

Measuring the Impact of Vitamin A Programs



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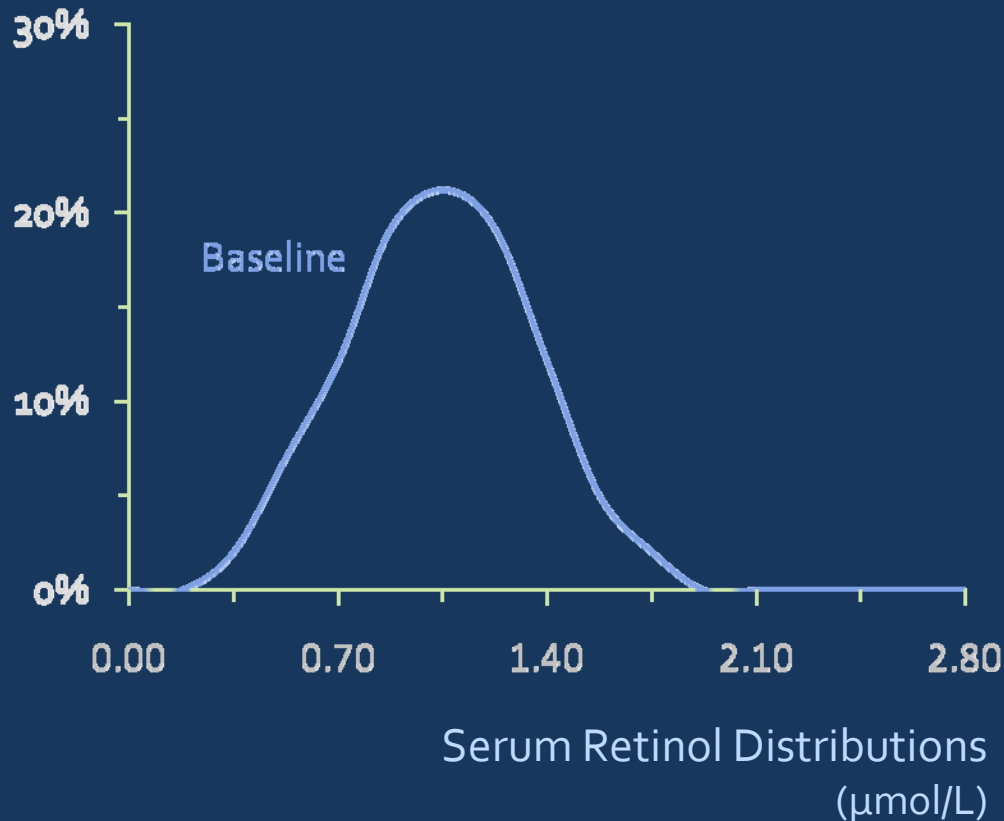
With funding from the United States Fund for UNICEF, New York, NY and
the Bill and Melinda Gates Foundation, Seattle, WA

Key Policy Questions

1. Are vitamin A supplementation and fortification programs having a public health impact?
2. For how long do we need to continue universal vitamin A supplementation?

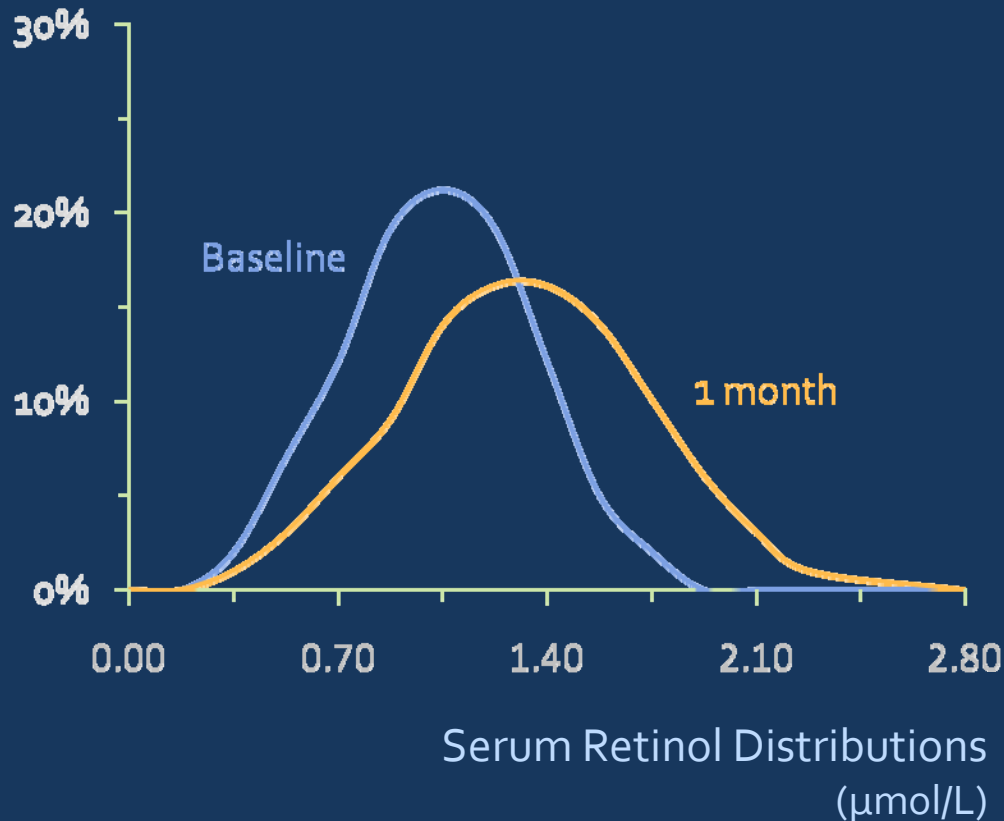
Serum Retinol Response in High-Coverage VAS Program Settings (1)

Philippines (children 1-5 yrs)



