Homicide Victims in the Military: 1980–1992

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Data abstracted from the Report of Casualty (DD 1300) is used to describe active duty homicide victims for the period 1980 through 1992. The Marine Corps experienced the fewest homicides (186) but the highest rate (7.36 per 100,000) compared to the other services: Army (619/6.36), Navy (381/5.24), and Air Force (194/2.65). Those younger than 25 accounted for 57% of the homicides and had a higher rate than the older age groups. Blacks had a rate 2.1 times higher than whites, and the overall female-to-male rate ratio was 1.2. Firearms were used against 63% of male and 35% of female homicide victims. Twenty-eight percent of female victims were beaten or strangled and females were over 10 times more likely than males to be strangled. The risk for homicide among active duty males was less than for males in the general population. Conversely, active duty females were at an increased risk for homicide in comparison to both males in the military and females in the general population.

Introduction

From 1979 through 1988, homicide was the second most common cause of death among persons 15 through 34 years of age in the United States, exceeded only by unintentional injuries. In this age group, homicide was the fourth most common cause of death among white females, the third most common cause among white males, and the most common cause among both black females and black males.[1]

In a comparison of 1986 mortality rates between U.S. Army soldiers and the entire U.S. population, Rothberg et al. found that soldiers died at a rate half that of their civilian counterparts.[2] Black men in the Army were one-twelfth as likely to die from homicide as black males in the civilian population. Rothberg and his colleagues suggest that the mortality experience of the Army may be due to two general factors: (1) the selection and entrance criteria by which a civilian becomes and remains a soldier, and (2) the physical and social environment to which they are subsequently exposed.

It has been hypothesized that military personnel are likely to have high homicide rates while off-duty because of the high concentration of high-risk age groups and the geographic mobility of the population.[3] Baker et al. indicate that statistics on occupational injuries and deaths generally apply to the civilian population only.[4] Because denominator information is generally not available for military personnel, this group is often excluded from single state (or larger) studies, resulting in a needless loss of valuable information.

The Department of Defense (DoD) publishes periodic summaries of all active duty military casualties, including homicides; however, these summaries do not provide detailed epidemiological or risk information.[5] In this study, active duty homicide victims in the four military services—Air Force, Army, Marine Corps, and Navy—are described for the 13-year period 1980 through 1992. Temporal trends and demographic risk comparisons are made between the military services and with the U.S. resident population with the same age profile and for a similar period of time.

Methods

Military Homicides

The DoD maintains and operates the automated Worldwide Casualty System (WCS), whose primary source of information is the Report of Casualty (DD 1300).[6] The DD 1300 is the official record of death for all military officers and enlisted personnel who die while on active duty. In addition to the DD 1300, a death certificate is also filed in the state of occurrence for all active duty persons who die in the U.S. Casualty data are compiled from each military service on a fiscal-year basis, October 1 through September 30, and consolidated casualty information reports for use by DoD, other federal agencies, and the general public are prepared.[5,6] For this study, homicide statistics were compiled and analyzed by calendar year to facilitate comparisons with general population data.

A subset of the WCS data consisted of all injury fatalities that occurred during the 13-year period January 1, 1980, through December 31, 1992. Included among these fatalities were deaths due to unintentional injury, natural causes, suicide, homicide, and other causes, including hostile action.

Military Strength (Population)

Complete data on the number of active duty military stratified by age, gender, race, and officer/enlisted status were obtained from the DoD Defense Manpower Data Center for each year of the study period. Annual summaries as of December 31 of each year accounted for changes due to accession and attrition throughout the year. Three age groups were used: 17 to 24 years, 25 to 34 years, and 35 to 54 years. The race category of Other included Asians/Pacific Islanders, Native Americans, and those persons whose race was unknown. Enlisted personnel were grouped in two categories: E1 to E4 and E5 to E9. Variable-specific (age, gender, race, officer/enlisted, method of homicide) rates and rate ratios, per 100,000 military personnel, were calculated using 13-year summaries of active duty military person-years at risk. Confidence intervals for rates and rate ratios were not calculated because the data represent the full enumeration of military homicides and not a sample. Because of the instability of rates based on small numbers, rates were not calculated in categories with less than five deaths.

