Mortality Statistics (continued)

by Arthur Firstenberg

In the July 1998 issue of *No Place to Hide* an article appeared titled "PCS Kills Ten Thousand." In that story, preliminary data derived from Centers for Disease Control (CDC) mortality statistics were summarized and given as evidence that the first introduction of 1900 MHz digital cellular (PCS) service caused a significant rise in mortality lasting two or more months, in major U.S. cities.

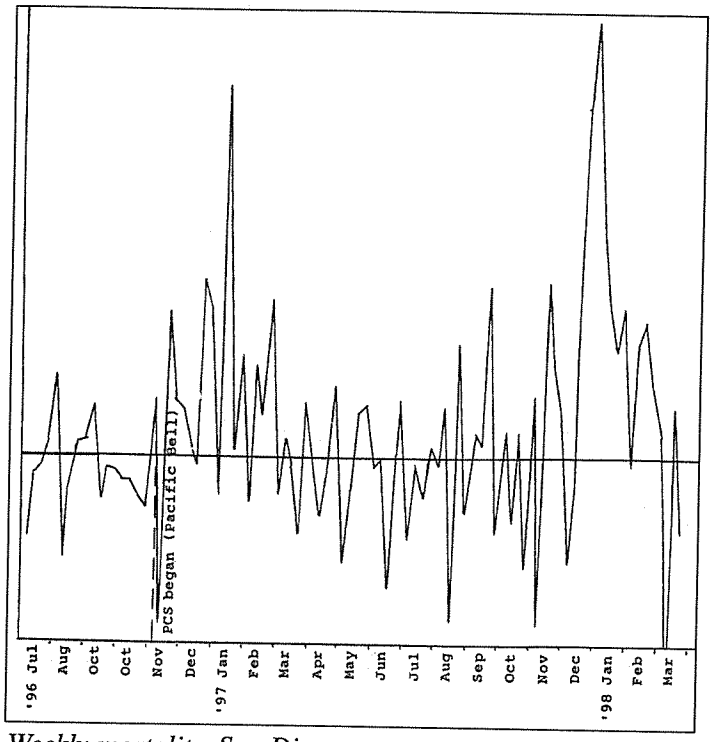
Some have questioned my expertise to do statistical analysis. Therefore, the raw data are presented here for all to see. The tables below contain complete mortality statistics from the CDC for two paris of cities from July 1996 through March 1998. Although both cities in each pair are in the same region of the country, it will be seen that highest mortality did not occur at the same time, or in the same year, in the two cities, showing that some factor other than seasonal disease epidemics was at work.

	NORTHEASTERN U.S.				SOUTHERN CALIFORNIA			
	New York City		Boston		Los Angeles		San Diego	
week of	deaths	variation (%)	deaths	variation (%)	deaths	variation (%)	deaths	variation (%)
July 7, 1996	1244	0%	126	-16%	588	+40%	99	-18%
14	1133	-9	149	0	264	-37	133	-4
21	1152	-7	145	-3	340	-19	136	-2
28	1135	-8	166	+11	468	+11	142	+3
Aug. 4	1168	-6	125	-16	317	-25	163	+18
11	1187	-4	125	-16	534	+27	108	-22
18	1118	-10	152	+2	424	+1	127	-8
25	1153	-7	126	-16	516	+22	141	+2
Sept. 1	1139	-8	130	-13	611	+45	142	+3
8	1175	-5	154	+3	369	-12	154	+11
15	1187	-4	144	-4	382	-9	124	-10
22	1236	0	130	-13	U	U	135	-2
29	1219	-2	119	-20	327	-22	134	-3
Oct. 6	1213	-2	181	+21	224	-47	131	-5
13	1236	0	143	-4	507	+20	131	-5
20	1202	-3	146	-2	587	+39	125	-9
27	1248	+1	137	-8	431	+2	123	-11
Nov. 3	1334	+8	186	+25	412	-2	156	+13
10	1205	-3	123	-18	183	-57	87	-37
17	1611	+30	145	-3	290	-31	182	+32
24	1516	+22	172	+15	453	+8	155	+12
Dec. 1	1587	+28	164	+10	250	-41	152	+10
8	1250	+8	149	0	191	-55	140	+1
15	1324	+7	134	-10	U	U	135	-2
22	1773	+43	165	+11	474	+13	191	+38
29	1391	+12	168	+13	395	-6	182	+32
Jan. 5, 1997	1363	+10	152	+2	323	-24	127	-8
12	1435	+16	176	+18	571	+36	248	+80
19	1306	+5	152	+2	475	+13	139	+1
26	1335	+8	136	-9	528	+25	168	+22
Feb. 2	1230	-1	126	-16	296	-30	124	-10
9	1260	+2	140	-6	505	+20	165	+20
16	1246	0	189	+27	394	-6	149	+8
23	1274	+3	165	+11	543	+29	185	+34
Mar. 2	1229	-1	168	+13	591	+40	127	-8
9	1264	+2	170	+14	527	+25	144	+4
16	1187	-4	139	-7	523	+24	135	-2

