

# Poverty Kills

by Ned Rosinsky, M.D.

Economic collapse kills people. Poverty destroys societies; and social collapse, at its end stages, involves sudden downward changes in people's health, due to factors such as loss of jobs, loss of health insurance, homelessness, breakup of families, resort to substance abuse, psychological collapse, and descent into crime and incarceration. These various downward changes strongly interact. Loss of job can directly cause loss of health insurance, as well as homelessness due to inability to pay rent or mortgage. Homelessness can contribute to family breakup, and with this loss of family support, can come psychological collapse.

Psychological collapse and family breakup can lead to substance abuse. Substance abuse can in turn lead to job loss, worsen psychological collapse, and induce a resort to crime to pay for the drugs, which in turn can lead to more psychological collapse and more disruption to the family.

These strong interactions set up a spiralling downward process, ultimately leading to the total collapse of individuals, families, and larger social groups and layers of society. These factors also result in poor nutrition, exposure to infectious disease, violence, and lack of medical care for treatable illnesses, all culminating in high death rates.

Health conditions in the City of Baltimore illustrate this collapse process in grisly detail; the death-rate patterns in Baltimore show the disastrous effects of economic collapse.

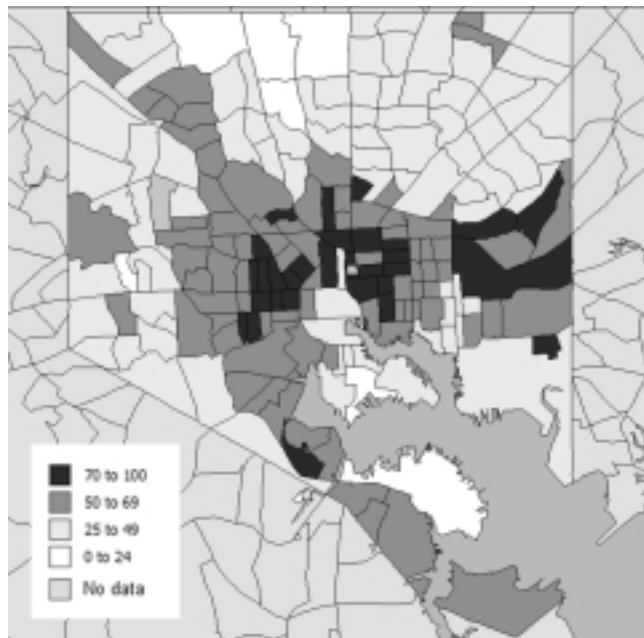
The study presented here compares death rates to poverty rates, using data from the 1990 and 2000 national censuses, including data on population and household income levels in each of Baltimore's 201 census tracts. (Due to some tracts being sub-divided in two, or missing data, the total number of census tracts used in any part of the study may vary from 199 to 201.)

The median income in Baltimore is currently approximately \$34,000 per household; in 2000 it was \$30,000. This study uses a measure of poverty as the percent of households with income below \$25,000 for the 1991 data, and an inflation-equivalent \$30,000 for the 2000 data. (**Figures 1 and 2** show the pattern of census tracts in the various household percentage categories of income.) The figure of \$25,000 is not crucial to the study, because as poverty increases and the percent of households below \$25,000 increases, so also does the percentage below \$20,000, and so on.

This percentage of poverty is then compared to the total number of deaths that occur in each census tract, as reported by the Maryland State Department of Health and Mental Hygiene.

FIGURE 1

### Baltimore, 1990: Percentages of Households with Annual Incomes Under \$25,000, by Census Tract



Source: U.S. Bureau of the Census.

FIGURE 2

### Baltimore, 2000: Percentages of Households with Annual Incomes Under \$30,000, by Census Tract



Source: U.S. Bureau of the Census.

When tracking the effects of poverty in a major city, it is important to have access to data from numerous small geographic areas, because neighborhoods can change from poor to wealthy over short distances (such as around the Inner Harbor complex of Baltimore); and the smallest geographical areas in Baltimore for which there is reliable and publicly available health and population data, are the national census tracts.

Each census tract contains from several hundred to several thousand persons, and while the census tract boundaries may have had some past historical significance, currently they cut nearly randomly across various socio-economic levels of neighborhoods. Some census tracts are nearly all impoverished, some nearly all wealthy, and some are mixed.

The State of Maryland has kept records of deaths by census tract annually since 1991, and therefore the first study shown here uses the 1991 data. Before 1991, the state kept death records according to larger geographical areas that are less suitable for this type of analysis.

### Comparing 'To Be Expected' to 'Excess' Deaths

For each census tract it is possible to calculate the total number of deaths expected for that population, based on the number of people of each age grouping, documented in the

national census done every 10 years. For the current studies, the 1990 and 2000 census data is used, and death rates can be predicted based on national statistics of death rates for each age ("age-corrected"). The actual number of deaths for each census tract as reported by the State of Maryland is then compared to the total expected for the population, producing a number we refer to as the *excess death ratio* (Figures 3 and 4).

