
Annexure Tabulation

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Annexure-I

POPULATION ESTIMATION

The Difference Distribution Method for Estimation of Populations by Five Yearly Age Groups and its Validity

In India, the Census is providing the population figures once in every 10 years starting from the year 1951. The latest Census was conducted in the year 2001. Thus, for cancer incidence data, to provide various rates for a given year, lying between any two-census years, the calculation of population estimates assumes importance.

For the estimation of the mid year population usually the Exponential Growth Rate Method is used and the formulae that are used in this method are shown below:

$$r = (P^t / P^0)^{1/t} - 1, \dots\dots\dots (1)$$

$$P_x = P^0 * (1+r)^x \text{ when } 0 < x < t \dots\dots\dots (2)$$

$$P_x = P^t * (1+r)^x \text{ when } x > t \dots\dots\dots (3)$$

The population growth rate is assumed to remain the same after the time x.

Five yearly age groups considered for providing the age specific rates:

In Cancer Epidemiology, the following five yearly age groups are usually considered to calculate the various age specific rates:

0-4; 5-9; 10-14; 15-19; 20-24; 25-29; 30-34; 35-39; 40-44; 45-49; 50-54; 55-59; 60-64; 65-69; 70-74; 75 & above. These age groups are referred with the help of i = 1, 2, 3... 16. For example for i = 1 => the 0-4 years age group is referred; for i = 2 the 5-9 years.

The Difference Distribution Method:

This method makes use of the five yearly age distributions of immediately preceding two Census years. Assume that for a given area aⁱ⁹¹ and aⁱ⁰¹ denotes the population of ith five yearly age group for i=1, 2, 3... 16 for the Census years 1991 and 2001, respectively. Then, calculate the difference (dⁱ⁰¹⁹¹) in the population for each age group and express it as the proportion (pⁱ⁰¹⁹¹) of the overall change in the population (D⁰¹⁹¹). Thus, in notations:

$$d^{i0191} = a^{i01} - a^{i91} \quad \forall i = 1,2,3... 16. \quad D^{0191} = \sum d^{i0191}$$

$$p^{i0191} = (d^{i0191} / D^{0191}) \quad \forall i = 1, 2, 3... 16$$

To estimate the five yearly age groups populations for the year x, the Difference Distribution Methods requires the knowledge of the following two populations: 1) Base population (P₁₉₉₁) and 2) The population (P_x) at time x which can be estimated using the formula (1), (2) or (3). Then, proceed as follows:

Case I: When $1991 < x < 2001$

Let $D_{x91} = (P_x - P_{91})$ then

$$a_{ix} = a_{i91} + (D_{x91} * p_{i0191}) \quad \forall i = 1, 2, 3 \dots 16$$

Case II: When $x > 2001$

Let $D_{x01} = (P_x - P_{01})$ then

$$a_{ix} = a_{i01} + (D_{x01} * p_{i0191}) \quad \forall i = 1, 2, 3 \dots 16$$

It is assumed here that the difference distribution remains the same after the year 2001.

The Table 1 demonstrates the application of the above method for the estimation of five yearly age group populations using the Census data of Chennai PBCR area for males for the year 2003. The five yearly age group populations for the Census years of 1991 (a_{i91}) and 2001 (a_{i01}) are shown in column 2 & 3, respectively. Their differences (d_{i0191}) and the corresponding difference proportions (p_{i0191}) are shown in column 4 & 5, respectively. The estimated growth and the estimates of five yearly age group populations for the year 2003 are provided in column 6 & 7, respectively. The population estimates of 0-4 years and 5-9 years have shown a decreasing trend while the other age groups have shown an increasing trend as compared to the populations of the year 2001.

It is shown that the proposed Difference Distribution Method, unlike the Proportion Method, is able to maintain both the negative as well as the positive growth in different five yearly age group populations. It has maintained the negative growth in 0-4 years and 5-9 years and maintained the positive growth in other five yearly age groups. The proposed method also maintains the overall growth rate unlike seen in the case of Individual Exponential Growth Rate Method. Thus, the proposed method scores over both the current methods, which are in use in the projection of the five yearly age group population.

(Ref: *Takiar R, Shobana B: Cancer Incidence Rates and Problem of Denominators – A New Approach in Indian Cancer Registries; Asian Pacific J Cancer Prev. Vol 10, 209; 123-126.*)

Table ANX 1.1: Population Estimation by Five Yearly Age Groups, using Difference Distribution Method - Chennai (India) - 2003

