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Mortality and Inflation: A 21-Year Analysis of Data on Jamaica

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Abstract

Introduction: Empirically, the analyses of mortality have been on age, crude death rate, age-specific death rates and infant mortality, not mortality and inflation.

Objectives: The present work 1) evaluates mortality and inflation patterns, 2) models mortality, inflation and crude death rates, and 3) assesses age-specific mortality.

Methods: Using at least 20 years of data on Jamaica (1989-2009), inflation, mortality, and mortality and inflation were graphed, and models were created to fit the data.

Results: Mortality pattern is best fitted by a 6 degree polynomial (R^2 = 0.789). Less than 20% of the change in mortality can be accounted for by a 1% change in inflation, and about 60% of deaths occurred at 60+ years and 70% at 75+ years.

Conclusion: This work offers insights into the insignificant influence that inflation has on mortality except age, and provides pertinent information for its inclusion in the economics of death, particularly at older ages.

Keywords: Inflation; Mortality; Crude death rate; Age-specific death rate; Jamaica

Introduction

The study of general mortality is well documented in the literature. This dates back to the late seventeenth century as evident in the work of John Graunt entitled the Bills of Mortality and somewhat earlier by the Romans [1,2]. Among the rationales for the study of death are its association with overall health of the population [3] as well as human's fascination and/or the intrigue with death, life and continued survivability [4-7]. General mortality statistics have been used to develop the life table [4-7], yet the World Health Organization (WHO) found that this was limited in providing a complete understanding of health in its general sense. Life expectancy calculates the number of years a person is estimated to live if he/she subscribes to the general mortality patterns, which included living with disability and/or illness [8].

The WHO later established a discourse to account for disability free years [8] that reflects 'good' health, healthy life expectancy. Recognizing that general mortality statistics in evaluating life expectancy do not capture good health, the World Health Organization developed an approach that made this adjustment [9]. Accounting for disability free years (healthy life expectancy) is a good step towards expanding the narrow methodology of life expectancy, but data collection and reporting quality on disability is not good in all countries, making the healthy life expectancy dossier extremely unreliable in some nations [3]. This step forward is less consistent than general mortality data, and developing nations like Jamaica has a long history of good quality deaths registry [10], and continue to improve on this [11,12]. There is documented empirical evidence that the rate of registration of mortality was at least 80% [13], which based on the WHO's International Classification of Diseases (ICD) a score of 70-90% denotes medium quality data [14].

In the construction of life tables, general mortality patterns are germane as they supply the engine that drives the establishment of the formulation of the principles [5,15,16]. Because life means that the individual would not have subscribed to the general mortality patterns of others in the cohort, it is also an indication of the health of the living person and the unhealthiness leading to death [17]. This perspective is simplistic as being alive does not mitigates against disability and illness as the individual may not be disease free [8], while the dead could be free of disease causing pathogens. Many issues account for the death of an organism, among them is illness. The

strong correlation between general mortality and morbidity (or comorbidity) is rationale for the use of mortality analysis in health of a population or sub-population.

All organisms naturally age, which explains biological ageing. This approach emphasizes the longevity of the cells, in relation to the number of years the organism can live or its life expectancy. Gompertz's law in Gavrilov and Gavrilova [18] showed that there is fundamental quantitative theory of ageing and mortality of certain species (the examples here are as follows–humans, human lice, rats, mice, fruit flies, and flour beetles) [19]. Death increases with ageing as the human adult becomes even more advanced in age. This denotes that biological ageing is a process as the human cells degenerate with years (i.e., the cells die with increasing age), which has been documented in evolutionary biology [20-24]. Experiential evidence illustrates that using evolutionary theory for "late-life mortality plateaus," fails because of arguably the unrealistic set of assumptions that the theory uses to establish itself [25-28]. Notwithstanding the shortcomings of evolutionary biology, it provides an elucidation for the greater percentage of deaths at older ages in Jamaica (e.g., in 2008, 55.6% among 60+ year olds and 64.3% of those 50+ years old, with most deaths occurring among the 75+ age cohort) [29]. Gompertz's law recognized that human mortality increases two-fold with every 8 years of an adult life, which means that mortality increases in a geometric progression at adult ages [30].

