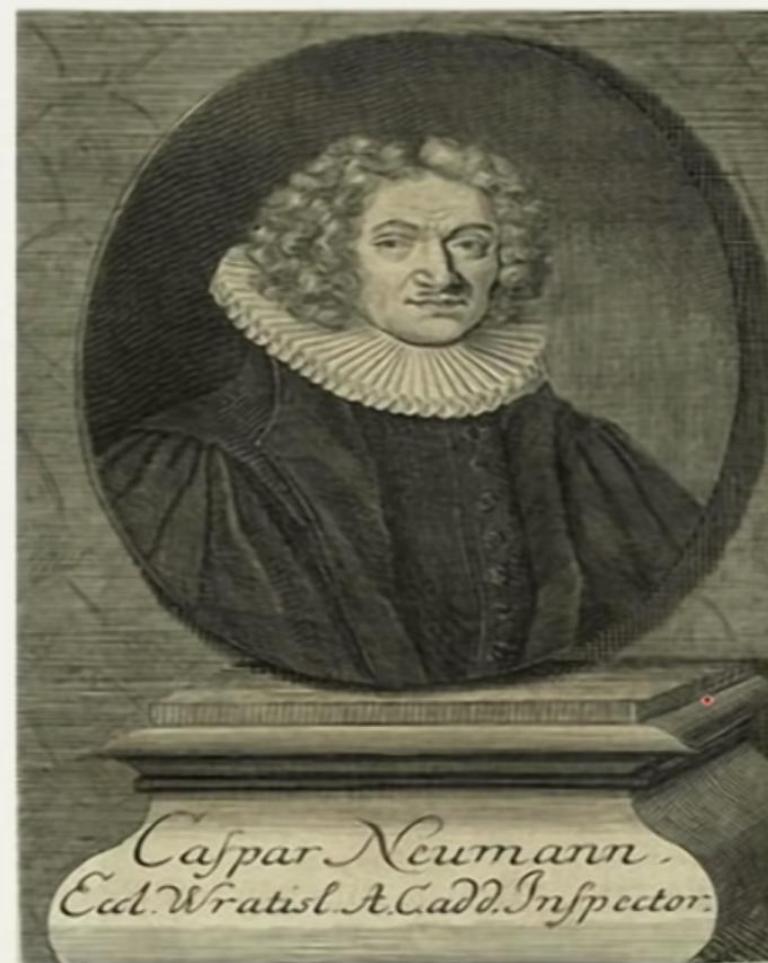


Edmund Halley
1656-1743

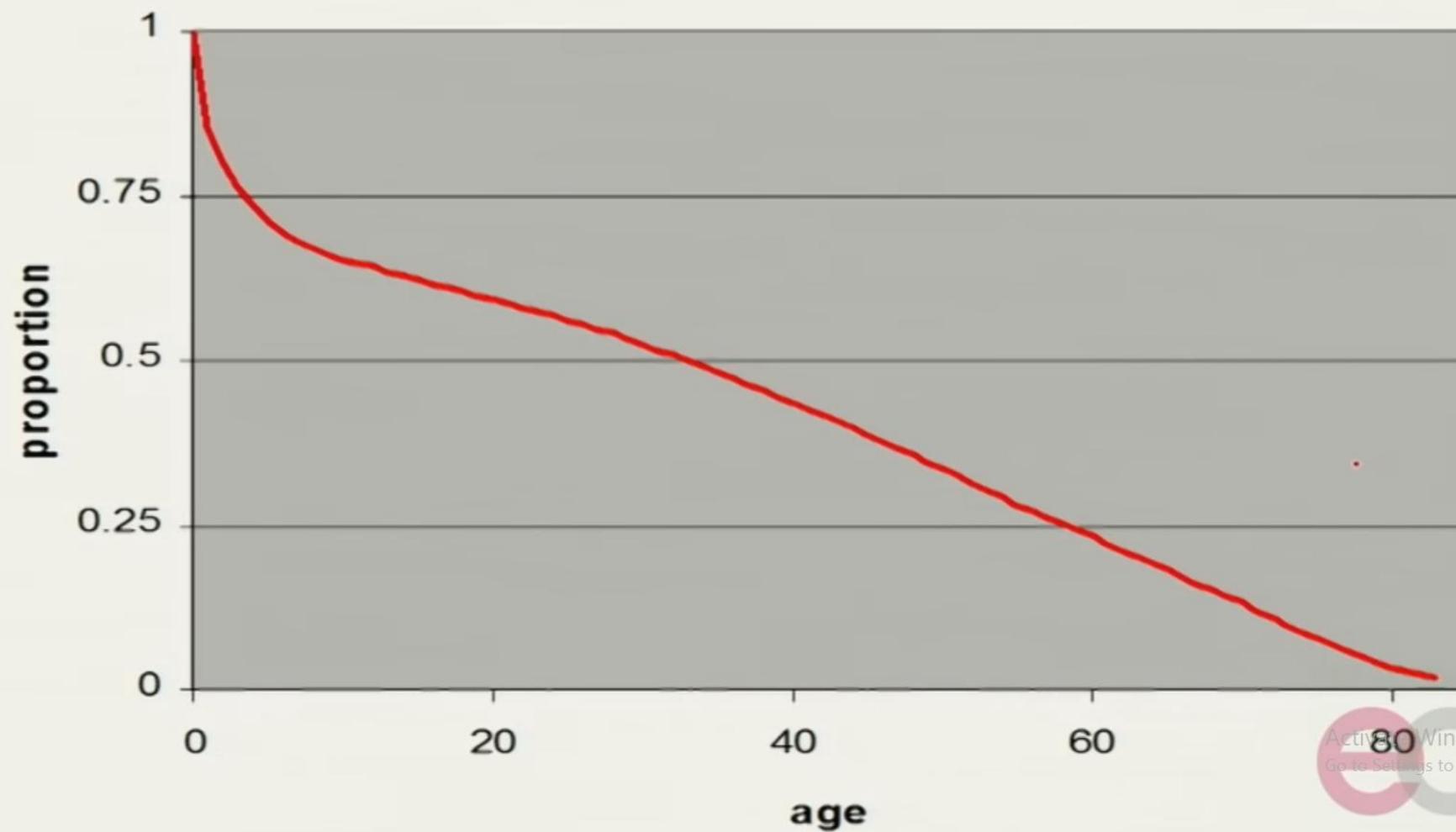


*Caspar Neumann.
Ed. Wratisl. A. Cadd. Inspector.*

Caspar Neumann
1648-1715



Halley's Lifetable, Breslau 1687-91





Age. Curt.	Per- sons.										
1	1000	8	680	15	628	22	586	29	539	36	481
2	855	9	670	16	622	23	579	30	531	37	472
3	798	10	661	17	616	24	573	31	523	38	463
4	760	11	653	18	610	25	567	32	515	39	454
5	732	12	646	19	604	26	560	33	507	40	445
6	710	13	640	20	598	27	553	34	499	41	436
7	692	14	634	21	592	28	546	35	490	42	427
Age. Curt.	Per- sons.										
43	417	50	346	57	272	64	202	71	131	78	58
44	407	51	335	58	262	65	192	72	120	79	49
45	397	52	324	59	252	66	182	73	109	80	41
46	387	53	313	60	242	67	172	74	98	81	34
47	377	54	302	61	232	68	162	75	88	82	28
48	367	55	292	62	222	69	152	76	78	83	23
49	357	56	282	63	212	70	142	77	68	84	20

Halley's Lifetable 1693



Age. Curt.	Per- sons.										
1	1000	8	680	15	628	22	586	29	539	36	481
2	855	9	670	16	622	23	579	30	531	37	472
3	798	10	661	17	616	24	573	31	523	38	463
4	760	11	653	18	610	25	567	32	515	39	454
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7	692	14	634	21	592	28	546	35	490	42	427
Age. Curt.	Per- sons.										
43	417	50	346	57	272	64	202	71	131	78	58
44	407	51	335	58	262	65	192	72	120	79	49
45	397	52	324	59	252	66	182	73	109	80	41
46	387	53	313	60	242	67	172	74	98	81	34
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Halley's Lifetable 1693

PHILOSOPHICAL
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45	397	52	324	59	252	66	182	73	109	80	41
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Halley's Lifetable 1693



How are these curves constructed? Did we wait 100 years?

Concentrate on the 2006 curve between the ages of 65 and 70.

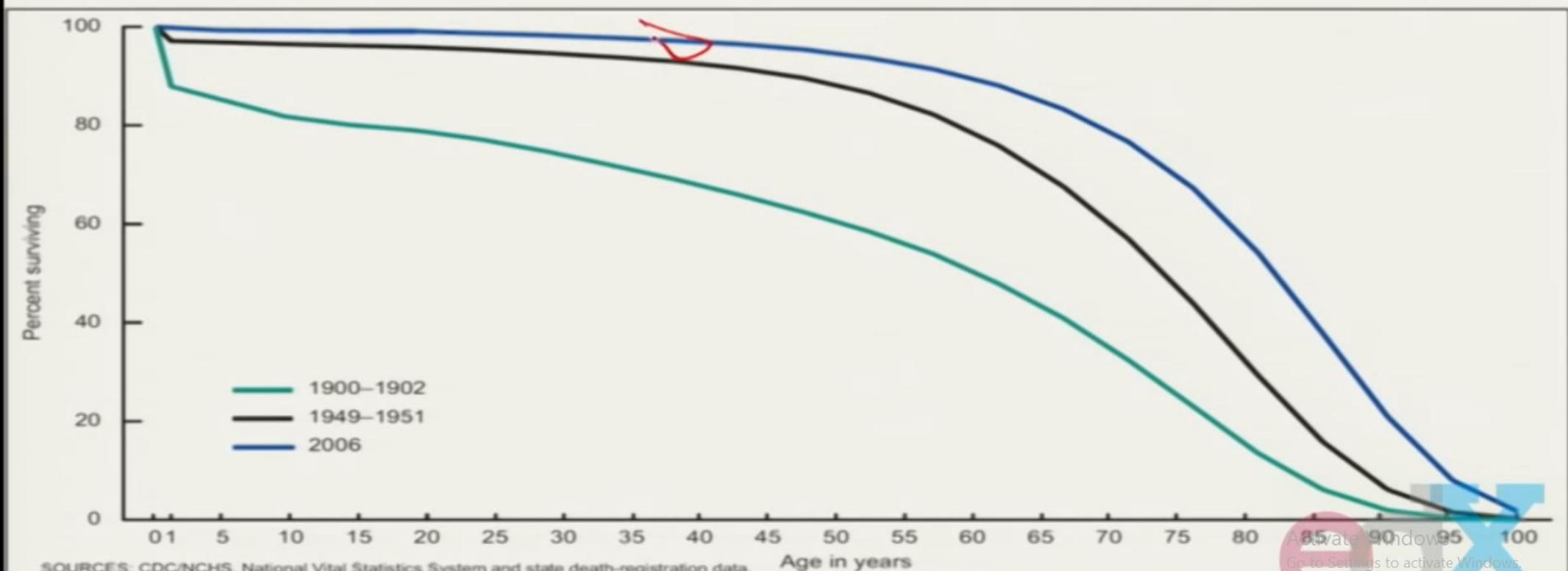


Figure 3. Percentage surviving, by age: Death-registration states, 1900–1902, and United States, 1949–1951 and 2006



How are these curves constructed? Did we wait 100 years?

