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Annette B. Ramirez de Arellano
CUNY Hunter College

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Premature Mortality among U.S. Puerto Ricans, 1989

Annette B. Ramírez de Arellano, D.P.H.

The indicator “years of potential life lost” (YPLL) points out the extent to which premature death among Puerto Ricans residing in the United States is a function of behaviors and social conditions. The computation of YPLL for various causes of death highlights the devastating effect of HIV infection, which emerges as the leading cause of premature death for both genders. Indeed, a 50 percent reduction in the HIV/AIDS death toll would save more years of potential life than the complete eradication of both cancer and diabetes. Accidents and homicides follow HIV as leading causes of YPLL.

This indicator also underscores gender-specific vulnerabilities. Men comprise less than half the U.S. Puerto Rican population, but they account for 61.1 percent of all deaths and 73 percent of YPLL. While they do not permit an analysis of changes over time, these cross-sectional data reflect general trends in Puerto Rico, where gender differentials are also marked, and deaths related to unprotected sex, drug use, and violence have displaced traditional pathophysiological conditions as the leading causes of premature death.

Death has been called the ultimate “sentinel event,” alerting decision makers to the fact that something is wrong with the body politic. In the health field, mortality data are variously seen as expressions of specific vulnerabilities, indexes of environmental and other risk factors, and indicators of service gaps. Taken collectively, mortality rates may represent “the quantification of a population’s collective tragedy.”¹

Not until 1989 were Hispanic/Latino identifiers included on the standard registration certificates for vital events recommended for use by the United States.² As a result, the mortality experience of U.S. Puerto Ricans was captured only in certain areas, and an accurate picture of how Puerto Ricans were faring nationally was not available until relatively recently. This lack of data has hindered the identification of specific health problems, hence the design of adequate strategies to address them. Lack of data has also had negative implications for funding. Because reliable base lines and objectives have not been available, Latinos have been overlooked or neglected in many of the federal government’s Healthy People 2000 objectives. And because funding allocations at the federal, state, and local levels have been based on the guidelines established in that program, Latinos have not been targeted in many health promotion and disease prevention initiatives.

This article examines the 1989 mortality data for U.S. Puerto Ricans by computing years of potential life lost (YPLL) for the population as a whole by cause and by gender. Establishing this benchmark allows changes to be studied over time, thereby providing

Annette B. Ramírez de Arellano, former associate dean of the School of Health Sciences at Hunter College and consultant to the Secretary of Health of Puerto Rico, is a consultant on health policy and planning.

planners the data to establish priorities and to design, carry out, and assess programs to prevent premature mortality.³

Methods

While the crude death rate is often used to rank the relative importance of the various conditions affecting a population, this indicator tends to reflect deaths occurring at older ages, when intervention strategies are less effective.⁴ YPLL has gained increasing currency in assessing premature mortality. First contemplated in 1687,⁵ this indicator is being used in a number of countries, including the United States, Canada, Israel, and Italy.⁶

YPLL seeks to compare the relative importance of various causes of death for a specific population — here, Puerto Ricans in the United States. YPLL is defined as the number of years of life lost by persons who die before reaching age 65. The calculation of YPLL for a particular cause involves adding the number of deaths of people between one and 64 years of age occurring in each ten-year age group, multiplied by the difference between 65 and the midpoint on the given age range. The figure for YPLL for that cause is therefore the sum, over all persons dying from that cause, of the years that they would have lived had they completed normal life expectancy.⁷

While there has been some debate concerning both the exclusion of infant deaths and the appropriate cutoff point for defining “prematurity,” I have followed Romeder and McWhinnie in excluding deaths under age one. They argue that the inclusion of infant deaths would represent “an overestimation of the value accepted by society for such a loss.”⁸ Moreover, these deaths are largely attributable to age-specific causes or conditions that are negligible among other age groups. At the same time, I have defined death before age 65 as “premature,” because this is the cutoff age used in calculations in the United States and because it coincides with the age groups as tabulated and published in the national vital statistics.⁹