Reliability theory, on the other hand, is a better fitted justification for the ageing of humans than that which is argued by Gompertz's law as the 'failing law' speaks to deterioration of human organisms with age [18] as well as non-ageing term. The latter based on Gavrilov and Gavrilova [18] can occur because of accidents and acute infections, which is called "extrinsic causes of death". While Gompertz's law [30] speaks to mortality in ageing organism due to age-related degenerative illnesses such as heart diseases and cancers, a part of the reliability function is the non-ageing component. The data validates the reliability of evolutionary biology as well as Gompertz's law, while depicting the importance of the non-ageing components in mortality statistics. The non-ageing issues do not underestimate the relevance of the Gompertz's law, evolutionary biology and the strong correlation between ill-health and mortality.

Inflation is well documented in the literature as accounting for increased cost of goods and/or services, decline in real wages and a reduction in living standards [31]. With evidence existing to support the exponential increases in inflation during crises and increased child mortality in macroeconomic crisis [32] as well as the decline in food consumption in periods of economic and financial crisis [33], a stage is set for the poor health in such instances [34] and the need for improvement in the social safety net [35]. The data provide us with a much better understanding of the crises such as poor health and child mortality and the consequences of the economic and financial crises; however, a gap exists in the literature on mortality and inflation. The aims of the present work are to 1) evaluate mortality and inflation patterns, 2) model mortality, inflation and crude death rates, and 3) assess age-specific mortality, using 21 years of data on Jamaica.

Materials and Methods

The data for this research were taken from various governments of Jamaica, publications, demographic statistics, pocketbook of statistics and statistical digest. Data were taken from Statistical Institute of Jamaica, Demographic statistics (i.e., 1989-2009) [36]; Statistical Institute of Jamaica, Pocketbook of statistics, Jamaica, 1999 [37]; and Bank of Jamaica, Statistical Digest (i.e., 1989-2009) [38]. The crude death rate is the total mortalities (or deaths) for the year divided by the mean population for the year and multiplied by 1,000 [29].

CDR=Deaths in year x 1,000 Mean population

ASDR=Number of deaths in the age range x to x + n_ x 1,000 Mid population in the age range x to x + n

Data were entered into Microsoft Excel spreadsheet, models were developed therein, r squared was computed and format trendline was used to determine the best fit equation. These included polynomials and linear curves. Using data for the studied period, mortality, crude death rates, inflation (in %), mortality and inflations (in %), and crude death rates and inflation (in %) were best fitted on polynomial curve and/or linear lines, with r-squared to assess which curve best fitted the data. For the mortality curve (Figure 1).

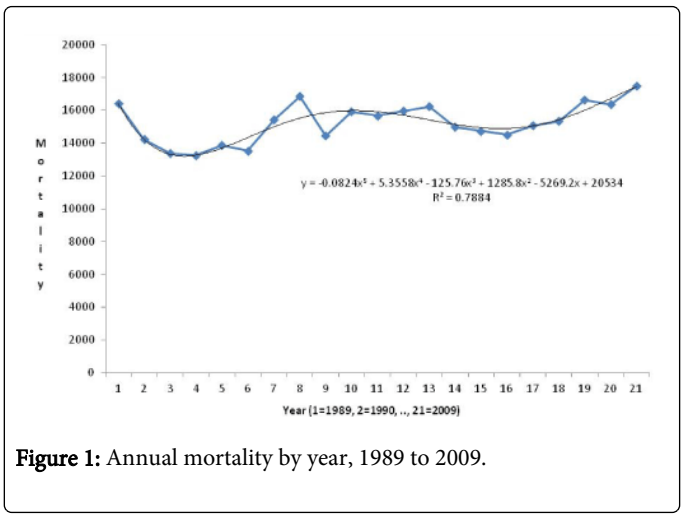

Figure 1: Annual mortality by year, 1989 to 2009.

xi denotes the number of years from the starting date of 1989. The starting date represents 1, and so on, which was also the case in the inflation curve. For the mortality and inflation function, xi means inflation rates (in %). Crude death rate (1989-2009) was treated the same as mortality curve, and crude death rates and inflation like mortality and inflation. Age-specific death rates (ASDR) were calculated, entered in MS Excel from which curves were drawn and best fit models were established based on the data. Based on the number of ASDRs for 2001-to-2008, the researcher selected the latest year to model and decomposed by age group, with a comparison between ages from 0-to-49 years and 50-to-75+years.

