# Deaths from Unintentional Drug Overdoses in North Carolina, 1997-2001: A DHHS Investigation into Unintentional Poisoning-Related Deaths

Prepared by
Catherine (Kay) Sanford, MSPH, Epidemiologist
N.C. Injury and Violence Prevention Unit

Acknowledgements to
Michael (Mick) Ballesteros, PhD, MS, EIS Officer, NCIPC, CDC
Daniel Budnitz, MD, MPH, EIS Officer, NCIPC, CDC
Georgina Agyekum, MPH, PHPS Officer, CDC

N.C. Injury and Violence Prevention Unit September 20, 2002



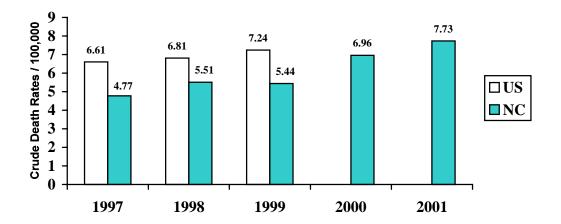
State of North Carolina • Michael F. Easley, Governor North Carolina Department of Health and Human Services Carmen Hooker Odom, Secretary

N.C. DHHS is an equal opportunity employer and provider

## **BACKGROUND**

- Poisonings are injuries that constitute a significant public health problem in North Carolina.
- ➤ Poisonings on death certificates are classified by International Classification of Disease (ICD) codes as intentional (suicides and homicides); unintentional ("accidents"); and undetermined intent. The classification system on death certificates changed from version 9 (ICD-9) to version 10 (ICD-10) in 1999.
- Intentional and unintentional poisonings result from exposure to noxious substances, such as carbon monoxide, cleaning fluids, petroleum products, and legal and illegal drugs.
- ➤ In North Carolina, there were 2,419 poisoning-related deaths during the five-year period from 1997 through 2001. The number and rate of poisoning-related deaths has been increasing slowly across the nation, whereas in North Carolina the number and rate of poisoning-related deaths have increased faster than the national average (Figure 1). By the time U.S. 2001 data are available, it is possible that the state rate will have reached or possibly exceeded the national poisoning-related mortality rate.

Figure 1. Intentional and Unintentional Poisoning<sup>1</sup> Crude Death Rates<sup>2</sup> in the US<sup>3</sup> and NC<sup>4</sup>: 1997-2001



Classification of poisoning deaths are from ICD-9 for 1997-1998 and ICD-10 for 1999-2001. Unintentional drugs (E850-E858; X40-X44); Unintentional other poisons (E860-E869; X45-X49); Intentional poisonings-suicide (E950-E952; X60-X69); Intentional poisonings-homicide (E962; X85-X90); Poisonings – Undetermined (E980-E982; Y10-Y19).

Crude death rates: the number of deaths from death certificates divided by the state population.

National poisoning-related data are from the CDC website: www.cdc.gov/ncipc/wisqars. Data for 2000 and 2001 are not available at the writing of this report.

Vital statistics and population data from the State Center for Health Statistics; the 2001 death certificate database is not closed at the writing of this report and represents an underestimation of the number of poisoning-related deaths shown in this report for 2001.

- ➤ In North Carolina, the number of all poisoning-related deaths increased 67% between 1997 and 2001, from 380 to 633.
- ➤ Thirty-two percent of these poisoning-related deaths were suicides. Suicides increased by 48% in this five-year period.
- Over half (55%) of the poisoning deaths were due to poisoning from an unintentional overdose of legal or illegal drugs.
- ➤ The number of unintentional drug-related deaths increased over 100% (110.7%), from 187 deaths in 1997 to 394 deaths in 2001, which explains the sharp rise in the total number of poisoning-related deaths over this five-year period.

