

World Population

An Analysis of Vital Data

Nathan Keyfitz and Wilhelm Flieger



Standard Book Number: 226-43234-3

Library of Congress Catalog Card Number: 68-14010

The University of Chicago Press, Chicago 60637
The University of Chicago Press, Ltd., London

© 1968 by The University of Chicago

All rights reserved. Published 1968. Second Impression 1970

Printed in the United States of America

TABLE 1
DATA

AGE AT LAST BIRTHDAY	BOTH SEXES	POPULATION				BIRTHS		DEATHS		AGE AT LAST BIRTHDAY
		MALES		FEMALES		BY AGE OF MOTHER	BOTH SEXES	MALES	FEMALES	
		Number	%	Number	%					
0	617207	318728	2.2	298479	2.0	0	37571	21586	15985	0
1-4	2831871	1461922	10.2	1365949	9.0	0	4769	2557	2212	1-4
5-9	3526304	1816605	12.7	1709699	11.2	0	1932	1181	751	5-9
10-14	2963465	1522214	10.6	1441251	9.4	299	1379	880	499	10-14
15-19	1980262	1006037	7.0	974225	6.4	43474	1687	1152	535	15-19
20-24	2024645	923800	6.5	1100845	7.2	222077	2939	2027	912	20-24
25-29	2322157	1162812	8.1	1159345	7.6	192556	3631	2349	1282	25-29
30-34	2326839	1139862	8.0	1186977	7.8	121441	4306	2706	1600	30-34
35-39	2014147	941866	6.6	1072281	7.0	63453	4687	2737	1950	35-39
40-44	1382458	644054	4.5	738404	4.8	15594	4229	2466	1763	40-44
45-49	1659157	770910	5.4	888247	5.8	1858	8160	4659	3501	45-49
50-54	1697732	804722	5.6	893010	5.8	188	12509	7638	4871	50-54
55-59	1408495	649973	4.5	758522	5.0	0	16485	10023	6462	55-59
60-64	1077829	464844	3.3	612985	4.0	0	20205	11527	8678	60-64
65-69	729226	298067	2.1	431159	2.8	0	21807	11464	10343	65-69
70-74	510857	195539	1.4	315318	2.1	0	24582	11429	13153	70-74
75-79	290930	106826	0.7	184104	1.2	0	22466	9598	12868	75-79
80-84	140854	48077	0.3	92777	0.6	342388 M.	17740	6906	10834	80-84
85+	72467	21922	0.2	50545	0.3	318552 F.	13083	4404	8679	85+
TOTAL	29576902	14298780		15278122		660940	224167	117289	106878	TOTAL

TABLE 2
MALE LIFE TABLE

x	nq_x	l_x	n^d_x	nL_x	n^m_x	n^a_x	T_x	r_x	\hat{e}_x	nM_x	x
0	0.064194	100000	6419	94786	0.067725	0.1878	6485434	0.0000	64.854	0.067725	0
1	0.006961	93581	651	372409	0.001749	1.0626	6390648	0.0000	68.290	0.001749	1
5	0.003231	92929	300	463895	0.000647	2.5000	6018239	0.0147	64.762	0.000650	5
10	0.002918	92629	270	462518	0.000584	2.6809	5554344	0.0584	59.963	0.000578	10
15	0.005792	92359	535	460609	0.001161	2.7850	5091826	0.0487	55.131	0.001145	15
20	0.010913	91824	1002	456692	0.002194	2.5786	4631217	0.0000	50.436	0.002194	20
25	0.010050	90822	913	451839	0.002020	2.5138	4174525	0.0000	45.964	0.002020	25
30	0.011819	89909	1063	446967	0.002377	2.5738	3722686	0.0187	41.405	0.002374	30
35	0.014510	88846	1289	441134	0.002922	2.5955	3275719	0.0541	36.870	0.002906	35
40	0.019025	87557	1666	433886	0.003839	2.6589	2834585	0.0160	32.374	0.003829	40
45	0.029800	85891	2560	423519	0.006044	2.6798	2400699	0.0000	27.950	0.006044	45
50	0.046502	83322	3875	407680	0.009505	2.6827	1977180	0.0071	23.727	0.009491	50
55	0.074991	79457	5959	383389	0.015542	2.6681	1569501	0.0387	19.753	0.015421	55
60	0.118122	73458	8882	346941	0.025024	2.6329	1186112	0.0488	16.138	0.024798	60
65	0.177362	64816	11496	296394	0.038786	2.5914	839171	0.0488	12.947	0.038461	65
70	0.257453	53321	13727	232934	0.058933	2.5474	542777	0.0488	10.180	0.058449	70
75	0.369233	35993	14619	161313	0.090625	2.4928	309843	0.0488	7.826	0.089847	75
80	0.529532	24974	13225	91211	0.144988	2.4548	148530	0.0488	5.947	0.143645	80
85+	*1.000000	11749	11749	57319	0.204982	4.8785	57319	0.0488	4.878	0.200894	85+

