



VBDR

Improving communications with veterans
and resolving issues related to dose
reconstruction and claim adjudication

Demographic Analysis

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Subcommittee 4: Communication & Outreach



**Board Meeting
March 23, 2012**



What is a Demographic Analysis? And Why?

➤ A spreadsheet analysis combining:

- NTPR records of how many participated in each test series, and how many qualify as Atomic Vets who were in Hiroshima & Nagasaki, and their birth years (YOB) (of some of them)
- ~~Data on the “Healthy Soldier Effect”~~
Observed mortality in Atomic Vets, six series to mid 2007, by YOB
- Actuarial data on how long people live given YOB, to extend projections to 2011, '21, '31, '41, and fill in thin Atomic Vet data

➤ To calculate:

- How many Atomic Veterans are still living
- How that number will diminish with time, through mortality

➤ So that we can:

- Plan in a more informed way
- Establish a relationship between pace of outreach and how many we can reach



BAKER (CROSSROADS)
Bikini Atoll, 23 kt
24 July 1946


How Many Participants?

Year	Series	Partic's	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936		
1945	Hiroshima	152,286	1210	1129	1533	1694	2218	3347	3710	5122	4840	5929	7219	9236	9962	12220	13511	17140	29038	15083	1976	81	This grey area rejects YOBs								
1945	Nagasaki	124,095	456	707	935	1231	2029	2325	2280	3374	4400	4674	6179	7820	9256	10146	12220	19197	20884	10784	1254	182	corresponding to the vet being								
1945	Trinity	642	16	29	16	20	20	53	29	25	41	41	57	16	25	33	53	12	4	0	8	0	less than 16 yrs old								
	Post-Trinity	172	0	9	17	6	0	12	3	17	15	3	3	0	3	12	9	12	0	6	0	0	at the series.								
1946	Crossroads	44,835	294	278	335	352	458	538	596	739	901	1090	1516	1838	2195	2560	2572	2933	5075	9481	8985	417	24								
	Post-Crossroads	4,420	34	25	36	37	52	43	76	64	75	103	153	169	219	226	265	238	474	908	1055	60	2								
1948	Sandstone	19,754	172	202	217	202	253	331	376	428	470	574	728	803	848	1018	1160	1042	1186	3145	3288	1791	857	11	7						
	Post-Sandstone	1,889	17	17	22	28	17	28	44	55	52	72	105	83	77	102	113	113	121	151	259	256	99	8	0						
1951	Ranger	778	13	13	9	9	15	20	41	26	65	26	61	68	35	39	37	26	17	9	37	48	50	33	22	2	0	0	0		
	Post-Ranger	2										1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0		
1951	Greenhouse	8,909	67	107	84	107	127	191	216	257	324	324	395	436	373	410	448	451	424	446	585	783	769	610	457	158	3	0			
	Post Greenhouse	2,564	16	29	34	39	16	57	55	65	70	65	99	88	91	81	86	62	81	132	210	307	281	247	187	88	21	0			
1951	Buster-Jangle	11,170	158	215	196	228	255	310	328	407	469	426	480	377	391	348	277	306	328	447	1028	1210	869	523	320	167	27	0			
	Post-Buster-Jangle	76	0	0	0	0	2	2	0	3	9	5	0	3	2	0	3	0	0	2	18	8	3	9	2	2	0	0			
1952	Tumbler-Snapper	12,097	84	126	166	184	194	222	261	305	373	345	376	313	341	301	289	308	261	413	942	1280	1418	1236	907	548	186	2	2		
	Post-Tumbler-Snapper	368	4	6	9	4	6	11	6	13	9	19	4	13	11	0	19	13	11	15	32	51	39	32	6	13	2	0	0		