Age Group	Census 1991 (a_{i91})	Census 2001 (a_{i01})	Difference $d_{i0191} = (a_{i01} - a_{i91})$	Difference proportion $p_{i0191} =$ (d_{i0191}/D_{0191})	Estimated growth by 2003 $g_{i0301} =$ $(D_{0301} * p_{i0191})$	Estimated Population by age group $a_{i03} = a_{i01} + g_{i0301}$
(1)	(2)	(3)	(4)	(5)	(6)	(7)
0-4	167407	156443	-10964	-0.047	-2343	154101
5-9	191025	174686	-16339	-0.07	-3491	171195
10-14	195524	200575	5052	0.0217	1079	201655
15-19	198581	216803	18222	0.0781	3894	220697
20-24	216844	231618	14774	0.0633	3157	234775
25-29	200616	226999	26383	0.1131	5637	232636
30-34	168146	197627	29482	0.1264	6299	203927
35-39	151786	181515	29729	0.1274	6352	187867
40-44	125427	148448	23020	0.0987	4919	153367
45-49	98541	130115	31575	0.1354	6747	136862
50-54	81152	104987	23835	0.1022	5093	110080
55-59	62384	70861	8477	0.0363	1811	72672
60-64	52094	64215	12122	0.052	2590	66805
65-69	31846	44587	12741	0.0546	2722	47309
70-74	22924	32622	9697	0.0416	2072	34694
75+	21982	37437	15455	0.0663	3302	40739
Total	1986278	2219539	233261	1.0000	49842	2269381
$D_{0191} = \sum(d_{i01}) = 233261$ $P_{03} = 2269381;$ $P_{01} = 2219539;$ $D_{0301} = P_{03} - P_{01} = 49842$						

Table ANX 1.2(a): Estimated Population of Area 1 of Bhopal (1988-2007)**MALES**

Year	Age Group (years)															Total	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74		75+
1988	34871	41273	39993	35562	36074	28384	24337	20823	16763	13373	10775	6500	7494	3210	2808	2135	324373
1989	35368	42329	41357	37327	38011	29517	25400	22112	17647	14110	11161	6965	7785	3548	3018	2337	337991
1990	35886	43429	42778	39166	40030	30697	26508	23456	18567	14879	11564	7450	8088	3900	3237	2547	352181
1991	36128	43944	43444	40028	40977	31251	27027	24085	18999	15239	11752	7677	8231	4065	3339	2645	358831
1992	36451	44629	44328	41173	42233	31986	27716	24921	19572	15717	12003	7979	8419	4284	3475	2776	367662
1993	36781	45330	45234	42345	43520	32738	28423	25778	20159	16207	12259	8288	8613	4509	3615	2910	376710
1994	37119	46049	46163	43547	44840	33510	29146	26656	20761	16709	12522	8605	8811	4739	3758	3047	385981
1995	37466	46785	47114	44778	46191	34300	29888	27555	21377	17224	12791	8930	9014	4975	3904	3187	395480
1996	37821	47539	48089	46040	47576	35110	30648	28477	22009	17751	13067	9263	9222	5217	4054	3331	405213
1997	38185	48312	49087	47332	48995	35940	31426	29421	22656	18291	13350	9603	9435	5464	4208	3479	415185
1998	38558	49104	50111	48657	50449	36790	32224	30388	23319	18844	13640	9953	9654	5718	4366	3630	425403
1999	38940	49916	51159	50014	51938	37661	33041	31380	23998	19411	13936	10310	9878	5978	4527	3785	435872
2000	39331	50747	52233	51404	53465	38554	33879	32395	24694	19992	14240	10677	10107	6244	4693	3944	446599
2001	39732	51599	53334	52828	55028	39468	34737	33436	25407	20587	14552	11053	10342	6517	4862	4106	457589
2002	40143	52472	54462	54288	56631	40405	35616	34502	26138	21197	14871	11438	10583	6796	5036	4273	468851
2003	40564	53367	55617	55784	58272	41365	36516	35595	26887	21822	15198	11832	10829	7083	5214	4444	480389
2004	40996	54283	56801	57316	59954	42349	37439	36714	27654	22462	15534	12236	11082	7376	5396	4619	492211
2005	41438	55222	58014	58886	61678	43357	38385	37861	28440	23118	15877	12650	11341	7677	5583	4798	504325
2006	41891	56184	59257	60495	63444	44390	39354	39036	29245	23790	16229	13074	11606	7985	5774	4982	516736
2007	42355	57170	60530	62143	65253	45448	40347	40240	30071	24479	16589	13509	11878	8301	5971	5170	529454

