



TOBY L. SIMON, M.D.

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Dr. Simon has had previous positions with Serologicals Corporation, Blood Systems, and TriCore Reference Laboratories. He is a past president of America's Blood Centers, the American Association of Blood Banks, and the South Central Association of Blood Banks. He has been active in the medical policy committee of PPTA and received the Robert W. Reilly Leadership Award from PPTA in 2015.

Dr. Simon has written more than 100 original and review articles and book chapters. He is also a senior editor of Rossi's Principles of Transfusion Medicine, now in its fifth edition.

Dr. Simon is certified in internal medicine and hematology by the American Board of Internal Medicine and in blood banking by the American Board of Pathology.

He is currently industry representative on the FDA Blood Products Advisory Committee. He also served in that position from 2000 to 2002.

Measles Antibody Titers in Plasma Donors

Toby L. Simon, MD

Measles in the United States

- 1963: Measles-containing vaccines are first licensed
- 1988: Measles incidence falls from more than 300 to 1.3 cases per 100,000
- 1989: After resurgence in some counties third effort with routine second dose of vaccine
- 2000: Measles is declared eliminated from the US
- 2014: Increase in annual total to 668
- 2015: 189 cases in US

- Source: JAMA 315:1151, March 15, 2016

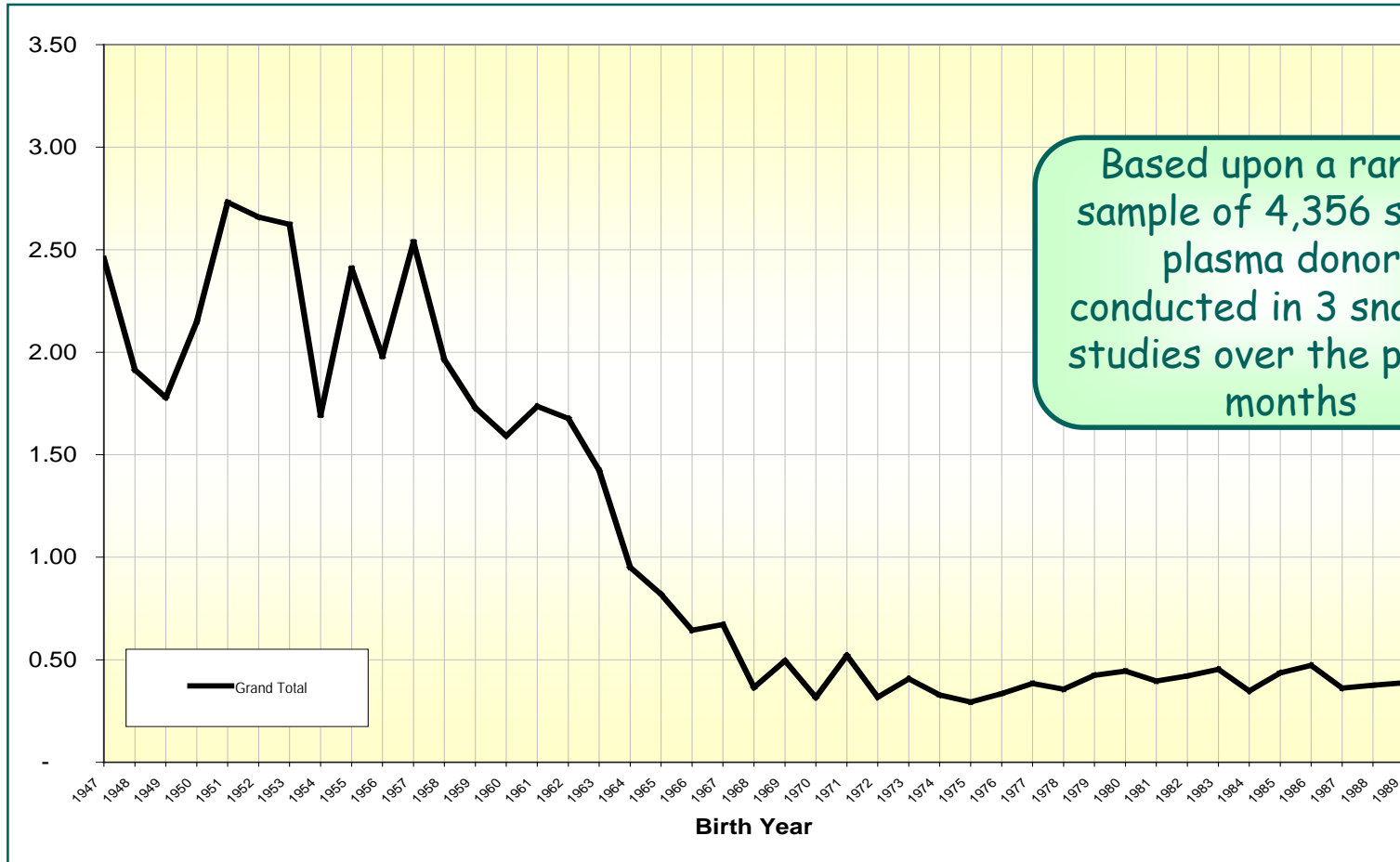
Antibody titers after vaccination

- “ The antibody titers elicited by vaccination do decline over time (as do those induced by natural infection) and may become undetectable. Vaccine-induced antibody titers are typically lower than those induced by natural infection.”
- Source: Plotkin, Orenstein, Vaccines, Philadelphia, WB Saunders, 1999,p.234.

Measles Antibody Screening Assay

- ELISA method, Measles IgG
 - Eti-Max system, Diasorin
- Internal calibrator developed
 - Used WHO 66/202 standard
- Reporting range of 0.5-10 IU/ml
- 2.7-14.7% CV—higher at lower concentrations
- Correlation with in- process testing by manufacturer's assay (Dade Behring Elisa)=0.95

Aggregate Observed Birth Year – Titer (IU/mL) Relationship



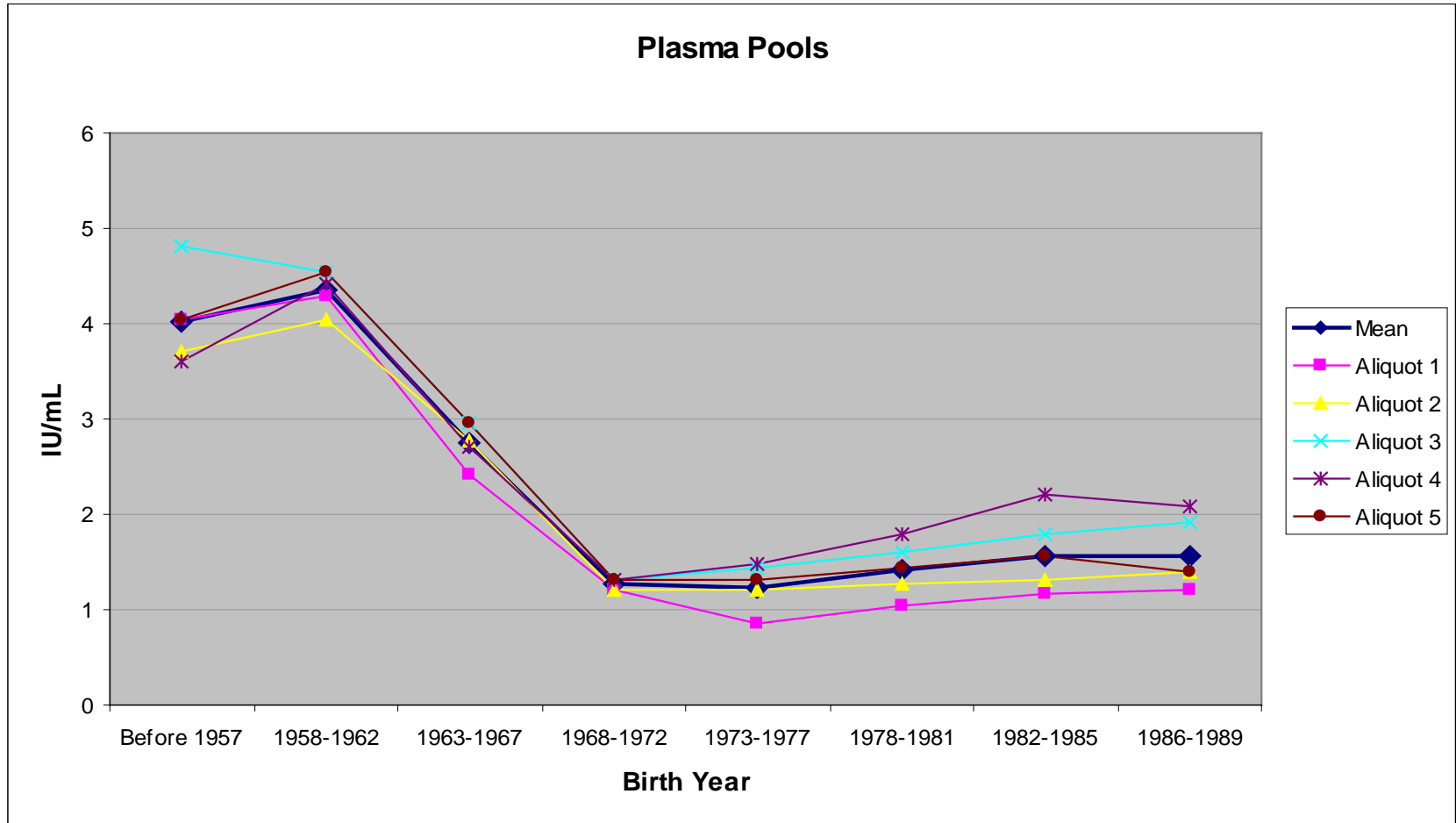
Based upon a random sample of 4,356 source plasma donors conducted in 3 snapshot studies over the past 12 months