Data were also entered and stored in the Statistical Package for Social Sciences (SPSS) for Windows, Version 21.0. Ordinary least square regression (OLS) was used to model a mortality function. Both inflation and mortality were logged (natural logarithm) in keeping with the requirements for usage in OLS regression. A significant of 5% will be used to determine statistical significant (i.e. 95% confidence interval).

Results

Table 1 presents information on mean population, mortality and inflation rate for Jamaica, 1989-2009. For the studied period, when inflation was at least 30%, particularly 40 and 80%, mortality was among the lowest and when inflation was less than double-digit,

mortality averaged 15,503 annually, while in periods of double-digit inflation, mortality averaged 16,817 per year. The mean mortality was 15,249 (SD = 1,204; 95%CI: 14 701 – 15 238), with mean inflation being 19.1% (SD = 16.9%; 95%CI: 11.4% – 26.8%) and averaged crude death rate was 5.98 per 1,000 (SD = 0.5; 95%CI: 5.8 – 6.2) of mean population.

Year	Mean population	Mortality*	Inflation (In %)	CDR** (per 1000 of mean population)
1989	2 344 800	16 414	17.2	7
1990	2 368 900	14 213	29.8	6
1991	2 388 500	13 376	80.2	5.6
1992	2 411 300	13 262	40.2	5.5
1993	2 434 800	13 878	30.1	5.7
1994	2 459 400	13 527	26.8	5.5
1995	2 488 100	15 426	25.6	6.2
1996	2 515 450	16 854	15.8	6.7
1997	2 450 500	14 458	9.2	5.9
1998	2 564 700	15 901	7.9	6.2
1999	2 581 800	15 672	6.8	6.07
2000	2 589 400	15 945	6.1	6.16
2001	2 604 100	16 239	8.8	6.24
2002	2 615 200	14 989	7.2	5.73
2003	2 625 700	14 729	13.8	5.61
2004	2 638 100	14 513	13.7	5.5
2005	2 650 400	15 065	12.6	5.68
2006	2 663 100	15 321	5.7	5.75
2007	2 675 800	16 614	16.8	6.21
2008	2 687 200	16 371	16.8	6.09
2009	2 695 583	17 318	10.2	6.42
Average		15 249	19.1	5.98

Table 1: Mean population, Mortality, Crude death rate (CDR) and inflation, 1989-2009.

Source: Statistical Institute of Jamaica, Demographic statistics, various years; Statistical Institute of Jamaica, Pocketbook of statistics, Jamaica, 1999; Bank of Jamaica, Statistical Digest, 1989-2009.

*Reported occurrence in the year by the Registrar General's Department (department is responsible for vital statistics).

**Calculated by Paul Andrew Bourne based on reported and registered deaths

Table 2 illustrates the decomposition of age-specific deaths (ASDRs) of Jamaicans from 2002 to 2008.

Age group				ASDR*			
	2002	2003	2004	2005	2006	2007	2008
0-4	4.70	4.70	4.82	4.93	4.67	5.23	5.11
5-9	0.31	0.29	0.27	0.27	0.26	0.30	0.31
10-14	0.32	0.29	0.26	0.26	0.25	0.41	0.34
15-19	1.04	0.85	0.94	0.99	0.92	0.98	1.17
20-24	2.07	1.76	2.18	2.39	2.24	2.38	2.79
25-29	2.67	2.35	2.44	2.60	2.41	2.66	2.74
30-34	2.89	2.54	2.67	2.64	2.43	2.50	2.39
35-39	3.06	2.74	2.92	2.75	2.49	2.61	2.48
40-44	3.51	3.41	3.61	3.41	3.08	3.24	3.04
45-49	4.65	4.84	4.93	4.82	4.39	4.87	4.81
50-54	6.04	6.12	5.90	5.97	5.43	6.24	6.16
55-59	10.04	9.26	8.63	8.30	7.60	8.85	8.94
60-64	14.69	14.45	14.68	14.66	13.56	13.47	12.63
65-69	20.55	19.35	19.31	18.52	17.04	18.36	18.03
70-74	32.27	29.06	29.64	30.50	27.89	25.86	24.99
75+	75.99	76.84	73.89	77.68	70.55	69.71	68.08