Table ANX 1.2(b): Estimated Population of Area 2 of Bhopal (1988-2007)**MALES**

Year	Age Group (years)															Total	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74		75+
1988	23586	27228	22431	19237	20081	20299	18308	16195	11155	8092	5930	3423	4123	1830	1715	1186	204817
1989	24046	27744	23438	20505	21548	21440	19195	17003	11783	8743	6469	3866	4606	2144	1897	1338	215762
1990	24531	28288	24499	21841	23093	22641	20129	17854	12445	9429	7037	4332	5114	2474	2088	1497	227291
1991	24849	28645	25197	22719	24109	23430	20744	18414	12880	9879	7410	4638	5448	2692	2213	1602	234870
1992	25228	29070	26025	23762	25316	24368	21473	19078	13397	10415	7854	5002	5844	2950	2362	1727	243874
1993	25621	29511	26886	24845	26569	25342	22231	19769	13934	10971	8314	5380	6256	3218	2517	1856	253222
1994	26030	29969	27779	25970	27870	26354	23018	20485	14492	11549	8792	5772	6684	3497	2678	1991	262929
1995	26453	30444	28707	27138	29221	27404	23835	21229	15070	12148	9288	6180	7128	3786	2845	2130	273008
1996	26894	30938	29670	28351	30624	28494	24683	22002	15671	12771	9804	6603	7590	4086	3018	2275	283473
1997	27351	31450	30670	29610	32080	29626	25564	22804	16295	13417	10339	7042	8068	4398	3198	2426	294339
1998	27825	31983	31709	30917	33593	30802	26479	23637	16943	14088	10894	7498	8566	4722	3385	2582	305622
1999	28318	32535	32787	32275	35163	32022	27428	24502	17616	14785	11471	7972	9082	5058	3579	2744	317337
2000	28829	33109	33906	33684	36794	33289	28414	25401	18315	15509	12070	8464	9618	5407	3780	2913	329502
2001	29361	33705	35069	35148	38486	34605	29438	26333	19040	16260	12692	8974	10175	5769	3989	3088	342132
2002	29912	34323	36276	36667	40244	35972	30501	27302	19793	17040	13338	9504	10753	6145	4206	3269	355247
2003	30485	34966	37529	38245	42070	37390	31605	28307	20575	17851	14009	10055	11353	6536	4432	3458	368865
2004	31080	35633	38831	39884	43965	38863	32751	29351	21387	18692	14705	10627	11976	6942	4666	3654	383007
2005	31697	36325	40182	41585	45933	40393	33941	30435	22230	19565	15428	11220	12623	7363	4909	3857	397686
2006	32338	37044	41585	43351	47976	41981	35177	31561	23105	20472	16179	11836	13295	7800	5161	4068	412929
2007	33004	37791	43042	45186	50098	43630	36460	32729	24014	21414	16958	12476	13992	8255	5424	4287	428760

Table ANX 1.2(c): Estimated Population of Area 1 of Bhopal (1988-2007)**FEMALES**

Year	Age Group (years)															Total	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74		75+
1988	31876	36333	35634	32656	34658	28374	20761	17074	13481	10805	8344	5476	6794	2734	2526	2096	289624
1989	32302	37147	36819	34013	36344	29726	22165	18372	14522	11467	8707	5942	7012	2957	2718	2280	302492
1990	32746	37997	38055	35431	38105	31139	23633	19728	15608	12158	9086	6429	7240	3190	2918	2472	315932
1991	32936	38361	38585	36038	38859	31744	24261	20309	16073	12455	9248	6637	7337	3290	3003	2555	321691
1992	33199	38864	39317	36877	39901	32580	25129	21111	16716	12864	9472	6925	7472	3427	3121	2669	329643
1993	33468	39379	40067	37737	40968	33436	26019	21933	17375	13283	9702	7220	7610	3568	3242	2785	337791
1994	33744	39907	40835	38617	42062	34313	26930	22775	18050	13712	9938	7522	7751	3713	3367	2905	346140
1995	34027	40448	41622	39519	43183	35213	27864	23638	18741	14152	10179	7831	7896	3861	3494	3027	354695
1996	34317	41003	42429	40444	44332	36134	28821	24523	19450	14604	10426	8149	8044	4013	3624	3153	363463
1997	34614	41571	43255	41392	45508	37078	29802	25429	20176	15066	10679	8474	8196	4169	3758	3281	372446
1998	34918	42153	44102	42363	46715	38046	30807	26357	20920	15539	10939	8807	8352	4328	3894	3413	381652
1999	35230	42750	44970	43358	47950	39037	31836	27309	21683	16025	11205	9148	8512	4491	4035	3548	391086
2000	35549	43361	45860	44377	49217	40053	32892	28284	22464	16522	11477	9498	8675	4659	4178	3686	400752
2001	35877	43987	46771	45422	50514	41094	33973	29284	23265	17031	11756	9856	8843	4830	4326	3828	410658
2002	36212	44629	47705	46493	51844	42161	35081	30308	24085	17554	12042	10224	9015	5006	4477	3973	420808
2003	36556	45287	48662	47590	53207	43254	36216	31357	24926	18089	12336	10600	9191	5186	4631	4122	431210
2004	36908	45961	49643	48714	54603	44374	37380	32432	25787	18637	12636	10986	9371	5371	4790	4275	441868
2005	37269	46652	50648	49866	56034	45522	38572	33534	26670	19199	12944	11381	9556	5560	4952	4431	452790
2006	37639	47360	51678	51046	57500	46698	39794	34663	27575	19775	13260	11786	9745	5754	5118	4591	463982
2007	38018	48085	52733	52256	59003	47903	41046	35820	28502	20365	13583	12201	9940	5952	5289	4755	475451