Table 1. Intentional and Unintentional Poisoning Deaths<sup>1</sup> in North Carolina from Death Certificates: 1997-2001<sup>2</sup>

	1997	1998	1999	2000	2001	Total
Unintentional Drugs	187	191	234	319	394	1325
Unintentional Other poisons	41	39	45	48	39	212
Intentional (suicides) All poisons	126	149	141	169	186	771
Intentional (homicides) – All poisons	3	3	1	2	4	13
Undetermined Intent	23	24	19	22	10	98
Total Poisoning Deaths	380	406	440	560	633	2419

Classification of poisoning deaths are from ICD-9 for 1997-1998 and ICD-10 for 1999-2001. Unintentional drugs (ICD-9:E850-E858; ICD-10:X40-X44); Unintentional other poisons (ICD-9:E860-E869; ICD-10:X45-X49); Intentional poisonings-suicide (ICD-9:E950-E952;ICD-10:X60-X69); Intentional poisonings-homicide(ICD-9:E962; ICD-10: X85-X90); Poisonings – undetermined (ICD-9:E980-E982; ICD-10:Y10-Y19).

This highly significant increase in the number of unintentional poisoning-related deaths from drugs resulted in a request by the North Carolina State Epidemiologist to the Centers for Disease Control and Prevention for an EPI-AID investigation.

### THE EPI-AID INVESTIGATION

- ➤ Three CDC public health officers were deployed to North Carolina from July 5 to 26, 2002 to help the N.C. DHHS Injury and Violence Prevention Unit investigate the increase in unintentional poisoning-related deaths in North Carolina from 1997 through 2001.
- > The primary objectives of the EPI-AID investigation were to
  - define the scope of the increase in poisoning deaths;
  - identify and characterize reported fatalities due to poisonings:
  - provide support for further investigation into risk factors;
  - formulate recommendations for control measures.

Vital Statistics are from the State Center for Health Statistics; the 2001 death certificate database is not closed at the writing of this report and represents an underestimation of the number of poisoning-related deaths shown in this report for 2001.

Cases to be investigated were defined as North Carolina residents whose underlying cause of death was an unintentional drug-related poisoning that occurred in North Carolina between 1997 and 2001 (inclusive). Case codes included ICD-9 codes E850-E858 for 1997-1998 and ICD-10 codes X40-X44 for 1999-2001 (Table 2).

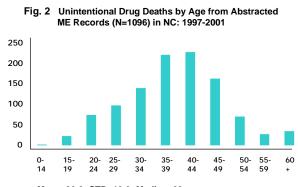
Table 2. Comparison of ICD-9 to ICD-10 Codes for Unintentional Poisoning

	ICD-10	ICD-9
X40:	non-opioid analgesics, anti-pyretics, anti-rheumatics	E850
X41:	anti-epileptic, sedatives-hypnotics, parkinsonism, psychotropics	E851, E852, E853, E854
X42:	narcotics, psychodysleptics (hallucinogens)	E850, E854
X43:	autonomic nervous system	E855
X44:	other	E855, E856, E857, E858

- All poisoning-related deaths have to be investigated by a medical examiner in North Carolina.
- ➤ The cases from Vital Records were matched to the cases in the Office of the Chief Medical Examiner's (OCME) database. Eighty-three percent of the vital records cases were identified. This study includes information on the unintentional drug-related deaths of 1,096 N.C. residents between 1997 and 2001 that were investigated by medical examiners.
- Selected data from the OCME reports of investigation by medical examiner, autopsy and toxicology databases were downloaded. Additional information not contained in the OCME databases was abstracted from 1,096 medical examiner charts. That additional information included
  - victim's characteristics;
  - circumstances surrounding the poisoning and death;
  - medical examiner's conclusions as to which drug(s) caused the death.

# **FINDINGS**

➤ AGE: The mean age of the 1,096 victims who died from an unintentional drug overdose was 39 ± 10.6 years. The median age was also 39 (Figure 2). The youngest decedent was age 9; the oldest, age 85. The variation in deaths for unintentional drug overdoses by age is different from that seen for most other fatal injuries where the highest proportions occur in the population under age 35.