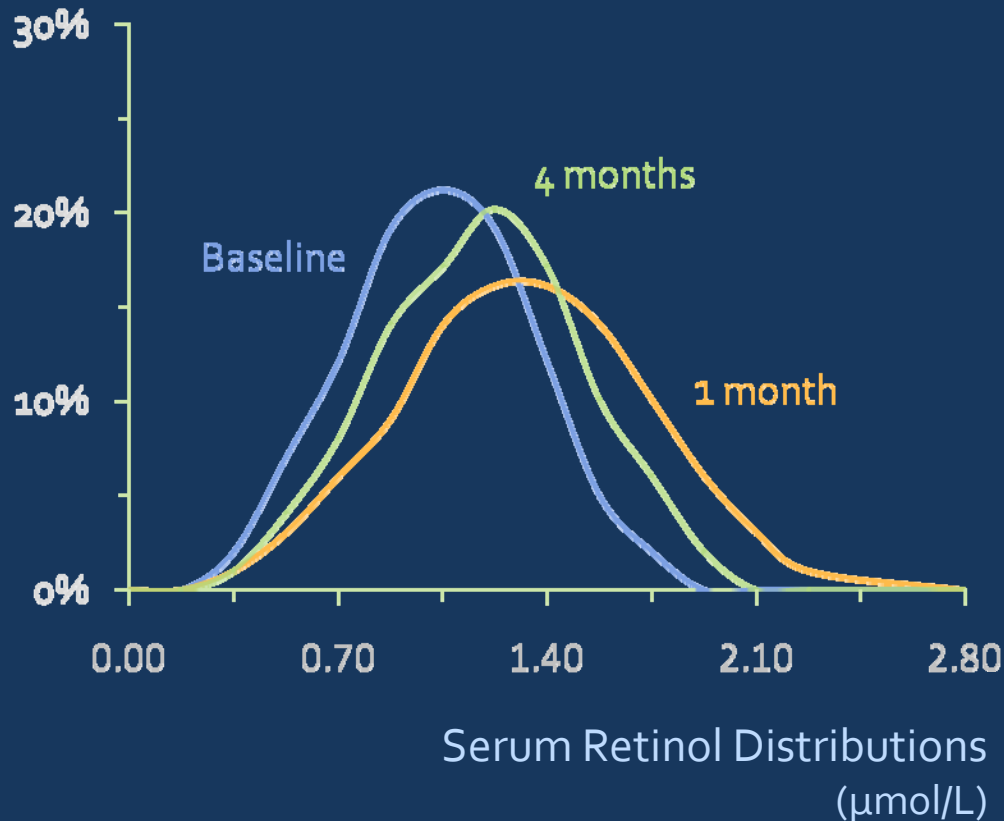
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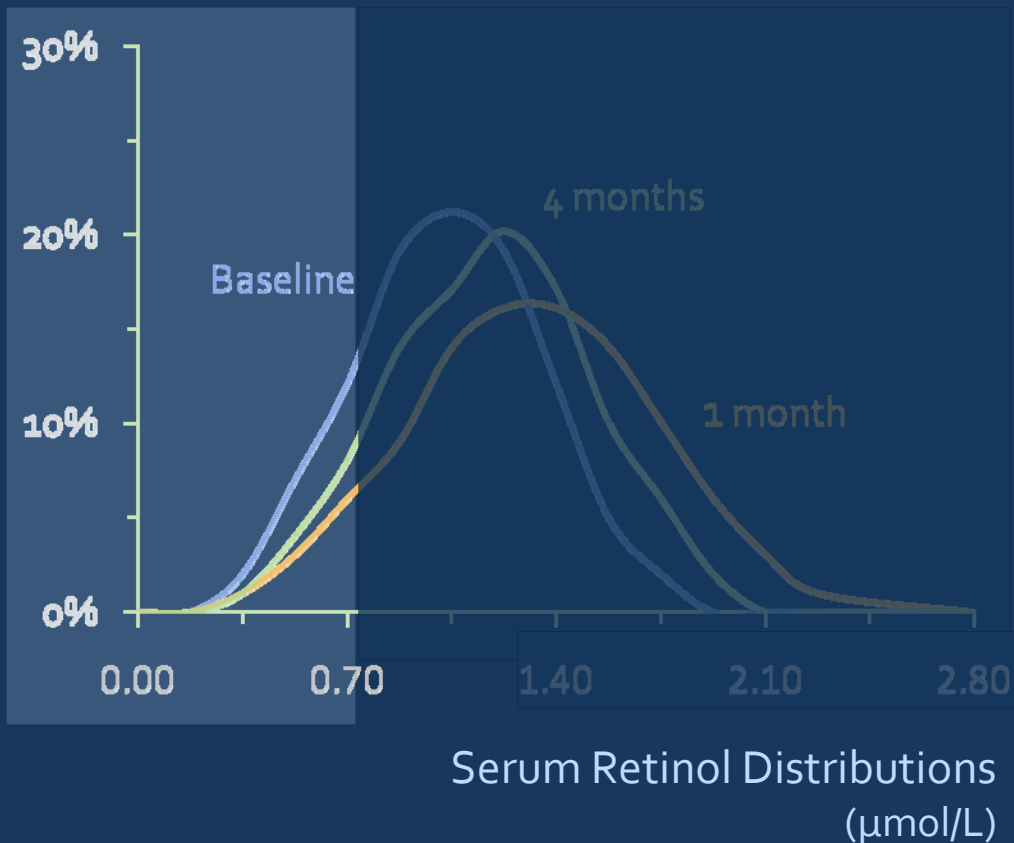
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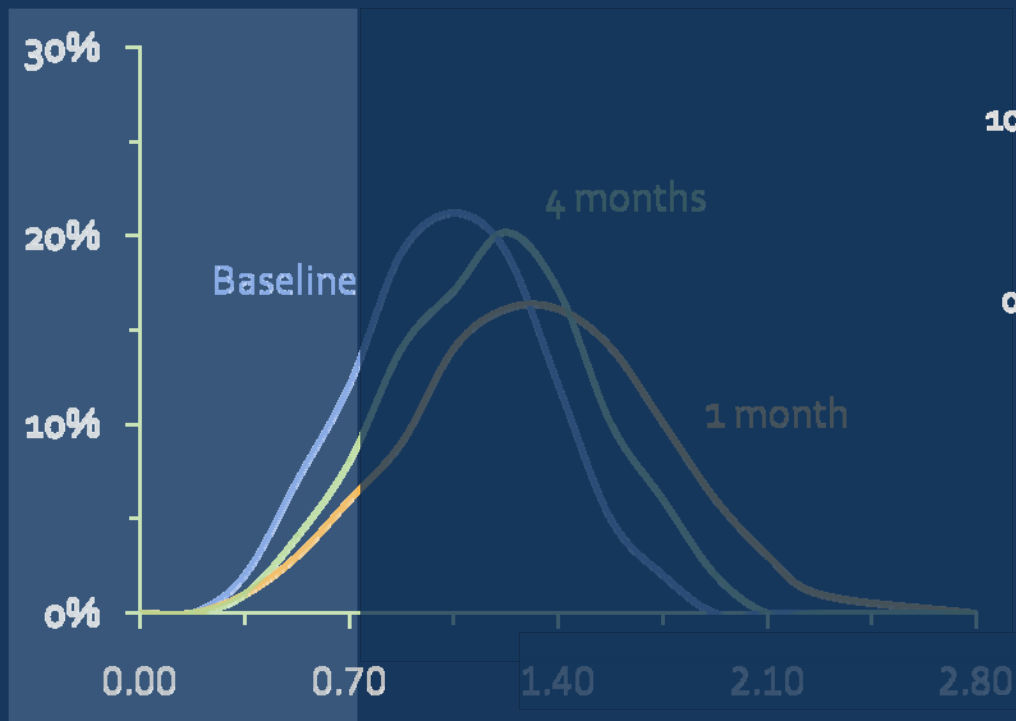
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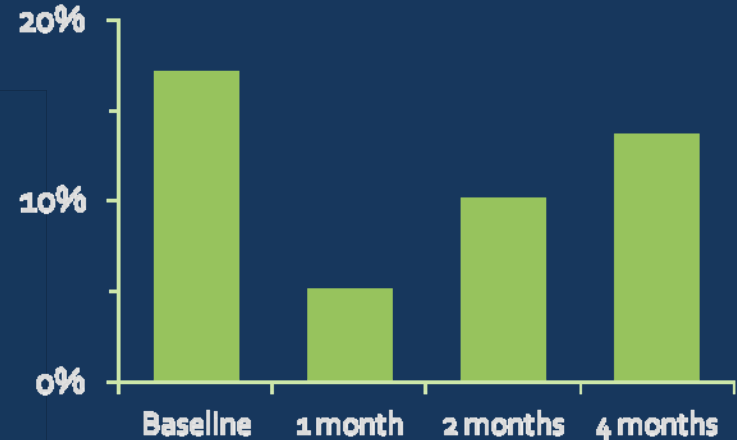


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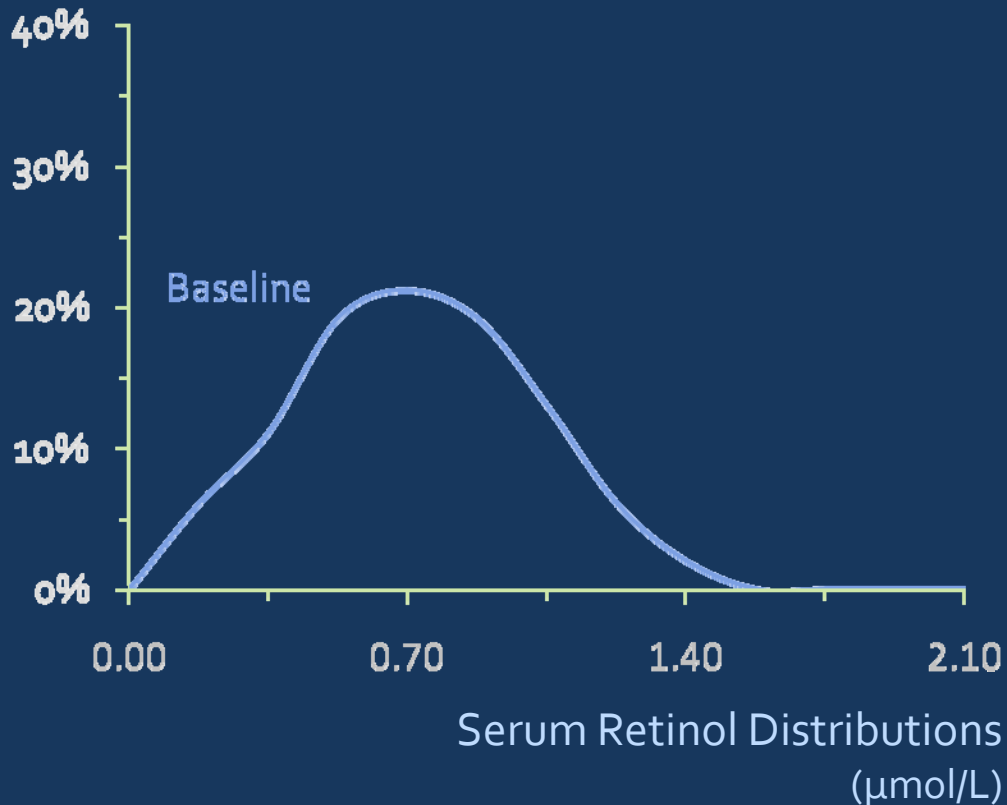
Serum Retinol Distributions ($\mu\text{mol/L}$)



Prevalence low serum retinol (<0.70 $\mu\text{mol/L}$)