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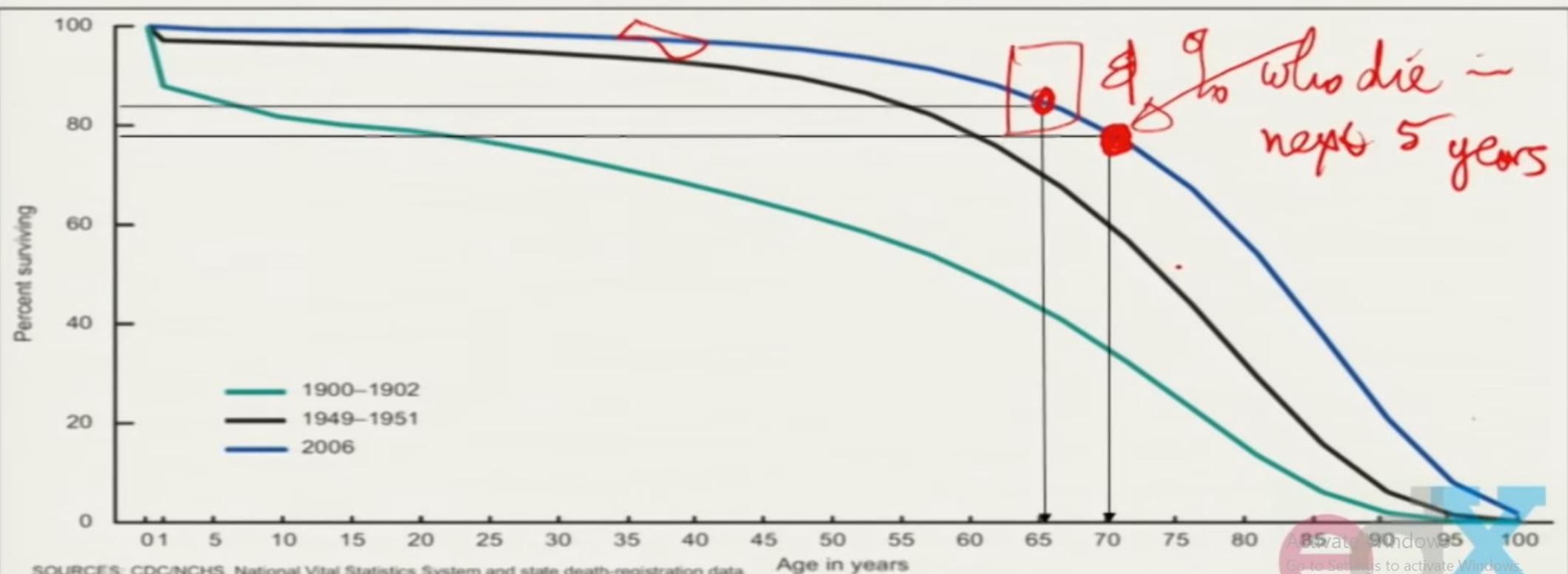


Figure 3. Percentage surviving, by age: Death-registration states, 1900–1902, and United States, 1949–1951 and 2006

Life Table



We don't know what will happen to the 65 year-olds in $2007 + 65 = 2072$,
BUT we do know what happened to the 65 year-olds in 2007, and the 66 year-olds in 2007 and the 67 year-olds in 2007 etc.....

The life table methodology constructs a life-experience for a cohort subjected to **current** mortality rates as it progresses through life, as if the current rates do not change.

Indeed, in 2007 we saw:



Life Table



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The life table methodology constructs a life-experience for a cohort subjected to **current** mortality rates as it progresses through life, as if the current rates do not change.

Indeed, in 2007 we saw:

Life Table for 2007 USA

Age	q_x	P. Probability of dying between ages x to $x + 1$	Number surviving to age x	Number dying between ages x to $x + 1$
		l_x		
0–1	0.006761	100,000	676	
1–2	0.000460	99,324	46	
2–3	0.000286	99,278	28	
3–4	0.000218	99,250	22	
4–5	0.000176	99,228	17	
5–6	0.000164	99,211	16	
6–7	0.000151	99,194	15	
7–8	0.000140	99,179	14	
8–9	0.000124	99,166	12	
9–10	0.000105	99,153	10	
10–11	0.000091	99,143	9	
11–12	0.000094	99,134	9	
12–13	0.000132	99,125	13	
13–14	0.000209	99,112	21	
14–15	0.000314	99,091	31	
15–16	0.000426	99,060	42	
16–17	0.000529	99,018	52	
17–18	0.000627	98,965	62	
18–19	0.000715	98,903	71	
19–20	0.000796	98,832	79	

Life Table for 2007 USA

Age	q_x	Probability of dying between ages x to $x + 1$	Number surviving to age x	Number dying between ages x to $x + 1$
		$\cancel{\text{Proportion}}$		
0–1	0.006761		100,000	676
1–2	0.000460		99,324	46
2–3	0.000286		99,278	28
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3/16/2020

17



Activate Windows
Go to Settings to activate Windows.

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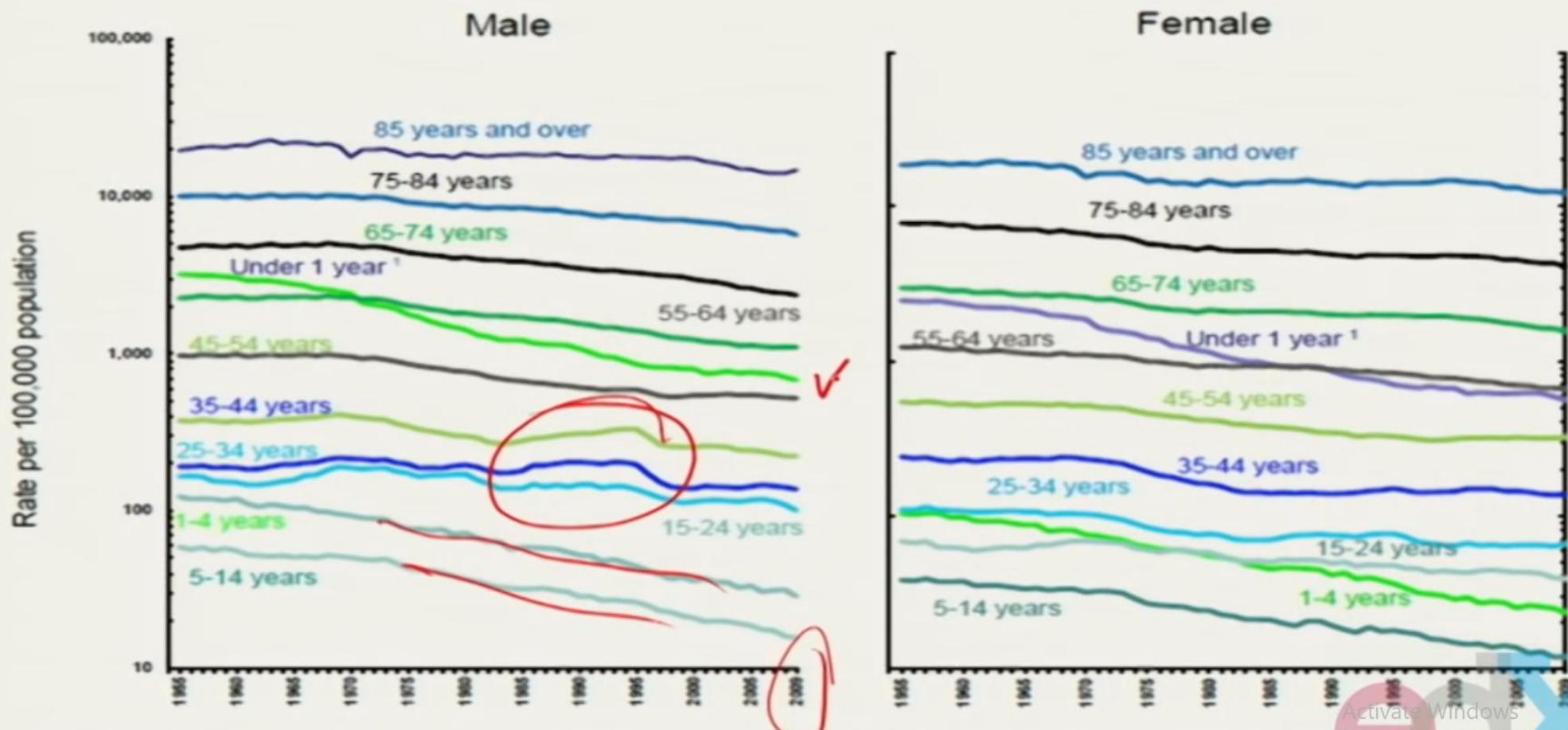
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Figure 3. Death rates, by age and sex: United States, 1955-2009



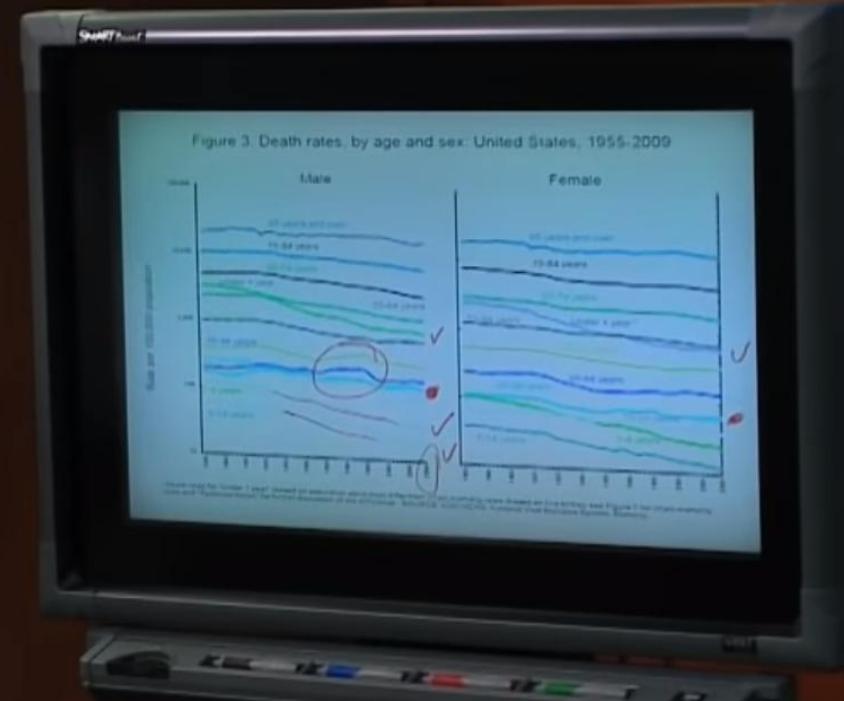
¹Death rates for "Under 1 year" (based on population estimates) differ from infant mortality rates (based on live births); see Figure 7 for infant mortality rates and "Technical Notes" for further discussion of the difference. SOURCE: CDC/NCHS, National Vital Statistics System, Mortality.