Snapshot June 20, 2007

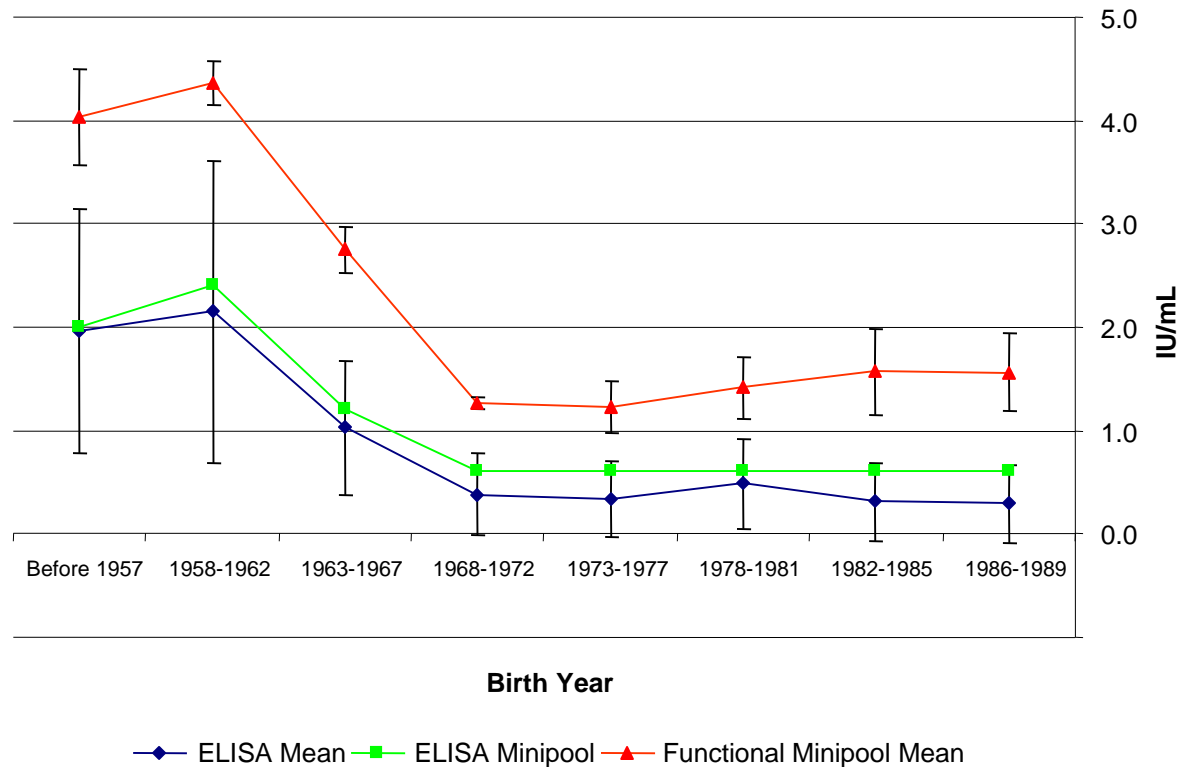
Comparing EIA and Viral Neutralization Assay

