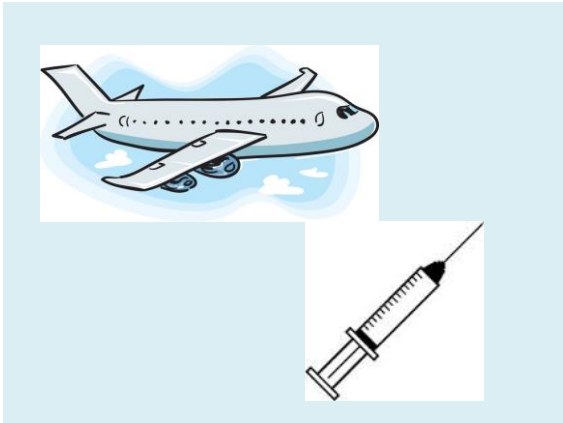


# Did penicillin cause the AIDS pandemic?

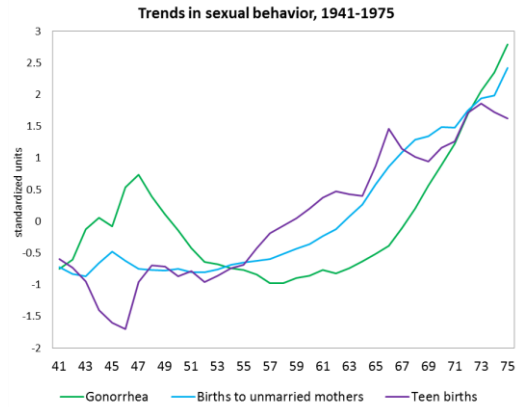
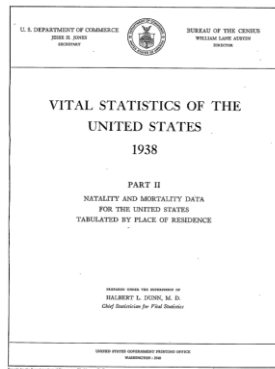
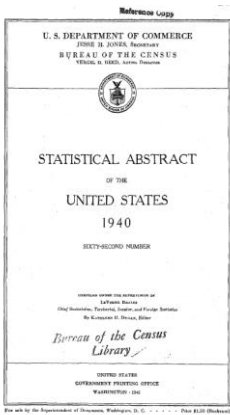
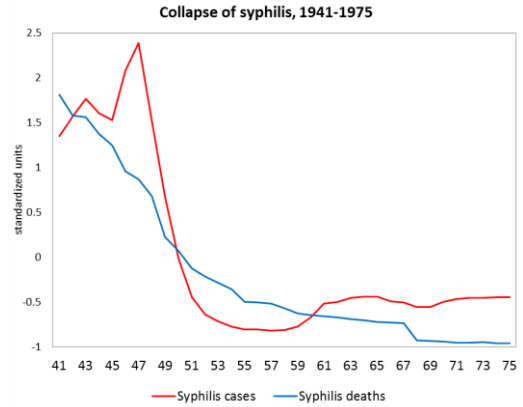
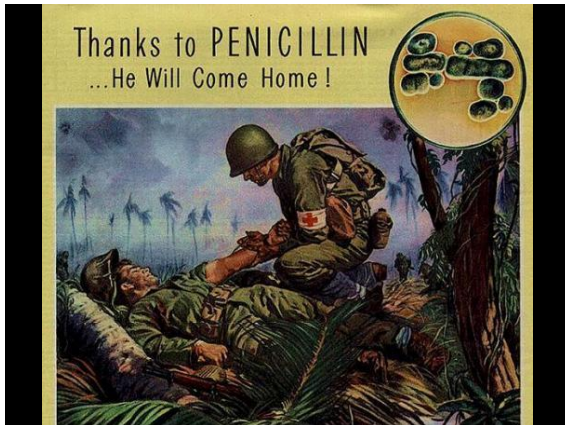
2015 World STI & HIV Congress  
Dr. Andrew Francis-Tan  
Emory University