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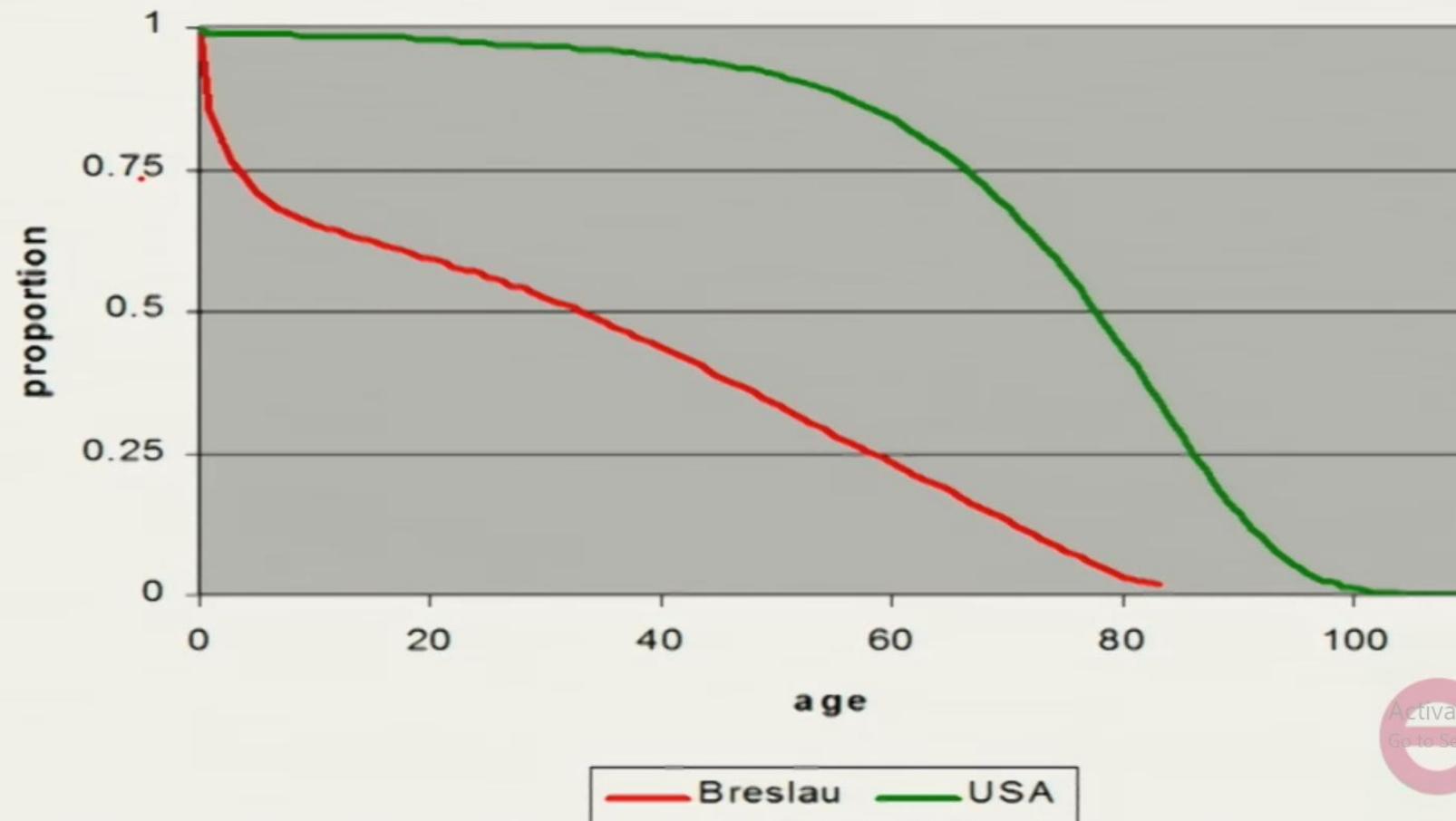


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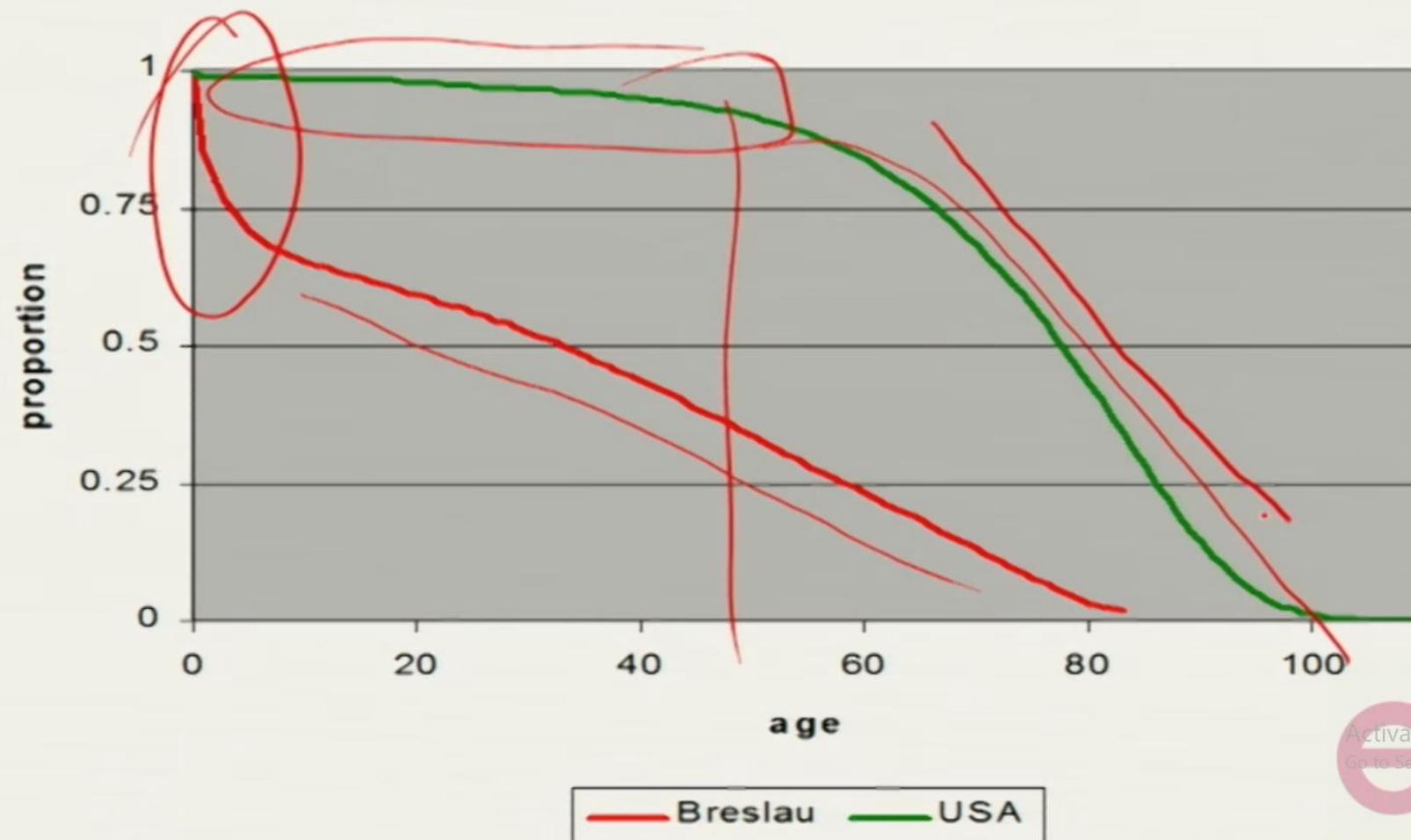


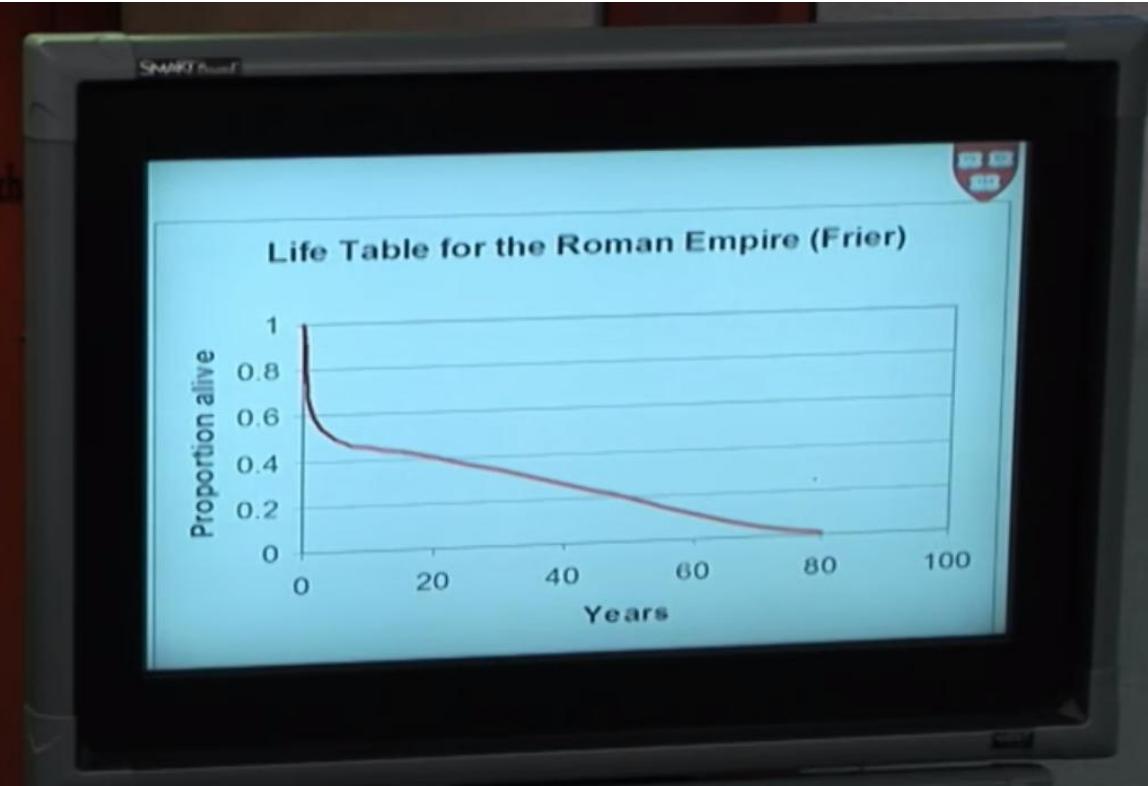
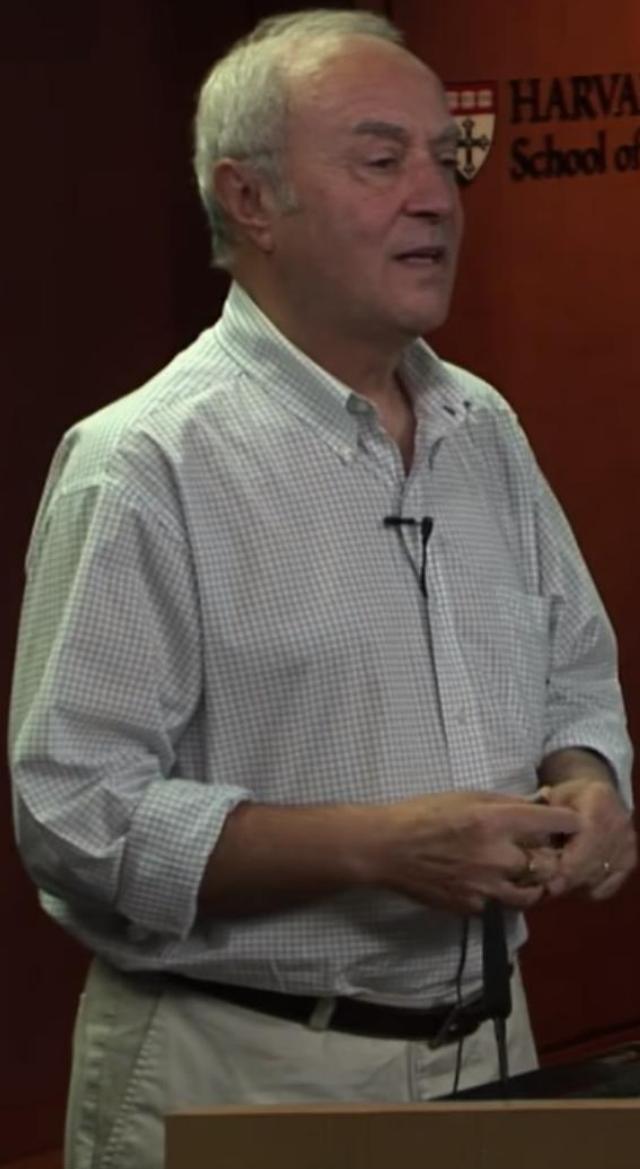
Halley's Lifetable, Breslau 1687-91 and USA 1979-81