This excess death ratio is shown as height in the graph, with the number 1 representing the average for the U.S. population as a whole. (As Baltimore is divided into 201 census tracts, this graph uses one point for each of these tracts.) For example, a point at level 1 would indicate no excess deaths above the national average for that tract, while a point at level 2 would mean that twice as many people died as would be expected by national statistics.

The horizontal axis of the graph in Figure 3 shows poverty level, with a higher percentage of households in poverty toward the right side of the graph, the range going from 0 to 100% of households below \$25,000 income annually.

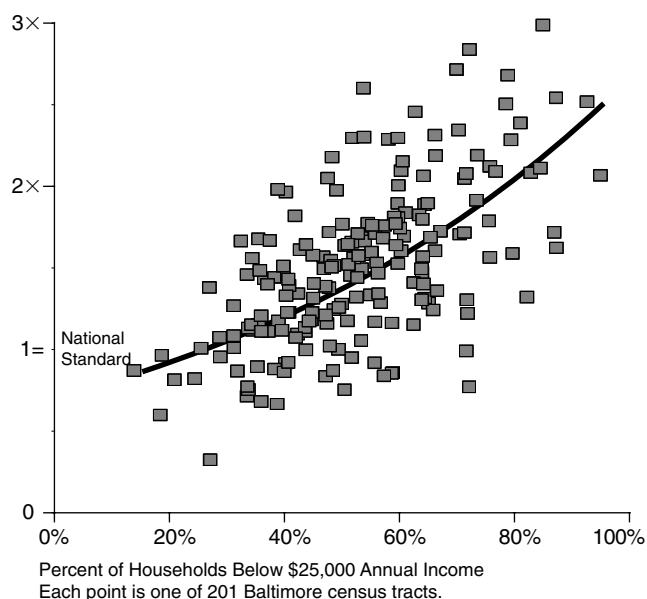
The resulting pattern of point locations shows that for those tracts with low levels of poverty, with approximately 20-30% of households having an income below \$25,000, the points cluster around a height of slightly less than 1, indicating that the number of deaths that actually occurred in these census tracts is slightly below national averages.

FIGURE 3

### Baltimore 'Excess Deaths,' 1991: Census Tract Deaths, Shown As Compared (Above or Below) to Expected Death Rates (National Standard)

(Plotted by Percent of Tract Households Below a \$25,000 Annual Income)

Number of Times Census Tract Actual Deaths Exceed Expected Deaths (National Standard)



Source: U.S. Bureau of the Census; Baltimore City Health Department.

As the poverty level increases, towards the right side of the graph, the excess death ratio also increases, so that in census tracts with high poverty levels, at 60-70% or more of households with less than \$25,000 annual income, the points cluster around two to three times the number of deaths expected.

Figure 4 shows a parallel study using the 2000 census populations to predict death rates, and the 2000 census tract total death rates. In this case the income cut-off is \$30,000. The resulting graph is similar in form to the 1991 graph, with a higher upturn on the right, indicating that the extreme end of poverty has worsened over the decade.

### Media Lies: 'Average' Life Span Improving

One does not usually see coverage in the media of these overall increases in death rates with poverty. What the media usually report is that the overall life-span for the country as a whole is slowly increasing, and death rates from the main killer diseases, such as heart attacks, strokes, and cancer, are slowly decreasing. *The key word here, is "overall."*