Poisson regression is used to model incidence density data from rare events such as homicide.[7] The data used are the numbers or rates of homicide occurring within the military

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The views expressed in this article are those of the author and do not reflect the official policy or position of the Department of the Navy, Department of Defense, or the U.S. Government.

This manuscript was received for review in February 1994. The revised manuscript was accepted for publication in February 1995.

population. The primary variables used in the model were gender, race, service, age, and officer/enlisted (paygrade) status. The individual years 1980 through 1992 were entered in the model but results are not reported. The Appendix defines the baseline variables, the model, and presents the results of the analysis.

National Homicide and Population Data

Data on homicides occurring in the U.S. resident population, ages 17 through 54 years, were obtained from the National Center for Health Statistics (NCHS) compressed mortality files for the 12-year period 1980 through 1991.[8] NCHS mortality data include information for members of the Armed Forces who die in the U.S., but does not include information for deaths of U.S. citizens and military personnel that occur outside the U.S. Fifteen percent of the military homicides occurred outside the U.S. Population data for the U.S. resident population between the ages of 17 and 54, for a similar time period, were obtained from the Bureau of the Census.[9] The denominator data also excluded military personnel stationed overseas.

Because differences in the age composition of a population can influence total mortality rates, age-specific rates are appropriate for comparison of the mortality experiences in the two populations.[10] Age adjustment is often used as a summary statistic to take into account the differences in the age distribution of a population. In this study, however, where all rates relate to one cause, the inclusive age range of the two populations was exactly the same, and the study period was similar, age adjustment was not necessary.

Definition of Homicide

In this study, only deaths as a result of homicide are analyzed. In both populations these deaths were defined according to the International Classification of Diseases, 9th Revision (ICD-9)—external cause of death E codes E960 through E969—which includes homicide and injury purposely inflicted by other persons.[11] Deaths from legal interventions were excluded.

Results

Homicide was the fourth leading cause of death (5%) among all active duty military personnel (third and 14% among females, fourth and 5% among males), after unintentional injury (61%), natural causes (18%), and suicide (12%). During the 13-year study period, 1,380 service members were victims of homicide. The overall crude homicide rate for all services combined was 5.14 per 100,000 active duty personnel. The Marine Corps had the fewest homicide victims (186) and the highest service-specific rate, 7.36 per 100,000, compared to the other services: Army, 619/6.36; Navy, 381/5.24; and Air Force, 194/2.65.

The age at death for all military homicide victims ranged from 17 to 53 years; the mean age at death for all males was 25.6 years and for all females it was 25.4 years. Within each of the services the mean age of male and female homicide victims were, respectively: Air Force, 26.8 and 26.3 years; Army, 25.6 and 25.1 years; Marine Corps, 23.6 and 24.8 years; and Navy, 25.8 and 25.4 years. Collectively, Marine Corps victims were significantly younger ($p < 0.05$) than victims in the other services. Enlisted homicide victims were significantly younger ($p < 0.01$) than officer homicide victims, 25.2 years and 32.8 years, respectively. In the two large populations, 98% of the total military population and 99% of the homicide victims were <45 years of age compared to 82 and 89%, respectively, in the general population.

Table I describes the homicide experience, by age, gender, race, and officer/enlisted status, for each service and collec-

TABLE I

ACTIVE DUTY MILITARY AND NATIONAL HOMICIDE RATES (PER 100,000) BY SERVICE, AGE, GENDER, RACE, AND OFFICER/ENLISTED STATUS

	Air Force		Army		Marine Corps		Navy		All Military[a]		National[b]	
Group	*n*	Rate	*n*	Rate	*n*	Rate	*n*	Rate	*n*	Rate	*n*	Rate
Age												
17–24	95	3.49	341	7.42	130	8.23	218	6.27	784	6.33	65,193	16.80
25–34	71	2.37	215	6.10	46	6.48	117	4.50	449	4.57	81,739	16.47
35–54	28	1.75	63	3.93	10	4.20	46	3.86	147	3.18	69,937	10.48
Gender												
Male	156	2.43	531	6.09	173	7.17	345	5.22	1,205	4.99	172,479	22.37
Female	38	4.19	88	8.63	13	11.20	36	5.52	175	6.49	44,390	5.69
Race												
White	128	2.15	323	5.06	113	5.91	240	4.12	804	4.00	110,812	8.44
Black	62	5.62	265	9.57	62	12.83	132	13.40	521	9.76	100,901	54.28
Other	4	ND[c]	31	5.33	11	8.35	9	2.30	55	4.15	5,156	9.71
Officer/enlisted												
E1–E4	109	3.40	382	7.83	139	8.87	236	6.79	866	6.60	—	—
E5–E9	72	2.59	212	6.04	37	5.23	128	4.45	449	4.54	—	—
Officer	13	0.98	25	1.84	10	3.93	17	1.88	65	1.69	—	—
Total	194	2.65	619	6.36	186	7.36	381	5.24	1,380	5.14	216,869	13.98