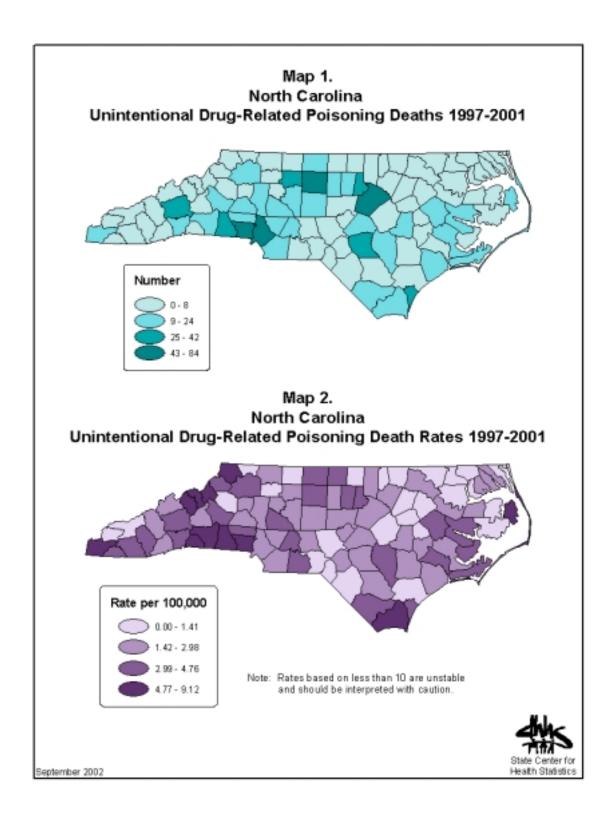
Mean: 39.0; STD: 10.6; Median: 39

- ➤ RACE: Eighty percent of the NC residents with drug-related deaths were classified as white. The number of these deaths in non-white residents was consistent across the five-year period. In contrast to non-whites, the number of fatal unintentional drug overdoses among whites increased 126% from 116 in 1997 to 263 in 2001.
- > **SEX**: Two thirds (68.3%) of the deaths from unintentional overdoses of drugs occurred in men (Figure 3). From 1997 through 2001, the number of males dying from accidental drug overdoses increased from 119 to 198 (66%); among women, the number rose from 38 to 118, an increase of 210%.

Fig. 3 Unintentional Drug Deaths by Sex from ME Records (N=1096) in NC: 1997-2001



- ➤ **CONCURRENT HEALTH CONDITIONS**: Three quarters of those who died from drug overdoses had a known history of one or more health problems at the time of their death, including substance abuse (53.8%), alcohol abuse or alcoholism (23.8%), chronic pain (20.1%), or mental illness (20.4%).
- LOCATION: There is considerable variation in the decedents' county of residence at the time of their deaths. Mecklenburg had the highest number of drug-related deaths (84) from 1997 through 2001 (Appendix 1). Yancey had the highest unintentional drug-related mortality rate (9.12 per 100,000) during those five years (Appendix 2), however the rate is based on only 8 deaths and should be interpreted with caution.
  - The North Carolina counties with the greatest number of deaths contained the major metropolitan areas (Map 1).
  - The smaller, rural counties had the highest mortality rates for unintentional drug deaths (Map 2).



- ➤ CAUSE OF DEATH: For the 1,096 decedents investigated in this study, the medical examiner concluded that 780 deaths (71.2%) were due to a single drug; however, the toxicology reports indicated that 55% of those decedents had other drugs and/or alcohol in their system at the time of their demise. There were 318 deaths (28.8%) due to the abuse of multiple drugs.
- ➤ **SINGLE-DRUG DEATHS**: Ninety percent of the single-drug deaths were caused by an illicit drug (cocaine or heroin) or a prescription narcotic (Table 3). The major prescription narcotics included morphine, methadone, oxycodone, hydrocodone, fentanyl, propoxyphene, meperidine, codeine, hydromorphone, and butorphanol.