- Testing of mini-pools based on statistical analysis
- Viral neutralization (functional) assay calibrated against 3rd WHO standard 21 IU/mL anti-measles activity
- 5 Aliquots from each mini-pool

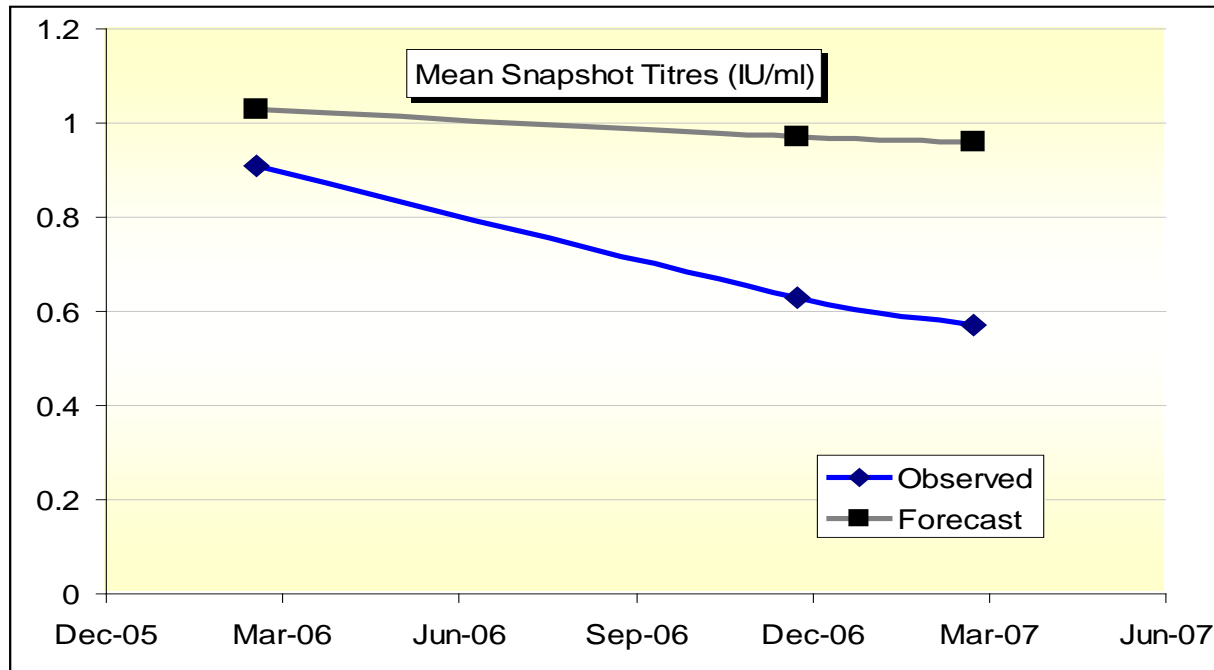
Viral Neutralization Testing of Plasma Pools