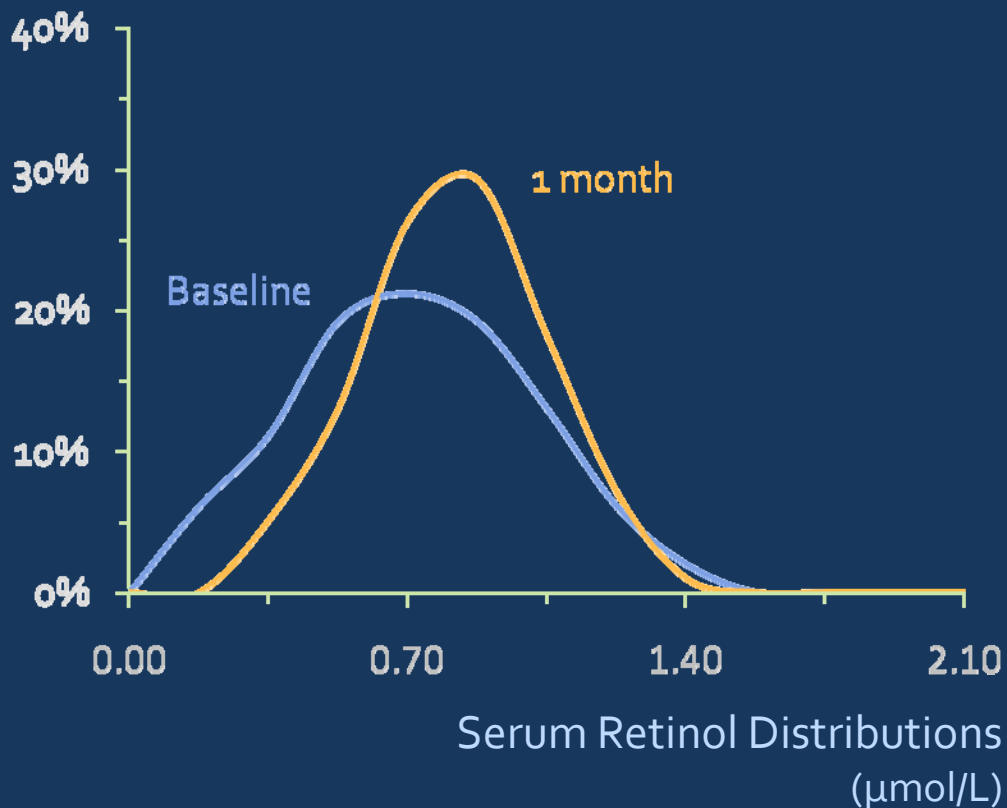
Serum Retinol Response in High-Coverage VAS Program Settings (2)

Orissa, India (children 1-4 yrs)