Nov. 15 Omni-point service began[1]

Nov. 1 Pacific Bell service began[4]

	23	1234	0	162	+9		U	U	115	-17
	30	1212	-2	151	+1		U	U	155	+12
Apr.	6	1234	0	121	-19		170	-60	136	-2
	13	1121	-10	153	+3		271	-36	120	-13
	20	1187	-4	149	0		401	-5	135	-2
	27	1207	-3	141	-6		560	+33	162	+17
May	4	1172	-5	125	-16		U	U	107	-23
	11	1126	-9	144	-4		289	-31	129	-7
	18	1195	-4	157	+5		475	+13	152	+10
	25	1144	-8	121	-19		U	U	155	+12
June	1	1207	-3	165	+11		526	+25	136	-2
	8	1120	-10	165	+11		U	U	138	0
	15	1014	-18	141	-6		460	+9	100	-28
	22	1263	+2	149	0		579	+37	140	+1
	29	1140	-8	146	-2		496	+18	156	+13
July	6	1019	-18	138	-8	***July 3***	272	-35	113	-18
	13	1290	+4	139	-7	***Pacific***	462	+10	137	-1
	20	1101	-11	162	+9	***Bell***	710	+69	127	-8
	27	1096	-12	136	-9	***service***	647	+54	141	+2
Aug.	3	1034	-17	141	-6	***began***[3]	617	+46	137	-1
	10	1108	-11	135	-10		559	+33	154	+11
	17	1021	-18	139	-7		455	+8	89	-36
	24	1170	-6	128	-14		707	+68	172	+25
	31	1131	-9	150	0		649	+54	122	-12
Sept.	7	1097	-12	93	-38		606	+44	147	+6
	14	1145	-8	150	0		472	+12	142	+3
	21	1125	-9	113	-24		U	U	190	+38
	28	1098	-11	133	-11		243	-42	116	-16
Oct.	5	1130	-9	137	-8		679	+61	148	+7
	12	1220	-2	158	+6		556	+32	120	-13
	19	1170	-6	143	-4		441	+5	146	+6
	26	1138	-8	158	+6		330	-22	106	-23
Nov.	2	1203	-3	168	+13		239	-43	157	+14
	9	1268	+2	152	+2	***Nov. 12***	U	U	89	-36
	16	1099	-11	177	+19	***Sprint***	427	+1	191	+38
	23	1266	+2	151	+1	***service***	U	U	163	+18
	30	1258	+1	143	-4	***began***[2]	U	U	154	+11
Dec.	7	1323	+7	177	+19		U	U	107	-23
	14	1408	+14	169	+13		214	-49	128	-7
	21	1305	+5	199	+33		U	U	243	+76
	28	1554	+25	199	+33		U	U	269	+95
Jan.	4, 1998	1368	+10	135	-10		U	U	204	+48
	11	1346	+9	197	+32		564	+34	182	+32
	18	1344	+8	211	+41		340	-19	170	+23
	25	1221	-2	163	+9		U	U	184	+33
Feb.	1	1263	+2	180	+21		U	U	137	-1
	8	1241	0	167	+12		463	+10	173	+25
	15	1322	+7	170	+14		603	+43	180	+30
	22	1126	-9	152	+2		717	+70	162	+17
Mar.	1	1206	-3	170	+14		589	+40	145	+5
	8	1145	-8	143	-4		U	U	26	-81
	15	1171	-6	155	+4		457	+9	155	+12
	22	1147	-7	122	-18		296	-30	166	-16



Weekly mortality, San Diego

Upon the advice of the Centers for Disease Control, the dates in the above tables have been adjusted for an average three-week delay in the filing of death certificates. "U" means data are unavailable for that week. Baselines (0%) were arbitrarily chosen as the average of ten months of data preceding cellular service. For each city, the date of first PCS service, by its first PCS provider, is marked on the table.

Cellular service was followed by an average death rate 17% above baseline over 11 weeks for New York City; 15.5% above baseline over 16 weeks for Boston; 30% above baseline over 15 weeks for Los Angeles; and 14.5% above baseline over 17 weeks for San Diego. These data have not been seasonally adjusted, but they do give a rough indication of the increase in deaths which directly followed the startup of PCS wireless telephone service in each of these four cities.