Table ANX 1.2(d): Estimated Population of Area 2 of Bhopal (1988-2007)**FEMALES**

Year	Age Group (years)															Total	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74		75+
1988	20806	26374	20789	16623	21527	19380	15053	10809	7854	5477	4559	3372	3968	1918	1498	1137	181145
1989	21157	26867	21824	17915	22534	20271	15776	11736	8667	6174	5053	3936	4266	2267	1738	1273	191453
1990	21528	27387	22918	19279	23598	21212	16540	12716	9526	6909	5576	4532	4580	2636	1990	1417	202346
1991	21770	27727	23631	20170	24292	21826	17039	13356	10087	7389	5917	4921	4785	2877	2155	1511	209452
1992	22059	28132	24483	21233	25121	22559	17634	14119	10756	7962	6324	5385	5030	3164	2352	1623	217939
1993	22359	28554	25370	22340	25984	23322	18254	14914	11453	8559	6747	5869	5285	3463	2557	1740	226770
1994	22672	28993	26293	23491	26882	24116	18898	15741	12177	9179	7188	6372	5550	3774	2771	1861	235958
1995	22998	29449	27253	24689	27816	24942	19569	16601	12931	9825	7647	6895	5826	4098	2993	1988	245519
1996	23337	29924	28252	25936	28788	25802	20267	17496	13716	10497	8124	7439	6114	4435	3224	2119	255468
1997	23689	30419	29291	27233	29799	26696	20993	18427	14532	11196	8620	8006	6412	4785	3464	2256	265819
1998	24056	30933	30372	28582	30851	27627	21748	19396	15382	11923	9137	8596	6723	5150	3714	2398	276590
1999	24438	31469	31498	29986	31946	28595	22535	20405	16266	12680	9674	9209	7047	5529	3974	2547	287797
2000	24835	32026	32668	31448	33085	29603	23353	21454	17185	13468	10234	9847	7384	5924	4245	2701	299459
2001	25248	32605	33887	32968	34270	30651	24204	22546	18142	14287	10816	10511	7734	6335	4526	2861	311593
2002	25678	33208	35154	34550	35504	31742	25090	23681	19138	15140	11421	11202	8098	6763	4820	3028	324218
2003	26125	33836	36473	36196	36787	32877	26011	24863	20174	16027	12051	11921	8478	7208	5124	3201	337355
2004	26591	34489	37846	37909	38123	34058	26970	26093	21252	16950	12707	12670	8872	7670	5442	3382	351025
2005	27075	35168	39274	39691	39512	35287	27968	27373	22374	17911	13389	13448	9283	8152	5772	3570	365248
2006	27579	35875	40760	41545	40958	36566	29006	28705	23541	18911	14099	14258	9710	8653	6116	3766	380048
2007	28103	36610	42306	43475	42462	37896	30087	30090	24756	19951	14837	15101	10155	9175	6473	3969	395447

Annexure-II

**Table ANX 2.1: Distribution of Population according to their type of Tobacco habits
(All Age Group) – Bhopal - NCRP Survey 2005**

Type of Habit	Male				Female			
	Affected		Unaffected		Affected		Unaffected	
	No.	%	No.	%	No.	%	No.	%
Non user	4115	71.2	4890	79.7	4650	89.2	5471	96.5
User	1666	28.8	1248	20.3	562	10.8	200	3.5
Chewer	1184	20.5	827	13.5	456	8.7	196	3.5
Smoker	817	14.1	556	9.1	14	0.3	4	0.1
Both	335	5.8	135	2.2	8	0.2	0	0.0
Total	5781	100.0	6138	100.0	5212	100.0	5671	100.0

**TABLE: ANX 2.2: Distribution of Population according to their Tobacco habits
(for age > 21 years) – Bhopal - NCRP Survey 2005**

Type of Habit	Male				Female			
	Affected		Unaffected		Affected		Unaffected	
	No.	%	No.	%	No.	%	No.	%
Non user	1504	49.3	2286	65.8	2411	84.5	3048	94.1
User	1544	50.7	1188	34.2	443	15.5	191	5.9
Chewer	1077	35.3	770	22.2	436	15.3	187	5.8
Smoker	789	25.9	550	15.8	11	0.4	4	0.1
Both	322	10.6	132	3.8	7	0.2	0	0.0
Total	3048	100.0	3474	100.0	2854	100.0	3239	100.0

Annexure-III

Table ANX 3.1: Population Weightages considered for calculation of Modified CR (CR-M) and Modified AAR (AAR-M) - Bhopal (1988-2007)