Comparison of functional assay and EIA for June, 2007 snapshot showing one SD

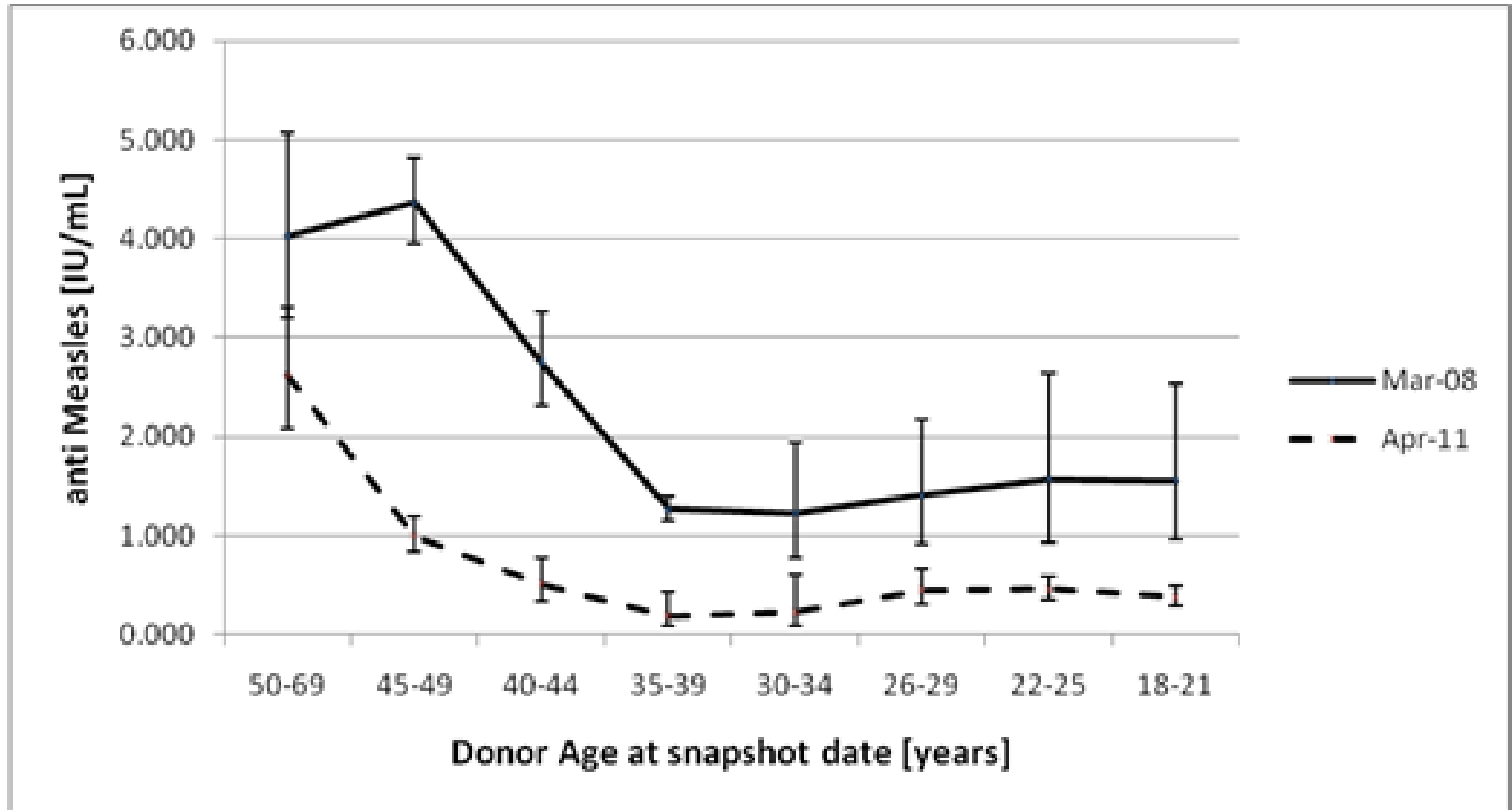


Observed Titers over time

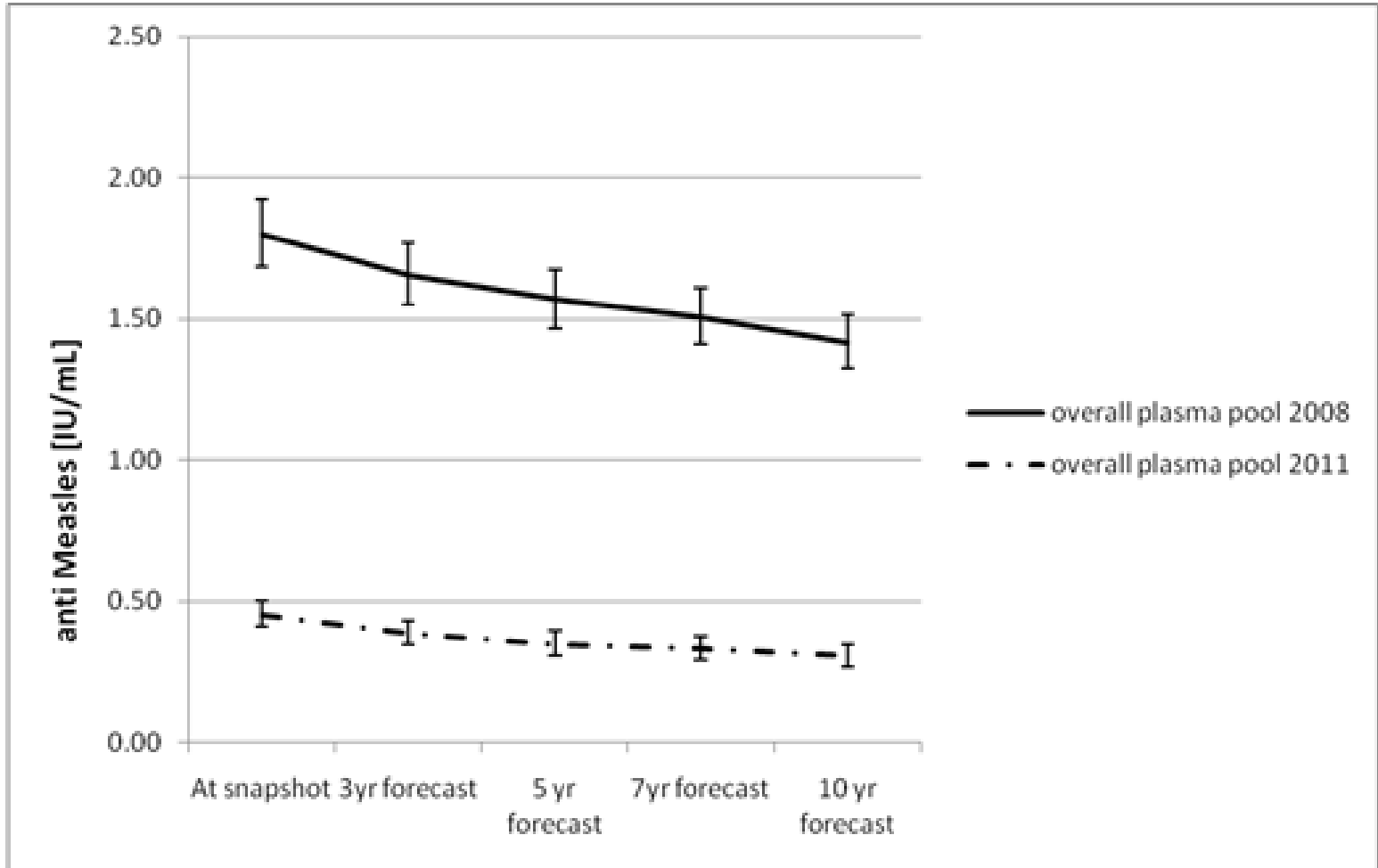


- March to December decline is 0.28 IU/ml or 31%
- March to March decline is 0.34 IU/ml or 37%
- Actual reduction above decay model—reflecting growth (New younger donors have lower levels than older donors)

Comparison of two snapshots



Comparison of projections from the two snapshots



Reason for marked shift from 2008 to 2011

- Did not repeat neutralizing assay in 2011
- More donors fell below limit of sensitivity of EIA and thus were measured as undetectable
- Continued decrease in proportion of donors with natural immunity.

Summary

- Falling measles titers were anticipated over time in normal donors in 2008 snapshot
- The 2011 snapshot verifies the continued fall in the titers
- Reduction in plasma titers currently being seen will make it difficult to achieve product specifications in the future
- Immunization program poses significant issues
- Measles antibody specifications for Immune Globulin products need to be reconsidered