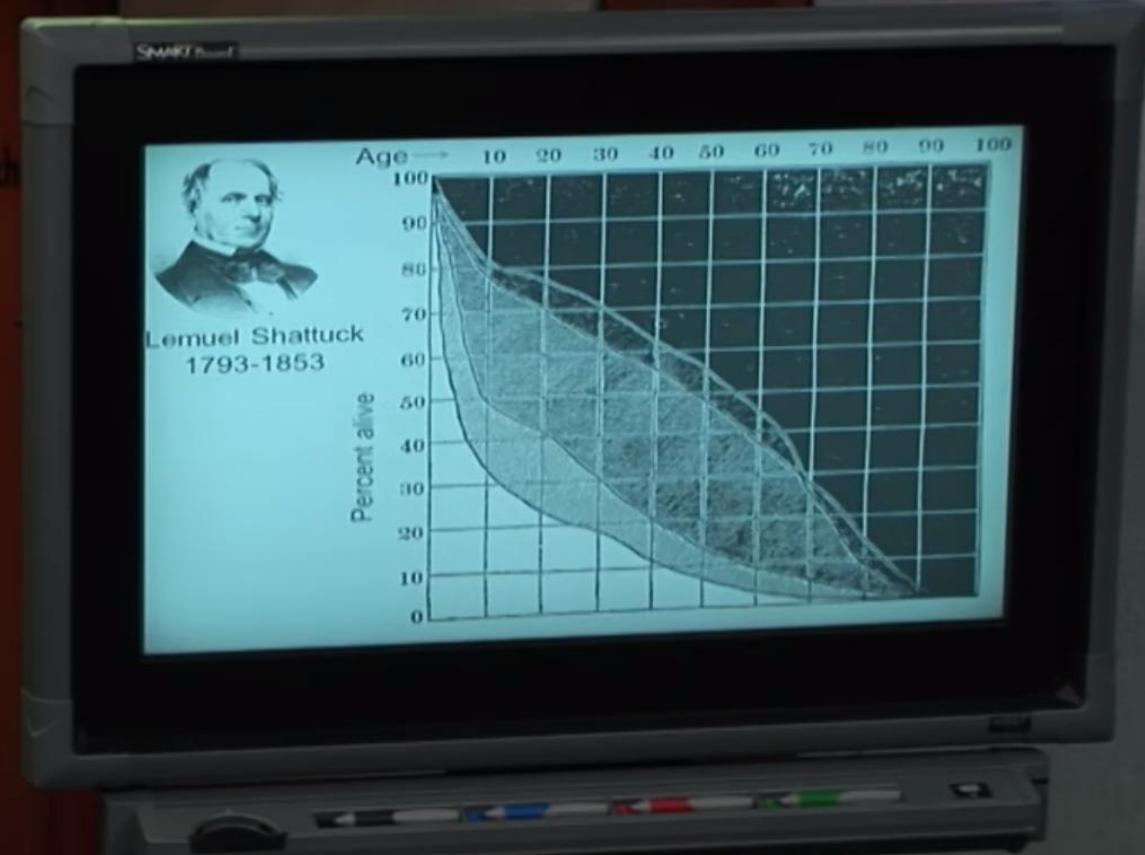




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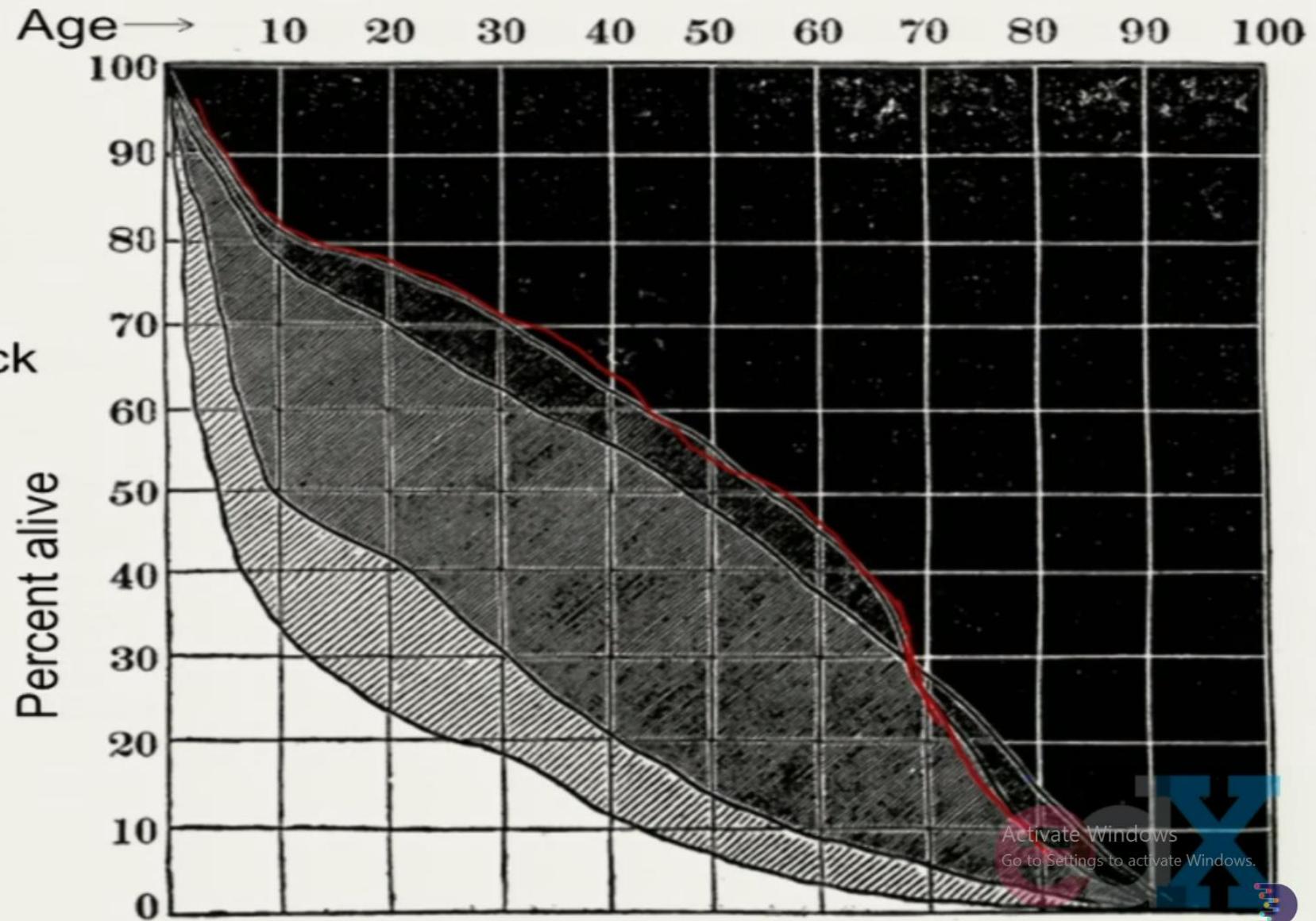






Lemuel Shattuck
1793-1853

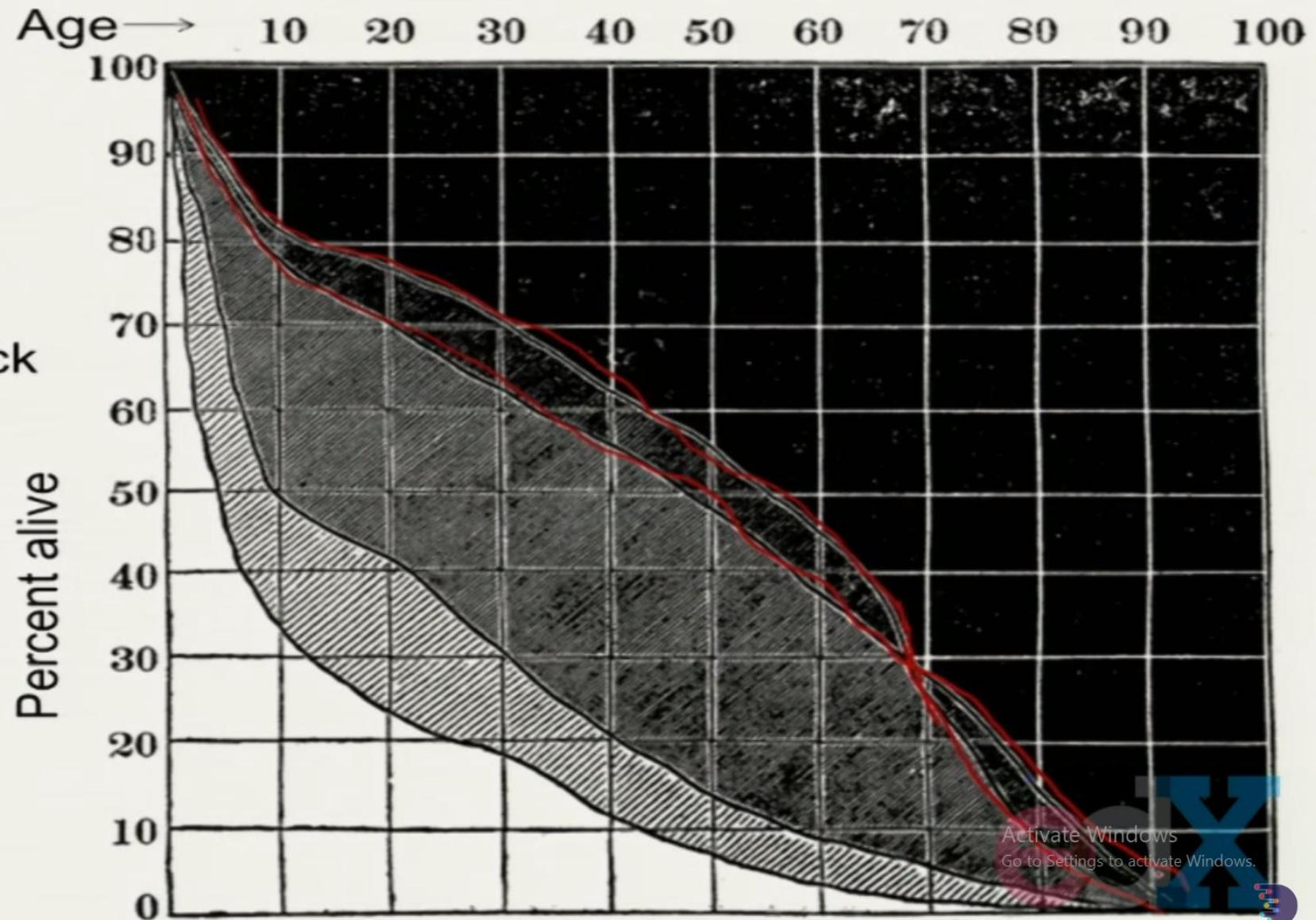
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Lemuel Shattuck
1793-1853