These numbers differ somewhat from the early estimates reported last July.

The data for these four cities have been graphed, as shown.

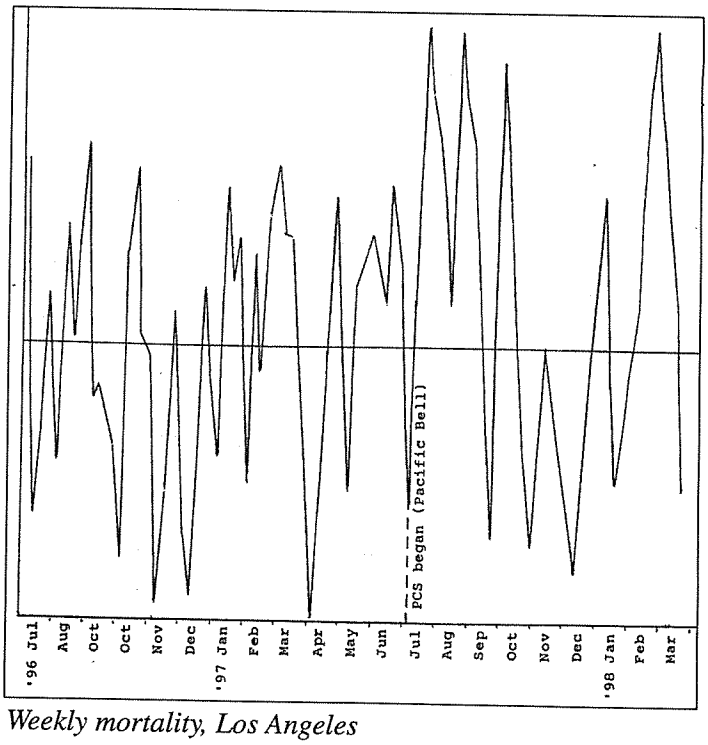
The graphs suggest also another kinds of change besides an immediate rise in the death rate. Particularly in the San Diego and New York graphs, the curve is smoother before the introduction of PCS, and more jagged afterwards (the curves for Boston and Los Angeles were already very erratic before PCS). I consulted several statisticians and was advised that a rigorous analysis would be extremely difficult. However, I devised two crude ways to measure this:

(1) All the graphs reversed direction more often after PCS than before PCS. I counted 40 weeks before PCS and 40 weeks after mortality returned to "normal" (40 weeks is the maximum span for which data are easily available both before and after for all cities):

	before	after
New York	27 reversals	34 reversals
San Diego	24 reversals	34 reversals
Boston	27 reversals	30 reversals
Los Angeles	24 reversals	28 reversals

(2) I calculated the difference between successive weeks, and for New York and San Diego this difference is significantly larger after PCS than before. I treated it as a comparison of distances, r, from a regression line through the midpoints of each pair of data.

	Σr^2 after/Σr^2 before	
New York	2.37	(p=0.004)
San Diego	1.79 (40 weeks)	(p=0.03)
	1.84 (80 weeks)	(p=0.02)
Boston	1.11	
Los Angeles	.99	



Weekly mortality, Los Angeles

[1] "Underdog Debuts New Cellular Services", *New York Newsday,* Nov. 15, 1996
[2] "Firms Hope Consumers Answer Call of Wireless", *Boston Globe,* Nov. 12, 1997
[3] "On Friday, New Digital Phones Get a Dial Tone", *San Diego Union-Tribune,* Oct. 29, 1996
[4] "Pac Bell's Digital Service to Arrive in Southern California", *Los Angeles Times,* July 2, 1997

Again, 40-week periods were used, except that an additional calculation was made using 80 weeks of data after PCS for San Diego. The differences are statistically significant at the 0.02 probability level for both New York and San Diego.

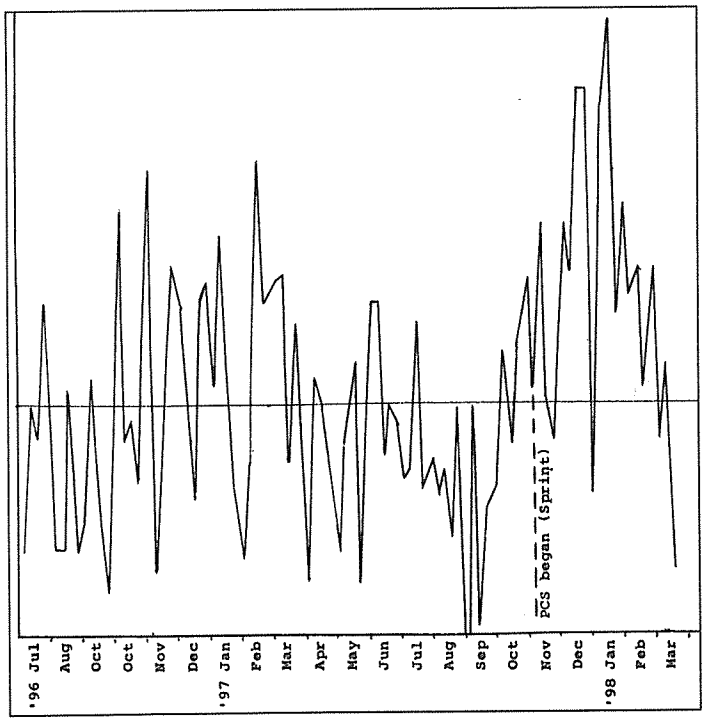
Intervals containing unavailable data were excluded from the above measures.