Table 3. The Six Most Common Drugs Causing Unintentional Single-Drug Poisoning Deaths in North Carolina, 1997-2001

1997	,		1998	3		199	99		200	0		200	)1		1997-	2001	
Drug	Ν	%	Drug	Ν	%	Drug	N	%	Drug	N	%	Drug	N	%	Drug	N	%
Cocaine	52	44	Heroin	32	29	Cocaine	44	34	Methadone	56	28	Methadone	58	26	Cocaine	221	28
Heroin	23	20	Cocaine	31	28	Heroin	30	23	Cocaine	48	24	Cocaine	46	20	Methadone	147	19
Morphine	9	8	Fentanyl	7	6	Methadone	19	15	Heroin	31	16	Heroin	31	14	Heroin	147	19
Methadone	7	6	Methadone	7	6	Morphine	5	4	Morphine	15	8	Oxycodone	19	8	Morphine	53	7
Fentanyl	6	5	Morphine	7	6	Fentanyl	4	3	Oxycodone	14	7	Morphine	17	8	Fentanyl	42	5
Propoxyphene	5	4	Propoxyphen	e 2	2	Hydrocodon	e 4	3	Fentanyl	11	6	Fentanyl	14	6	Oxycodone	38	5

- In 1997 there were 117 single-drug deaths; in 2001, there were 226 deaths, an increase of 109 (93%) (Table 4).
- The number of heroin and cocaine single-drug deaths was consistent over the five-year period, ranging from 63 to 79.
- The number of prescription narcotic drugs, excluding methadone, resulting in unintentional deaths rose from 32 in 1997 to 128 in 2001 (300% increase). These prescription narcotics accounted for 88.1% of the overall increase in drug-related deaths from 1997 to 2001.
- The number of methadone deaths increased 7-fold over the five-year period, from 7 deaths in 1997 to 58 in 2001 (729% increase). Methadone accounted for 46.7% of the overall increase in drug-related deaths in the five-year period.

Table 4. Contribution of Methadone and All Prescription Narcotics to the Increase of Single-Drug Deaths<sup>1</sup> from Abstracted N.C. ME Records, 1997 -2001

5g. 5g 5g 5									
	1997	2001	Number	% change	% of				
			Change	from 1997	overall				
				through 2001	increase				
All Single-Drug Deaths	117	226	109	93%					
Methadone	7	58	51	729%	46.7%				
All Prescription Narcotics	32	128	96	300%	88.1%				

<sup>1</sup> Number of single-drug deaths = 780

- ➤ MULTIPLE-DRUG DEATHS: Alcohol was the leading drug reported in deaths for which the medical examiner identified more than one drug contributing to the person's demise (31.3% of cases) (Table 5).
  - Heroin and cocaine were reported as co-contributors at 28.5% and 18.4%, respectively.
  - Prescription narcotics such as oxycodone and methadone increased, but not as substantially as seen with single-drug deaths.

Table 5. The Six Most Common Drugs Contributing to Unintentional Multiple-Drug Poisoning Deaths<sup>1</sup> 1997-2001 (from abstracted N.C. ME records)

199	7		199	8		1999	)		2000	)		2001		1997-20	01	
Drug	Ν	%	Drug	Ν	%	Drug	N	%	Drug	Ν	%	Drug	N %	Drug	Ν	%
Alcohol	17	43	Cocaine	18	39	Alcohol	21	36	Alcohol	26	32	Cocaine	25 28	Alcohol	99	31
Cocaine	14	35	Heroin	18	39	Cocaine	14	24	Oxycodone	21	26	Oxycodone	22 24	Cocaine	90	28
Heroin	10	25	Alcohol	14	30	Methadone	10	17	Cocaine	19	23	Methadone	22 24	Heroin	58	18
Hydrocodone	8 :	20	Morphine	8	17	Oxycodone	6	10	Hydrocodone	12	15	Alcohol	21 23	Oxycodone	52	16
Morphine	3	8	Hydrocodone	e 5	11	Hydrocodone	6	10	Methadone	11	14	Hydrocodone	19 21	Methadone	51	16
Alprazolam	3	8	Alprazolam	5	11	Alprazolam	6	10	Alprazolam	11	14	Heroin	13 14	Hydrocodone	50	16

Number of unintentional multiple-drug deaths = 316 (NOTE: not mutually exclusive groups)