Because I sought to analyze the experiences of the sexes and therefore compare two populations of different sizes, I computed a rate by dividing the YPLL for each cause and gender by the total population between the ages of one and 64 in the respective gender. I then multiplied this product by 1,000, so that the rate is expressed in terms of years of potential life lost per thousand. I calculated sex-specific YPLL and YPLL rates for twelve causes, following the vital statistics aggregates of the ninth revision of the International Classification of Diseases. Each of these causes was responsible for at least 190 deaths during 1989, the most recent year for which complete vital statistics have been reported.

Findings

As Table 1 indicates, the ranking of the leading causes of death is significantly altered when YPLL rather than the crude mortality rate is used. With the exception of the catchall category of “symptoms, signs, and ill-defined conditions,” substituting one indicator for another shifts the relative importance of all other conditions. Five conditions alter their ranks by more than two rungs. Diseases of the heart and malignant neoplasms, traditionally considered the two leading causes of death for both the U.S. population as a whole and the Puerto Rican population, rank fourth and fifth, respectively, when YPLL is computed. Cerebrovascular diseases, which have a differential impact on older age groups, are also significantly downgraded when only premature deaths are

considered. At the same time, the devastating impact of AIDS is highlighted, as it becomes the leading cause of YPLL. Indeed, a 50 percent reduction in the AIDS death toll, which is theoretically possible, would save more years of potential life than the eradication of cancer and diabetes combined.

Table 1

**Relative Ranks of Causes of Death by Indicator,
U.S. Puerto Ricans, 1989**

| Cause of Death | Crude Death Rate | YPLL |
|---|------------------|------|
| Diseases of heart (390-398, 402, 404-429) ^a | 1 | 4 |
| Malignant neoplasms (140-208) | 2 | 5 |
| HIV infection (042-044) | 3 | 1 |
| Accidents and adverse effects (E800-E949) | 4 | 3 |
| Homicide and legal intervention (E960-E978) | 5 | 2 |
| Symptoms, signs, and ill-defined conditions (780-799) | 6 | 6 |
| Cerebrovascular diseases (430-438) | 7 | 10 |
| Pneumonia and influenza (480-487) | 8 | 9 |
| Chronic liver disease and cirrhosis (571) | 9 | 8 |
| COPD and allied conditions (490-496) | 10 | 12 |
| Diabetes mellitus (250) | 10 | 11 |
| Suicide (E950-E959) | 11 | 7 |

Source: Based on National Center for Health Statistics, Department of Health and Human Services, *Vital Statistics of the United States, 1989*, vol. 2, *Mortality*, DHHS Pub. No. (PHS) 92-1102 (Washington, D.C.: U.S. Government Printing Office, 1992).

^a Numbers in parentheses refer to specific causes from the Ninth Revision of the International Classification of Diseases.