Year	Age Group (years)															
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+
1988	0.4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1989	0.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1990	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1991	0.0	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1992	0.0	0.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1993	0.0	0.4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1994	0.0	0.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1995	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1996	0.0	0.0	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1997	0.0	0.0	0.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1998	0.0	0.0	0.4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1999	0.0	0.0	0.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
2000	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
2001	0.0	0.0	0.0	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
2002	0.0	0.0	0.0	0.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
2003	0.0	0.0	0.0	0.4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
2004	0.0	0.0	0.0	0.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
2005	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
2006	0.0	0.0	0.0	0.0	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
2007	0.0	0.0	0.0	0.0	0.6	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Table ANX 3.2: Modified Population considered for calculation of Modified CR (CR-M) and Modified AAR (AAR-M) by using appropriate weightages - Area 1 - Bhopal (1988-2007)

Males

Year	Age Group (years)																Modified Total	Actual Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+		
1988	13948	41273	39993	35562	36074	28384	24337	20823	16763	13373	10775	6500	7494	3210	2808	2135	303452	324373
1989	7074	42329	41357	37327	38011	29517	25400	22112	17647	14110	11161	6965	7785	3548	3018	2337	309698	337991
1990	0	43429	42778	39166	40030	30697	26508	23456	18567	14879	11564	7450	8088	3900	3237	2547	316296	352181
1991	0	35155	43444	40028	40977	31251	27027	24085	18999	15239	11752	7677	8231	4065	3339	2645	313914	358831
1992	0	26777	44328	41173	42233	31986	27716	24921	19572	15717	12003	7979	8419	4284	3475	2776	313359	367662
1993	0	18132	45234	42345	43520	32738	28423	25778	20159	16207	12259	8288	8613	4509	3615	2910	312730	376710
1994	0	9210	46163	43547	44840	33510	29146	26656	20761	16709	12522	8605	8811	4739	3758	3047	312024	385981
1995	0	0	47114	44778	46191	34300	29888	27555	21377	17224	12791	8930	9014	4975	3904	3187	311228	395480
1996	0	0	38471	46040	47576	35110	30648	28477	22009	17751	13067	9263	9222	5217	4054	3331	310236	405213
1997	0	0	29452	47332	48995	35940	31426	29421	22656	18291	13350	9603	9435	5464	4208	3479	309052	415185
1998	0	0	20044	48657	50449	36790	32224	30388	23319	18844	13640	9953	9654	5718	4366	3630	307676	425403
1999	0	0	10232	50014	51938	37661	33041	31380	23998	19411	13936	10310	9878	5978	4527	3785	306089	435872
2000	0	0	0	51404	53465	38554	33879	32395	24694	19992	14240	10677	10107	6244	4693	3944	304288	446599
2001	0	0	0	42262	55028	39468	34737	33436	25407	20587	14552	11053	10342	6517	4862	4106	302357	457589
2002	0	0	0	32573	56631	40405	35616	34502	26138	21197	14871	11438	10583	6796	5036	4273	300059	468851
2003	0	0	0	22314	58272	41365	36516	35595	26887	21822	15198	11832	10829	7083	5214	4444	297371	480389
2004	0	0	0	11463	59954	42349	37439	36714	27654	22462	15534	12236	11082	7376	5396	4619	294278	492211
2005	0	0	0	0	61678	43357	38385	37861	28440	23118	15877	12650	11341	7677	5583	4798	290765	504325
2006	0	0	0	0	50755	44390	39354	39036	29245	23790	16229	13074	11606	7985	5774	4982	286220	516736
2007	0	0	0	0	39152	45448	40347	40240	30071	24479	16589	13509	11878	8301	5971	5170	281155	529454

Table ANX 3.3: Modified Population considered for calculation of Modified CR (CR-M) and Modified AAR (AAR-M) by using appropriate weightages - Area 1 - Bhopal (1988-2007)