Table 2: Age-specific death rates (ASDR, per 1000 of mid-year population, 2002-2008

Calculated by author from deaths and mid-year populations published in the Demographic statistics, 2009 (Statistical Institute of Jamaica).

*Adjusted mortality was used (Figure is adjusted by the Statistical Institute of Jamaica for under-coverage – Demographic Statistics, 2009: pp. 88-95).

Table 3 presents information on log mortality and log inflation. Ln inflation and ln mortality are inversely statistically associated (b = -0.069, P = 0.005; 95%CI: -0.114 to 0.024). Furthermore, 31.4% of the variance in lnmortality can be accounted by a 1% change in log inflation. Based on Table 3, a mortality function can be written as Eqn [1]:

ln Mortality = 9.816 – 0.069lninflation + εi Eqn [1.1]

or Mortality = e(9.816 – 0.069inflation + ε) Eqn [1.2]

Mortality between 1988 and 2010 is a cyclical function (Figure 1). The curve shows that mortality has gone through 4 changes (or turning points) from 1989 to 2009.

Characteristic	Unstandardized Coefficients B	Std. Error	Beta	t statistic	Prob.	95% CI
Constant	9.816	0.060		163.066	0.000	9.690 - 9.942
Ininflation	-0.069	0.022	-0.590	-3.186	0.005	-0.114 - -0.024
F statistic [1,19] = 10.151, P = 0.005, R = 0.590						
R^2 = 0.314 Adjusted R^2 = 0.314 Durbin Watson test = 1.4						

Table 3: OLS: lnmortality and lninflation. Dependent variable is ln Mortality

Figure 2 depicts that age-specific death rate (ASDR) increases significantly with age beyond 54 years, and that ASDR is very high 74 years, which was relatively consistent over a 8 eight period (2002-2008).

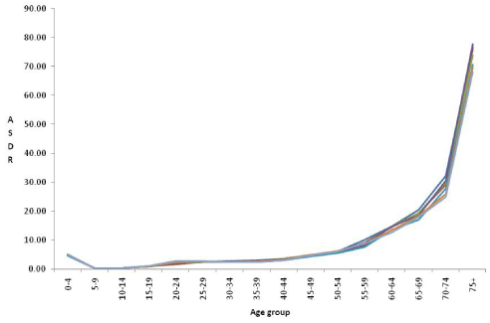

Figure 2: Age Specific Death Rate (ASDR, per 1000 of mid-year population), 2002-2008.

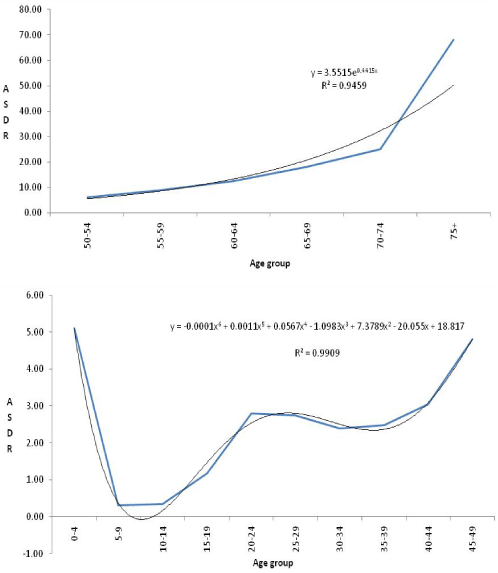

Figure 3: Decomposition of Age-specific death rate, 2008.

