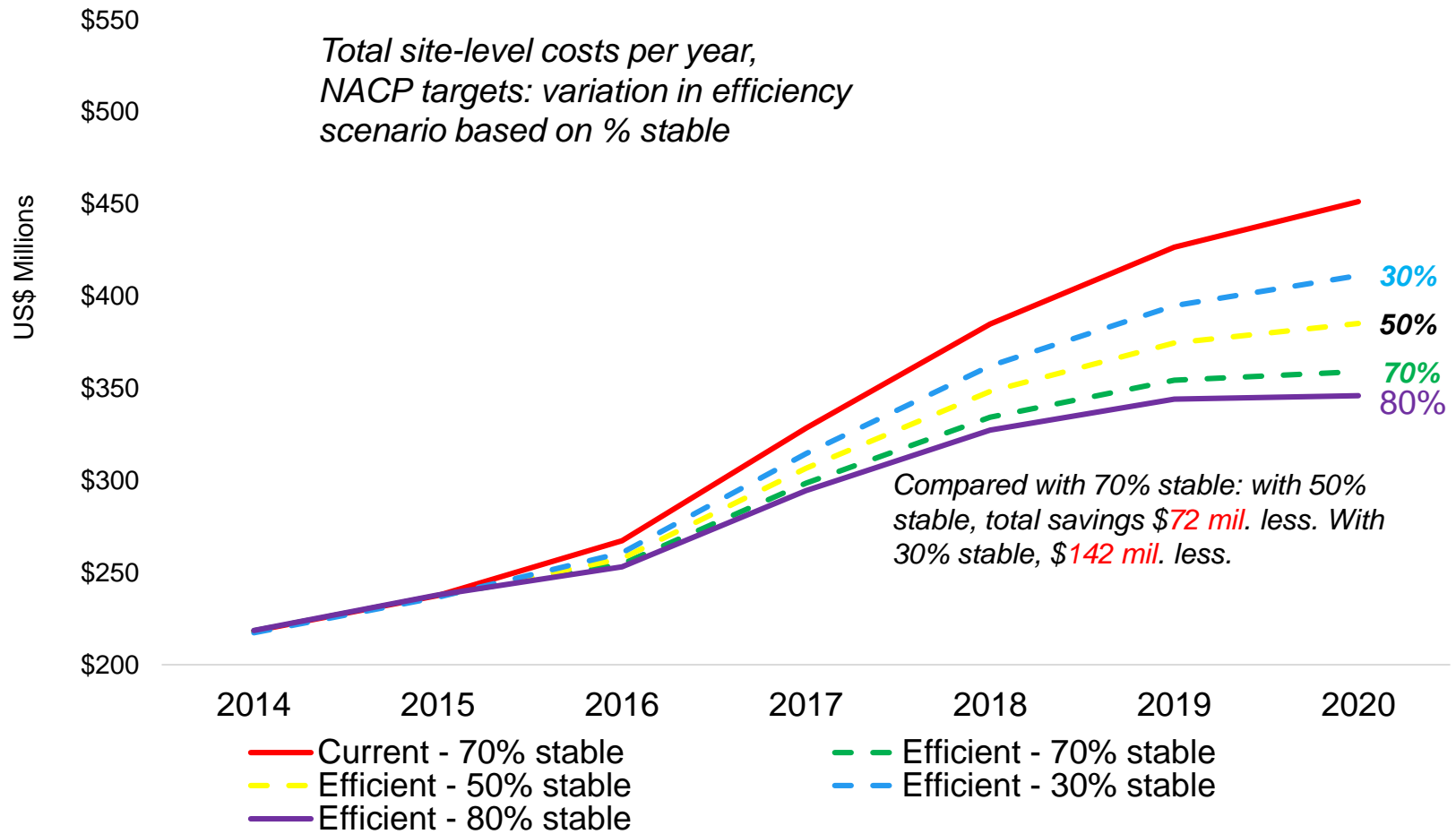
Total site-level resources required between **2016 and 2020** under the three different scenarios



Main components of cost savings between the **Current Practice** scenario and the **Efficient Service Delivery** scenario are savings from overhead/supplies (42%) and human resources (30%)



The benefits of efficiency measures are likely to be significantly reduced if the quality of treatment is not maintained