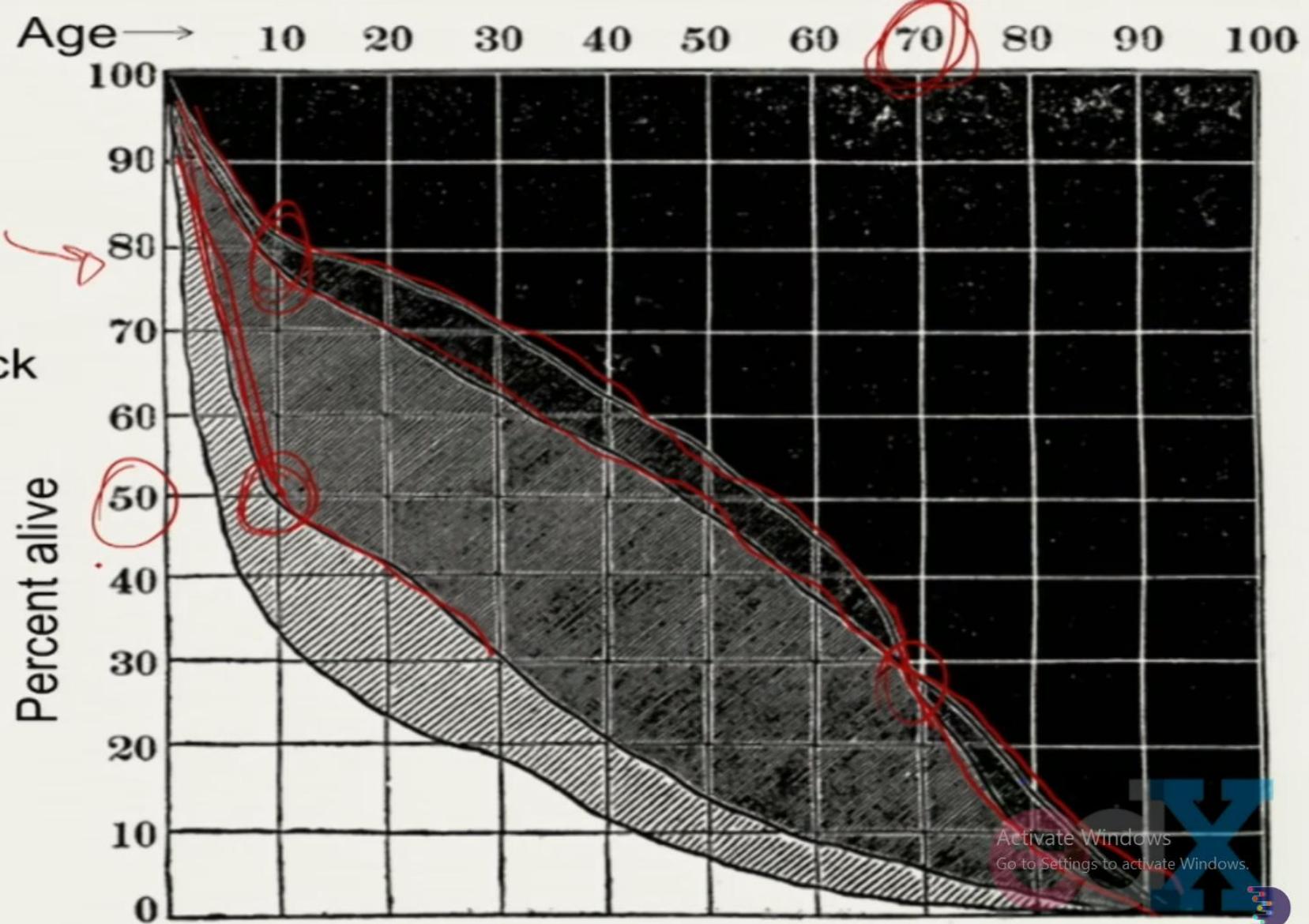
Preston
Newton





Lemuel Shattuck
1793-1853

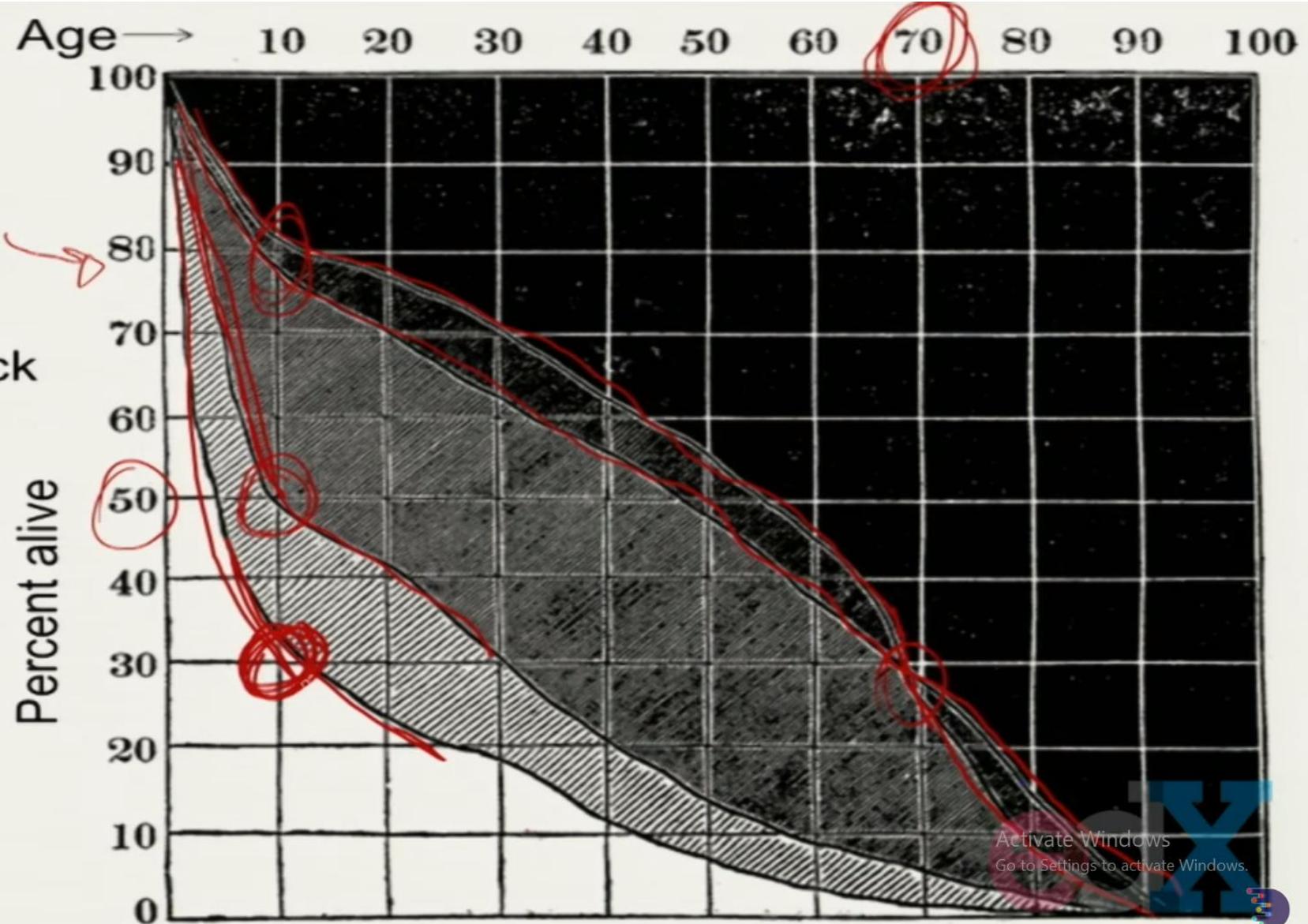
Preston
Newton





Lemuel Shattuck
1793-1853

Preston
Newton





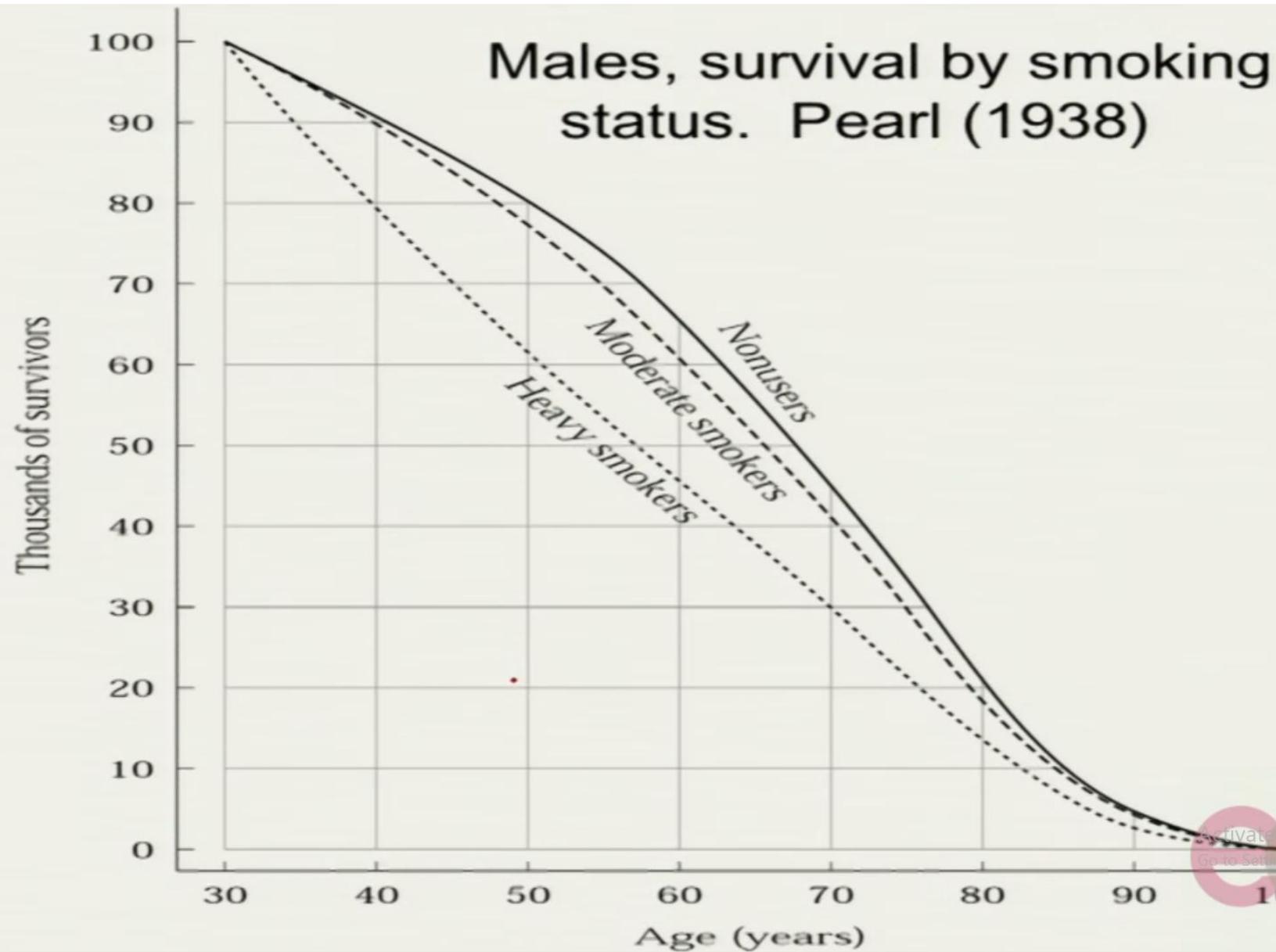
Dean Briggs of Harvard says, “The peculiar evil in cigarettes I leave for scientific men to explain; I know merely that among college students the excessive cigarette smokers are recognized even by other smokers as representing the feeblest form of intellectual and moral life.”