1953	Ivy	13,985	65	76	82	87	116	176	190	250	274	302	350	400	361	377	405	403	408	469	797	1166	1558	1834	1671	1234	632	73	0		
	Post-Ivy	599	0	3	5	5	5	13	11	16	26	18	32	26	18	18	32	21	24	24	29	47	74	53	42	29	13	3	0		
1953	Upshot-Knothole	20,479	188	192	234	249	307	377	471	548	619	664	599	662	541	486	509	471	521	692	1225	1638	2353	2580	1892	813	325	156	5		
	Post-Upshot-Knothole	443	2	0	6	6	6	6	11	13	13	15	4	6	13	11	13	8	23	17	26	28	43	54	68	32	11	0	0		
1954	Castle	17,672	58	74	50	108	125	147	191	242	266	260	319	349	377	341	389	426	370	438	583	1033	1617	2265	2715	2286	1642	690	71		
	Post-Castle	1,063	2	9	9	10	7	17	16	16	24	10	17	24	31	24	19	17	30	30	30	75	78	92	115	155	92	68	28		
1955	Teapot	12,280	111	97	121	155	204	206	227	336	385	362	388	383	337	286	309	241	250	300	443	497	575	650	833	1248	1035	733	587		
	Post-Teapot	150	2	3	0	2	2	0	7	5	8	2	2	15	7	0	5	5	7	5	5	8	10	10	8	13	3	2	0		
1955	Wigwam	6,812	8	24	37	33	42	61	71	109	89	99	134	137	137	150	144	177	146	144	157	239	302	434	787	820	808	711	481		
	Post-Wigwam	6																							3	1	0	1			
1956	Redwing	12,783	46	42	63	69	101	101	153	170	242	277	274	250	302	302	300	288	268	297	332	405	509	505	722	1048	1228	1238	1471		
	Post-Redwing	4,466	12	17	22	33	33	55	67	55	77	98	93	105	74	69	91	89	110	122	153	172	199	203	237	294	376	376	505		
1957	Plumbbob	14,207	128	151	175	215	250	297	356	404	410	445	432	483	398	376	359	331	273	292	433	443	504	484	537	788	984	633	854		
	Post-Plumbbob	156	0	1	0	1	4	1	4	7	4	1	7	10	9	5	1	8	0	7	10	4	5	5	4	7	14	9	12		
1958	Hardtack I	18,715	31	59	56	80	91	117	183	207	259	291	359	457	407	362	439	431	404	414	500	502	488	532	581	688	1091	1212	1552		
	Post-Hardtack I	973	7	5	5	0	2	9	18	7	16	21	23	16	16	11	11	18	18	11	18	21	25	37	34	44	55	67	60		
1958	Argus	4,525	3	6	5	8	13	11	19	18	38	46	53	70	81	65	96	101	83	93	91	75	105	85	94	127	217	252	376		
1958	Hardtack II	1,667	15	16	15	25	28	49	55	58	59	62	64	76	49	62	59	47	43	40	46	65	59	73	64	58	98	81	47		
	Post-Hardtack II	436	9	6	5	8	6	9	11	11	14	20	11	27	15	15	13	19	13	19	11	14	11	18	11	14	20	27	17		
62-63	Dominic I	24,550	23	25	35	34	66	63	87	98	140	157	222	237	285	332	374	454	471	418	463	532	593	445	463	499	652	708	786		
	Post-Dominic I	2											1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0		
62-63	Dominic II	4,035	26	29	29	40	31	59	57	78	79	90	97	122	105	102	122	90	84	102	145	136	152	141	109	76	95	124	193		
	Post-Dominic II	108	2	2	2	0	0	6	2	0	0	2	0	0	0	0	0	6	8	4	0	4	4	4	18	2	0	6	4		
62-63	Plowshare	378	4	4	4	8	2	6	8	9	9	13	6	9	9	9	9	9	11	15	8	23	19	15	13	13	19	19	23		
	# of vets born in each YOB =	####	####	####	####	####	####	####	10,235	13,556	15,365	16,950	20,861	25,127	27,402	30,902	34,768	45,515	61,462	44,972	25,188	13,602	13,693	13,244	12,910	11,266	####	####	####		
	Sum of row above:	544,547	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936		
	Sum of Column C:	544,547																													
	Hiroshima & Nagasaki	276,381																													
	All Series	268,166																													