[a]Department of Defense, 1980–1992, ages 17 to 54 years.

[b]National Center for Health Statistics, 1980–1991, ages 17 to 54 years.

[c]ND, not determined (due to small number of deaths).

TABLE II

ACTIVE DUTY MILITARY AND NATIONAL HOMICIDE RATES (PER 100,000) BY SERVICE, AGE, RACE, AND GENDER SUBGROUPS

	All Military[a]		National[b]	
Group	*n*	Rate	*n*	Rate
Age group: 17–24				
White male	416	4.99	23,705	14.51
Black male	255	11.78	27,614	104.50
White female	53	5.87	7,108	4.51
Black female	29	7.62	5,250	19.11
Age group: 25–34				
White male	184	2.85	31,250	14.87
Black male	168	9.43	32,348	113.30
White female	44	6.09	8,957	4.32
Black female	35	10.58	7,405	22.92
Age group: 35–54				
White male	99	2.83	30,429	10.71
Black male	33	5.27	23,308	71.84
White female	8	4.50	9,363	3.23
Black female	1	ND[c]	4,976	12.85

[a]Department of Defense, 1980–1992, ages 17 to 54 years.
[b]National Center for Health Statistics, 1980–1991, ages 17 to 54 years.
[c]ND, not determined (due to small number of deaths).

tively for the four services. In each service, homicide rates decreased as age increased. The Marine Corps experienced the highest age-specific rate, 8.23 per 100,000, among personnel aged 17 to 24, compared to any other age group across the other services.

Eighty-seven percent of all military homicide victims were male, 58% white and 38% black. In each service, rates among blacks were noticeably higher than for whites or persons of other races. Blacks had an overall rate 2.09 times that of whites ($p < 0.000$) (see Appendix). Females were victims of homicide at a rate higher than males in each service and, for all services combined, at a rate significantly higher than the rate for males ($p < 0.05$) (see Appendix).

Over 95% of all military homicide victims were enlisted personnel. The overall homicide rate among enlisted personnel was over three times the rate observed among officers. There were no homicides among flag and general officers. In each service, the risk of homicide was highest in the junior enlisted group (E1 to E4), decreasing through the senior enlisted (E5 to E9) and officer groups.

A review of the homicide rates among military subgroups, presented in Table II, shows that rates among black males were significantly higher than those among white males in each age group ($p < 0.01$). Homicide rates among black females were higher than those among white females in the two youngest age groups and significantly so in the middle age group ($p < 0.05$). White females had higher rates than white males in all age groups. Rates among both white and black females were higher than rates among white males in all age groups. White females in particular had a significantly higher rate than white males in the 25 to 34-year age group ($p < 0.001$).

There was an overall decreasing trend in military homicide rates during the 13-year study period. Rates among males dropped 28% from 8.42 per 100,000 in 1980 to 6.04 per 100,000 in 1992. An average of 93 males were victims of homicide annually, with a high of 157 in 1980 and a low of 48 in 1989. Rates among males were lower than rates among females in all years except 1981. Rates among females decreased a similar amount—25%, from 9.22 per 100,000 in 1980 to 6.91 per 100,000 in 1992—but exhibited greater variability than rates among males. An average of 13 females were victims of homicide each year during the study period, with a high of 19 in 1985 and a low of 8 in 1981.

Among both genders, firearms were the predominant method of homicide, followed by cutting/piercing instruments (Table III). The proportion of males killed by firearms was nearly twice that of females, 63 and 35%, respectively, with males experiencing a rate of firearm-related homicide 1.34 times greater than females. Collectively, military females were 1.51 times more likely to be killed by stabbing compared to military males. A much higher proportion of military female victims were strangled compared to males, 18 and 2%, respectively. The overall rate of homicide due to strangulation among military females was 10.75 times higher than among military males ($p < 0.001$). Firearms were by far the most common method of homicide used against all military whites (60%), blacks (58%), and victims of other races (65%). Use of cutting/piercing instruments was the second most frequently observed method in each of these races: 20, 33, and 23%, respectively.