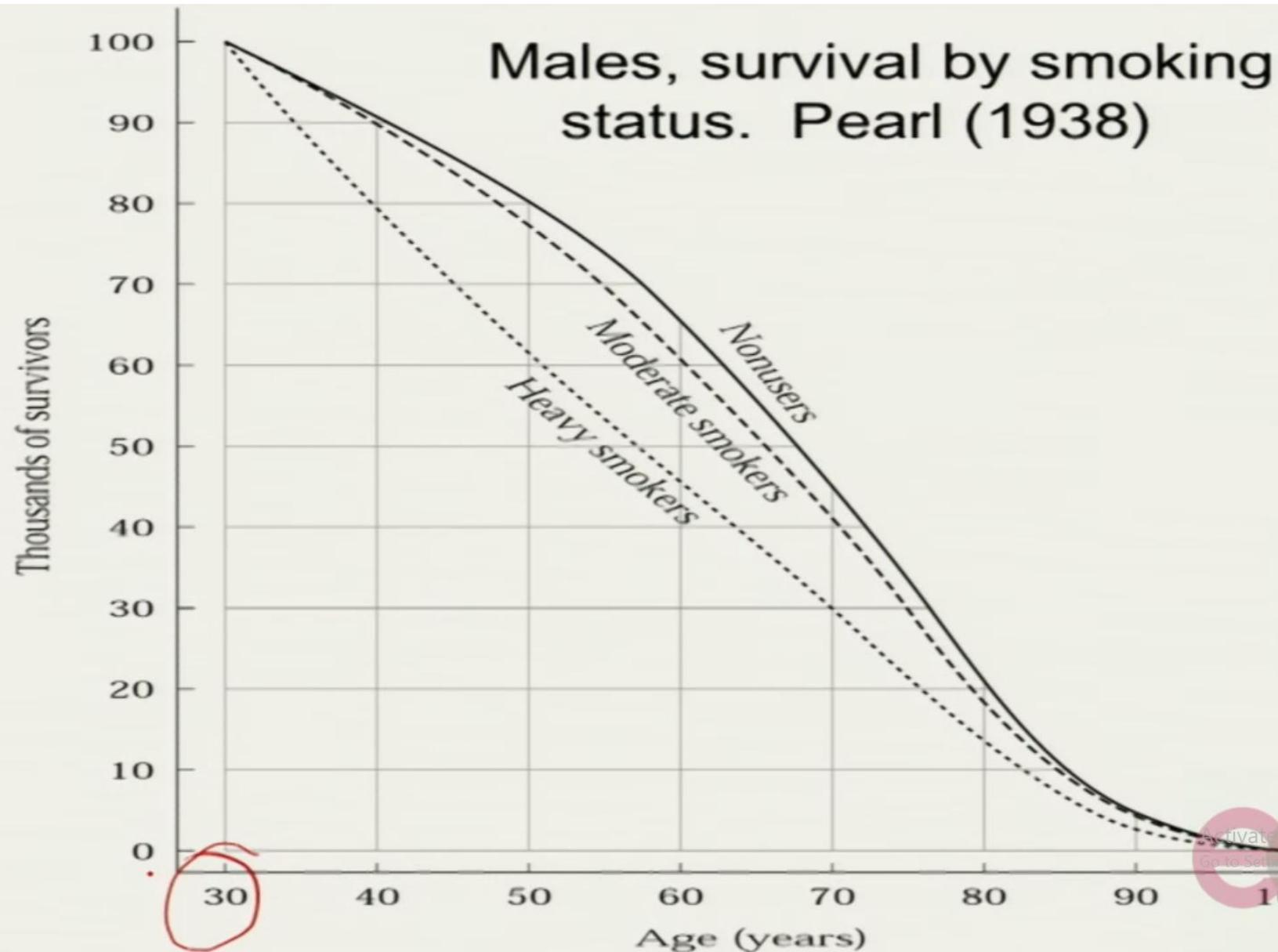
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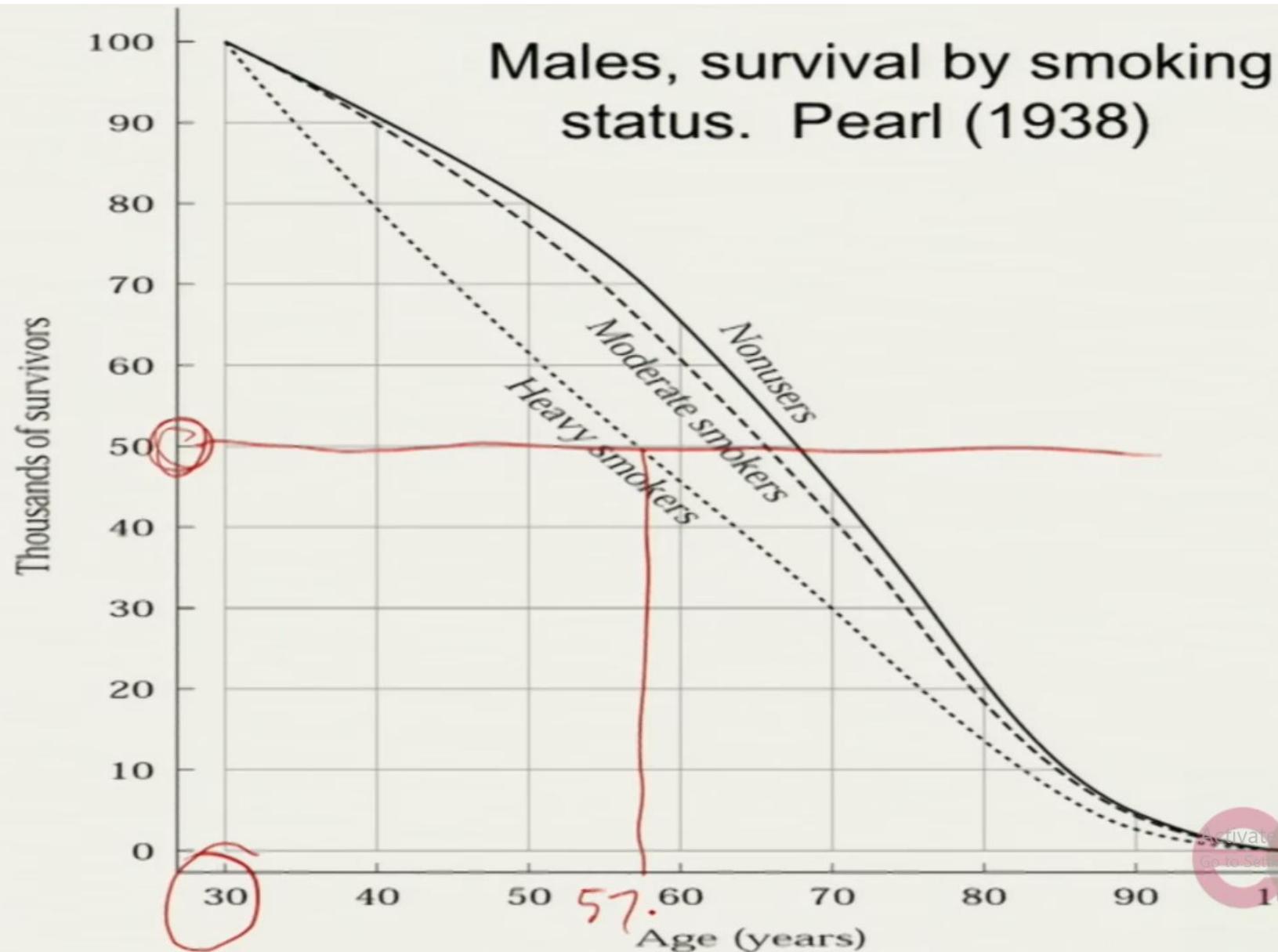
Healthy Living, Book Two