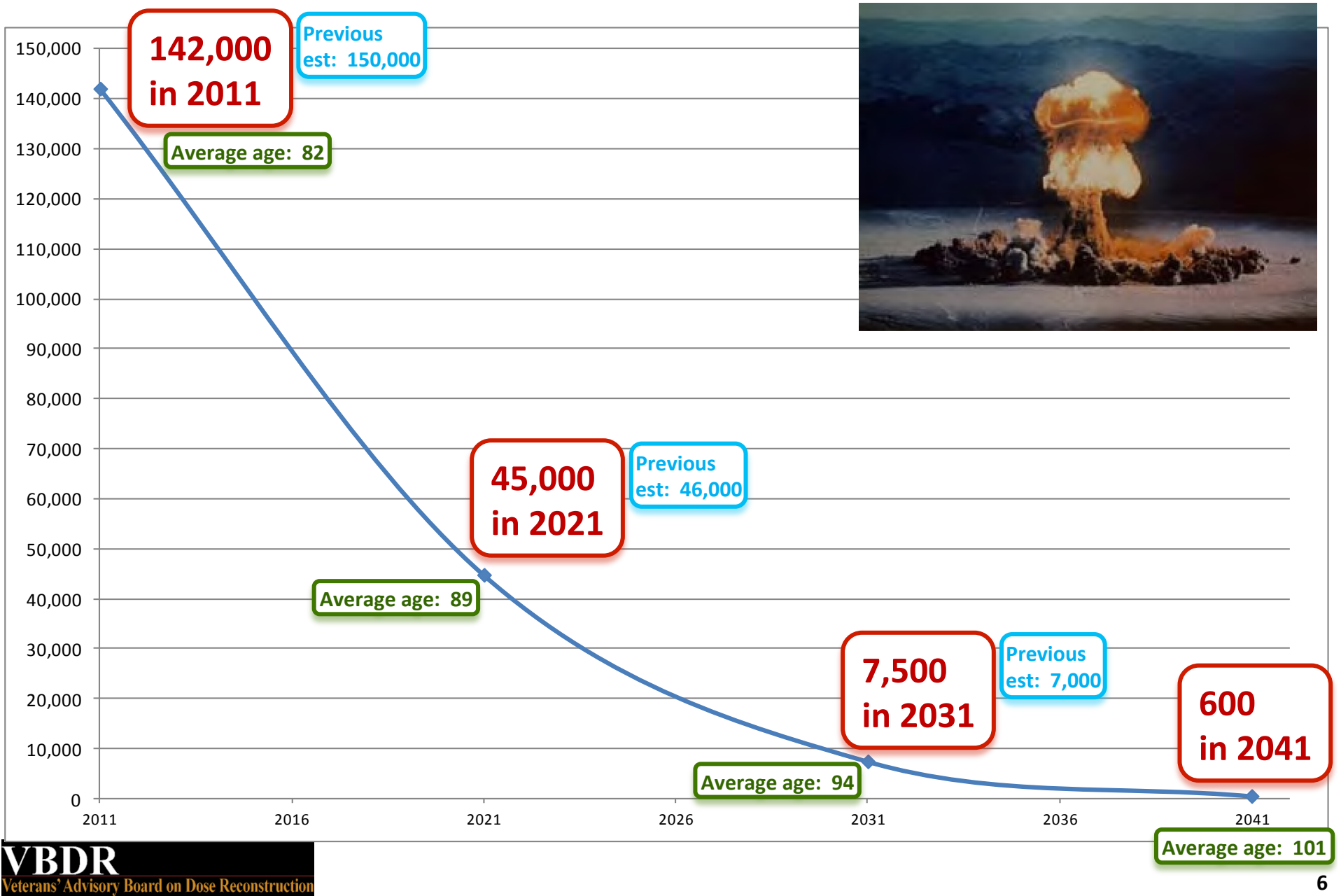


Both above sums are from all YOBs, back to 1878. 2011 life tables ran out for YOBs before 1910, i.e., none of them expected to be alive in 2011, so those YOBs not counted visibly on this worksheet.

What Fraction Are Still With Us in 2011?