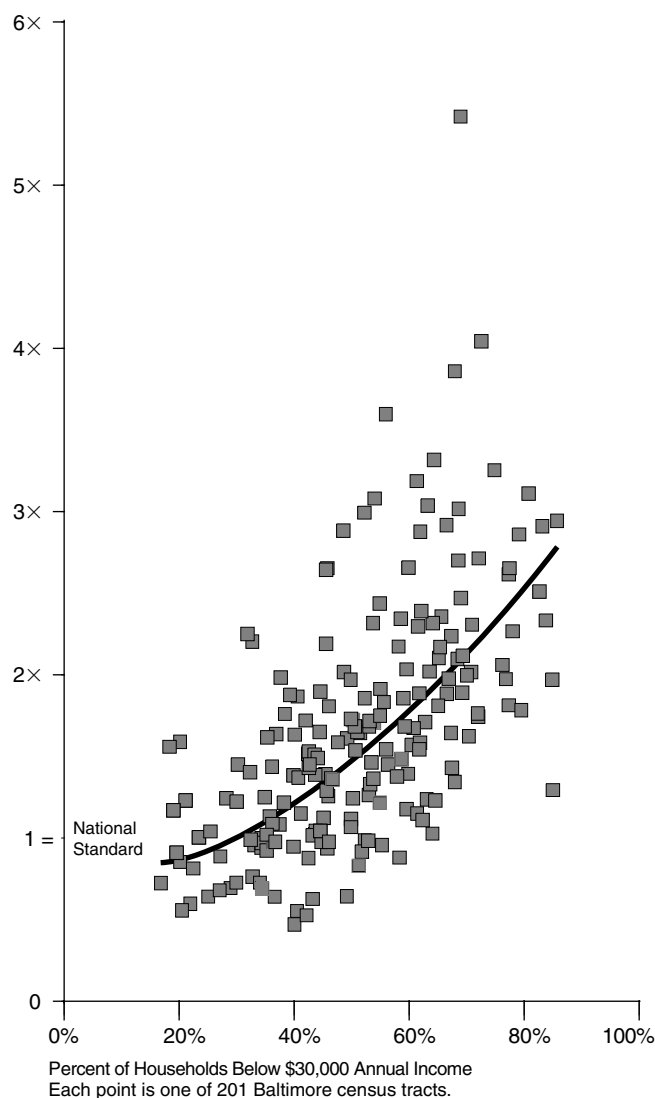
Just as the income statistics for the whole country show that the upper 20% of families are getting richer and the lower

FIGURE 4

### Baltimore 'Excess Deaths,' 2000: Census Tract Deaths, Shown As Compared (Above or Below) to Expected Death Rates (National Standard)

(Plotted by Percent of Tract Households Below a \$30,000 Annual Income)

Number of Times Census Tract Actual Deaths Exceed Expected Deaths (National Standard)



Source: U.S. Bureau of the Census; Baltimore City Health Department.

80% are getting poorer, with the overall income average slowly increasing, so in health it appears that the wealthier families are doing better, while the poorer families are doing worse, with the average numbers covering up the catastrophic conditions in the very poorest areas.

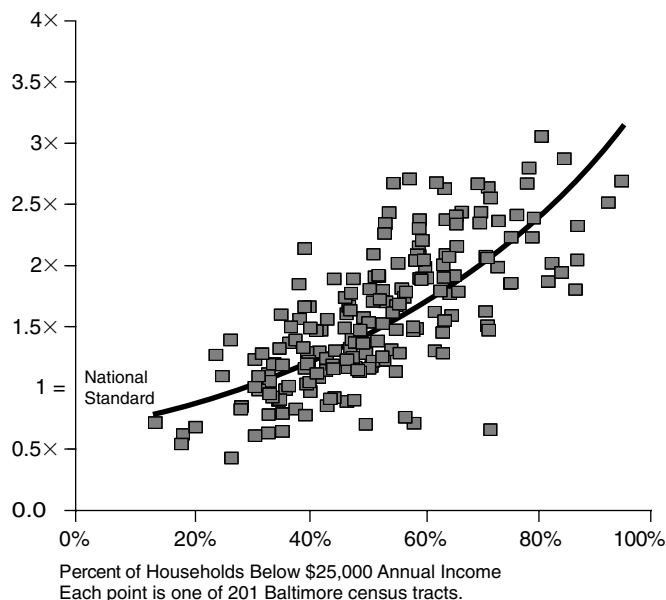
Keep in mind that Baltimore as a whole has a higher aver-

FIGURE 5

### Baltimore 'Person Years Lost,' 1991-94: Person-Years Lost Compared (Above or Below) to Expected Person-Years Lost (National Standard)

(Plotted by Percent of Tract Households Below a \$25,000 Annual Income)

Number of Times Person-Years Lost Exceeds  
Expected (National Standard)



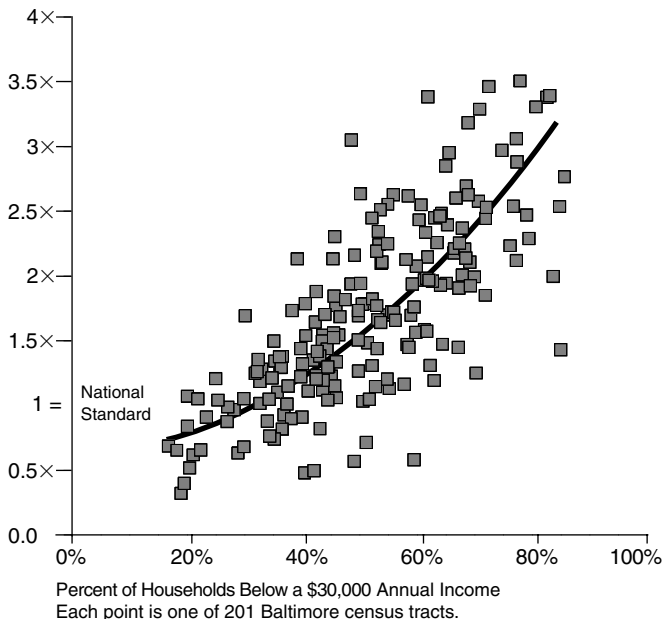
Source: U.S. Bureau of the Census; Baltimore City Health Department.