Females

Year	Age Group (years)																Modified Total	Actual Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+		
1988	12750	36333	35634	32656	34658	28374	20761	17074	13481	10805	8344	5476	6794	2734	2526	2096	270496	289624
1989	6460	37147	36819	34013	36344	29726	22165	18372	14522	11467	8707	5942	7012	2957	2718	2280	276651	302492
1990	0	37997	38055	35431	38105	31139	23633	19728	15608	12158	9086	6429	7240	3190	2918	2472	283189	315932
1991	0	30689	38585	36038	38859	31744	24261	20309	16073	12455	9248	6637	7337	3290	3003	2555	281083	321691
1992	0	23318	39317	36877	39901	32580	25129	21111	16716	12864	9472	6925	7472	3427	3121	2669	280899	329643
1993	0	15752	40067	37737	40968	33436	26019	21933	17375	13283	9702	7220	7610	3568	3242	2785	280697	337791
1994	0	7981	40835	38617	42062	34313	26930	22775	18050	13712	9938	7522	7751	3713	3367	2905	280471	346140
1995	0	0	41622	39519	43183	35213	27864	23638	18741	14152	10179	7831	7896	3861	3494	3027	280220	354695
1996	0	0	33943	40444	44332	36134	28821	24523	19450	14604	10426	8149	8044	4013	3624	3153	279660	363463
1997	0	0	25953	41392	45508	37078	29802	25429	20176	15066	10679	8474	8196	4169	3758	3281	278961	372446
1998	0	0	17641	42363	46715	38046	30807	26357	20920	15539	10939	8807	8352	4328	3894	3413	278121	381652
1999	0	0	8994	43358	47950	39037	31836	27309	21683	16025	11205	9148	8512	4491	4035	3548	277131	391086
2000	0	0	0	44377	49217	40053	32892	28284	22464	16522	11477	9498	8675	4659	4178	3686	275982	400752
2001	0	0	0	36338	50514	41094	33973	29284	23265	17031	11756	9856	8843	4830	4326	3828	274938	410658
2002	0	0	0	27896	51844	42161	35081	30308	24085	17554	12042	10224	9015	5006	4477	3973	273666	420808
2003	0	0	0	19036	53207	43254	36216	31357	24926	18089	12336	10600	9191	5186	4631	4122	272151	431210
2004	0	0	0	9743	54603	44374	37380	32432	25787	18637	12636	10986	9371	5371	4790	4275	270385	441868
2005	0	0	0	0	56034	45522	38572	33534	26670	19199	12944	11381	9556	5560	4952	4431	268355	452790
2006	0	0	0	0	46000	46698	39794	34663	27575	19775	13260	11786	9745	5754	5118	4591	264759	463982
2007	0	0	0	0	35402	47903	41046	35820	28502	20365	13583	12201	9940	5952	5289	4755	260758	475451

Table ANX 3.4: Modified Population considered for calculation of Modified CR (CR-M) and Modified AAR (AAR-M) by using appropriate weightages - Area 2 - Bhopal (1988-2007)

Males

Year	Age Group (years)																Modified Total	Actual Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+		
1988	9434	27228	22431	19237	20081	20299	18308	16195	11155	8092	5930	3423	4123	1830	1715	1186	190667	204817
1989	4809	27744	23438	20505	21548	21440	19195	17003	11783	8743	6469	3866	4606	2144	1897	1338	196528	215762
1990	0	28288	24499	21841	23093	22641	20129	17854	12445	9429	7037	4332	5114	2474	2088	1497	202761	227291
1991	0	22916	25197	22719	24109	23430	20744	18414	12880	9879	7410	4638	5448	2692	2213	1602	204291	234870
1992	0	17442	26025	23762	25316	24368	21473	19078	13397	10415	7854	5002	5844	2950	2362	1727	207015	243874
1993	0	11804	26886	24845	26569	25342	22231	19769	13934	10971	8314	5380	6256	3218	2517	1856	209892	253222
1994	0	5994	27779	25970	27870	26354	23018	20485	14492	11549	8792	5772	6684	3497	2678	1991	212925	262929
1995	0	0	28707	27138	29221	27404	23835	21229	15070	12148	9288	6180	7128	3786	2845	2130	216109	273008
1996	0	0	23736	28351	30624	28494	24683	22002	15671	12771	9804	6603	7590	4086	3018	2275	219708	283473
1997	0	0	18402	29610	32080	29626	25564	22804	16295	13417	10339	7042	8068	4398	3198	2426	223269	294339
1998	0	0	12684	30917	33593	30802	26479	23637	16943	14088	10894	7498	8566	4722	3385	2582	226790	305622
1999	0	0	6557	32275	35163	32022	27428	24502	17616	14785	11471	7972	9082	5058	3579	2744	230254	317337
2000	0	0	0	33684	36794	33289	28414	25401	18315	15509	12070	8464	9618	5407	3780	2913	233658	329502
2001	0	0	0	28118	38486	34605	29438	26333	19040	16260	12692	8974	10175	5769	3989	3088	236967	342132
2002	0	0	0	22000	40244	35972	30501	27302	19793	17040	13338	9504	10753	6145	4206	3269	240067	355247
2003	0	0	0	15298	42070	37390	31605	28307	20575	17851	14009	10055	11353	6536	4432	3458	242939	368865
2004	0	0	0	7977	43965	38863	32751	29351	21387	18692	14705	10627	11976	6942	4666	3654	245556	383007
2005	0	0	0	0	45933	40393	33941	30435	22230	19565	15428	11220	12623	7363	4909	3857	247897	397686
2006	0	0	0	0	38381	41981	35177	31561	23105	20472	16179	11836	13295	7800	5161	4068	249016	412929
2007	0	0	0	0	30059	43630	36460	32729	24014	21414	16958	12476	13992	8255	5424	4287	249698	428760

Table ANX 3.5: Modified Population considered for calculation of Modified CR (CR-M) and Modified AAR (AAR-M) by using appropriate weightages - Area 2 - Bhopal (1988-2007)