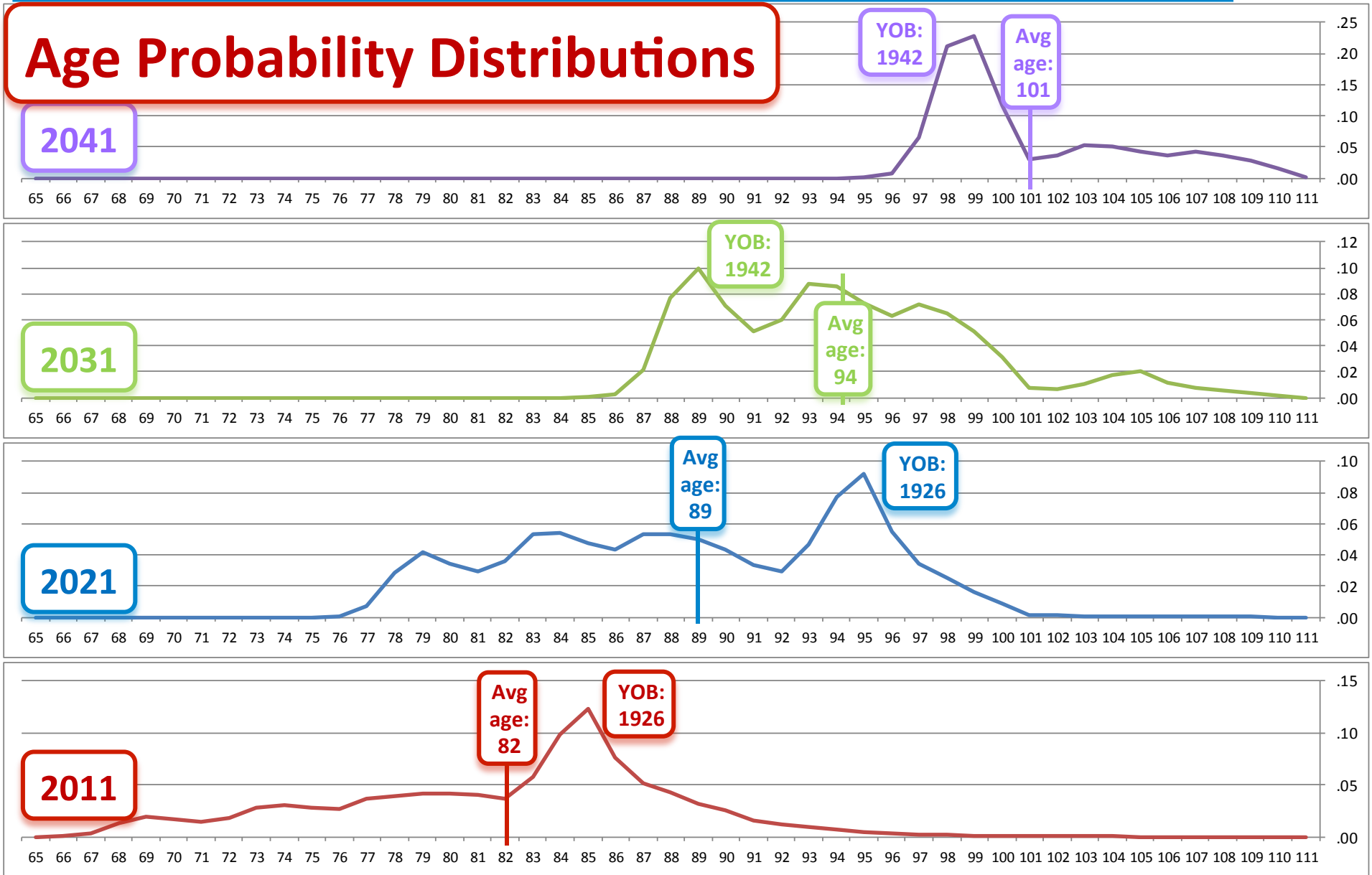
Series	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	
1945 Hiroshima	.002	.010	.018	.025	.033	.041	.049	.057	.065	.073	.081	.110	.140	.170	.200	.229	.259	.289	.318	.348	.378	This grey area rejects Yt corresponding to the v less than 16 yrs ol at the series.				
1945 Nagasaki	.002	.010	.018	.025	.033	.041	.049	.057	.065	.073	.081	.110	.140	.170	.200	.229	.259	.289	.318	.348	.378					
1945 Trinity	.002	.010	.018	.025	.033	.041	.049	.057	.065	.073	.081	.110	.140	.170	.200	.229	.259	.289	.318	.348	.378					
1945 Post-Trinity	.002	.010	.018	.025	.033	.041	.049	.057	.065	.073	.081	.110	.140	.170	.200	.229	.259	.289	.318	.348	.378					
1946 Crossroads	.002	.010	.018	.026	.033	.041	.049	.057	.065	.073	.081	.111	.141	.170	.200	.230	.259	.289	.319	.349	.378					
1946 Post-Crossroads	.002	.010	.018	.026	.033	.041	.049	.057	.065	.073	.081	.111	.141	.170	.200	.230	.259	.289	.319	.349	.378					
1948 Sandstone	.002	.010	.018	.026	.034	.042	.050	.058	.066	.073	.081	.111	.141	.171	.201	.230	.260	.290	.320	.350	.379		.409	.438		
1948 Post-Sandstone	.002	.010	.018	.026	.034	.042	.050	.058	.066	.073	.081	.111	.141	.171	.201	.230	.260	.290	.320	.350	.379	.409	.438			
1951 Ranger	.002	.010	.018	.026	.034	.042	.050	.058	.066	.074	.082	.112	.142	.172	.202	.232	.262	.292	.322	.351	.381	.411	.440	.469	.498	
1951 Post-Ranger	.002	.010	.018	.026	.034	.042	.050	.058	.066	.074	.082	.112	.142	.172	.202	.232	.262	.292	.322	.351	.381	.411	.440	.469	.498	
1951 Greenhouse	.002	.010	.018	.026	.034	.042	.050	.058	.066	.074	.082	.112	.142	.172	.202	.232	.262	.292	.322	.351	.381	.411	.440	.469	.498	
1951 Post Greenhouse	.002	.010	.018	.026	.034	.042	.050	.058	.066	.074	.082	.112	.142	.172	.202	.232	.262	.292	.322	.351	.381	.411	.440	.469	.498	
1951 Buster-Jangle	.002	.010	.018	.026	.034	.042	.050	.058	.066	.074	.082	.112	.142	.172	.202	.232	.262	.292	.322	.351	.381	.411	.440	.469	.498	