- ➤ SOURCE OF DRUGS: . The source of lethal drugs is underreported by medical examiners. Because of the circumstances surrounding drug-overdose deaths, the source of drug(s) is often not known. Over 50% of victims are already dead when found, and witnesses are seldom informative. The source of drugs was not reported in 32% of the 749 deaths of males from an unintentional drug overdose. Among all of the male deaths over the five-year period, 358 of the decedents (48%) on whom the source of drug was reported obtained the lethal drug "on the street"; 132 (18%) obtained the drug by prescription from their own physician; 14 (<1%) obtained a drug prescribed to another person; and 3 (<1%) obtained both illegal and prescription drugs. Among the female deaths from unintentional drug overdoses, the source of drugs was not reported for 34% of the 347 women. Twenty-eight percent of these women obtained their drugs on the street. Thirty-five percent obtained the drugs from prescriptions written by a physician, either to those women themselves (n=112) or to another person (n=9).</p>
- ➤ **SOURCE OF METHADONE**: Of the methadone-related single- and multiple-drug deaths (n=80) in 2001, the source of the methadone was available in 61% of the medical examiner reports. Based on those reports, opioid treatment programs (OTP clinics) appear to be a negligible source of the methadone implicated in unintentional drug-related fatalities in North Carolina. In 2001:
  - Twenty-one percent of the methadone was prescribed to the decedent by a physician for pain.
  - Another 8% was prescribed to the decedent, but the reason was not stated.
  - Methadone was obtained illegally in 19% of the cases.

- One decedent who was being treated at an OTP clinic (1%) obtained the lethal dose from that clinic.
- One lethal dose of methadone (1%) was prescribed while the person was hospitalized.

### **SUMMARY**

If an epidemic is defined as the prevalence of a condition within a specific population during a proscribed period of time, then the number of unintentional drug-related deaths in North Carolina has reached epidemic proportions. The actual number of these deaths is small in comparison to other fatal injuries, such as those resulting from motor vehicle crashes. However, the number of deaths from unintentional drug overdoses has increased over 100% from 1997 through 2001, and there is no reason to believe that without intervention this trend will spontaneously reverse. Deaths due to poisonings are increasing nationally. In North Carolina, the increase is explained by abuse of prescription narcotics. The Secretary of the Department of Health and Human Services has appointed a Task Force to Prevent Deaths from Unintentional Drug Overdoses. This Task Force willl work on recommendations for new policies and procedures to reduce deaths from licit and illicit drugs before this problem reaches a crisis level.

Appendix 1. Number of Unintentional Drug-Related Deaths by County, North Carolina, 1997-2001

	No. of Deaths	5-Year Pop.	Rate per
COUNTY	over 5 Years	Average	100,000 Population
4 MEQUEENIBURG		0== 0.1.1	2.42
1 MECKLENBURG	84	677,044	2.48
2 GUILFORD	79	413,702	3.82
3 GASTON	60	188,724	6.36
4 WAKE	57	612,737	1.86
5 DURHAM	42	219,488	3.83
6 FORSYTH	39	302,953	2.57
7 BUNCOMBE	38	203,637	3.73
8 NEW HANOVER	37	157,980	4.68
9 CUMBERLAND	34	301,374	2.26
10 CLEVELAND	26	95,213	5.46
11 PITT	24	130,090	3.69
12 RUTHERFORD	22	62,354	7.06
13 ROWAN	22	128,656	3.42
14 ORANGE	21	116,333	3.61
15 BRUNSWICK	20	71,404	5.60
16 HENDERSON	20	87,612	4.57
17 BURKE	19	87,910	4.32
18 ALAMANCE	18	128,666	2.80
19 CABARRUS	15	127,844	2.35
20 ROCKINGHAM	14	91,328	3.07
21 DAVIDSON	14	145,718	1.92
22 SAMPSON	13	58,839	4.42
23 CARTERET	13	59,062	4.40
24 CRAVEN	13	90,785	2.86
25 WAYNE	13	113,067	2.30
26 RANDOLPH	13	128,139	2.03
27 CATAWBA	13	139,405	1.87
28 WILKES	12	65,099	3.69
29 ONSLOW	12	149,428	1.61
30 LINCOLN	11	62,628	3.51
31 UNION	11	120,201	1.83
32 CHEROKEE	10	23,925	8.36
33 BEAUFORT	10	44,611	4.48
34 HARNETT	10	88,969	2.25
35 DARE	9	29,388	6.13
36 COLUMBUS	9	54,247	3.32
37 STANLY			3.15
	9	57,155	
38 IREDELL 39 YANCEY	9	119,687	1.50
	8	17,549	9.12
40 ROBESON	8	121,436	1.32
41 MITCHELL	7	15,559	9.00
42 ASHE	7	24,213	5.78
43 WATAUGA	7	42,398	3.30
44 HAYWOOD	7	53,471	2.62
45 JOHNSTON	7	117,987	1.19
46 GRANVILLE	6	47,435	2.53
47 SURRY	6	70,167	1.71
48 AVERY	5	16,612	6.02
49 POLK	5	18,048	5.54
50 MACON	5	29,302	3.41