Females

Year	Age Group (years)																Modified Total	Actual Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+		
1988	8322	26374	20789	16623	21527	19380	15053	10809	7854	5477	4559	3372	3968	1918	1498	1137	168660	181145
1989	4231	26867	21824	17915	22534	20271	15776	11736	8667	6174	5053	3936	4266	2267	1738	1273	174528	191453
1990	0	27387	22918	19279	23598	21212	16540	12716	9526	6909	5576	4532	4580	2636	1990	1417	180816	202346
1991	0	22182	23631	20170	24292	21826	17039	13356	10087	7389	5917	4921	4785	2877	2155	1511	182138	209452
1992	0	16879	24483	21233	25121	22559	17634	14119	10756	7962	6324	5385	5030	3164	2352	1623	184624	217939
1993	0	11422	25370	22340	25984	23322	18254	14914	11453	8559	6747	5869	5285	3463	2557	1740	187279	226770
1994	0	5799	26293	23491	26882	24116	18898	15741	12177	9179	7188	6372	5550	3774	2771	1861	190092	235958
1995	0	0	27253	24689	27816	24942	19569	16601	12931	9825	7647	6895	5826	4098	2993	1988	193073	245519
1996	0	0	22602	25936	28788	25802	20267	17496	13716	10497	8124	7439	6114	4435	3224	2119	196559	255468
1997	0	0	17575	27233	29799	26696	20993	18427	14532	11196	8620	8006	6412	4785	3464	2256	199994	265819
1998	0	0	12149	28582	30851	27627	21748	19396	15382	11923	9137	8596	6723	5150	3714	2398	203376	276590
1999	0	0	6300	29986	31946	28595	22535	20405	16266	12680	9674	9209	7047	5529	3974	2547	206693	287797
2000	0	0	0	31448	33085	29603	23353	21454	17185	13468	10234	9847	7384	5924	4245	2701	209931	299459
2001	0	0	0	26374	34270	30651	24204	22546	18142	14287	10816	10511	7734	6335	4526	2861	213257	311593
2002	0	0	0	20730	35504	31742	25090	23681	19138	15140	11421	11202	8098	6763	4820	3028	216357	324218
2003	0	0	0	14478	36787	32877	26011	24863	20174	16027	12051	11921	8478	7208	5124	3201	219200	337355
2004	0	0	0	7582	38123	34058	26970	26093	21252	16950	12707	12670	8872	7670	5442	3382	221771	351024
2005	0	0	0	0	39512	35287	27968	27373	22374	17911	13389	13448	9283	8152	5772	3570	224039	365247
2006	0	0	0	0	32766	36566	29006	28705	23541	18911	14099	14258	9710	8653	6116	3766	226097	380048
2007	0	0	0	0	25477	37896	30087	30090	24756	19951	14837	15101	10155	9175	6473	3969	227967	395447

Annexure-IV

Table ANX 4.: Distribution of population surveyed according to the history of MIC Exposure in Affected and Unaffected areas - Bhopal - NCRP Survey 2005

Affected Area												
Age Group	Male						Female					
	Exposed		Unexposed		Total		Exposed		Unexposed		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0-4	0	0.0	475	100.0	475	8.2	0	0.0	429	100.0	429	8.2
5-9	0	0.0	633	100.0	633	10.9	0	0.0	537	100.0	537	10.3
10-14	0	0.0	665	100.0	665	11.5	0	0.0	583	100.0	583	11.2
15-19	0	0.0	675	100.0	675	11.7	0	0.0	574	100.0	574	11.0
20-24	390	55.2	317	44.8	707	12.2	300	46.5	345	53.5	645	12.4
25-29	357	71.8	140	28.2	497	8.6	239	45.6	285	54.4	524	10.1
30-34	299	68.0	141	32.0	440	7.6	210	47.3	234	52.7	444	8.5
35-39	300	69.1	134	30.9	434	7.5	224	58.0	162	42.0	386	7.4
40-44	246	75.5	80	24.5	326	5.6	233	75.9	74	24.1	307	5.9
45-49	217	81.9	48	18.1	265	4.6	185	83.7	36	16.3	221	4.2
50-54	152	83.5	30	16.5	182	3.1	126	84.6	23	15.4	149	2.9
55-59	119	82.1	26	17.9	145	2.5	99	75.6	32	24.4	131	2.5
60-64	107	82.3	23	17.7	130	2.2	90	81.8	20	18.2	110	2.1
65-69	74	84.1	14	15.9	88	1.5	51	79.7	13	20.3	64	1.2
70-74	53	82.8	11	17.2	64	1.1	44	77.2	13	22.8	57	1.1
75+	47	85.5	8	14.5	55	1.0	39	76.5	12	23.5	51	1.0
Total	2361	40.8	3420	59.2	5781	100.0	1840	35.3	3372	64.7	5212	100.0
Unaffected Area												
0-4	0	0.0	455	100.0	455	7.4	0	0.0	452	100.0	452	8.0
5-9	0	0.0	591	100.0	591	9.6	0	0.0	518	100.0	518	9.1
10-14	0	0.0	660	100.0	660	10.7	0	0.0	573	100.0	573	10.1
15-19	0	0.0	667	100.0	667	10.8	0	0.0	593	100.0	593	10.5
20-24	62	9.3	602	90.7	664	10.8	52	7.9	603	92.1	655	11.5
25-29	58	9.8	535	90.2	593	9.6	43	7.5	533	92.5	576	10.2
30-34	48	10.2	422	89.8	470	7.6	38	7.9	446	92.1	484	8.5
35-39	45	9.8	415	90.2	460	7.5	38	8.8	396	91.2	434	7.7
40-44	45	12.0	331	88.0	376	6.1	53	16.7	264	83.3	317	5.6
45-49	52	17.3	249	82.7	301	4.9	47	16.8	232	83.2	279	4.9
50-54	46	20.4	179	79.6	225	3.6	35	15.9	185	84.1	220	3.9
55-59	40	17.7	186	82.3	226	3.7	17	10.6	143	89.4	160	2.8
60-64	23	14.7	133	85.3	156	2.5	21	11.7	159	88.3	180	3.2
65-69	16	11.7	121	88.3	137	2.2	17	16.2	88	83.8	105	1.9
70-74	10	10.3	87	89.7	97	1.6	11	15.7	59	84.3	70	1.2
75+	6	10.0	54	90.0	60	1.0	9	16.4	46	83.6	55	1.0
Total	481	7.8	5687	92.2	6168	100.0	381	6.7	5290	93.3	5671	100.0