TABLE 3
FEMALE LIFE TABLE

x	nq_x	l_x	n^d_x	nL_x	n^m_x	n^a_x	T_x	r_x	\hat{e}_x	nM_x	x
0	0.051363	100000	5136	95908	0.053555	0.2033	7069293	0.0000	70.693	0.053555	0
1	0.006428	94864	610	377669	0.001615	1.0709	6973385	0.0000	73.510	0.001615	1
5	0.002179	94254	205	470756	0.000436	2.5000	6595717	0.0138	69.978	0.000439	5
10	0.001736	94048	163	469845	0.000348	2.5680	6124961	0.0558	65.126	0.000346	10
15	0.002755	93885	259	468826	0.000552	2.6802	5655116	0.0264	60.234	0.000549	15
20	0.004134	93626	387	467218	0.000828	2.6375	5186290	0.0000	55.393	0.000828	20
25	0.005514	93239	514	464961	0.001106	2.5958	4719072	0.0000	50.612	0.001106	25
30	0.006723	92725	623	462135	0.001349	2.6084	4254111	0.0064	45.879	0.001348	30
35	0.009103	92102	838	458510	0.001828	2.6151	3791975	0.0456	41.172	0.001819	35
40	0.011907	91264	1087	453793	0.002395	2.6769	3333465	0.0162	36.526	0.002388	40
45	0.019527	90177	1761	446752	0.003941	2.6536	2879672	0.0000	31.934	0.003941	45
50	0.026976	88416	2385	436503	0.005464	2.6620	2432920	0.0100	27.517	0.005455	50
55	0.042022	86031	3615	421807	0.008571	2.6911	1996417	0.0286	23.206	0.008519	55
60	0.069178	82416	5701	398904	0.014293	2.6893	1574609	0.0431	19.106	0.014157	60
65	0.114654	76714	8796	363102	0.024223	2.6728	1175705	0.0431	15.326	0.023989	65
70	0.191340	67919	12996	308713	0.042096	2.6237	812603	0.0431	11.964	0.041713	70
75	0.300672	54923	16514	234243	0.070499	2.5552	503890	0.0431	9.174	0.069895	75
80	0.452323	38409	17373	147666	0.117653	2.5542	269647	0.0431	7.020	0.116775	80
85+	1.000000	21036	21036	121981	0.172453	5.7987	121981	0.0431	5.799	0.171709	85+

TABLE 4
OBSERVED AND PROJECTED VITAL RATES

RATES PER THOUSAND	OBSERVED POPULATION			PROJECTED POPULATION				STABLE POPULATION			
	BOTH SEXES	MALES	FEMALES	1965		1970		1975		MALES	FEMALES
Birth	22.35	23.95	20.85	22.04	19.35	23.06	20.40	24.71	22.04	22.17	20.77
Death	7.58	8.20	7.00	8.59	7.61	9.22	8.31	9.80	9.01	11.50	10.10
Increase	14.77	15.74	13.85	13.45	11.74	13.84	12.09	14.91	13.03		10.6702
PERCENTAGE											
under 15	33.60	35.80	31.54	33.63	29.86	30.53	27.35	29.15	26.38	28.56	27.14
15-64	60.50	59.51	61.43	60.79	61.81	62.83	63.10	63.28	62.98	62.96	61.83
65 and over	5.90	4.69	7.03	5.58	8.33	6.64	9.56	7.57	10.63	8.48	11.02
DEP. RATIO X 100	65.29	68.05	62.80	64.51	61.78	59.15	58.49	58.04	58.78	58.84	61.73