	No. of Deaths	5-Year Pop.	Rate per
COUNTY	over 5 Years	Average	100,000 Population
COUNTY	Over 5 Tears	Average	100,000 i opulation
51 JACKSON	5	32,499	3.08
52 MCDOWELL	5	41,727	2.40
53 CHATHAM	5	48,512	2.06
54 HALIFAX	5	57,430	1.74
55 LENOIR	5	59,564	1.68
56 WILSON	5	73,021	1.37
57 CALDWELL	5	76,707	1.30
58 NASH	5	86,774	1.15
59 CASWELL	4	23,312	3.43
60 ANSON	4	25,201	3.17
61 TRANSYLVANIA	4	28,990	2.76
62 BLADEN	4	31,949	2.70
63 HOKE	4	32,642	2.45
		•	2.45
64 DAVIE	4	34,169	
65 FRANKLIN	4	46,419	1.72
66 DUPLIN	4	48,292	1.66
67 LEE	4	48,512	1.65
68 MOORE	4	73,437	1.09
69 PAMLICO	3	12,616	4.76
70 MARTIN	3	25,506	2.35
71 MONTGOMERY	3	26,379	2.27
72 ALEXANDER	3	32,949	1.82
73 PASQUOTANK	3	34,900	1.72
74 VANCE	3	42,520	1.41
75 RICHMOND	3	46,491	1.29
76 EDGECOMBE	3	55,785	1.08
77 CLAY	2	8,635	4.63
78 JONES	2	10,187	3.93
79 MADISON	2	19,348	2.07
80 PERSON	2	35,132	1.14
81 PENDER	2	40,112	1.00
82 STOKES	2	44,200	0.90
83 CAMDEN	1	6,715	2.98
84 PERQUIMANS	1	11,337	1.76
85 WASHINGTON	1	13,793	1.45
86 CHOWAN	1	14,547	1.37
87 CURRITUCK	1	17,873	1.12
88 GREENE	1	18,715	1.07
89 NORTHAMPTON	1	21,966	0.91
90 HERTFORD	1	21,900	0.89
91 SCOTLAND	-	•	
	1	35,855	0.56
92 ALLEGHANY	0	10,525	0.00
93 BERTIE	0	19,934	0.00
94 GATES	0	10,366	0.00
95 GRAHAM	0	7,903	0.00
96 HYDE	0	5,743	0.00
97 SWAIN	0	12,800	0.00
98 TYRRELL	0	4,039	0.00
99 WARREN	0	19,643	0.00
100 YADKIN	0	35,903	0.00

Appendix 2. North Carolina Counties by Mortality Rates for Unintentional Drug-Related Poisonings, 1997-2000