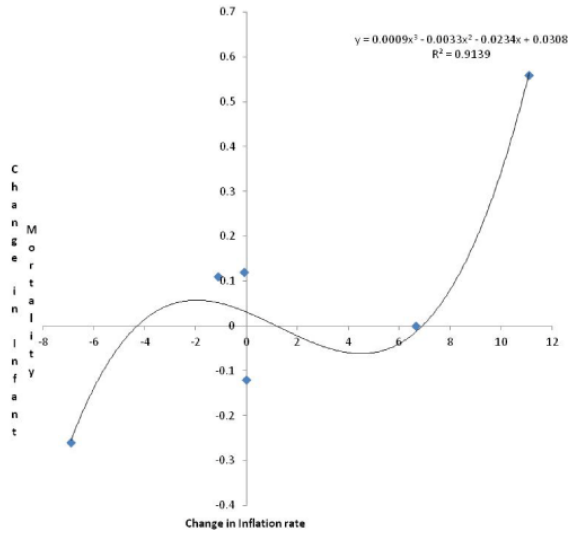

Figure 4: Change in Infant mortality and change in inflation rate, 2002-2007.

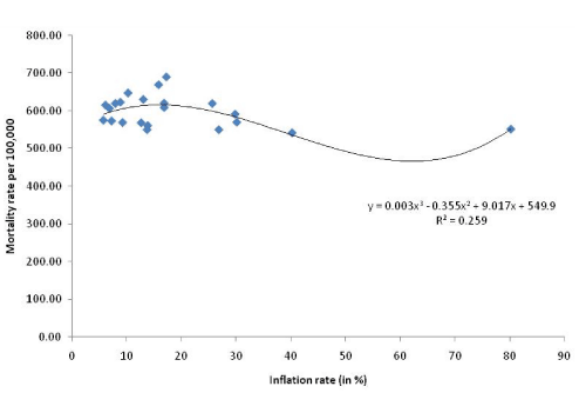

Figure 5: Mortality per 100,000 and inflation (in %), 1989-2009.

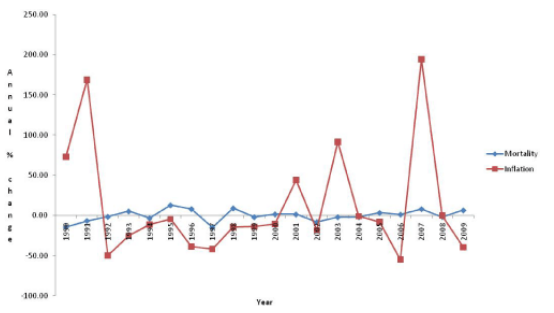

Figure 6: Annual % change in mortality per 100, 000 of population and inflation rate (in %).

Using one year (2008), the rate of change of ASDR is at a faster rate at 50+ years compared to lower ages (Figure 3). There is a cyclical change in rate of change of ASDR over the ages below 49 years.

Figure 4 depicts the change in infant mortality and change in inflation rate between 2001 and 2008. The curve shows a curvi-linear relationship between the two phenomena. When the inflation rate increases beyond 6 percentage points, the rate of change in infant mortality increased by a geometric progression.

Figure 5 shows a graphical display of the mortality per 100,000 of population and inflation (in %) for the period 1989-2009.

Figure 6 depicts the annual percent change in mortality per 1000 of population and inflation (in %) for 1990 to 2009. Greater percent changes were recorded for inflation than for mortality per 100,000 of population.