TABLE 1
DATA

AGE AT LAST BIRTHDAY	BOTH SEXES	POPULATION				BIRTHS		DEATHS		AGE AT LAST BIRTHDAY
		MALES		FEMALES		BY AGE OF MOTHER	BOTH SEXES	MALES	FEMALES	
		Number	%	Number	%					
0	599600	309700	2.1	289900	1.9	0	32887	18976	13911	0
1-4	2643800	1359200	9.3	1284600	8.2	0	4053	2200	1853	1-4
5-9	3546499	1815059	12.4	1731400	11.1	0	1919	1151	768	5-9
10-14	3256000	1664100	11.3	1591900	10.2	0	1551	985	566	10-14
15-19	2164400	1093500	7.4	1070500	6.8	39199	1827	1267	560	15-19
20-24	2110500	1059600	7.2	1051500	6.7	202722	2860	2035	825	20-24
25-29	2296000	1150500	7.8	1145500	7.3	174123	3628	2459	1169	25-29
30-34	2384800	1181800	8.0	1203000	7.7	110060	4593	3010	1383	30-34
35-39	2150300	998900	6.8	1151400	7.4	56644	5115	3146	1969	35-39
40-44	1550300	719000	4.9	831300	5.3	15400	4947	2863	2084	40-44
45-49	1440600	656000	4.5	784600	5.0	1176	7103	4079	3024	45-49
50-54	1694500	789800	5.4	904700	5.8	181	12884	7784	5100	50-54
55-59	1470500	676600	4.6	793900	5.1	0	17498	10813	6685	55-59
60-64	1159200	504600	3.4	654600	4.2	0	22522	13213	9309	60-64
65-69	802200	327000	2.2	475200	3.0	0	25471	13561	11910	65-69
70-74	493565	194689	1.3	298876	1.9	0	27083	12777	14306	70-74
75-79	318858	113448	0.8	205410	1.3	0	26635	11332	15303	75-79
80-84	173535	54246	0.4	115289	0.8	311002 M.	20299	7880	12419	80-84
85+	68743	18318	0.1	50425	0.3	288503 F.	16324	5408	10916	85+
TOTAL	30323900	14685900		15638000		599505	239199	124939	114260	TOTAL

TABLE 2
MALE LIFE TABLE

x	nq_x	l_x	$n d_x$	nL_x	$n m_x$	$n a_x$	T_x	r_x	e_x	$n M_x$	x
0	0.058375	100000	5838	95272	0.061272	0.1901	6456377	0.0000	64.564	0.061272	0
1	0.006444	94162	607	374868	0.001619	1.0637	6361105	0.0000	67.555	0.001619	1
5	0.003166	93556	296	467038	0.000634	2.5000	5986237	0.0000	63.986	0.000634	5
10	0.002983	93260	278	465654	0.000597	2.6846	5519199	0.0499	59.181	0.000597	10
15	0.005836	92981	543	463676	0.001170	2.7326	5053546	0.0440	54.350	0.001170	15
20	0.009564	92439	884	460073	0.001922	2.6015	4589869	0.0000	49.653	0.001922	20
25	0.010631	91555	973	455394	0.002137	2.5564	4129797	0.0000	45.107	0.002137	25
30	0.012669	90581	1148	450127	0.002549	2.5782	3674402	0.0115	40.565	0.002549	30
35	0.015698	89434	1404	443783	0.003164	2.5889	3224275	0.0465	36.052	0.003164	35
40	0.019841	88030	1747	436041	0.004006	2.6480	2780492	0.0378	31.586	0.003982	40
45	0.030648	86283	2644	425280	0.006218	2.6799	2344451	0.0000	27.172	0.006218	45
50	0.048178	83639	4030	408854	0.009856	2.6822	1919171	0.0000	22.946	0.009856	50
55	0.077472	79609	6168	383688	0.016074	2.6720	1510317	0.0280	18.972	0.015981	55
60	0.124207	73442	9122	345662	0.026390	2.6380	1126628	0.0402	15.340	0.026185	60
65	0.189838	64320	12210	292257	0.041779	2.5970	780966	0.0402	12.142	0.041471	65
70	0.284190	52109	14809	224092	0.066084	2.5383	488708	0.0402	9.379	0.065628	70
75	0.400394	37300	14935	148557	0.100533	2.4593	264616	0.0402	7.094	0.099887	75
80	0.531716	22366	11892	81168	0.146513	2.4218	116059	0.0402	5.189	0.145264	80
85+	*1.000000	10473	10473	34891	0.300173	3.3314	34891	0.0402	3.331	0.295229	85+