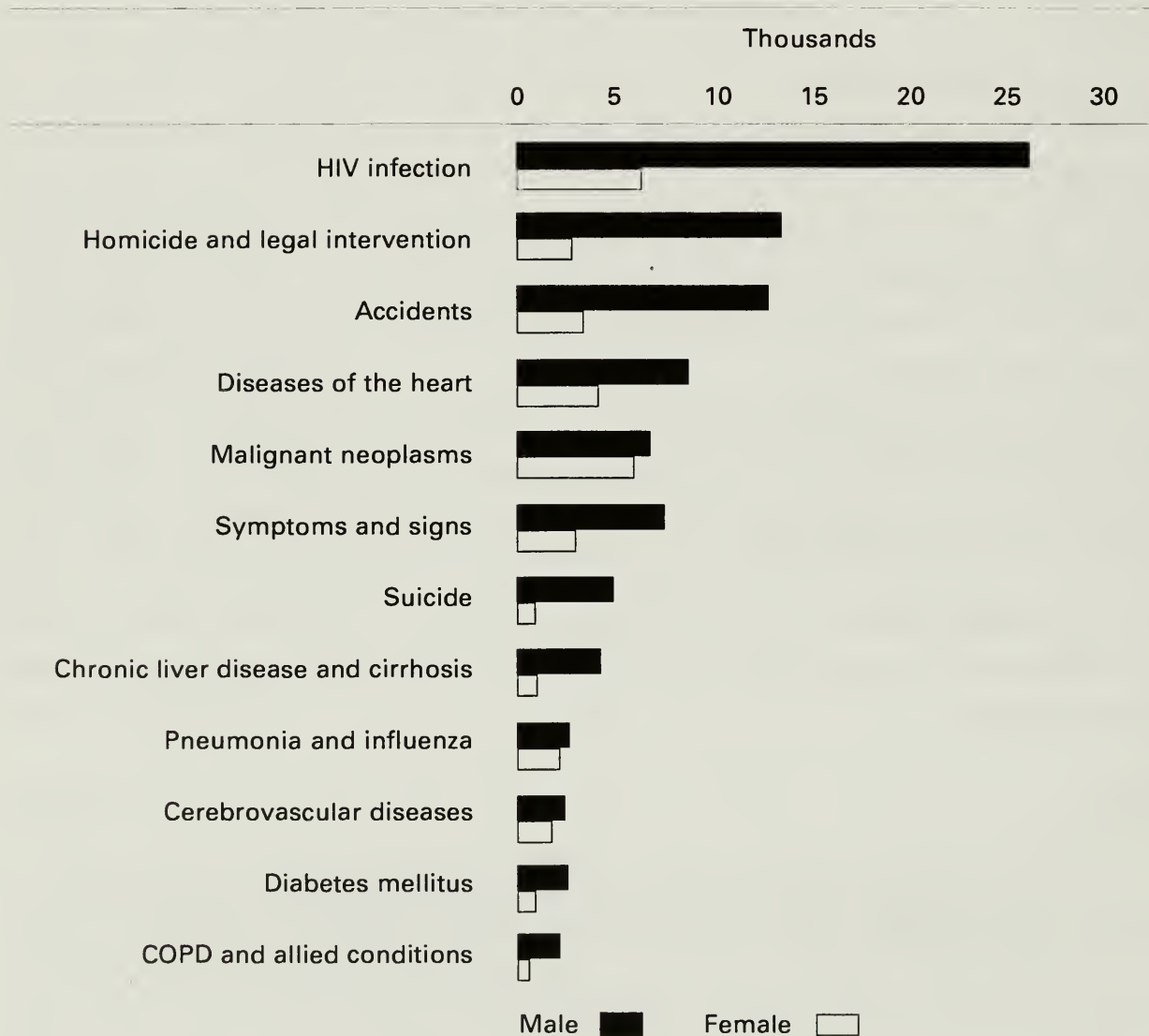
Two causes of external deaths — homicide and legal intervention and suicide — also become more salient, thereby suggesting the violent conditions under which many Puerto Ricans live and die prematurely. Accidents follow AIDS and homicides as the

third leading cause of YPLL, further underlining the extent to which premature death among Puerto Ricans in the United States is more a function of lifestyles and behaviors than of medical conditions.

The breakdown of YPLL by sex reveals the degree to which premature mortality is a male phenomenon. While men constituted only 48.8 percent of the U.S. Puerto Rican population in 1989, they accounted for 61.1 percent of all deaths and 73 percent of all YPLL reported that year. Thus, the male-to-female rate of years of potential life lost is 2.8 times higher for males than for females. Without exception, all twelve leading causes of death have a greater impact on men. Figure 1 and Table 2 illustrate the differences in mortality by gender, once again showing the differential impact of AIDS, violent deaths, and chronic liver disease and cirrhosis (associated with the consumption of alcohol) in men. As the last column in Table 2 indicates, the effect of these causes among Puerto Rican males is approximately fourfold that of females.