TABLE III

ACTIVE DUTY MILITARY AND NATIONAL HOMICIDES AND RATES (PER 100,000) BY METHOD OF HOMICIDE AMONG MALES AND FEMALES

	All Military[a]					National[b]				
	Male (*n* = 1,012)		Female (*n* = 149)			Male (*n* = 172,479)		Female (*n* = 44,390)		
Method	%	Rate	%	Rate	Crude Rate Ratio[c]	%	Rate	%	Rate	Crude Rate Ratio[c]
Firearm	63.1	3.06	34.9	2.28	0.75	71.1	15.92	54.0	3.07	0.19
Cutting/piercing instruments	24.5	1.19	27.5	1.80	1.51	19.1	4.26	19.8	1.12	0.26
Strangulation	2.3	0.11	18.1	1.18	10.75	1.3	0.29	12.0	0.68	2.34
Other	10.1	0.49	19.5	1.27	2.60	8.5	1.91	14.2	0.81	0.42

[a]Department of Defense, 1980–1990, ages 17 to 54 years.
[b]National Center for Health Statistics, 1980–1991, ages 17 to 54 years.
[c]Female-to-male (per 100,000).

Discussion

Young adults and blacks were at highest risk of homicide in both the military and general population, which confirms the findings of previous studies of the general population.[1,8,12,13] There were, however, notable risk differences between various demographic groups, not only within each of the services but between the military and national populations.

The overall rate for homicides in the national population was about 2.7 times higher than in the military population for a similar period and with a similar age range, whereas persons aged 17 to 24 years had the highest age-specific rates in both populations (Table I). Rates in the military were lower in all age groups compared to the national population, and in both populations, as age increased homicide rates decreased.

Males in the national population had homicide rates at least four times higher than males in the active duty male population. A lower risk for homicide for Army males in comparison to the U.S. population has been reported previously[2] and is corroborated by the current data. The other three services also had male homicide rates significantly lower than the rates for males in the national population.

Military females, however, were somewhat more likely to be homicide victims than females in the total population (Table I). White military females also had higher rates than their counterparts in the national population in all age groups; however, the rate differentials were not significant.

An interesting paradox exists for rates observed among racial subgroups of women in the military (Table II). Although white females in the military had higher rates than their civilian counterparts and black females in the military had lower rates than their civilian counterparts, black females in the military had higher rates than white females in the two youngest age groups. The rates among these two groups of women in the 25 to 34-year age group were significantly different ($p < 0.05$).

The rates presented in Table I are variable-specific and do not account for the potential influence of other variables on the resulting crude rates. The regression analysis, however, simultaneously adjusts for all variables of interest and their impact on the rate. Comparison of crude and Poisson regression rate ratios in the Appendix suggest that there was little difference between the two sets of rate ratios for service, gender, officer/enlisted, and other race. There were differences noted for the two oldest age groups. Observing age-specific crude rates only, one may get the impression that age greatly affects the rates; however, when adjustments are made for all variables of interest, the contribution of age appeared to be much less. For both sets of rate ratios, one sees that being black and female are the primary factors relating to homicide in the military.

Military data for the period 1980 through 1992 corroborate Rothberg's 1986 study, in which civilian black males had homicide rates 12 times higher than black males in the Army.[2] Rates for black males in both the Navy and Marine Corps exceeded the black male rate in the Army. Overall, rates among black males in the U.S. population were about 9.6 times higher than rates among black males in the military. These data support the theory that the Army, and the military environment in general, may provide a protective effect for male, particularly black male, homicide. In a larger sense, these findings suggest that Rothberg's explanation of the global concept of a healthy worker effect can be applied to the larger and more current military data set. This effect oversimplifies, to some degree, what is a more complex phenomenon involving individual, social, and organizational dimensions.[2]

There are multiple characteristics of military personnel and military life that differentiate active duty military from the population as a whole and may influence the risk for homicide. The military population is self-selected; all members on active duty since 1976 are volunteers. Ninety-eight percent of the military is less than 45 years of age, 90% are males, and 75% are white. All entrants undergo pre-entry screening (physical and mental) and engage in continuous physical fitness training with periodic assessment. The military lifestyle is characterized by both formal and informal guidelines (e.g., provision of housing, regulation of firearms, social support mechanisms, educational selection, etc.) that, Rothberg suggests, might also influence the reduction of homicide in nonmilitary populations.[2] Personality characteristics that may be associated with homicides and volunteering for military service include deference to authority and willingness to abide by rules and regulations.