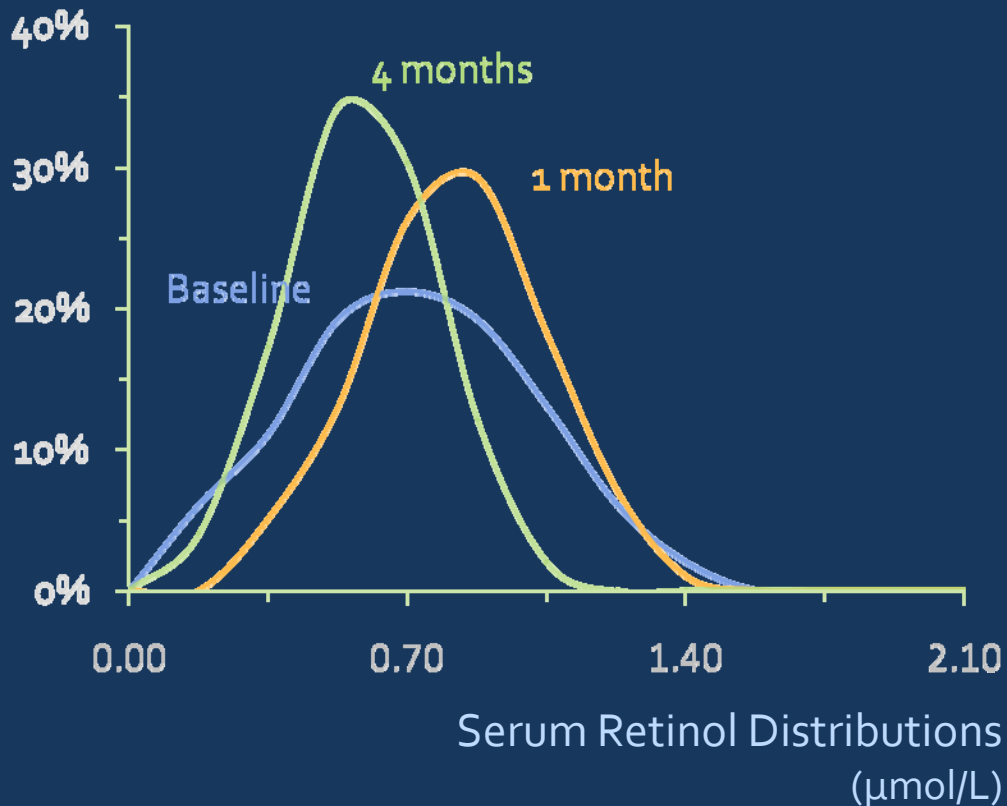
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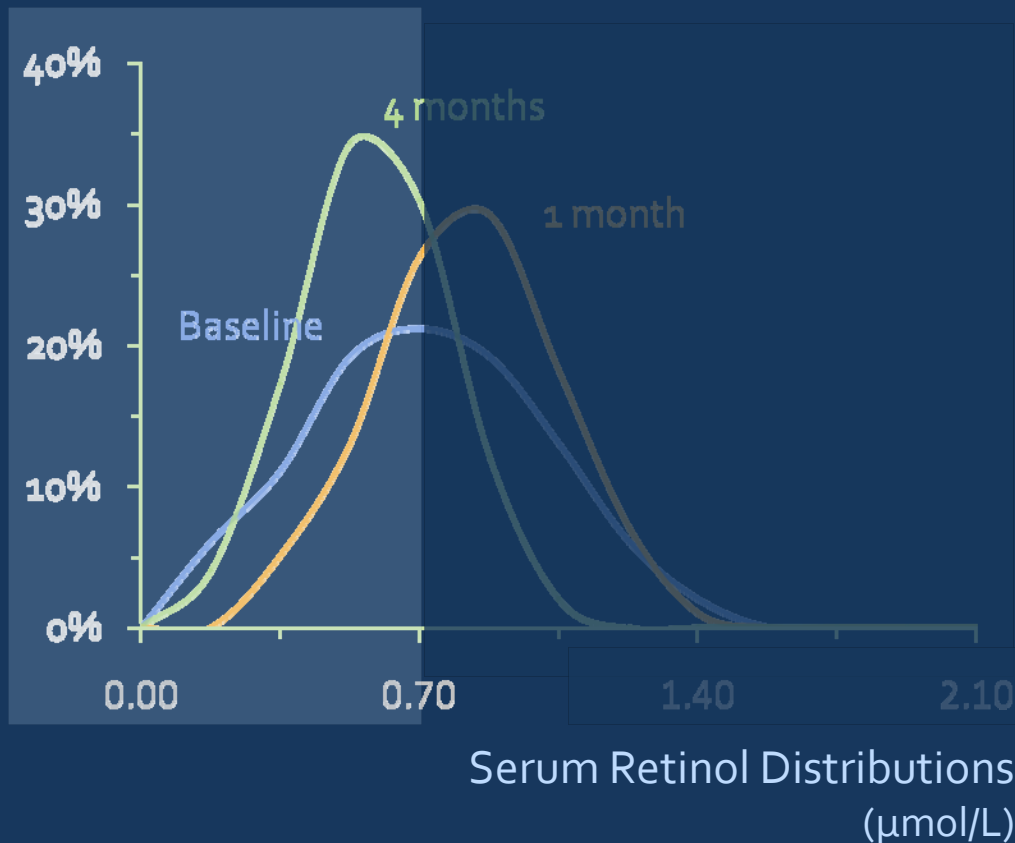
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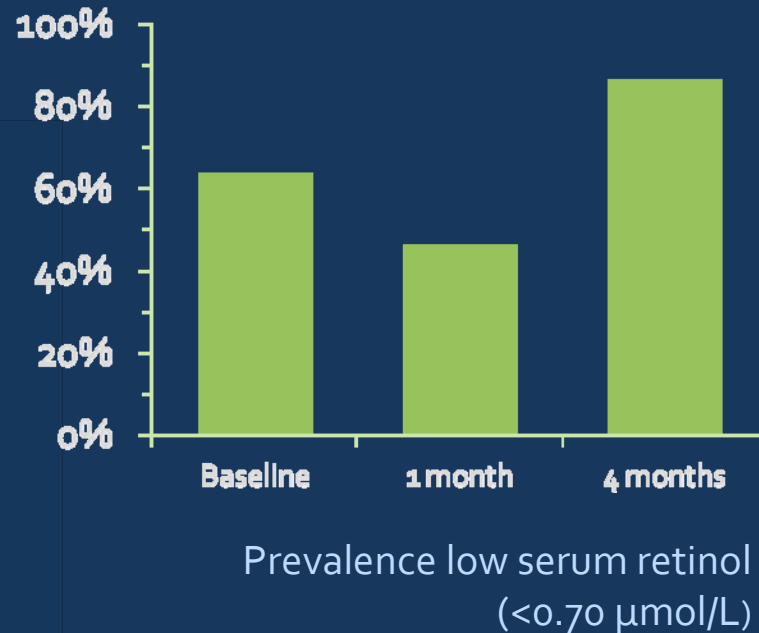
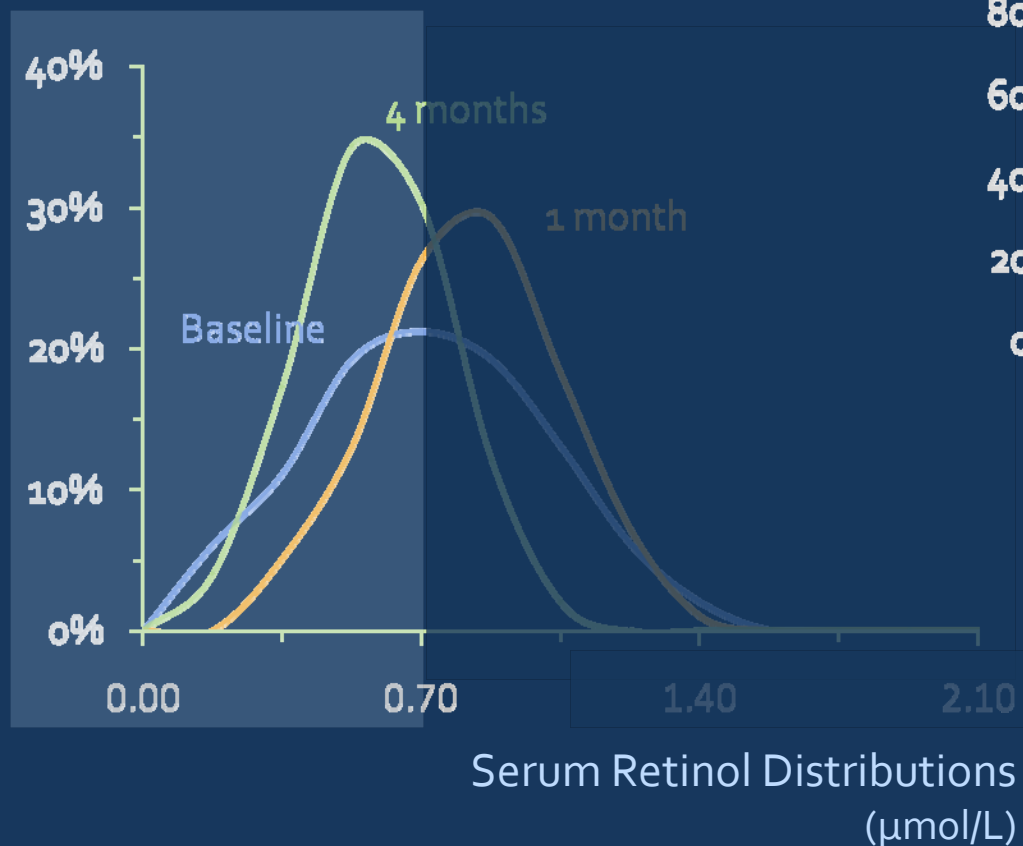
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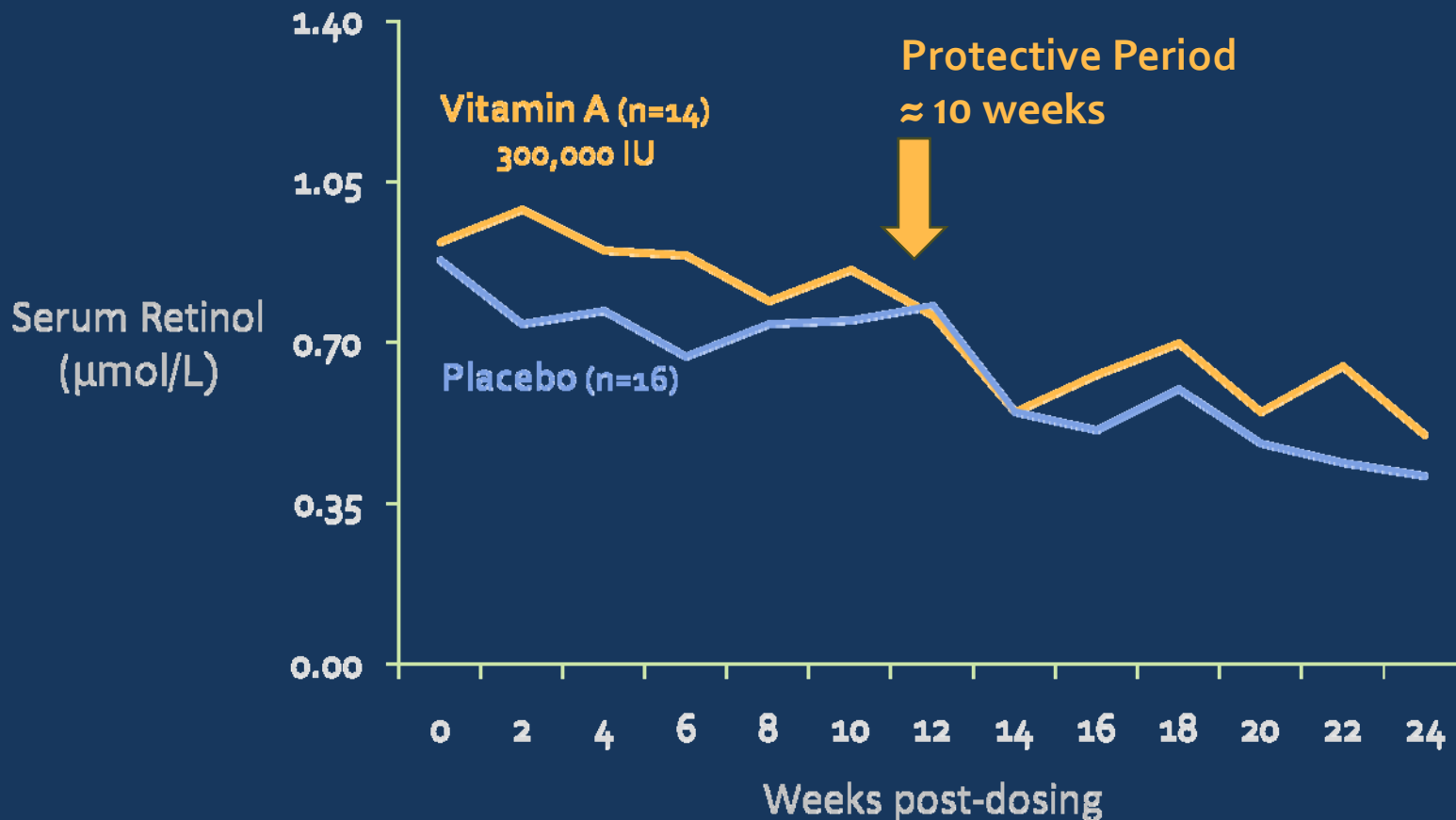
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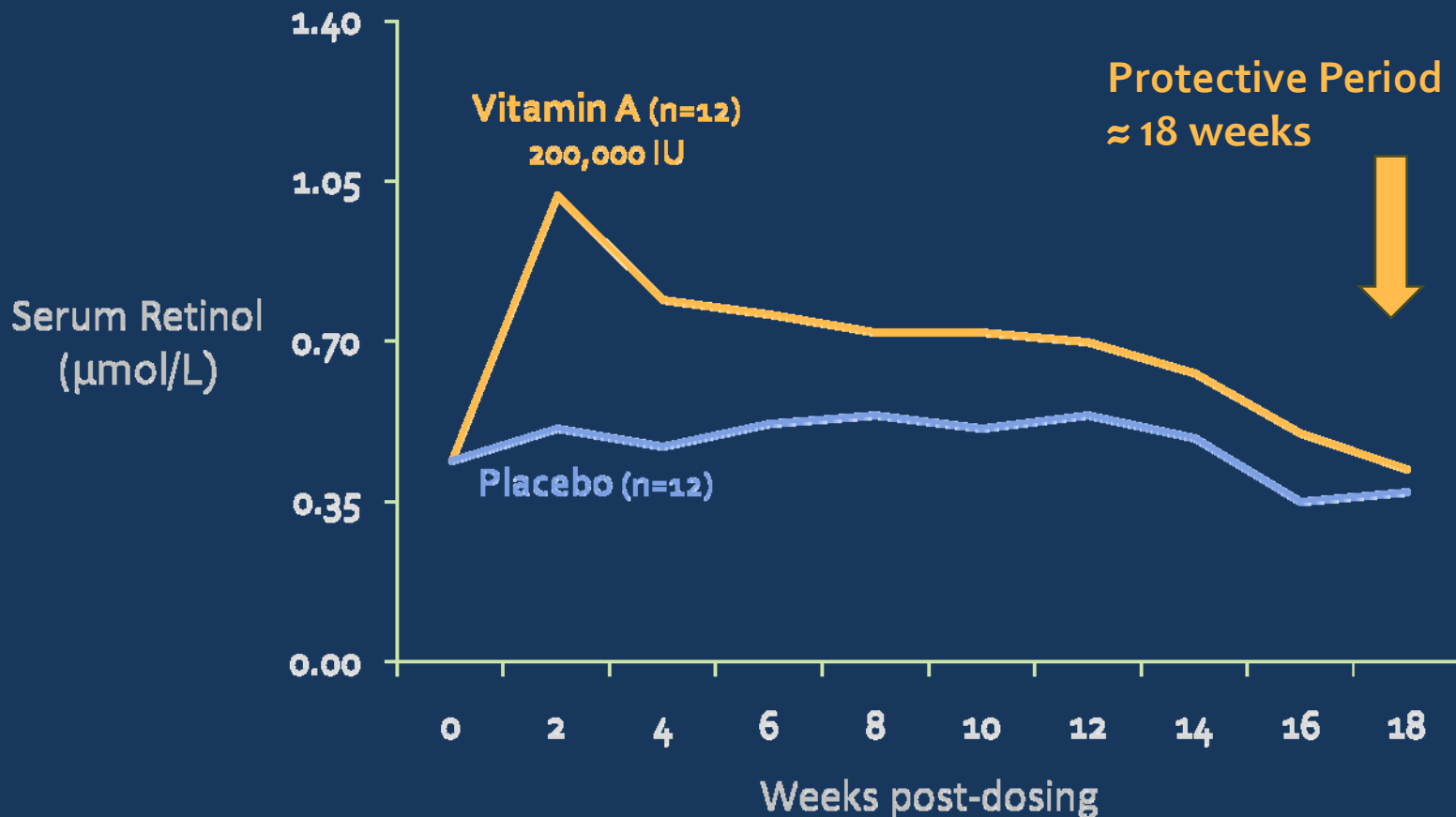
Serum Retinol Response to High-Dose Vitamin A Supplements (1)