Figure 1

**Years of Potential Life Lost by Cause and Gender
U.S. Puerto Ricans, 1989**



Source: Based on National Center for Health Statistics, Department of Health and Human Services, *Vital Statistics of the United States, 1989*, vol. 2, *Mortality*, DHHS Pub. No. (PHS) 92-1102 (Washington, D.C.: U.S. Government Printing Office, 1992).

Table 2

YPLL Rate by Cause and Sex, U.S. Puerto Ricans, 1989

| Cause | Male | Female | Male:Female Rate Ratio |
|---|------|--------|---------------------------|
| All causes | 81.8 | 28.8 | 2.8 |
| HIV infection (042-044) ^a | 20.7 | 4.7 | 4.4 |
| Homicide and legal intervention (E960-E978) | 10.5 | 2.2 | 4.8 |
| Accidents and adverse effects (E800-E978) | 9.6 | 2.5 | 3.8 |
| Diseases of heart (390-398, 402, 404-429) | 6.6 | 3.3 | 2.0 |
| Malignant neoplasms (140-208) | 5.3 | 4.3 | 1.2 |
| Symptoms, signs, and ill-defined conditions (780-799) | 5.5 | 1.8 | 3.1 |
| Suicide (E950-E959) | 3.7 | 0.5 | 7.4 |
| Chronic liver disease and cirrhosis (571) | 3.2 | 0.6 | 5.3 |
| Pneumonia and influenza (480-487) | 1.4 | 1.0 | 1.4 |
| Cerebrovascular diseases (430-438) | 1.1 | 0.8 | 1.4 |
| Diabetes mellitus (250) | 1.1 | 0.4 | 2.8 |
| COPD and allied conditions (490-496) | 0.9 | 0.1 | 9.0 |

Source: Based on National Center for Health Statistics, Department of Health and Human Services, *Vital Statistics of the United States, 1989*, vol. 2, *Mortality*, DHHS Pub. No. (PHS) 92-1102 (Washington, D.C.: U.S. Government Printing Office, 1992).

^aNumbers in parentheses refer to specific causes from the Ninth Revision of the International Classification of Diseases.

Tables 3 and 4 present the frequency distribution of the leading causes of YPLL by gender. Among men, the effect of AIDS is evident, with this cause representing more than one-fourth of all years of potential life lost. Moreover, the three top causes of YPLL represent almost half of all the losses reported in 1989. Among females, the pattern is more dispersed: while AIDS also emerges as the predominant cause of premature death, it accounts for a substantially smaller share of the total YPLL. Furthermore, in contrast to those of men, the other leading causes of premature death among women (cancer, diseases of the heart) reflect conditions that are more amenable to health interventions.

Table 3

**Percentage Distribution of YPLL by Cause,
Male U.S. Puerto Ricans, 1989**

| Cause | Percentage |
|--|------------|
| HIV infection (042-044) ^a | 25.3 |
| Homicide and legal intervention (E960-E978) | 12.8 |
| Accidents and adverse effects (E800-E978) | 11.7 |
| Diseases of heart (390-398, 402, 404-429) | 8.1 |
| Symptoms, signs, and ill-defined conditions (780-799) | 6.8 |
| Malignant neoplasms (140-208) | 6.4 |
| Suicide (E950-E959) | 4.6 |
| Chronic liver disease and cirrhosis (571) | 3.9 |
| Pneumonia and influenza (480-487) | 1.7 |
| Diabetes mellitus (250) | 1.4 |
| Cerebrovascular diseases (430-438) | 1.4 |
| COPD and allied conditions (490-496) | 1.1 |
| Total YPLL of All Causes | 85.20 |

Source: Based on National Center for Health Statistics, Department of Health and Human Services, *Vital Statistics of the United States, 1989, vol. 2, Mortality*, DHHS Pub. No. (PHS) 92-1102 (Washington, D.C.: U.S. Government Printing Office, 1992).