One possible interpretation of these changes is that the general health of the population became more erratic due to the radiation. The effect may thus be two-fold:

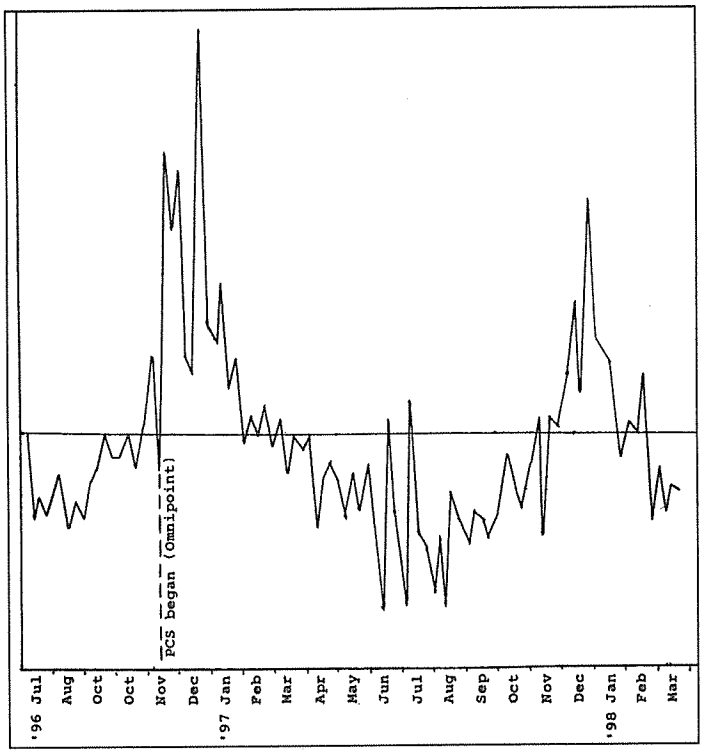
(1) Especially vulnerable or sensitive individuals may die immediately;

(2) The immune system of the general population becomes on constant alert—less vulnerable to minor stresses but unable to deal with major ones, and therefore subject to larger swings in health and mortality. This is consistent with what is being reported from around the world.

Other cities whose mortality rose for two or more months after receiving digital cellular services include Charlotte (BellSouth PCS, July 19, 1996; Chicago, Milwaukee, Austin, San Antonio, Fort Worth, Houston (all Primeco, Nov. 12, 1996); Atlanta (BellSouth, Nov. 12, 1996); Tulsa (Western Wireless, Nov. 16, 1996); Fresno, Spokane (both Sprint, Dec. 16, 1996); Portland, (Sprint, Dec. 18, 1996); Sacramento (Pacific Bell, March 12, 1997); Philadelphia (Sprint, April 3, 1997); and Detroit (Sprint, October 15, 1997).



Weekly mortality, Boston



Weekly mortality, New York City

The two factors that correlated most closely with mortality were (1) the magnitude and (2) the quickness of the change. The largest markets (New York, Los Angeles, Chicago) and the largest companies (Sprint, Primeco) showed the strongest correlations. Pacific Bell also put a big effort into its home city, San Diego. 900 MHz digital service does not require the density of towers that 1900 MHz service requires, and was not usually accompanied by a rise in morality—but here, again, BellSouth was so successful in its home city, Atlanta, that within four months of beginning its digital (900 MHz) marketing campaign, 53% of Atlantans had signed up for cellular service—triple the national average and almost triple the previous rate for Atlanta (*Atlanta Journal-Constitution,* March 24, 1997, "Long Commutes Good for Cellular Business").

**If you live in another country and can obtain weekly mortality statistics and dates of onset of 1900 MHz service, or of original GSM service, please contact the Cellular Phone Taskforce. We would like to expand this study worldwide.*