Discussion

In a study that was conducted in Peru, Paxson and Schady found that infant mortality rate among children born during the crisis of the late 1980s was 2.5% greater and that inflation was equally high [33]. They noted that "Inflation skyrocketed during the crisis—rising from 86 percent a year in 1987 to almost 7,500 percent in 1990, before falling to 410 percent in 1991 and 74 percent in 1992," which could imply that inflation is directly related to the increased general mortality in Peru [33]. Although their perspective is somewhat supported by empirical evidence, it is more complex and while they gave credence to some issues that changed during a crisis, it failed to discount all of the parameters in order to establish the conclusion. They claimed that "There is no evidence that the unexpectedly high levels of infant mortality were due to changes in the consumption of food, changes in the composition of women giving birth, outbreaks of infectious disease, or terrorism" [33]. The current work, however, shows a completely different result using general mortality data for the population of Jamaica. An inverse correlation existed between general mortality and inflation in Jamaica, and that it is a decreasing function. In fact, for the periods 1997 and 2009, when inflation rates were high in Jamaica, infant mortality was equally high. In 2003, when inflation rate was 13.8% which is a 6.6% increase over the previous year, infant mortality increased by 4.7% for the same period and this was also observed in 2007 over 2006 (inflation rate rose by 11.1% and infant mortality rose by 5.23 percent). Generally during the periods when inflation rates were declining in Jamaica, there were corresponding decline in infant mortality. The greatest percent increase in inflation rate occurred in 2007 over the previous year which saw a rise in general mortality by 8.4 percent. However, there is some similarity between Paxson and Schady's study and the present one. The present study highlights and concurs with Paxson and Schady's work that in periods of significant increases in prices of goods and/or services, infant mortality will rise. This work goes further to demonstrate that the increase in infant mortality rate will be a geometric one when inflation rises beyond 6%. Another fact, which emerged from this work, is the increasing rate of changes in infant mortality when inflation is below -2%, and that relationship between infant mortality rate and inflation rate is an inverse one, during periods when inflation is between -2% and 4%.

The present study found that in periods of economic downturn in Jamaica in the late 1990s (1995-1999), there were fluctuations in general mortality (including crude death rates, per 1000 of mean population) and decline in the inflation rates. In fact, during economic downturn in late 1990s, mortality rate per 1000 of the mean population and inflation rate were at their highest at the beginning of the recession in 1996, 6.7 per 1000 and 15.8 percent respectively, while mortality rate was increasing and decreasing, inflation rates were always declining. Another finding which emerged from this research is that even when there were hyper inflations in Jamaica (1991, 80.2%; 1992, 40% -highest in 21-year, 1989-2009), mortalities were the low and the lowest (13,376 and 13,262), respectively. In fact, this paper noted that in 2006, inflation declined by 54.8% but there was a simultaneous increase in deaths by 1.8%; with the infant mortality rate declining by 5.27%. These findings, however, contradict Paxson and Schady's work [33]. During the period of the financial and economic crises in Jamaica, 1990s, infant mortality rates fell by 4.5% over the previous period, 1980s [29], which is again another contradiction between what was observed in Jamaica and Peru.

Using inflation to assess economic crisis, this research found that the relationship between general mortality and inflation is curvi-linear one and the rate of change in general mortality is smaller than the variance in inflation. Over the 21-year period, the greatest annual percent increase in inflation rate occurred in 2007 over 2006 (194.7 percent) which correspond to an 8.4 percent rise in general mortality. In 1991, when inflation rate rose by 169.1 percent over 1990, general mortality declined by 5.9 percent. Outside of this issue, Downes [39] noted that the disintegration of the subprime market in the United States in 2007 along with the crash in the financial market subsequently resulted in the global financial crises. He also argued that this financial virus became contagious, and infected many developed nations. Downes [39] also opined that the global financial spilled over into worldwide crises, which resulted in income reduction, decreased demand for goods, and employment disparities [39] in many economies including developing nations.

Stuckler et al. [40] concurred with the postulations of Downes, as they opined that Northern Ireland experienced the global economic that saw the reduction in production of goods and services, increased unemployment, and that some home buyers are left with negative equity. While Downes did not extend the discourse to health of the population, Stuckler et al. [40] found that the recession inversely affected the health status of people in Northern Ireland, particularly among those who had lost their jobs, and that unemployment was associated with increased consumption of alcoholic beverages. Jamaica experienced a recession in 2008 following the onset of one in the United States in late 2007, and there was a marginal decline in general mortality (by 1.46%) as well as infant mortality (by 2.29%) for 2008

over 2007. Yet when a macroeconomic variable (inflation) fell by 39.3% this correspond to a 6.7% increase in general mortality for 2009 over 2008. Embedded in this finding is the delayed effect of economic crisis on ill-health including greater general mortality, suggesting that consequences of a crisis extends beyond the year through following periods. General mortality, which is the measure of ill-health, increased in Jamaica post the 2008 recession, but caution is advised as during the banking crisis of the mid-1990s [41], general mortality was greater in the late 1990s (1995-1999) than in early 1990s (1990-1994). Furthermore, a fluctuation in ill-health was noted in late 1990s.