Children 2-5 yrs allocated to receive vitamin A or placebo



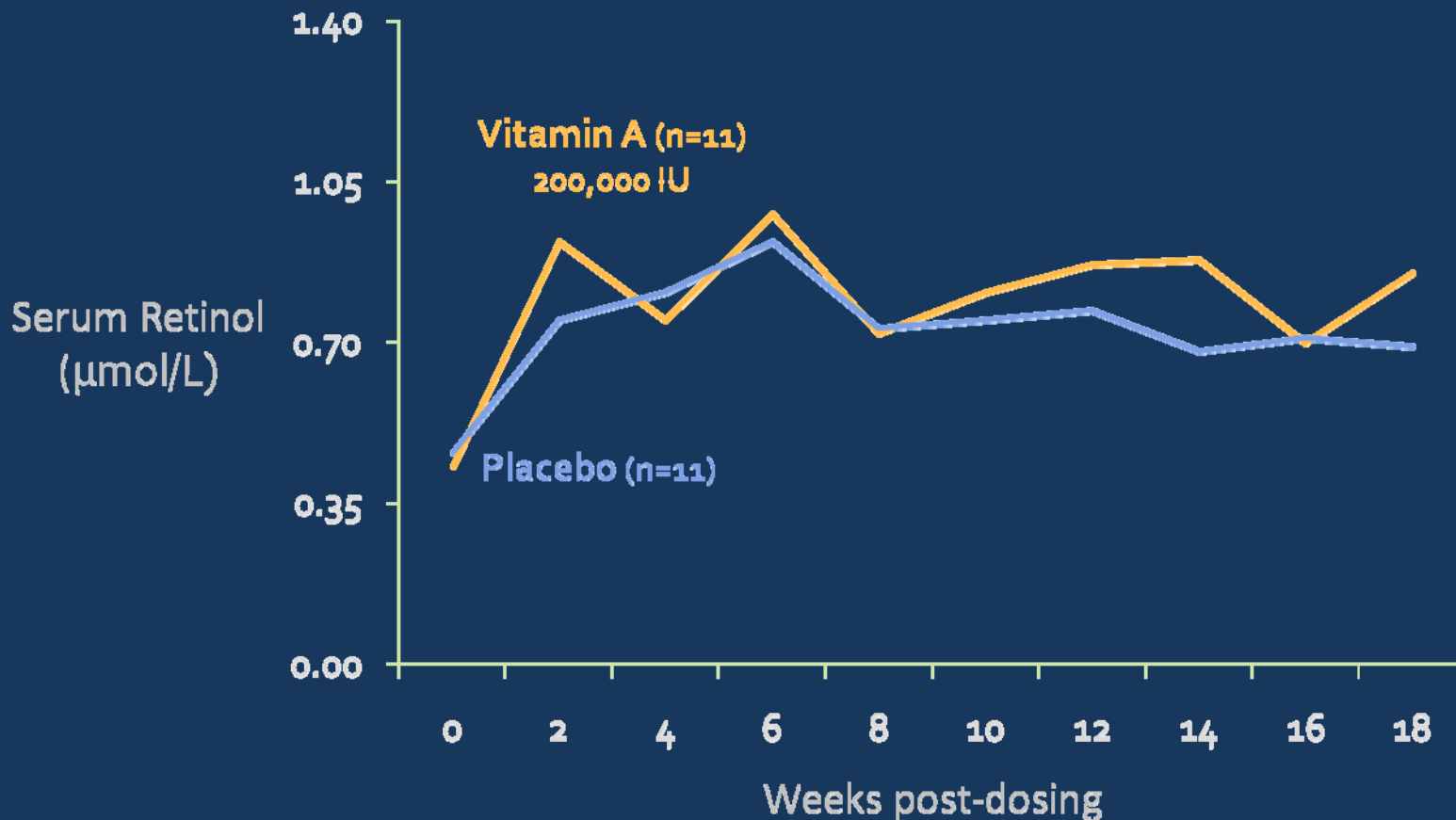
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Children 2-6 yrs with low vitamin A intake

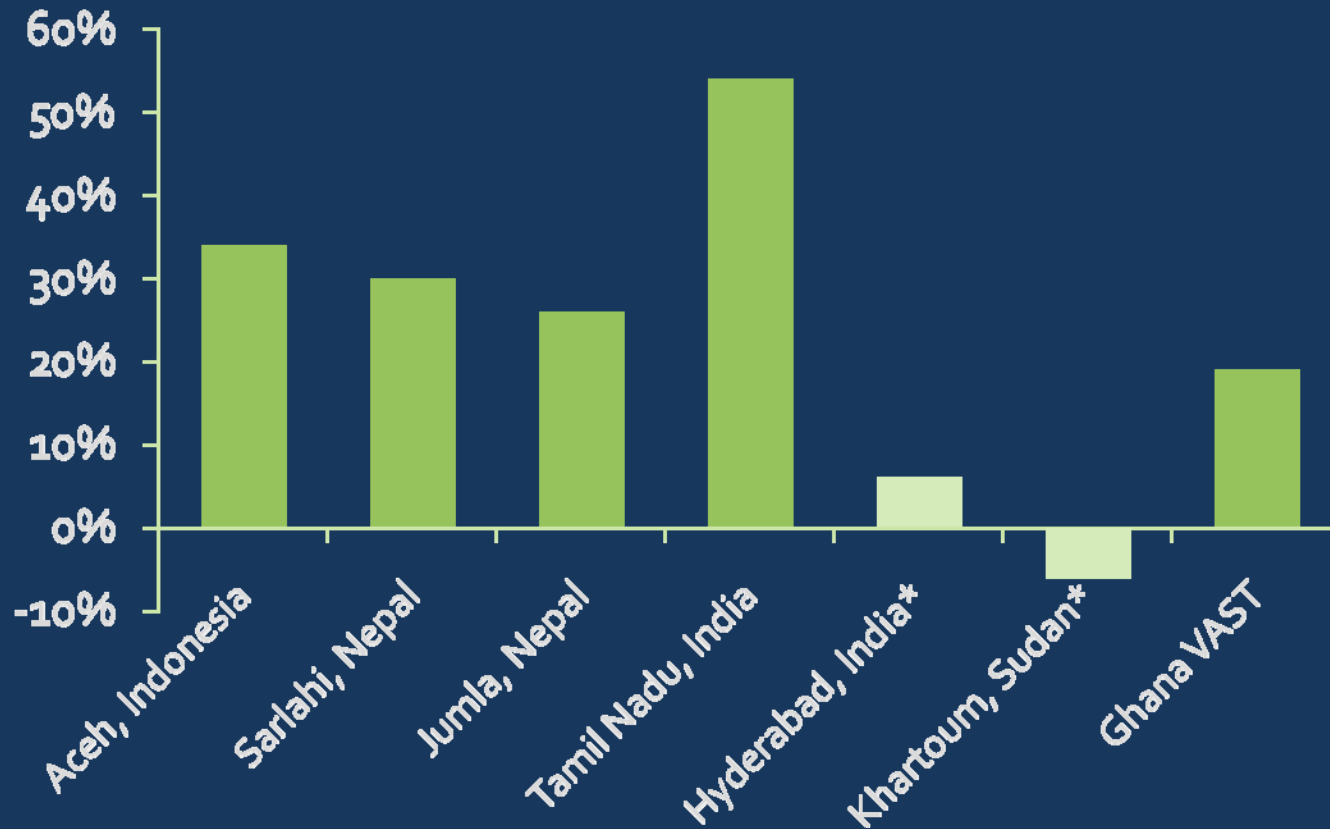


Serum Retinol Response to High-Dose Vitamin A Supplements (1)

Children 2-6 yrs with moderate vitamin A intake



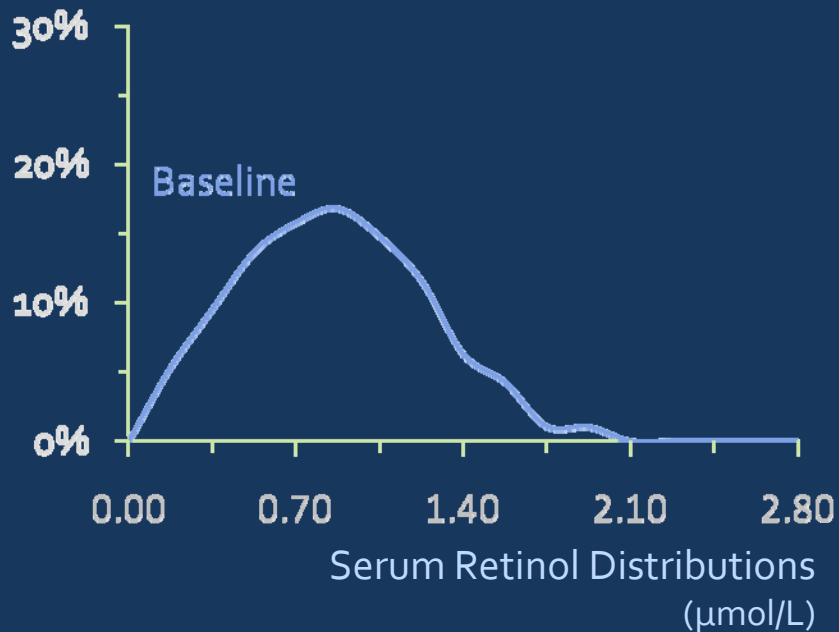
Impact on Child Survival



Efficacy trials illustrate ~23% reduction in mortality of children 6-59 months

Serum Retinol Response to Vitamin A-Fortified Foods (1)