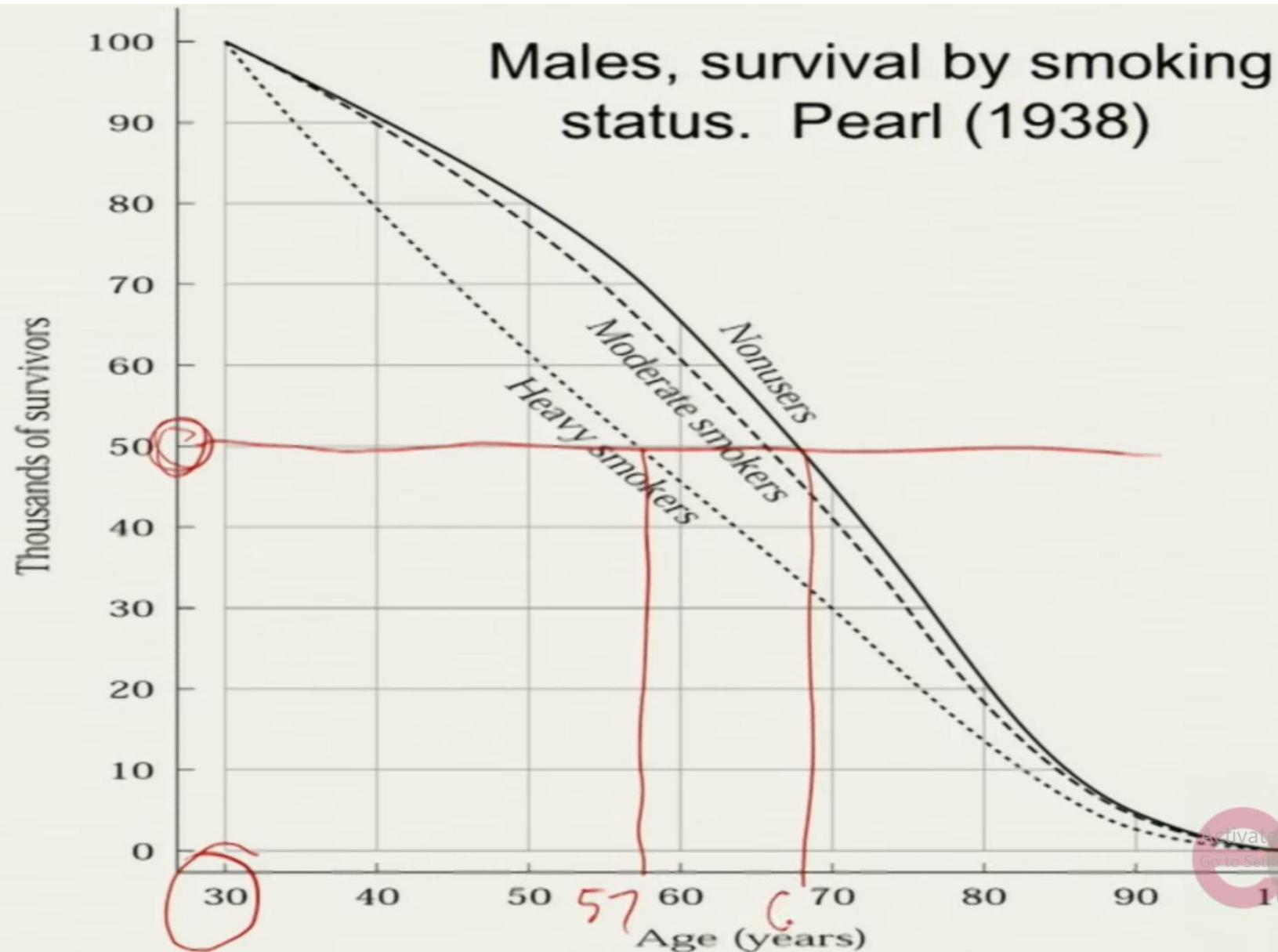
C.A. Winslow 1920 p.185

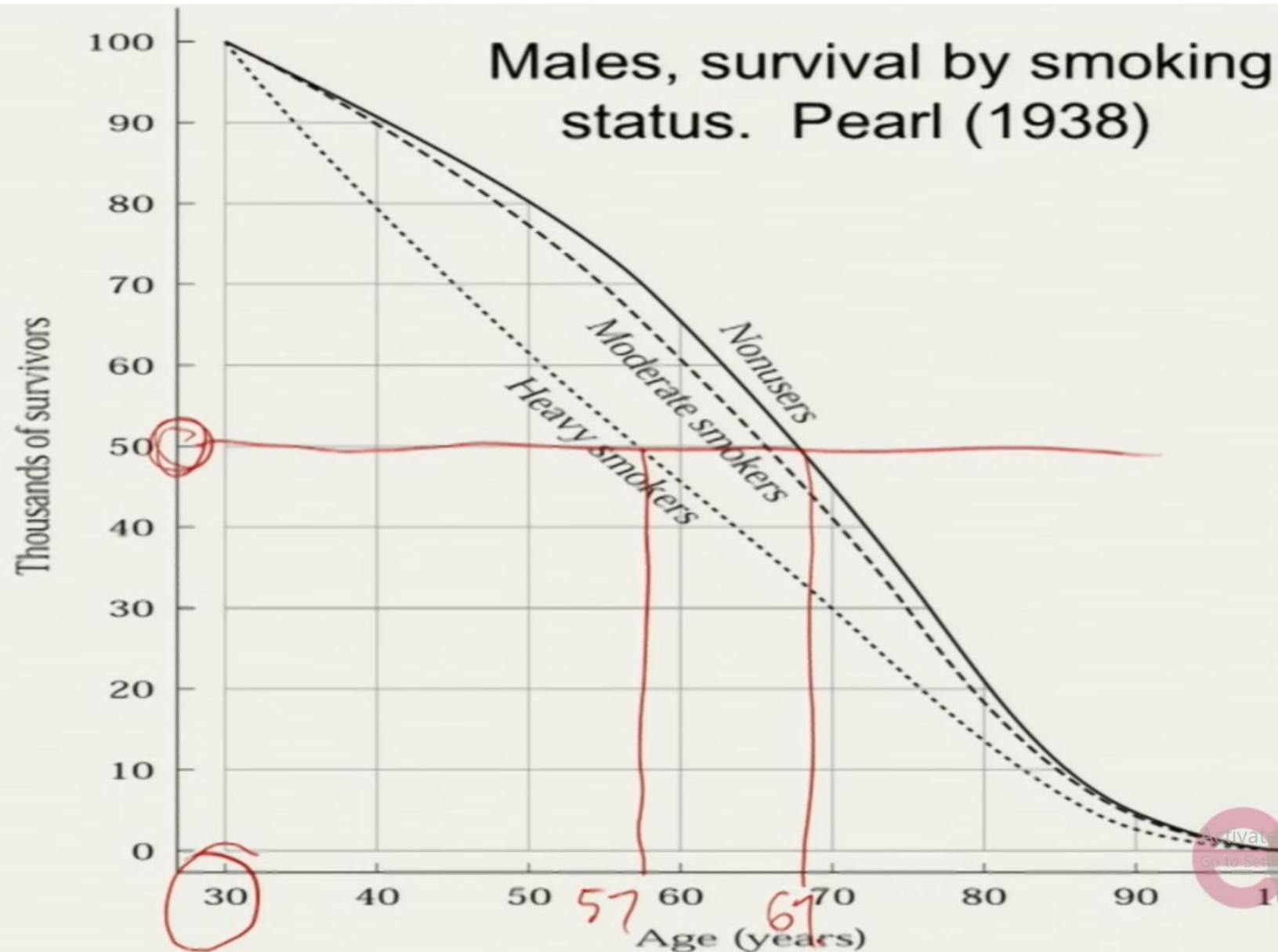


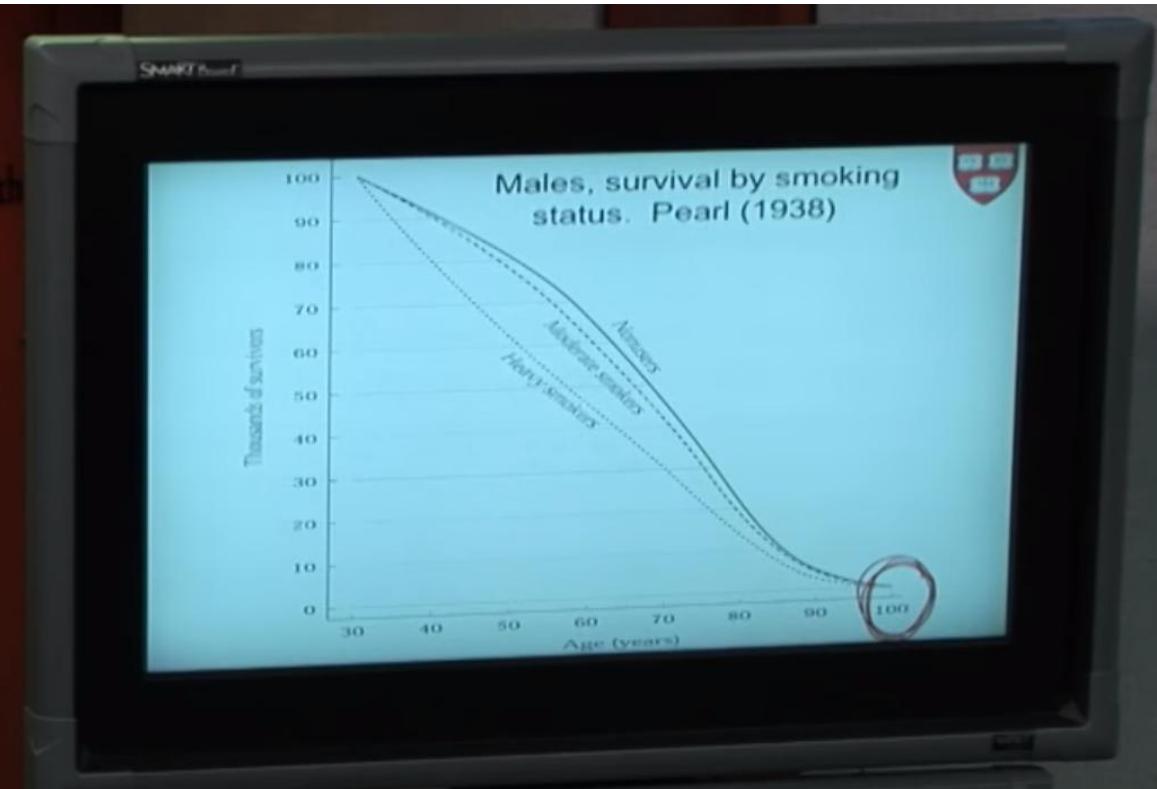
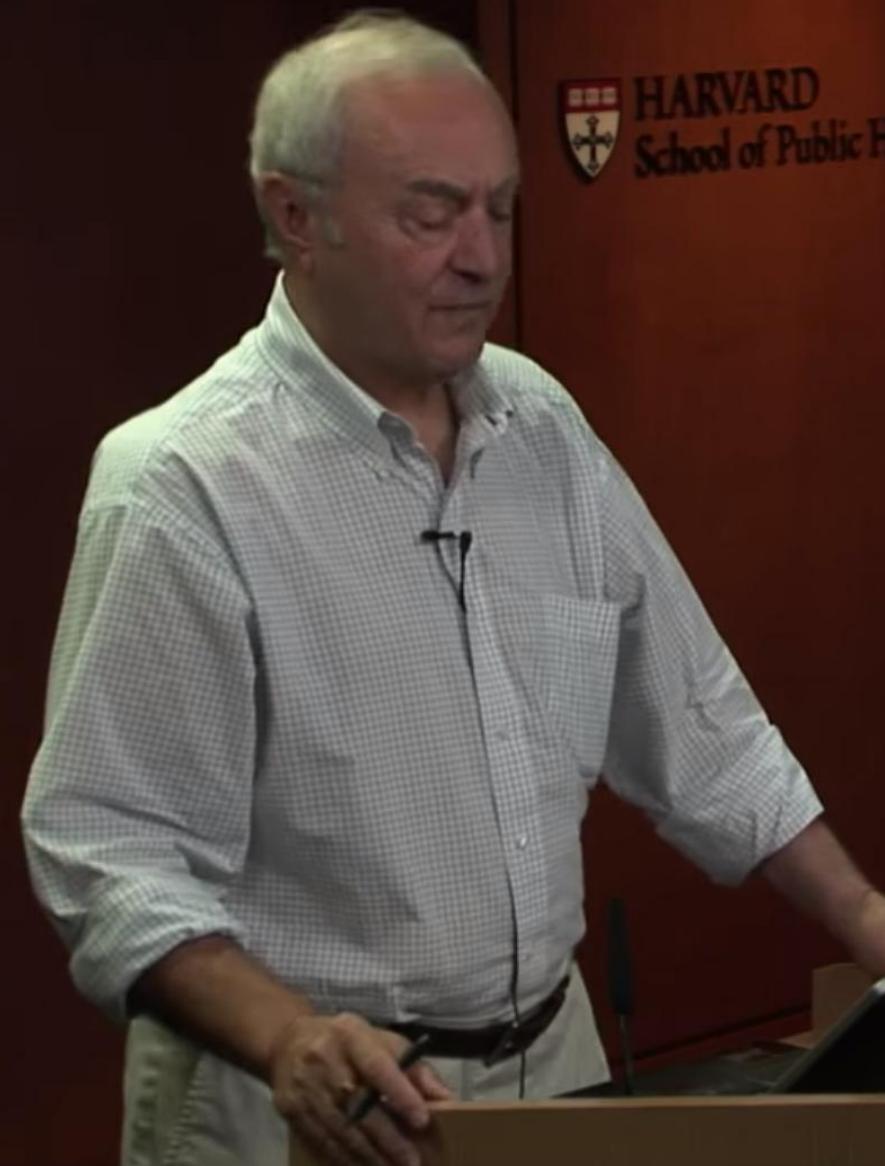












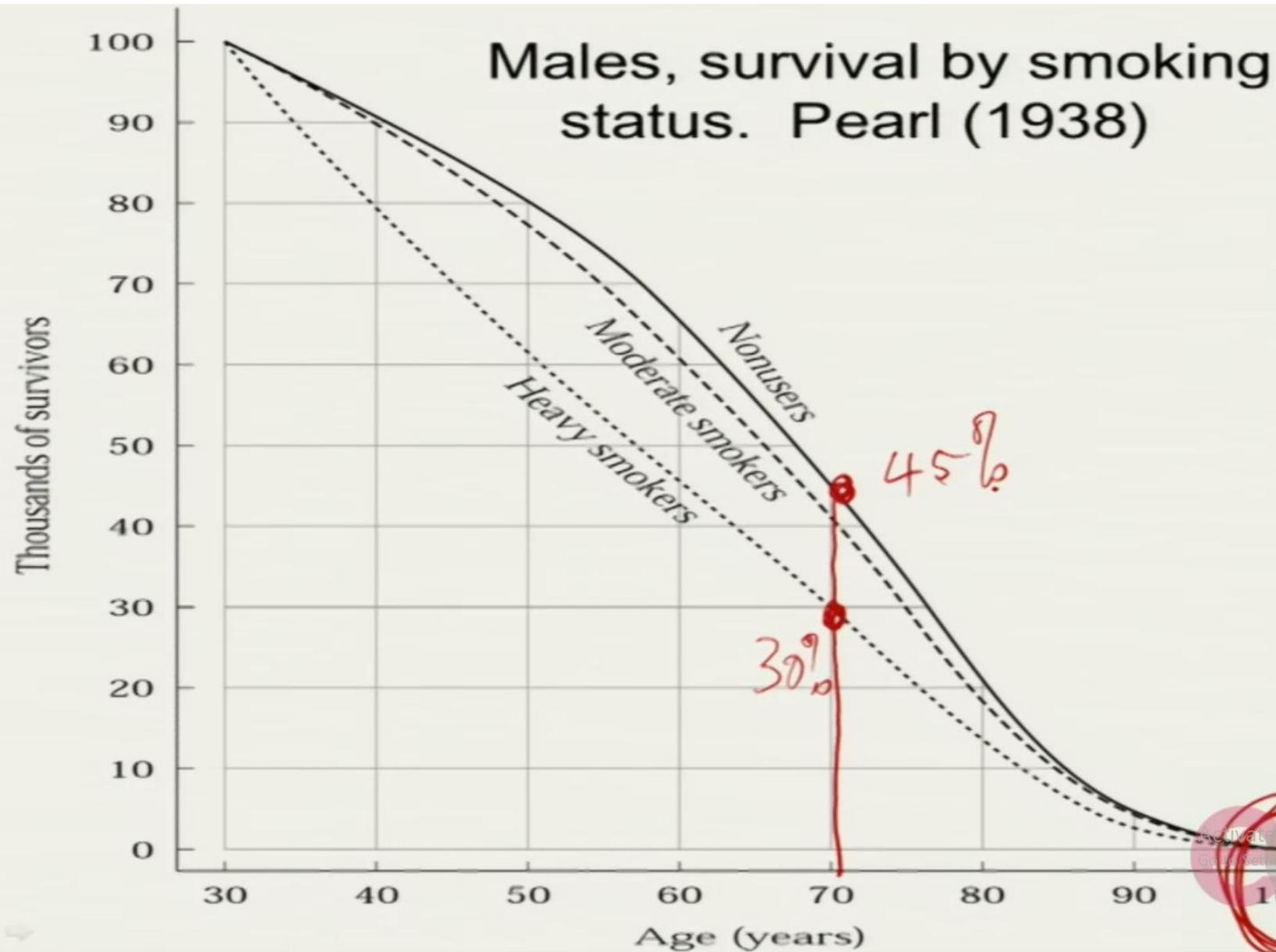


TABLE 1

THE DEATH RATE ($1,000 q_x$) AND SURVIVORSHIP (l_x) FUNCTIONS, AT FIVE-YEAR INTERVALS, STARTING AT AGE 30, OF
 (a) NON-USERS OF TOBACCO; (b) MODERATE SMOKERS
 WHO DID NOT CHEW TOBACCO OR TAKE SNUFF;
 (c) HEAVY SMOKERS WHO DID NOT CHEW TOBACCO
 OR TAKE SNUFF. WHITE MALES