Clearly there is a general mortality transition that emerged from the present study, which was never before identified in the literature on deaths in Jamaica. In this paper, Jamaica underwent four (4) transitions to date, and in 2015, the 5th transition will begin. Currently, the 4th transition began after 2010, which is the declining phase of general mortality, and the next transition (5th) is likely to be an increasing one. The first general mortality transition ended in 1992 (decreasing), and the 2nd that ended in 1998 (an increasing one), 2004 was the end of the 3rd transition (decreasing), followed by the turning point of the 4th transition (an increasing one), and this will progress to 2015, which would be the lowest point of the trough, and thereafter the commencement of the an increasing transition. The transition period of 8 years that was identified by Gompertz is shorter in Jamaica, and these which emerged from this work are not all increasing as the 6th degree polynomial has less cycles (with local minima and maxima). Unlike Gompertz's law, which established human deaths increase two-fold with every 8 years of an adult life, in this work, the rate of increase every 5 years was between 0.1 and 3.4. The work also highlighted that the rate of change in age-specific health rate among Jamaicans aged 15-19 over those 10-14 years was the greatest (3.4%), which was higher than that for those 75+ years over those 70-74 years (2.7%). In addition, while there were fluctuations in the rate of change in age-specific death rates of those less than 50 years and sometimes less than once the previous 5 years, among those 50+ year, the rate every 5 years would increase by at least 1.3 times to 2.7 times at the terminal ages (75+ years). These findings disprove Gompertz' law as there is no constant increasing rate in age-specific mortality. Instead, the rate fluctuates from high-to-low, which is more in keeping with work of Paxson and Schady [32].

On disaggregating the general mortality and inflation trends, comparing this to mortality and inflation patterns separately, it emerged from the work that the data is less fitted combined than singly, highlighting that the correlation between mortality and inflation is weak, but based on the 5-degree polynomial that best fits the data, then there are transition occurring and not a constant gradient, which is positive or negative. Knowing that 64.3% of Jamaicans were 50+ years and 55.6% seniors (60+ years old), every 6-year there is a change of mortality patterns, with some of this being as a result of inflation and 43% is accounting for by ageing and other conditions, using a non-linear function. A linear function to explain mortality and inflation and/or crude death rate and inflation creating an impression that the correlation between those phenomena are weak, in fact when it is strongly curvi-linear one. Economic hardship experienced through the use of inflation influenced ill-health, but that the pattern is cyclical one that changes after a fixed period of 6 years. Therefore, if mortality is in a decreasing period, associating this to reduced crimes may create a falsehood account as the time effect is elucidating the declining death rates which cannot be attributable to factors that bear little effect on phenomenon such as inflation.

The effect of inflation on general mortality or crude death rates in Jamaica is weak, using a best fit curve (either polynomial or linear square), which mean that a particular force (e.g., crime, inflation, etc.) may just be coinciding with the time effect (or transition in mortality) not an elucidation of the change. Based changes in general mortality and inflation as well as variations in CDR and inflation, inflation play a miniscule part in accounting for changes death in Jamaica. The composition of mortality offers more justification for the change in deaths compared to macroeconomic variables like inflation. With about 56% of mortality in Jamaica being among those 60+ years, from a life table's perspective that the probability of death increases with age means that as time progresses the mortality becomes naturally greater, and many of elderly will either die from natural causes or ill-health (i.e., disease causing pathogens). This paper provides pertinent empirical evident that the age-specific death rate of people 50+ years, every five years older Jamaicans become mortality increased between 1.2 and 1.6 times, expect for 57+ years that had a 2.7 times greater death compared to those 70-74 years old. The 4 groups of 4 5-year age cohort of ASDR provides the slope of the age groups and show the exponential increase in death at older age (60+ years), while at the younger ages the rate is a constant. Like Gompertz [30], this research confirms that mortality at older age changes in geometric progression, and, that prior to 60 years, mortality changes in arithmetic progression. Embedded in this finding is the degeneration of the human body in older age (60+ years) with every 5 years that is in keeping with literature on general mortality [30], which offers an elucidation for the deaths in Jamaica not so much inflation or economic crisis.