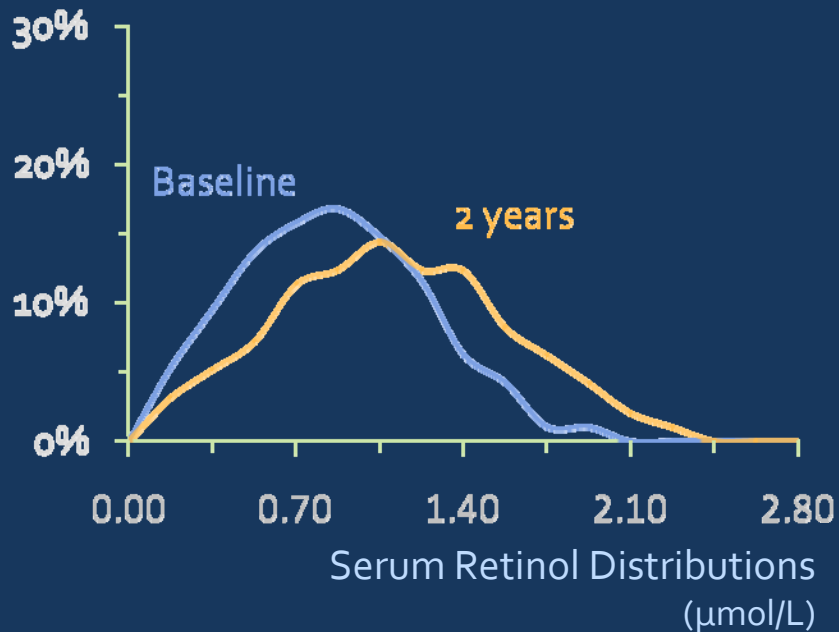
MSG + VA Fortification in South East Asia



Philippines (children 7-16 yrs)

Serum Retinol Response to Vitamin A-Fortified Foods ⁽¹⁾

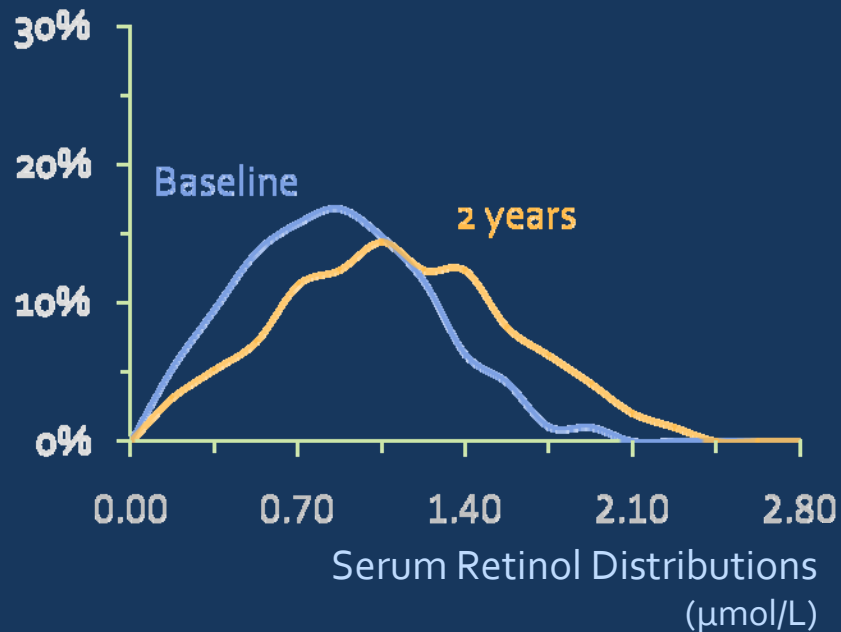
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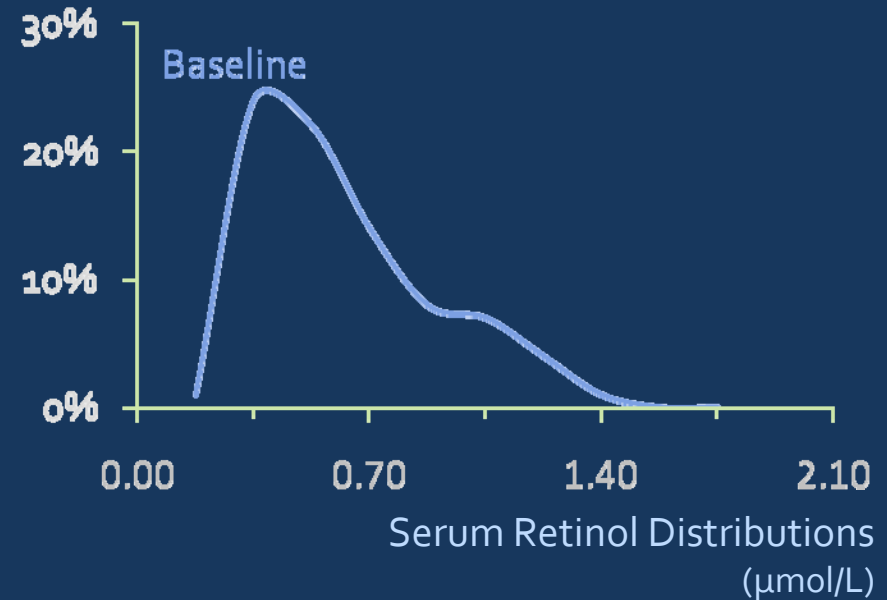
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(Solon *et al*, AJCN 1979)

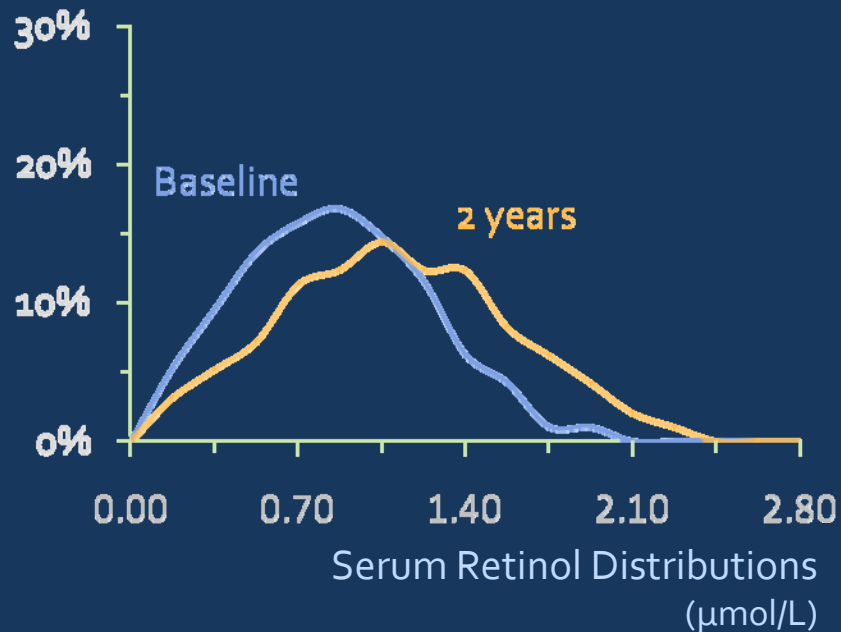


Indonesia (children 0-5 yrs)

(Muhilal *et al*, AJCN 1988)