FIGURE 6

### Baltimore 'Person-Years Lost,' 2001-04: Person-Years Lost Compared (Above or Below) to Expected Person-Years Lost (National Standard)

(Plotted by Percent of Tract Households Below a \$30,000 Annual Income)

Number of Times Person-Years Lost Exceeds  
Expected (National Standard)



Source: U.S. Bureau of the Census; Baltimore City Health Department.

age death rate than the U.S. average. The very high numbers seen here are balanced by lower numbers elsewhere, such as the wealthy areas of Baltimore County which surround the city to the north.

### Calculating 'Person-Years' Lost

The real effect of these higher death rates in poorer communities can be shown in another way. Instead of counting deaths, one can count years of life lost. For example, the death of a person at age 15 may involve the loss of 60 years of potential life that will not be lived, while the death of a person at age 70 may involve the loss of 10 years of additional life not lived.

In order to do this calculation, one needs to know the age, gender, and race of each person that died, to make an accurate estimate of the expected life-span that is lost with the death. This information is available from State of Maryland Department of Health and Mental Hygiene and the Baltimore City Health Department on request.

However, because of the small size of the census tracts—

each with populations ranging from several hundred to several thousand—to protect the identities of the deceased persons, the government will release data only in larger aggregates, in this case by aggregating four years of data together, such as 1991 to 1994, or 2001 to 2004. The information on age, gender, and race of the deceased persons is important in estimating the years of life lost, since in the United States, females live longer than males, and whites live longer than blacks. Life expectancy tables for each year of life, by gender and race, are available from the Centers for Disease Control and Prevention.

With this additional data, a graph of total person-years of life actually lost, divided by expected lost, versus poverty level, can be constructed. Two cases were examined.

**Figure 5** used the actual deaths for the period of 1991 to 1994 (37,429 death profiles,<sup>1</sup> representing over 99% of the Baltimore resident deaths during this period; an annual count

1. This figure is for death records that are statistically usable; some are not, due to typographical and other errors.

of deaths was calculated from this figure) and predicted deaths based on the 1990 census population and income data; and **Figure 6** used the corresponding actual deaths from 2001-04 (from which an annual death count was made) and predicted deaths based on the 2000 census population and income data. The resulting study shows an even stronger relation to poverty than the previous graphs.

For the 1991-94 study, the ratio of total person-years lost increases steadily as poverty increases, to the level of 2-3 times what would be expected, with 46 of the 201 census tracts being over 2 times the national average.

In the 2001-04 study, the effect is even more dramatic, with total person-years lost ratio increasing up to 3.5 times expected, and with 58 tracts over 2 times the national average, as well as 10 tracts over 3 times the national average.

Since the population of Baltimore has been steadily shrinking over this period, any distortion caused by using 1990 census data for the 1991-94 cases and 2000 census data for the 2001-04 cases would be to overestimate the expected years lost, and thereby cause an underestimation of the calculated excess years lost ratio. A rigorous statistical analysis of the data concludes that poverty causes an increase in lost person-years to 2.6 times expected rate.<sup>2</sup>

The most striking feature of these person-years studies, is the increase in the excess lost person-years that is evident when the 1991-94 period is compared to the 2001-04 period, and is particularly evident at the severe poverty level.

The person-years calculation has an additional implication, in the area of economics. When young people die, society loses large numbers of potentially productive person-years. This is not the case when elderly people die. The shift of the curve upward when Figures 5 and 6 are compared to Figures 3 and 4, indicates that the increase in deaths with poverty is in part related to more younger people dying. This is consistent with other more publicized observations, such as that the population of Baltimore is getting younger, and that a higher portion of youths die in poor communities compared to higher income areas.

The take-home message of these studies is clear: Public policies and any other factors that increase poverty are lethal. Politicians who promote such policies must be held accountable for these lethal effects.

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2. The statistical correlation coefficient  $R$ , using the method of least squares developed by Gauss, is 0.73 for the 1991-94 graph, and 0.75 for the 2001-04 graph. The effect of poverty is measured by  $R^2$ , which is 0.56; that is, 0.56 of the rise in the best-fit line is due to poverty. If the best-fit line for the 2001-04 study is extrapolated to 100% poverty, it reaches a level of 4 times the U.S. average, or an increase of 3 times the baseline. The effect of poverty is  $R^2$  times the rise, or 1.6 times the baseline, which when added to baseline produces a total of 2.6, or 260% of baseline. That is, this measure of poverty increases person-years lost to 260% of what would otherwise be expected.