Summary of Findings

- The site-level unit cost of providing ART to adults in Tanzania is estimated to be \$279 per adult patient per year, rising to \$343 per adult patient per year by 2020.
- This unit cost could be reduced if:
 - Client visits could be reduced from once per month to once per 6 months (with quarterly refill visits) for stable patients
 - The major cost savings are likely to be from human resource and shared overhead/supplies costs
- The total ART costs in Tanzania could be reduced from \$451 million in 2020 to as low as \$359 million if efficiency service deliver measures could be implemented without adverse effects for adherence and follow-up to clients

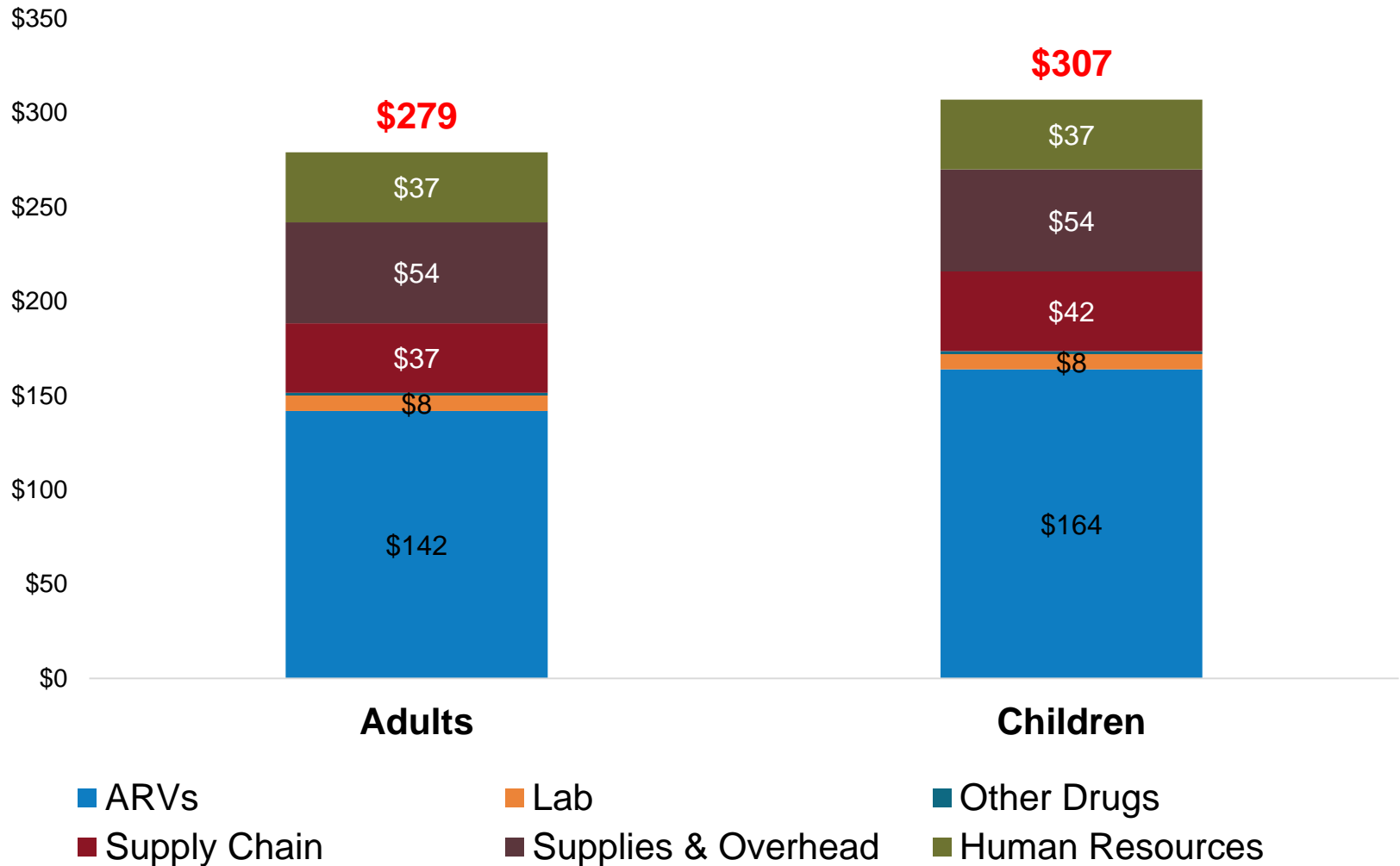
Thank You!

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Child Treatment was Slightly Higher than Adult Treatment



Sources: HPP analysis based on unit costs from NACP quantification. ARVs reflect weighted avg. costs across regimens and lines.