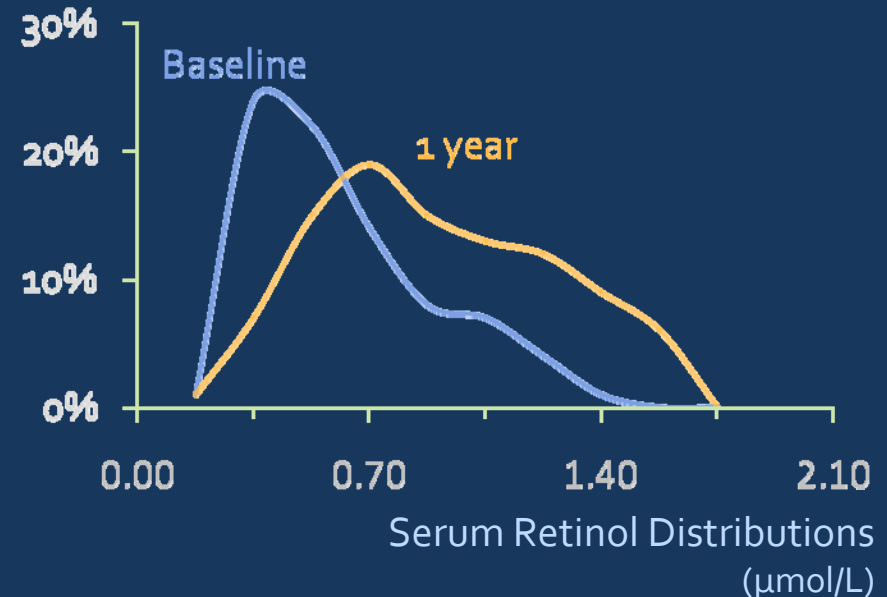
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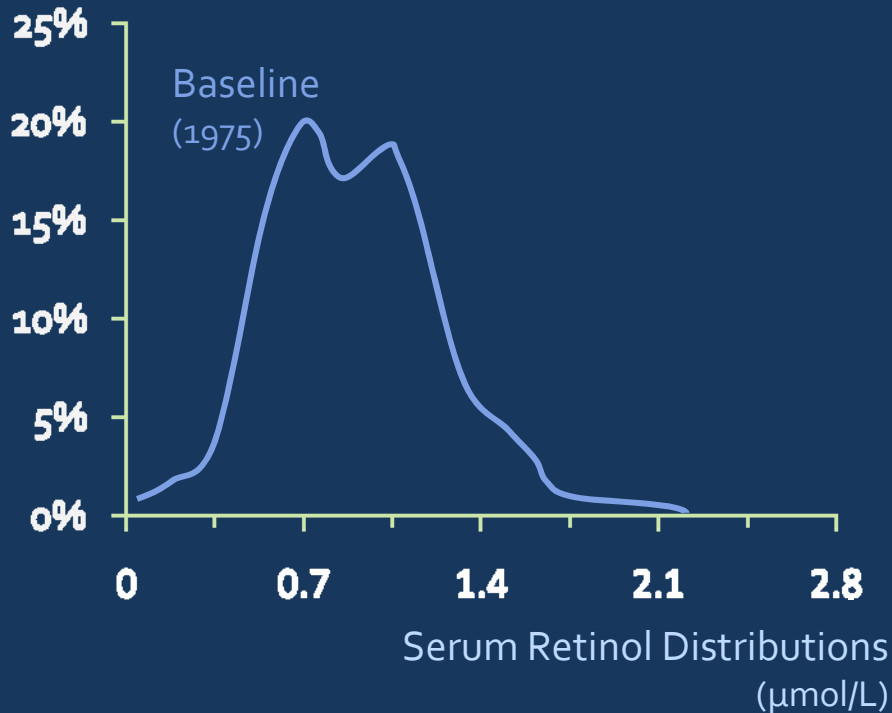


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Serum Retinol Response to Vitamin A-Fortified Foods (2)

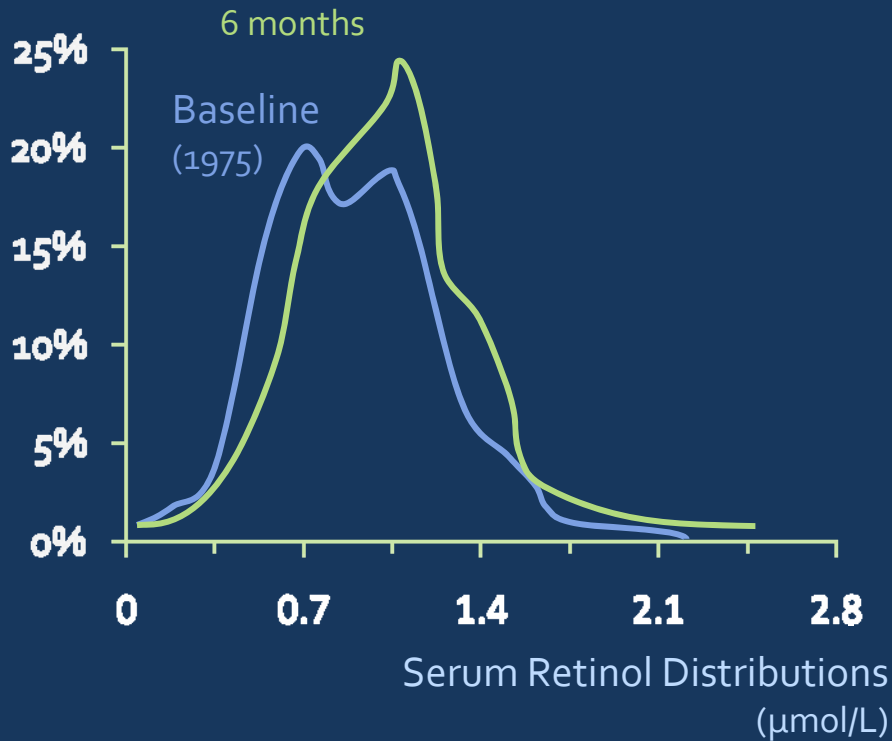
Sugar + VA Fortification in Central America



Guatemala (rural children 1-5 yrs)

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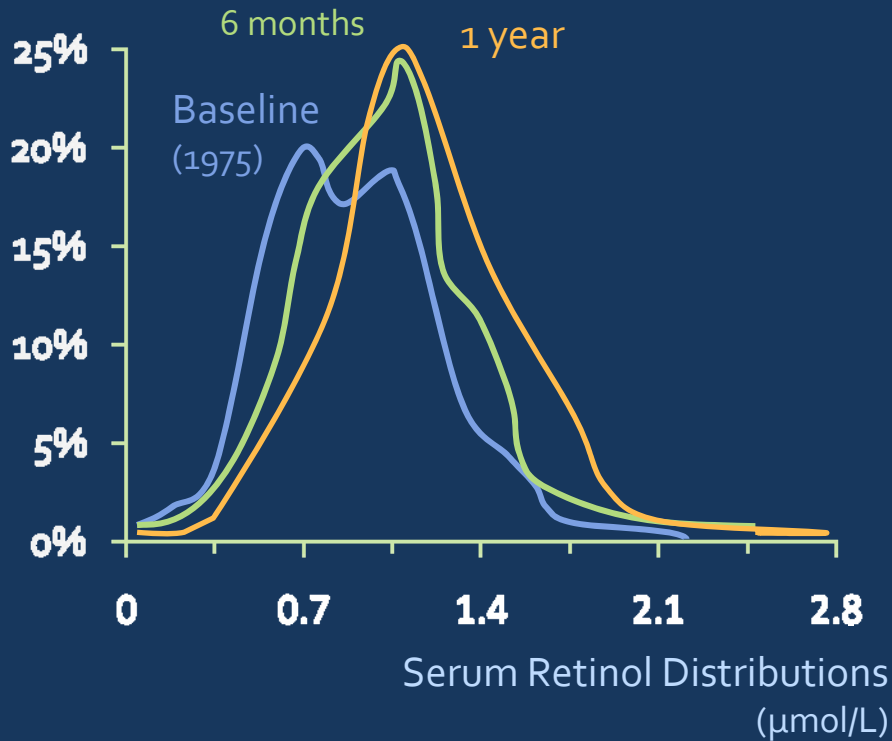
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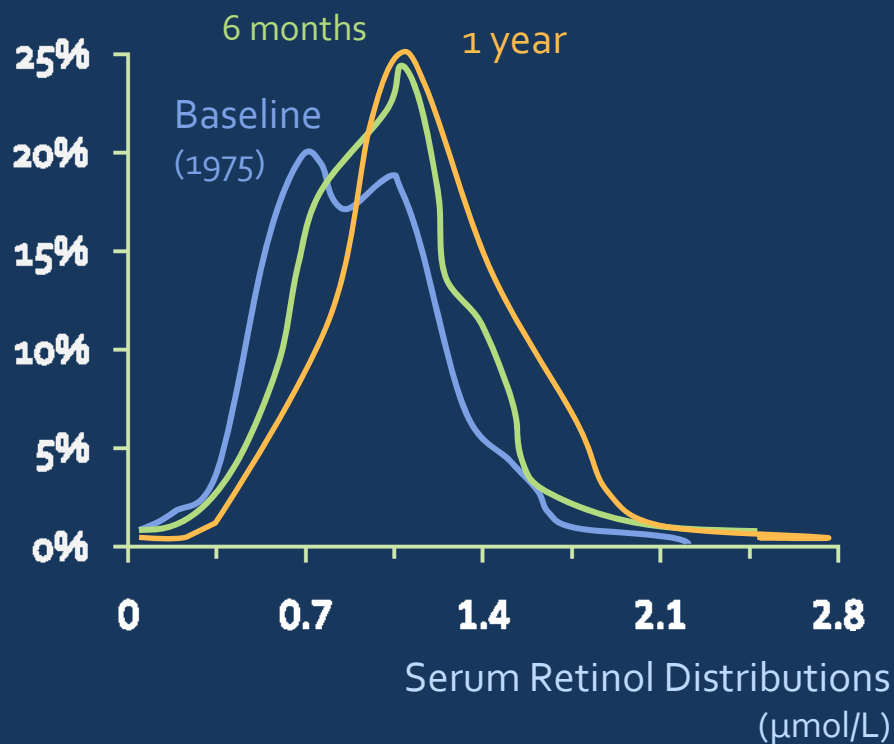
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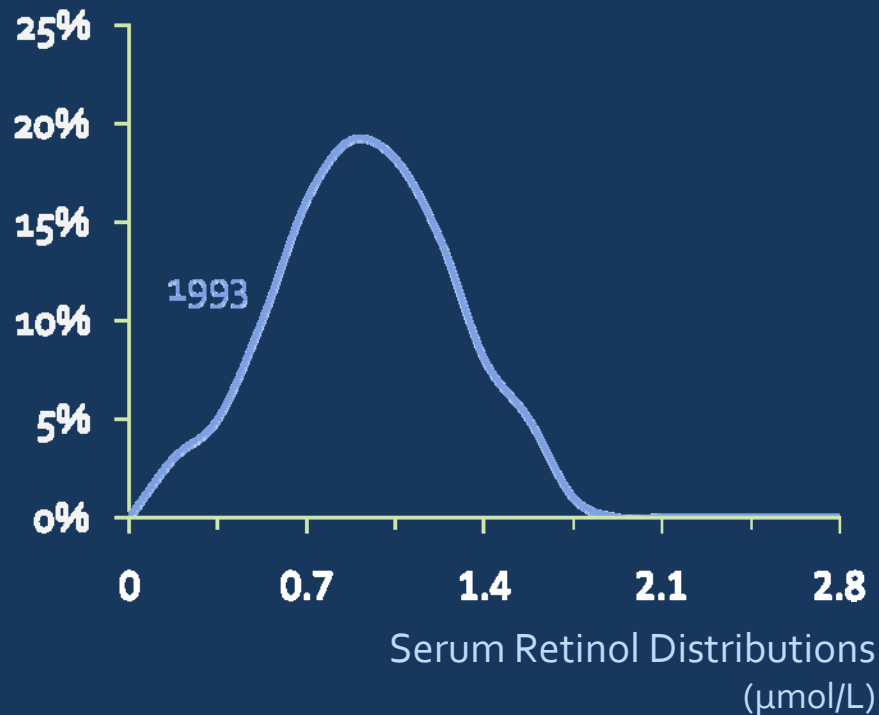
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Sugar + VA Fortification in Central America