These characteristics of military life are not specific to the Army, and likely play a role in the mortality experience of the other services as well. However, the ability to control for these factors is difficult, particularly in explaining their contribution to decreased homicide among military males. Conversely, the question is raised as to how this constellation of factors might interact differently among military females to increase their risk of homicide.

Homicide rates among both military males and females decreased about 25%, but annual rates for females showed the most temporal variation because of small numbers, particularly in 1981 and 1989. Homicide rates among civilian females remained steady throughout the period. Among U.S. males, rates declined from 1980 through 1985, but have steadily increased about 5% per year since 1987.

Firearms were the most common method of homicide used on males in both military and civilian populations, but they were used to a lesser degree among females (Table III). The use of stabbing weapons was similar between males and females within each population but slightly more common in the military. These distribution patterns among males and females were similar to those seen in previous studies.[1,12,14,15]

One of the interesting findings of this study was the high proportion of military women who were strangled, 18%. The next closest gender group was civilian females, with 12% of homicides due to strangulation. Males were victims of strangulation in about 2% or less of homicides in both the military and national populations. Among military females, a much higher proportion of Army homicide victims were strangled (28%) compared to the other services—Navy, 14%; Marines, 11%; and Air Force, 7%. In the military, females were strangled at a significantly higher rate than their male counterparts. This same pattern was apparent in the national population, although the female-to-male rate ratio was less (2.34) (Table III).

The explanation for the high proportion of military women who were strangled or beaten is multifaceted. Over 40% of these women were less than 25 years of age, many had only limited technical and military experience, and most of the women were likely to have resided in a structured living envi-

ronment, such as a dormitory, barracks, or aboard ship. These areas often have restrictions on the possession and use of firearms or other weapons, whereas open community living may not have such restrictions. Previously, the military environment was presented as a possible protective factor for male homicide. However, among females this same environment may exacerbate homicide risk. The high proportion of military women who were strangled may have more to do with who perpetrated the homicide than any other factor.

Straus indicates that domestic (nonlethal-physical) violence is often an antecedent of homicide. The limited availability and accessibility of a firearm or a stabbing instrument may lead an assailant to alternative methods of assaultive behavior, such as strangulation or beating, that turn more violent and ultimately fatal.[16] Browne states that women victims of violence by their male partners are more likely to be repeatedly attacked, raped, injured, or killed than are women assaulted by other types of assailants (e.g., acquaintances, strangers).[17] She further suggests that this repetition and severity of aggression is facilitated by the fact that partners are readily available, the amoung of time at risk is high, and assault can be carried out in private when the target is completely off guard. Mercy and Saltzman, in their review of FBI (Supplemental Homicide Reports [SHR] data for the period 1976 through 1985, found that the demographic patterns in the risk of spouse homicide were similar to those reported for nonfatal spouse abuse, suggesting that the causes of spouse homicide and nonfatal spouse abuse may be similar.[18] Wolfgang,[19] Block,[20] and others[21,22] indicate that the concept of the victim's causing or contributing to a crime (homicide) by intentionally or unintentionally "provoking" the offender must also be taken into consideration. These paradigms may also occur in homicide among young women in a military environment. Further research should be conducted to more fully understand these complex phenomena, particularly in explaining the gender differences observed in military homicides.