The weak influence of other variables than age and time was equally documented in Argentina, Indonesia, Mexico and Russia [42-47]. The evidence showed that the financial collapse in the late 1990s in Argentina which did not result in an increase in infant mortality [42]; while in 1998, there was only a 1.4% increase in infant mortality in Indonesia; the crisis in Mexico in the 1980s and 1990s showed increases in infant mortality, and the macroeconomic meltdown in Russia correspond to an increase in general mortality and no change in infant mortality. Jamaica experienced an economic crisis from 1994-1998, with the average general mortality increased by 7.0% compared to a 5-year positive economic growth period, 1989-1993, during which the average general mortality declined by 3.9%. This concurs with the literature that found a positive correlation between economic crisis and general mortality. However, this is not necessarily the information that the data purport as 1994-to-1998 corresponds to the upward general mortality transition, the time and age effect of increased death and should not be ascribed to economic meltdown. Using a 5-year period of 1999-to-2003, in which the Jamaican economy experienced positive economic growth [38], mean general mortality increased by 1.8% over the previous 5-year period in which there was an economic crisis. In Jamaica, general mortality increases in economic expansion, which was also found in the United States [48], along with declines in recession as is the case in some developed nations [49], and it is a cyclical phenomenon [50]. The literature as well as the findings for the present work suggests that the changes in general mortality should not be minimally ascribed to changes in inflation, and economic recession.

There is no denial that people are worse off in an economic or financial crisis [33,34,40] and this must be taken into consideration by policy formulators, governments and scholars, in that inflation play a critical role in the negative impact on living standards as well as quality of life of all individuals in the household. In 2007 over 2006,

inflation massively increased by 194.7% in Jamaica [51], which clearly erodes the quality of life that had taken years to be built by individuals and families. A group of academic researchers conducted a national probability cross-sectional survey in 2006 (July-August) of 1,338 Jamaicans, which was prior to the increased inflation, and found that 69 out of every 100 indicated that their current economic situation [at the time of the survey] was at most moderate; 62 out of every 100 said that their salary could not cover expenses; 72 out of every 100 was concerned about the probability of unemployment in the next 12-month period; only 23% said they were living better off than their parents, and when they were asked "How do you consider your economic situation and that of your family, compared to 12 months ago?" 8.3% mentioned much better, 31.2% said 'a little better', 35.6 % indicated the same and the remainder reported worse off [52]. Those issues translate into poorer nutritional intake; increased economic vulnerability among children, elderly, women, rural residents, (and homeless); poverty and indigence that exposed them to health problems; disease causing pathogens, and distrust in the system (governance). Hence, inflation is reducing the health of Jamaicans, including infants, as this is expressed in the inverse correlation between inflation and mortality, and the direct relationship between high inflation and infant mortality which contradicts an earlier work by Bourne [53] which shows that there is no relationship between inflation and infant mortality rate. In fact, the relationship between inflation and infant mortality is a curvilinear one. A similarity, therefore, existed between Paxson and Schady's research [32] and this one. In the 1980s, Paxson and Schady [32] observed the direct relationship between inflation and infant mortality rate, which occurred in Jamaica for 2007 over the previous year (i.e. due to a rise in male infant deaths of 17.7% [29]) and during that year there was positive economic growth [38] and increase in general mortality. Therefore this study, offers more to the discourse of mortality and the economics milieu, particularly infant mortality.

Conclusion

In summary, a critical finding of this work is that inflation offer insights into the economics on general mortality. This study also provides insights into the influence of inflation on general mortality and provides pertinent information for its inclusion in the economics of death, especially at older ages. These findings can provide policy makers, future scholars and health practitioners with an understanding of the role of inflation in general mortality, and how these phenomena must be interpreted and used to improve the quality of life among all age groups. In fact, policy makers, health care professionals, social workers and behaviour change specialists can use these findings as theorizing into the economics of mortality and health.

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