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(Arroyave *et al*, PAHO 1979)

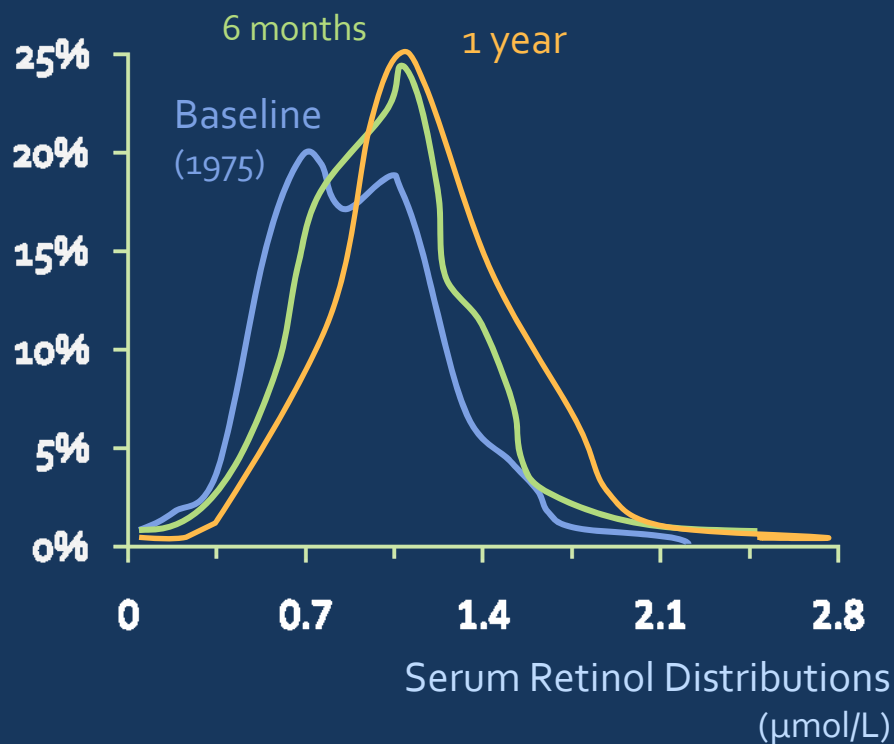


Nicaragua (children 0-5 yrs)

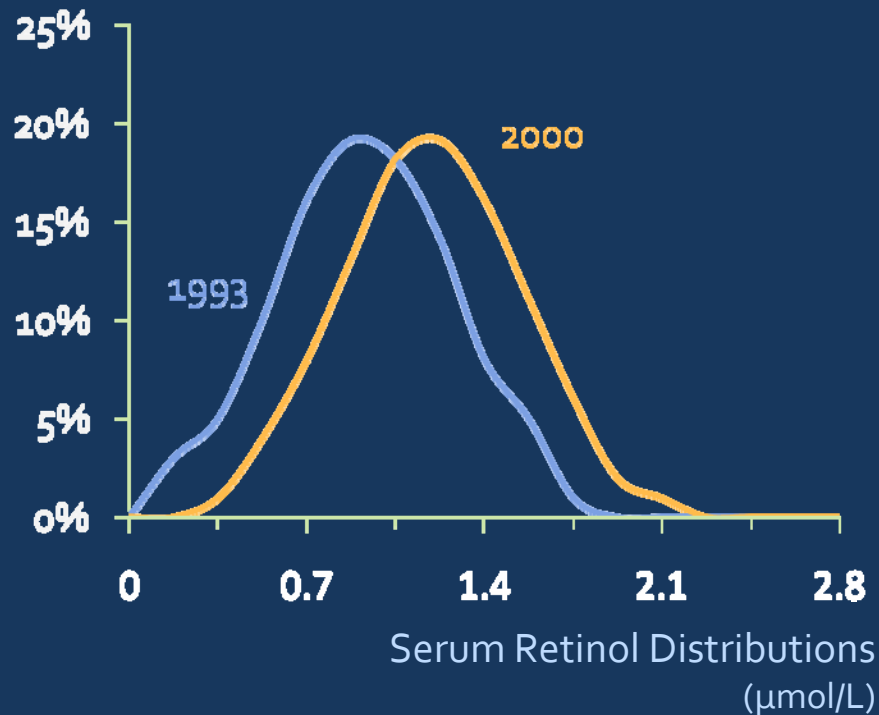
(MOST/USAID 2000)

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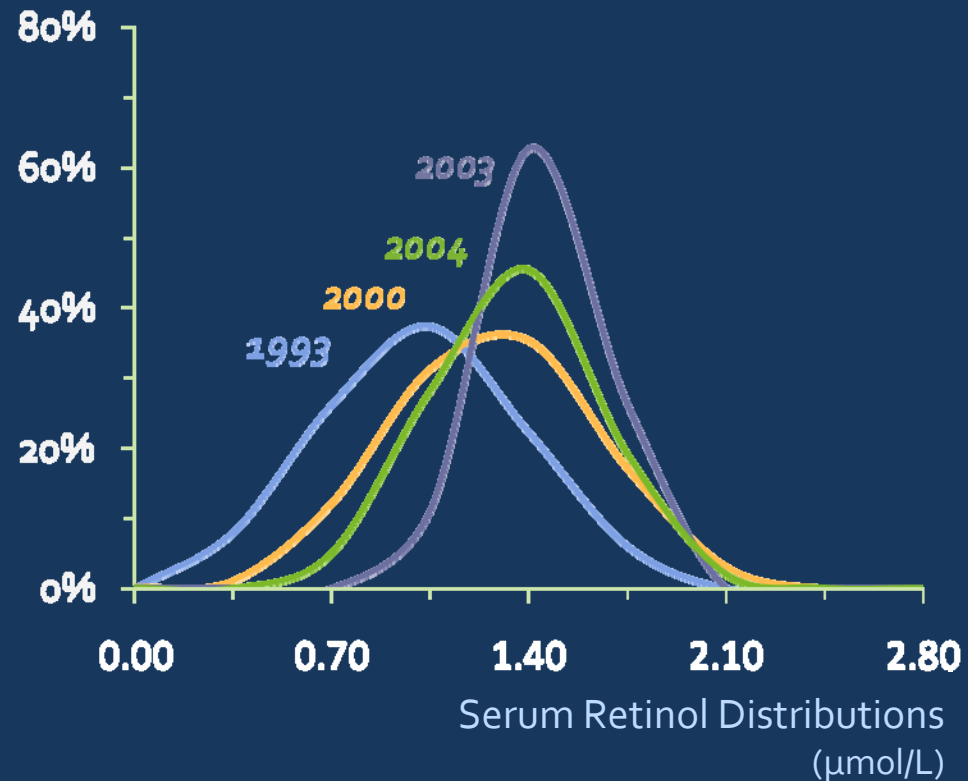


Nicaragua (children 0-5 yrs)

For how long do we need to
continue universal vitamin A
supplementation?

Countries ensuring adequate VA intakes with food-based strategies

- Stable right shift in serum retinol distribution
- Prevalence of low serum retinol $\leq 7.5\%$
- Cross-sectional surveys
 - 12-month interval
 - adequate sample size



Nicaragua (children 0-5 yrs)

Conclusion

- VA supplementation reduces xerophthalmia & child mortality, regardless of transient effect on serum retinol
- Programs should focus on measuring coverage
- In areas with high coverage food fortification, serum retinol is an informative indicator
- Supplementation will remain necessary until underlying dietary inadequacies are corrected