1951 Post-Buster-Jangle	.002	.010	.018	.026	.034	.042	.050	.058	.066	.074	.082	.112	.142	.172	.202	.232	.262	.292	.322	.351	.381	.411	.440	.469	.498	
1952 Tumbler-Snapper	.002	.010	.018	.026	.034	.042	.050	.058	.066	.074	.082	.112	.142	.172	.202	.232	.262	.292	.322	.352	.382	.411	.440	.469	.498	
1952 Post-Tumbler-Snapper	.002	.010	.018	.026	.034	.042	.050	.058	.066	.074	.082	.112	.142	.172	.202	.232	.262	.292	.322	.352	.382	.411	.440	.469	.498	
1953 Ivy	.002	.010	.018	.026	.034	.042	.050	.058	.066	.074	.082	.112	.142	.173	.203	.233	.263	.293	.323	.353	.383	.412	.441	.470	.499	
1953 Post-Ivy	.002	.010	.018	.026	.034	.042	.050	.058	.066	.074	.082	.112	.142	.173	.203	.233	.263	.293	.323	.353	.383	.412	.441	.470	.499	
1953 Upshot-Knothole	.002	.010	.018	.026	.034	.042	.050	.058	.066	.074	.082	.112	.142	.173	.203	.233	.263	.293	.323	.353	.383	.412	.441	.470	.499	
1953 Post-Upshot-Knothole	.002	.010	.018	.026	.034	.042	.050	.058	.066	.074	.082	.112	.142	.173	.203	.233	.263	.293	.323	.353	.383	.412	.441	.470	.499	
1954 Castle	.002	.010	.018	.026	.034	.042	.050	.058	.066	.074	.083	.113	.143	.173	.203	.233	.263	.293	.324	.354	.384	.413	.442	.471	.500	
1954 Post-Castle	.002	.010	.018	.026	.034	.042	.050	.058	.066	.074	.083	.113	.143	.173	.203	.233	.263	.293	.324	.354	.384	.413	.442	.471	.500	
1955 Teapot	.002	.010	.018	.026	.034	.042	.050	.058	.067	.075	.083	.113	.143	.173	.203	.234	.264	.294	.324	.354	.385	.414	.443	.471	.500	
1955 Post-Teapot	.002	.010	.018	.026	.034	.042	.050	.058	.067	.075	.083	.113	.143	.173	.203	.234	.264	.294	.324	.354	.385	.414	.443	.471	.500	
1955 Wigwam	.002	.010	.018	.026	.034	.042	.050	.058	.067	.075	.083	.113	.143	.173	.203	.234	.264	.294	.324	.354	.385	.414	.443	.471	.500	
1955 Post-Wigwam	.002	.010	.018	.026	.034	.042	.050	.058	.067	.075	.083	.113	.143	.173	.203	.234	.264	.294	.324	.354	.385	.414	.443	.471	.500	
1956 Redwing	.002	.010	.018	.026	.034	.042	.050	.059	.067	.075	.083	.113	.143	.174	.204	.234	.264	.295	.325	.355	.385	.414	.443	.472	.501	