Annexure-V

PATTERN OF CANCER IN HAMIDIA HOSPITAL (1983-1984)

Table ANX 5.1: Pattern of Cancer Cases reported at Hamidia Hospital, Bhopal (1983-984)

Males

ICD10	Site	1983	1984
C00-C14	LIP, ORAL CAVITY, PHARYNX		
C00	Lip	1	0
C01	Tongue	15	23
C03	Alvelous	1	2
C05	Palale	1	5
C06	Cheek	18	32
C09	Tonsils	6	4
C10	Epiglottis	4	3
C12	Pyri fossa	5	1
C14	Pharynx	3	2
	Total	54	76
C15-C26	DIGESTIVE SYSTEM		
C15	Oesophagus	7	14
C16	Stomach	1	1
C17	Duodem	0	1
C18	Colon	3	2
C20	Rectum	4	10
C21	Anal canal	1	5
C22	Liver (primary)	1	4
	Metastasis	4	
C25	Pancreas	0	1
	Total	21	38
C30-C39	RESPIRATORY SYSTEM		
C30	Nasuc cary	2	6
C31	Maxillary Anlum	1	2
C32	Larynx	11	22
C34	Lung	3	6
C38	Pleura	2	0
	Total	19	36
C40	BONE	2	4
C44	SKIN	11	18
C49	CONNECTIVE TISSUE	8	10
C50	BREAST	2	2
C60-63	MALE GENITAL TRACT		
C60	Penis	11	8
C61	Prostate	3	6
C62	Testis	4	3
	Total	18	17
C64-68	URINARY TRACT		
C64	Kidney	3	1
C67	Bladder	4	3
	Total	7	4
C77	LYMPH NODE		
C77	Primary	7	7
	Melustasis	15	9
	Total	22	16
C48	PERITONIUM	1	0

Table ANX 5.2: Pattern of Cancer Cases reported at Hamidia Hospital, Bhopal (1983-1984)

Females

ICD10	Site	1983	1984
C00-C14	LIP, ORAL CAVITY, PHARYNX		
C00	Lip	0	1
C01	Tongue	2	4
C03	Alveolar	1	1
C05	Palate	2	1
C06	Cheek	5	20
C08	Salivary gland	1	0
C09	Tonsils	0	2
C12	Pyri fossa	3	0
C14	Pharynx	0	1
	Total	14	30
C15-C26	DIGESTIVE SYSTEM		
C15	Oesophagus	1	6
C16	Stomach	1	0
C18	Colon	1	1
C20	Rectum	2	4
C21	Anal canal	1	2
C22	Liver	0	2
C23	Gall bladder	1	0
C25	Pancreas	1	1
	Total	8	16
C30-C39	RESPIRATORY SYSTEM		
C30	Nasuc cary	0	1
C31	Maxillary Anlum	2	1
C32	Larynx	0	0
C38	Pleura	1	1
	Total	3	3
C44	SKIN	9	7
C49	CONNECTIVE TISSUE	5	7
C48	OMEXLUM	1	1
C50	BREAST	34	33
C51-58	FEMALE GENITAL TRACT		
C51	Vulva	0	0
C52	Vagina	2	1
C53	Cervix	22	79
C54	Uterus	6	7
C55	Ovary	6	9
	Total	36	96
C77	LYMPH NODE		
C77	Primary	4	9
	Melustasis	2	8
	Total	6	17
C73	Thyroid	1	2
C91	Brain	1	1
C40	Bone	1	2
	Total	3	5