Although the DoD Report of Casualty (DD 1300) provides useful epidemiologic information and has been shown to be a timely and valuable source of complete case ascertainment for active duty deaths,[23] it has several limitations. The DD 1300, like the death certificate, has no information on the assailant. Thus, we do not know if the victim and the offender were friends or acquaintances, family members, or strangers to one another. Recent FBI-SHR data[14,15] have shown that about 55% of offenders were related to or acquainted with the victim. Additionally, the DD 1300 does not usually provide detailed information on the circumstance(s)/motive(s) relating to the homicide incident, such as, whether the homicide was committed during the commission of another felony (robbery) or under nonfelony circumstances (argument) or whether the incident occurred on- or off-base. Also, the duty status of the victim is typically not known. Provision for duty status is made on the DD 1300; however, it is reported at the option of each service and currently is not used consistently.[6] Information on the method of homicide is not provided on the DD 1300 after 1990 and will therefore limit future comparisons.

The Report of Casualty, as well as the death certificate, provide little causal explanation for a given homicide. Information relating to the biological, psychological, and sociological factors of a homicide, as defined by Rosenberg and Mercy[14] and others[15,18,24] is not available on either data source. Alternative sources of data that may provide additional information on military homicide victims include local and military police reports and various medico-legal investigative reports that may be prepared by a victim's individual military service.

The NCHS estimates that the proportion of homicides that occur among active duty military personnel is probably underreported (to NCHS) by the states because of differing requirements in recording the usual industry and occupation of the military member on the death certificate at the time of death (personal communication with NCHS Division of Data Services, July 1993). If all military homicides (n = 1,272 for the period 1980–1991) are captured by NCHS, these cases represent less than 1% of all national homicides in the 17- to 54-year age range. The NCHS homicide data can then be described as accurately representing the nonmilitary population with little confounding by military cases. The DoD data represent a full enumeration of homicides occurring among the active duty Armed Forces population.

Although occupation information was provided for both case and military population files, definition and grouping of occupational codes to facilitate comparison with national occupational fatality data are not complete. To more fully identify occupational groups within the military that may be at increased risk of homicide, complete analysis of occupational groups should be undertaken. Additional causal, occupational, and service environment information, particularly related to female homicides, is vital to a better understanding of the dynamics of homicide and in developing protective and preventive strategies.

Summary

The objective of this study was to review historical information on military homicide victims and provide a current epidemiological profile across the four armed services for the 13-year period 1980 through 1992. Young adults and blacks were at highest risk of homicide in both populations and confirm the findings of previous studies. There were notable differences between the services as well as between the two populations. In particular, military females were murdered at higher rates than military males in each of the services as well as their female counterparts in the national population. A paradox exists for rates observed among female racial subgroups in the military—white military females had higher rates than white civilian females, whereas black military females had lower rates than their civilian counterparts and higher rates than white military females in the two youngest age groups.

The suggestion that the military environment may be protective for males and exacerbative for females is a complex interaction of individual, social, organizational, and occupational factors. Additional research is needed to explain the risk differences observed between female and male military homicide victims.

Acknowledgment

I deeply appreciate the excellent data management of military case and population data and general population data by Mr. Greg Kulczycki, a contractor to the Division of Safety Research, NIOSH, Morgantown, West Virginia.

Appendix: Poisson Regression Analysis

Total active duty population, 1980–1992: 26,853,045 (100%).

Baseline variables and proportion of population base:

Service—Army	36%
Gender—male	90%
Race—white	75%
Paygrade—junior enlisted (E1–E4)	49%
Age—young (17–24)	46%

Years 1980–1992 in model but results not shown.

Model Variables	Coeff	StdErr	*p* Value	Rate Ratio	Crude Rate Ratio[a]
Air Force	−0.715	0.083	0.000	0.489	0.417
Marine Corps	0.190	0.085	0.025	1.210	1.152
Navy	−0.041	0.066	0.538	0.960	0.824
Female	0.210	0.082	0.011	1.233	1.301
Black	0.739	0.058	0.000	2.094	2.440
Other race	−0.062	0.140	0.655	0.939	1.038
Officer	−1.099	0.143	0.000	0.333	0.256
Senior enlisted	−0.306	0.079	0.000	0.736	0.688
Midage (25–34)	0.016	0.075	0.831	1.016	0.722
Oldest (35–54)	−0.058	0.114	0.613	0.944	0.502

[a]Derived from Table I crude rates: $\frac{\text{variable of interest}}{\text{baseline variable}}$

Examples: $\frac{\text{Air Force}}{\text{Army}} = \frac{2.65}{6.36} = 0.417.$

$\frac{\text{Black}}{\text{White}} = \frac{9.76}{4.00} = 2.440.$

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