1956 Post-Redwing	.002	.010	.018	.026	.034	.042	.050	.059	.067	.075	.083	.113	.143	.174	.204	.234	.264	.295	.325	.355	.385	.414	.443	.472	.501	
1957 Plumbbob	.002	.010	.018	.026	.034	.042	.051	.059	.067	.075	.083	.113	.144	.174	.204	.235	.265	.295	.325	.356	.386	.415	.444	.473	.502	
1957 Post-Plumbbob	.002	.010	.018	.026	.034	.042	.051	.059	.067	.075	.083	.113	.144	.174	.204	.235	.265	.295	.325	.356	.386	.415	.444	.473	.502	
1958 Hardtack I	.002	.010	.018	.026	.034	.043	.051	.059	.067	.075	.083	.114	.144	.174	.205	.235	.265	.296	.326	.356	.387	.416	.445	.474	.503	
1958 Post-Hardtack I	.002	.010	.018	.026	.034	.043	.051	.059	.067	.075	.083	.114	.144	.174	.205	.235	.265	.296	.326	.356	.387	.416	.445	.474	.503	
1958 Argus	.002	.010	.018	.026	.034	.043	.051	.059	.067	.075	.083	.114	.144	.174	.205	.235	.265	.296	.326	.356	.387	.416	.445	.474	.503	
1958 Hardtack II	.002	.010	.018	.026	.034	.043	.051	.059	.067	.075	.083	.114	.144	.174	.205	.235	.265	.296	.326	.356	.387	.416	.445	.474	.503	
1958 Post-Hardtack II	.002	.010	.018	.026	.034	.043	.051	.059	.067	.075	.083	.114	.144	.174	.205	.235	.265	.296	.326	.356	.387	.416	.445	.474	.503	
1962 Dominic I	.002	.010	.018	.027	.035	.043	.052	.060	.068	.076	.085	.115	.146	.176	.207	.237	.268	.298	.328	.359	.389	.419	.448	.477	.506	
1962 Post-Dominic I	.002	.010	.018	.027	.035	.043	.052	.060	.068	.076	.085	.115	.146	.176	.207	.237	.268	.298	.328	.359	.389	.419	.448	.477	.506	
1962 Dominic II	.002	.010	.018	.027	.035	.043	.052	.060	.068	.076	.085	.115	.146	.176	.207	.237	.268	.298	.328	.359	.389	.419	.448	.477	.506	
1962 Post Dominic II	.002	.010	.018	.027	.035	.043	.052	.060	.068	.076	.085	.115	.146	.176	.207	.237	.268	.298	.328	.359	.389	.419	.448	.477	.506	
1962 Plowshare	.002	.010	.018	.027	.035	.043	.052	.060	.068	.076	.085	.115	.146	.176	.207	.237	.268	.298	.328	.359	.389	.419	.448	.477	.506	