TABLE 3
FEMALE LIFE TABLE

x	nq_x	l_x	$n d_x$	nL_x	$n m_x$	$n a_x$	T_x	r_x	e_x	$n M_x$	x
0	0.046218	100000	4622	96317	0.047986	0.2031	7067973	0.0000	70.680	0.047986	0
1	0.005746	95378	548	379907	0.001442	1.0708	6971657	0.0000	73.095	0.001442	1
5	0.002215	94830	210	473626	0.000444	2.5000	6591749	0.0000	69.511	0.000444	5
10	0.001780	94620	168	472687	0.000356	2.5475	6118123	0.0477	64.660	0.000356	10
15	0.002631	94452	248	471679	0.000527	2.6680	5645436	0.0409	59.771	0.000523	15
20	0.003916	94203	369	470141	0.000785	2.6294	5173758	0.0000	54.921	0.000785	20
25	0.005090	93834	478	468028	0.001021	2.6062	4703616	0.0000	50.127	0.001021	25
30	0.006559	93357	612	465318	0.001316	2.6076	4235588	0.0000	45.370	0.001316	30
35	0.008560	92744	794	461850	0.001719	2.6419	3770270	0.0352	40.652	0.001710	35
40	0.012540	91950	1153	457066	0.002523	2.6699	3308420	0.0357	35.980	0.002507	40
45	0.019099	90797	1734	449928	0.003854	2.6591	2851354	0.0000	31.403	0.003854	45
50	0.027819	89063	2478	439510	0.005637	2.6563	2401426	0.0000	26.963	0.005637	50
55	0.041498	86586	3593	424631	0.008462	2.6907	1961916	0.0234	22.659	0.008420	55
60	0.069480	82993	5766	401723	0.014354	2.7040	1537286	0.0395	18.523	0.014221	60
65	0.119637	77226	9239	364896	0.025320	2.7016	1135562	0.0395	14.704	0.025063	65
70	0.216297	67987	14705	304752	0.048254	2.6075	770667	0.0395	11.335	0.047866	70
75	0.315776	53282	16825	224459	0.074958	2.5067	465915	0.0395	8.744	0.074500	75
80	0.418272	36457	15249	145074	0.105110	2.5599	241456	0.0395	6.623	0.104108	80
85+	*1.000000	21208	21208	96381	0.220041	4.5446	96381	0.0395	4.545	0.216480	85+

TABLE 4
OBSERVED AND PROJECTED VITAL RATES

RATES PER THOUSAND	OBSERVED POPULATION			PROJECTED POPULATION				STABLE POPULATION			
	BOTH SEXES	MALES	FEMALES	1967		1972		1977		MALES	FEMALES
Birth	19.77	21.18	18.45	20.25	17.76	22.10	19.53	23.49	20.93	19.93	18.50
Death	7.89	8.51	7.31	8.91	7.95	9.53	8.59	10.07	9.19	12.61	11.18
Increase	11.88	12.67	11.14	11.34	9.81	12.57	10.94	13.42	11.73		7.3215
PERCENTAGE											
under 15	33.13	35.05	31.32	31.69	28.38	28.53	25.60	27.69	25.02	26.48	24.92
15-64	60.75	60.13	61.33	62.59	62.99	64.79	64.59	64.95	64.25	64.41	62.88
65 and over	6.12	4.82	7.35	5.72	8.64	6.69	9.80	7.36	10.73	9.11	12.20
DEP. RATIO X 100	64.62	66.32	63.05	59.78	58.76	54.35	54.81	53.97	55.64	55.26	59.03