Age	Non-users		Moderate smokers		Heavy smokers	
	$1,000 q_x$	l_x	$1,000 q_x$	l_x	$1,000 q_x$	l_x
30	8.18	100,000	7.86	100,000	16.89	100,000
35	8.78	95,883	9.63	95,804	21.27	90,943
40	10.01	91,546	11.89	90,883	23.91	81,191
45	12.04	86,730	14.80	85,129	25.69	71,665
50	15.16	81,160	18.61	78,436	27.49	62,699
55	19.82	74,538	23.67	70,712	30.09	54,277
60	26.73	66,564	30.49	61,911	34.29	46,226
65	36.88	57,018	39.83	52,082	41.20	38,328
70	51.69	45,919	52.84	41,431	52.72	30,393
75	73.02	33,767	71.28	30,455	72.33	22,338
80	103.22	21,737	97.95	19,945	100.44	14,494
85	142.78	11,597	136.50	10,987	139.48	7,865
90	197.49	4,753	190.23	4,686	193.68	3,292
95	273.2	1,320	265.1	1,366	268.9	938

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40	10.01	91,546	11.89	90,883	23.91	81,191
45	12.04	86,730	14.80	85,129	25.69	71,665
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90	197.49	4,753	190.23	4,686	193.68	3,292
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Healthy worker effect

Here, just as is usually the case in our experience in studies of this sort, the differences between the usage groups in specific mortality rates, as indicated by q_x , practically disappear from about age 70 on. This is presumably an expression of the residual effect of the heavily selective character of the mortality in the earlier years in the groups damaged by the agent (in this case tobacco). On this view those individuals in the damaged groups who survive to 70 or thereabouts are such tough and resistant specimens that thereafter tobacco does them no further measurable harm as a group.



Smoking tobacco effect



However envisaged, the net conclusion is clear. In this sizable material the smoking of tobacco was statistically associated with an impairment of life duration, and the amount or degree of this impairment increased as the habitual amount of smoking increased.

Tobacco Smoking and Longevity

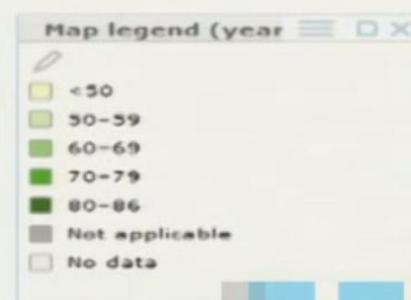
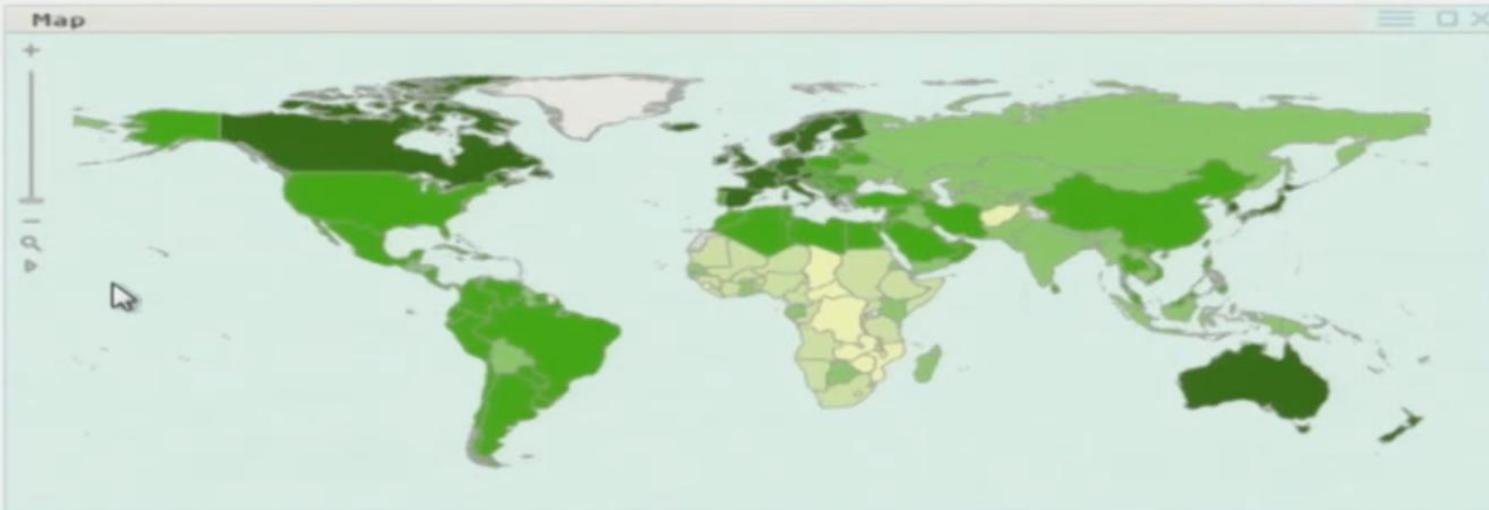
Raymond Pearl

Science, New Series, Volume 87, Issue 2253
(Mar. 4, 1938), 216-217.



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Life expectancy (years)	
Country	Years
Afghanistan	48
Albania	73
Algeria	72
Andorra	82
Angola	52
Antigua and Barbuda	74
Argentina	75
Armenia	70
Australia	82
Austria	80
Azerbaijan	68
Bahamas	76
Bahrain	74
Bangladesh	65
Barbados	76



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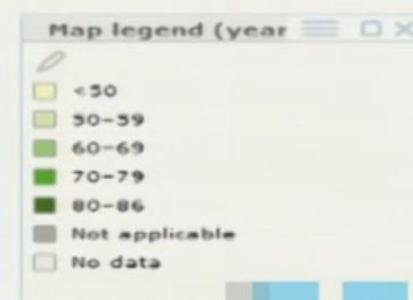
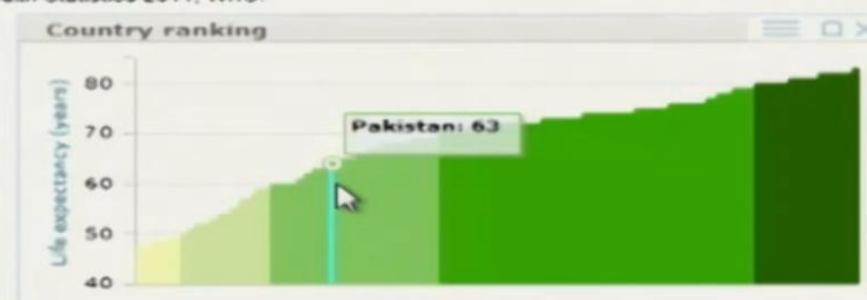
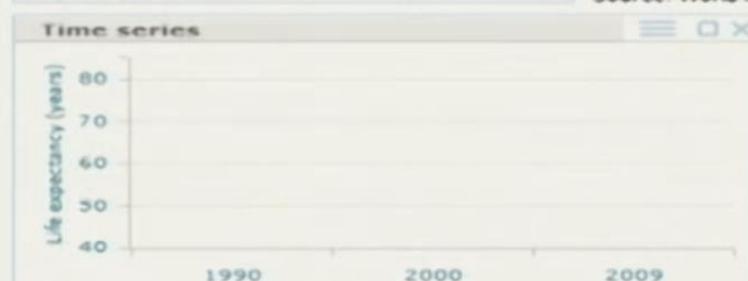
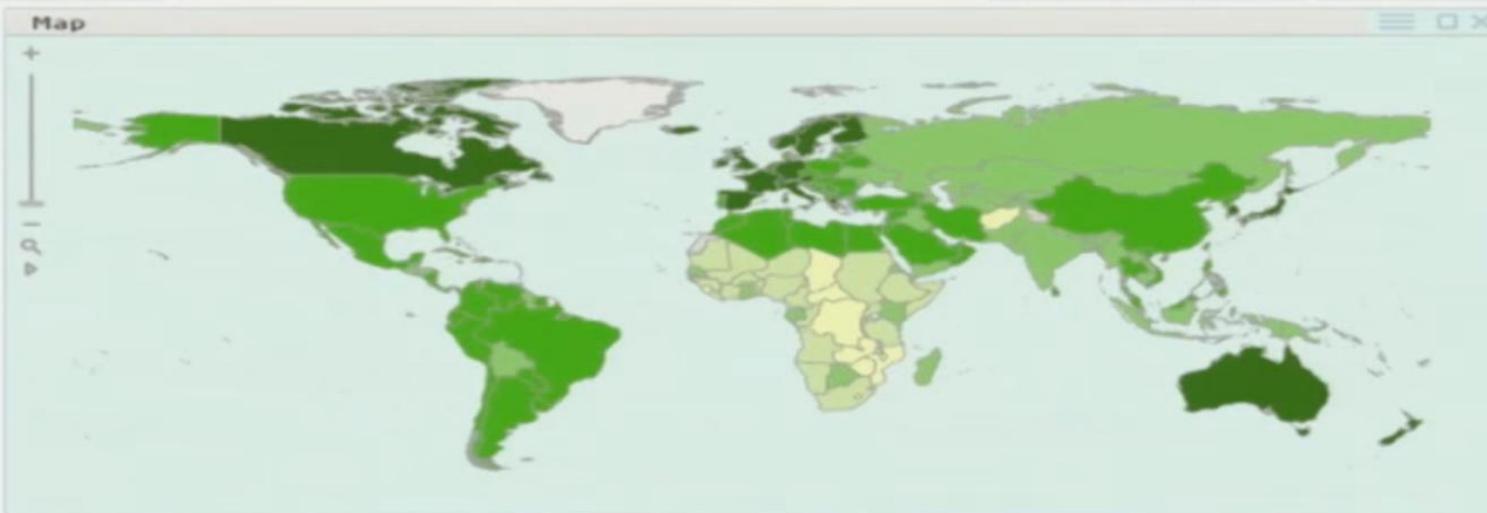
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Life expectancy (years)		Country	Years
		Afghanistan	48
		Albania	73
		Algeria	72
		Andorra	82
		Angola	52
		Antigua and Barbuda	74
		Argentina	75
		Armenia	70
		Australia	82
		Austria	80
		Azerbaijan	68
		Bahamas	76
		Bahrain	74
		Bangladesh	63
		Barbados	76



Use your mouse to select data. Click on a country to view the time series chart.
 Use Ctrl-key to make multiple selections. Click on the right mouse button to clear selections.
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