Those Numbers for Each Next Decade:

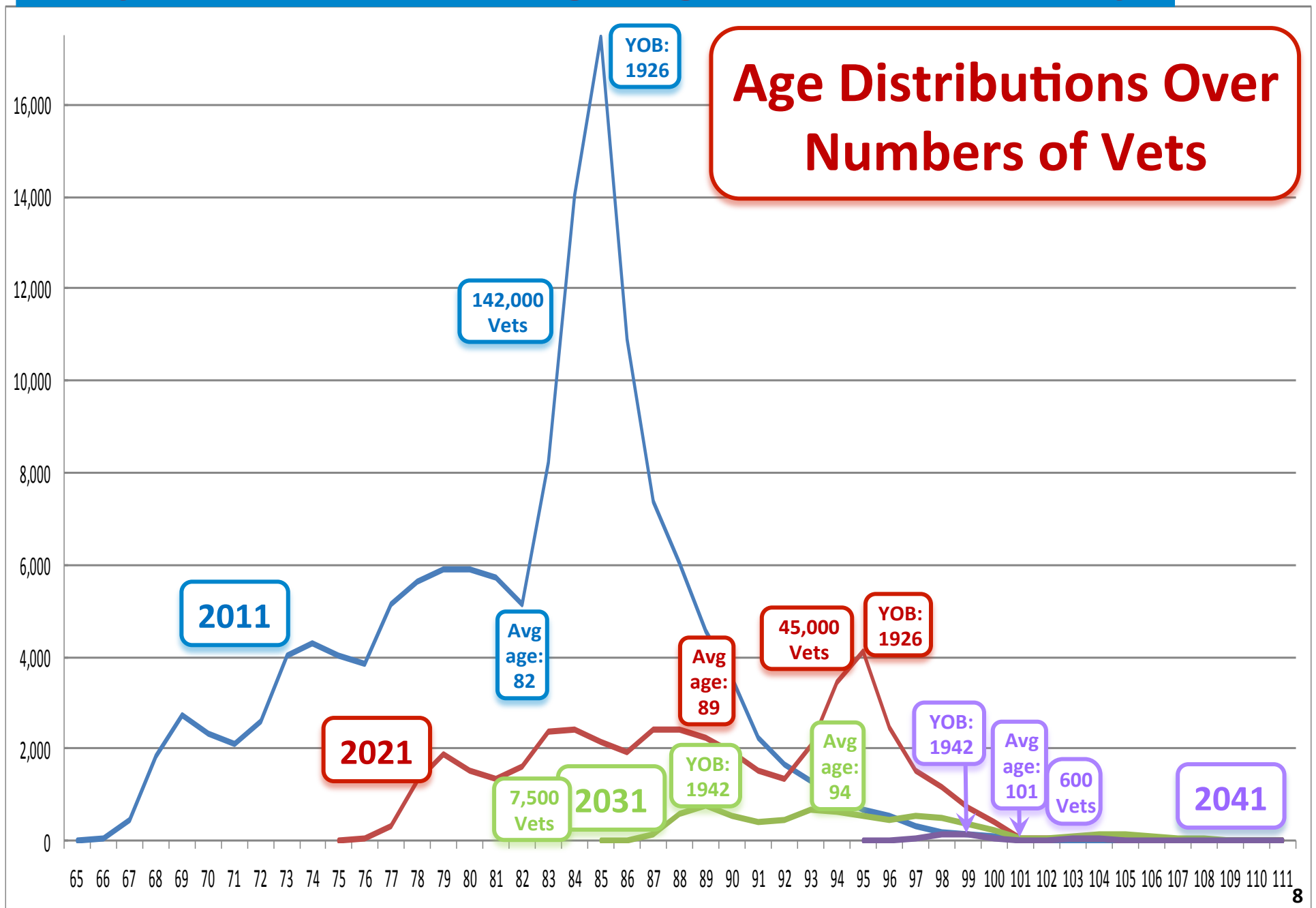


Why do those average ages shift so oddly?

Age Probability Distributions



Why do those average ages shift so oddly?