^aNumbers in parentheses refer to specific causes from the Ninth Revision of the International Classification of Diseases.

Discussion

YPLL points out the importance of using appropriate indicators to measure health status. All too often we speak of “leading causes” or “priority health problems” without specifying what yardstick we are using to rank different conditions or what we seek to accomplish. If our object is to add years to life, the crude mortality rate may provide a

Table 4

**Percentage Distribution of YPLL by Cause,
Female U.S. Puerto Ricans, 1989**

| Cause | Percentage |
|--|-------------|
| HIV infection (042-044) ^a | 16.2 |
| Malignant neoplasms (140-208) | 14.8 |
| Diseases of heart (390-398, 402, 404-429) | 11.4 |
| Accidents and adverse effects (E800-E978) | 8.6 |
| Homicide and legal intervention (E960-E978) | 7.5 |
| Symptoms, signs, and ill-defined conditions (780-799) | 6.3 |
| Pneumonia and influenza (480-487) | 3.6 |
| Cerebrovascular diseases (430-438) | 2.7 |
| Chronic liver disease and cirrhosis (571) | 2.0 |
| Suicide (E950-E959) | 1.8 |
| Diabetes mellitus (250) | 1.4 |
| COPD and allied conditions (490-496) | .4 |
| Total YPLL, of All Causes | 76.7 |

Source: Based on National Center for Health Statistics, Department of Health and Human Services, *Vital Statistics of the United States*, 1989, vol. 2, *Mortality*, DHHS Pub. No. (PHS) 92-1102 (Washington, D.C.: U.S. Government Printing Office, 1992).

^aNumbers in parentheses refer to specific causes from the Ninth Revision of the International Classification of Diseases.

useful approximation of what problems we wish to attack. But if the goal is to add life to years, then years of potential life lost is the indicator of choice. By focusing on premature mortality, we identify areas that may be amenable to primary and secondary prevention. Moreover, it has been pointed out that YPLL is a fairer and more ethically appropriate measure of health status, since it weights each person's death by the amount of possible life forgone.¹⁰

Because 1989 is the first year for which complete data are available for U.S. Puerto Ricans, it is impossible to compare the mortality situation with previous or subsequent

years. Nevertheless, the predominance of HIV infection and violent deaths mirrors trends in Puerto Rico. In the island, mortality patterns, both overall and by gender, have shifted noticeably over the past decade. While HIV did not appear among the leading causes of YPLL in Puerto Rico in 1986,¹¹ it ranked fourth in 1987.¹² Accidents and homicides have retained their relative primacy in the island, occupying the first and fourth rungs, respectively, in both 1978 and 1987, two years for which YPLL were computed and published.¹³ At the same time, the island has experienced a widening of the gender gap in premature mortality. While the YPLL rate for males was 2.4 times that of females in 1978, the gender ratio rose to 2.7 by 1987.¹⁴ This is ironic because the restrictions traditionally placed on Puerto Rican women in the home, in the workplace, and in the corridors of power have eroded. Still, the idea of “separate spheres,” under which women rule over the domestic domain while men control the public arena, continues to protect women against a variety of risk factors. Females therefore live different lives and die different deaths.

The overall gender differentials in premature mortality documented among U.S. Puerto Ricans are comparable to those registered in Puerto Rico. Nevertheless, the gap in certain causes, including HIV and homicide, is higher there than among mainland Puerto Ricans. This suggests that the factors which protect women are operating more effectively in the island or, conversely, that U.S. Puerto Rican males are exposed to greater risks than their island counterparts.