COUNTY	Rate per 100,000	5-year pop average	No. Deaths over 5 Yrs
1 YANCEY	9.12	17,549	8
2 MITCHELL	9.00	15,559	7
3 CHEROKEE	8.36	23,925	10
4 RUTHERFORD	7.06	62,354	22
5 GASTON	6.36	188,724	60
6 DARE	6.13	29,388	9
7 AVERY	6.02	16,612	5
8 ASHE	5.78	24,213	7
9 BRUNSWICK	5.60	71,404	20
10 POLK	5.54	18,048	5
11 CLEVELAND	5.46	95,213	26
12 PAMLICO	4.76	12,616	3
13 NEW HANOVER	4.68	157,980	37
14 CLAY	4.63	8,635	2
15 HENDERSON	4.57	87,612	20
16 BEAUFORT	4.48	44,611	10
17 SAMPSON	4.42	58,839	13
18 CARTERET	4.40	59,062	13
19 BURKE	4.32	87,910	19
20 JONES	3.93	10,187	2
21 DURHAM	3.83	219,488	42
22 GUILFORD	3.82	413,702	72 79
23 BUNCOMBE	3.73	203,637	38
24 PITT	3.69	130,090	24
25 WILKES	3.69	65,099	12
26 ORANGE	3.61	116,333	21
27 LINCOLN	3.51	62,628	11
28 CASWELL	3.43	23,312	4
29 ROWAN	3.42	128,656	22
30 MACON	3.41	29,302	5
31 COLUMBUS	3.32	54,247	9
32 WATAUGA	3.30	42,398	7
33 ANSON	3.17	25,201	4
34 STANLY	3.15	57,155	9
35 JACKSON	3.08	32,499	5
36 ROCKINGHAM	3.07	91,328	14
37 CAMDEN	2.98	6,715	1
38 CRAVEN	2.86	90,785	13
39 ALAMANCE	2.80	128,666	18
40 TRANSYLVANIA	2.76	28,990	4
41 HAYWOOD	2.62	53,471	7
42 FORSYTH	2.57	302,953	39
43 GRANVILLE	2.53	47,435	6
44 BLADEN	2.50	31,949	4
45 MECKLENBURG	2.48	677,044	84
46 HOKE	2.45	32,642	4
47 MCDOWELL	2.40	41,727	5
48 MARTIN	2.35	25,506	3
	2.00	_0,000	•

NOTE: Rates based on less than 10 deaths are unstable and should be interpreted with caution.

COUNTY	Rate per 100,000	5-year pop average	No. Deaths over 5 Yrs
49 CABARRUS	2.35	127,844	15
50 DAVIE	2.34	34,169	4
51 WAYNE	2.30	113,067	13
52 MONTGOMERY	2.27	26,379	3
53 CUMBERLAND	2.26	301,374	34
54 HARNETT	2.25	88,969	10
55 MADISON	2.07	19,348	2
56 CHATHAM	2.06	48,512	5
57 RANDOLPH	2.03	128,139	13
58 DAVIDSON	1.92	145,718	14
59 CATAWBA	1.87	139,405	13
60 WAKE	1.86	612,737	57
61 UNION	1.83	120,201	11
62 ALEXANDER	1.82	32,949	3
63 PERQUIMANS	1.76	11,337	1
64 HALIFAX	1.74	57,430	5
65 FRANKLIN	1.72	46,419	4
66 PASQUOTANK	1.72	34,900	3
67 SURRY	1.72	70,167	6
68 LENOIR	1.68	59,564	5
69 DUPLIN	1.66	•	4
		48,292	4
70 LEE	1.65	48,512	•
71 ONSLOW	1.61	149,428	12
72 IREDELL	1.50	119,687	9
73 WASHINGTON	1.45	13,793	1
74 VANCE	1.41	42,520	3
75 CHOWAN	1.37	14,547	1
76 WILSON	1.37	73,021	5
77 ROBESON	1.32	121,436	8
78 CALDWELL	1.30	76,707	5
79 RICHMOND	1.29	46,491	3
80 JOHNSTON	1.19	117,987	7
81 NASH	1.15	86,774	5
82 PERSON	1.14	35,132	2
83 CURRITUCK	1.12	17,873	1
84 MOORE	1.09	73,437	4
85 EDGECOMBE	1.08	55,785	3
86 GREENE	1.07	18,715	1
87 PENDER	1.00	40,112	2
88 NORTHAMPTON	0.91	21,966	1
89 STOKES	0.90	44,200	2
90 HERTFORD	0.89	22,498	1
91 SCOTLAND	0.56	35,855	1
92 ALLEGHANY	0.00	10,525	0
93 BERTIE	0.00	19,934	0
94 GATES	0.00	10,366	0
95 GRAHAM	0.00	7,903	0
96 HYDE	0.00	5,743	0
97 SWAIN	0.00	12,800	0
98 TYRRELL	0.00	4,039	0
99 WARREN	0.00	19,643	0
100 YADKIN	0.00	35,903	0
		,	-