**Table 1** Syphilis deaths in 1939 and AIDS deaths in 1995

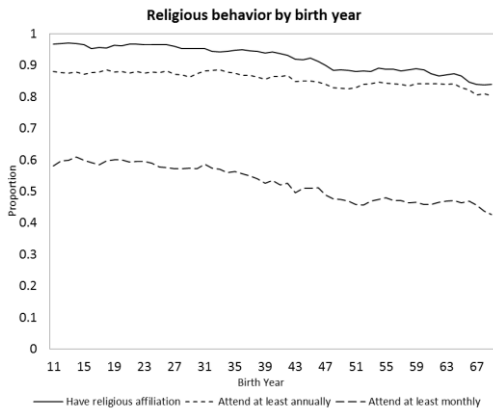
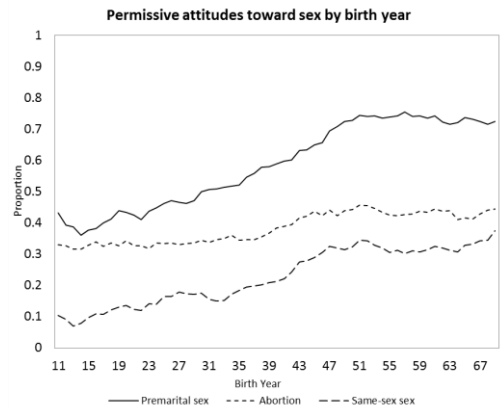
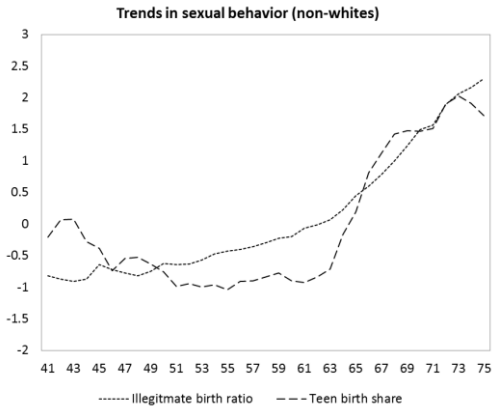
	Death rate (number per 100,000 persons)		Death share (% of deaths of any cause)	
	Syphilis 1939	AIDS 1995	Syphilis 1939	AIDS 1995
<i>All ages</i>				
Total	15.0	16.2	1.4%	1.9%
White males	15.5	20.9	1.4%	2.3%
White females	5.2	2.5	0.6%	0.3%
Black males	72.5	80.2	5.2%	8.4%
Black females	35.6	24.0	3.0%	3.2%
<i>Ages 25-64</i>				
Total	21.4	30.0	2.5%	7.7%
White males	22.0	38.4	2.4%	8.2%
White females	6.6	4.5	1.0%	1.8%
Black males	121.7	164.3	7.4%	17.8%
Black females	52.8	44.5	3.7%	9.4%





**Thanks!!**

Comments?  
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**Table 2** Estimated risk of syphilis for a sexually-active adult in the mid-1940s

*Parameters*

Number of sexual encounters with randomly-selected partner	10
Population of 15-40 year olds in US, 1944 <sup>a</sup>	58,601,551
Number of syphilis deaths in US, 1937-1944 <sup>b</sup>	129,753
Average ratio of new infections to deaths (before 1944) <sup>c</sup>	4.7
Per-contact probability of syphilis transmission <sup>d</sup>	30%
Percentage of untreated infected people who develop tertiary stage syphilis <sup>d</sup>	33%
Percentage of people with tertiary syphilis who die of the disease <sup>e</sup>	20%

*Estimates*

Number of recently infected people as of mid-1940s (new infections, 1937-1944)	610,973
Probability that randomly-selected partner infected with syphilis	1.04%
Probability of syphilis death if partner infected	6.41%

**Table 3** Effects of collapse of syphilis, 1937-1975

	Dependent Variable									
	Gonorrhea incidence rate		Illegitimate birth ratio (whites)		Illegitimate birth ratio (non-whites)		Teen birth share (whites)		Teen birth share (non-whites)	
Number of years since collapse of syphilis	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
3 or fewer	-0.29 **	-0.15 **	4.14 **	3.19 **	46.74 **	23.80 **	1.63 **	1.32 **	-1.81 **	0.77 **
4-7	-0.15 *	-0.09	12.02 **	8.69 **	79.17 **	47.98 **	2.80 **	2.05 **	-0.43	2.56 **
8-11	0.16 *	0.19 **	26.48 **	22.87 **	138.43 **	105.80 **	4.12 **	3.28 **	5.55 **	8.68 **
12-15	0.64 **	0.51 **	36.40 **	30.74 **	212.47 **	146.57 **	4.89 **	3.63 **	10.12 **	12.53 **
16 or more	0.98 **	0.75 **	46.31 **	39.84 **	273.39 **	194.77 **	5.48 **	3.92 **	11.16 **	13.15 **
Sample size	1767	1767	1624	1624	1618	1618	1944	1944	1944	1944
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for decade	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

\* p&lt;.10, \*\* p&lt;.05

**Table 4** Effects of syphilis death rate, 1937-1975

Dependent Variable	Independent Variable: Syphilis death rate			
Gonorrhea incidence rate	-0.18 **	-0.17 **	-0.09 **	-0.07 **
Illegitimate birth ratio (whites)	-9.52 **	-7.30 **	-5.71 **	-1.33 **
Illegitimate birth ratio (non-whites)	-58.55 **	-39.24 **	-23.43 **	-9.93 **
Teen birth share (whites)	-1.30 **	-0.60 **	-0.78 **	0.11 *
Teen birth share (non-whites)	-2.19 **	-2.28 **	-2.57 **	-0.87 **
State fixed effects	Yes	Yes	Yes	Yes
Controls for decade	No	Yes	Yes	Yes
State-specific year trends	No	No	Yes	Yes
State-year controls	No	No	No	Yes

\* p&lt;.10, \*\* p&lt;.05