Although the 1987 data for Puerto Rico are not strictly comparable to those for U.S. Puerto Ricans, suicide and ill-defined signs and symptoms, the two leading causes of YPLL in the United States, are of only marginal importance in Puerto Rico. Suicide, which is significantly more prevalent among males, is the seventh cause of YPLL among U.S. Puerto Ricans. Almost three-fourths (75.6%) of U.S. Puerto Rican males who commit suicide are between the ages of fifteen and forty-five. In general, suicide is associated with family conflicts, social isolation, homelessness, unemployment, and drug and alcohol abuse.¹⁵ Among immigrants and minorities, the stresses of discrimination, uprootedness, and marginalization also take their toll. The data therefore indicate that young Puerto Rican males are at particular risk for depression and demoralization, and that the quest for the “American dream” may quite literally lead to a dead end.

Symptoms, signs, and ill-defined conditions, which often serves as a residual category, is also an important cause of YPLL, particularly among males. Because this rubric is usually assigned to those who have not received prior medical care, this cause of death suggests a lack of access to services.

Implications for Policy

The data presented here indicate that pathophysiological conditions play a secondary role in the premature mortality of Puerto Ricans in the United States. As a result, the effect of the medical care system varies from slight to negligible. While the Puerto Rican community should support greater access to services and a more equitable allocation of health care resources, there should also be recognition of the fact that health care reform will scarcely make a dent in the numbers on premature mortality in this population.

As Table 5 illustrates, all five leading causes of YPLL have precursors rooted in social conditions. Changes in these circumstances will therefore require interventions in both individual behaviors and the broader environment in which these behaviors are embedded. Public health initiatives in health promotion and disease prevention will

thus have to proceed along two tracks: (1) emphasizing behavioral change and individual responsibility, and (2) broadening the targets of intervention to include families, organizations, the political system, and the environment as a whole.¹⁶

Table 5

Risk Factors Associated with the Five Leading Causes of YPLL among U.S. Puerto Ricans

| Cause | Risk Factor(s) |
|---------------------------------|---|
| HIV infection | Unprotected sex Illegal drug use |
| Homicide and legal intervention | Poverty Access to firearms Illegal drug use Alcohol abuse |
| Accidents | Illegal drug use Alcohol abuse Access to firearms Occupational hazards |
| Diseases of heart | Tobacco consumption Diet/activity patterns Stress |
| Malignant neoplasms | Tobacco consumption Diet/activity patterns Inadequate health screening |

Source: Based on National Center for Health Statistics, Department of Health and Human Services, *Vital Statistics of the United States*, 1989, vol. 2, *Mortality*, DHHS Pub. No. (PHS) 92-1102 (Washington, D.C.: U.S. Government Printing Office, 1992).

The fact that many of the risk factors associated with premature death involve behavioral choices and are therefore amenable to modification should not lull us into thinking that change will be easy. As two researchers have concluded:

There can be no illusion about the difficulty of the challenges in changing the impact which [external] factors have on health status . . . Behavioral change is motivated not by knowledge alone, but by a supportive social environment and the availability of supportive services. Sexual behavior and illicit use of drugs take place behind closed doors and are difficult to confront directly even in a putatively open society.¹⁷

What happens behind U.S. Puerto Ricans' closed doors cannot be disassociated from what happens in the "mean streets," which Piri Thomas has so vividly described.¹⁸ The so-called new morbidities¹⁹ resulting from drugs, sex, violence, depression, and stress have had a differential impact on this community. By "giving simple statistical expression to the harsh reality of death at younger ages,"²⁰ the years of potential life lost indicator signals a population very much at risk. ❧

Notes

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7. Last, *Dictionary*, 81.
8. Romeder and McWhinnie, "Potential Years of Life Lost," 144.
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“Research indicates that whether one examines income or wealth, individual occupation, education level, or residence in a poverty area, there is a direct link between health and socioeconomic status. Poor health is concentrated among those with lower incomes and education. Hispanic women especially are apt to be at greater risk owing to their higher poverty rates and lower educational levels and employment rates.”

— Janis Barry Figueroa