Potential for Further Analysis:



Spreadsheets could be combined with cancer rates, by age:

# of vets alive 2011 born in YOB =	0	8	8	7	4	5	11	14	23	12	25	87	142	190	296	530	658	959	1,305	1,675
Sum of Col C:	142,078	Average Age of Vet 82.1																		
Age of Vet in 2011:	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96	95	94	93	92
YOB:	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919
	5,143	5,723	5,898	5,916	5,636	5,131	3,846	4,006	4,293	4,036	2,602	2,096	2,320	2,748	1,835	456	40	3		
	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65		
	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946		

# of vets alive 2021 born in YOB =	0	2	4	5	8	15	19	28	38	49	65	400	730	1,145	1,544	2,451	4,131	3,446	2,079	1,331
Sum of Col C:	44,830	Average Age of Vet 88.9																		
age of Vet in 2021:	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96	95	94	93	92
YOB:	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929
	1,510	1,926	2,249	2,404	2,397	1,935	2,143	2,419	2,377	1,593	1,328	1,528	1,874	1,293	331	30	2			
	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75			
	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946			

# of vets alive 2031 born in YOB =	0	12	25	41	56	89	152	127	77	50	56	232	382	487	542	471	551	648	658	453
Sum of Col C:	7,527	Average Age of Vet 94.3																		
age of Vet in 2031:	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96	95	94	93	92
YOB:	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
	385	532	749	575	160	16	1													
	91	90	89	88	87	86	85													
	1940	1941	1942	1943	1944	1945	1946													

# of vets alive 2041 born in YOB =	0	9	16	21	24	22	25	30	31	21	18	68	134	123	39	4	0
Sum of Col C:	586	Average Age of Vet 101.0															
age of Vet in 2041:	111	110	109	108	107	106	105	104	103	102	101	100	99	98	97	96	95
YOB:	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946

Potential for Further Analysis:



**But, which cancers should we track?
Problematic:**

**NTPR CY 2010 completions,
483 Vets, 549 Vet-Disease pairs**

CaseType	BOSS CAT	Disease (Only the first-named disease is counted in "Freq")	Freq	% of 549	cum %
Non-Presumptive	EXP H/N	SKIN	230	41.9%	42%
Non-Presumptive	EXP H/N	PROSTATE CANCER	163	29.7%	72%
Non-Presumptive	EXP H/N	RECTAL CANCER	15	2.7%	74%
Non-Presumptive	EXP-NO SPARE	CATARACT-PSC, SKIN CANCER	14	2.6%	77%
Non-Presumptive	NONPART	LUNG*	10	1.8%	79%
Non-Presumptive	NONPART	BLADDER CANCER*	7	1.3%	80%
Non-Presumptive	EXP-SPARE	BRAIN*	5	0.9%	81%
Non-Presumptive	EXP-SPARE	COLON CANCER*	4	0.7%	82%
Non-Presumptive	NONPART	LARYNGEAL CANCER	4	0.7%	82%
Non-Presumptive	EXP-SPARE	THYROID NODULAR DISEASE*	4	0.7%	83%
Non-Presumptive	NONPART	THYROID-NMND*	4	0.7%	84%
Non-Presumptive	EXP H/N	VOCAL CORDS	4	0.7%	85%
Non-Presumptive	EXP-NO SPARE	CATARACT, SKIN	3	0.5%	85%
Non-Presumptive	EXP H/N	CLL	3	0.5%	86%
Non-Presumptive	NONPART	KIDNEY CANCER*	3	0.5%	86%
Non-Presumptive	NONPART	NON-HODGKINS LYMPHOMA*	3	0.5%	87%
Non-Presumptive	EXP-SPARE	THROAT (TONGUE), SKIN	3	0.5%	87%
Non-Presumptive	NONPART	COPD	2	0.4%	88%
Non-Presumptive	NONPART	LEUKEMIA (+q)*	2	0.4%	88%
Non-Presumptive	EXP-SPARE	MYELODYSPLASIA	2	0.4%	88%
Presumptive	VA-PRESUMPTIVE	PANCREATIC CANCER	2	0.4%	89%
Non-Presumptive	NONPART	TESTICULAR CANCER	2	0.4%	89%
Non-Presumptive	EXP-SPARE	TONGUE CANCER	2	0.4%	89%
Non-Presumptive	EXP-SPARE	ULCERATIVE COLITIS, INFLAMMATORY BOWEL DISEASE, UVE	2	0.4%	90%

*These cancers appear on the presumptive cancer list.

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i.e., 90% of total of 549, all but 56