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Factors Associated With Objective Wellbeing In Jamaica: Is Objective Index Still A Good Measure Of Health?

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ABSTRACT

Objective: To investigate the factors that influenced the wellbeing of Jamaicans. In addition the study sought to ascertain the power of each factor that influenced wellbeing.

Method: The current study used one of the World Bank's Living Standard Measurement Surveys (LSMS) - the Jamaica Survey of Living Conditions (JSLC). The JSLC was conducted between June and October 2002, using a detailed administered questionnaire. The survey was a nationally representative stratified random sample of 25 018 respondents. For the current work, descriptive statistics were used to provide background information on the sampled population; chi-square for bivariate associations and stepwise technique in multiple regressions was utilized to establish the parameter of the explanatory variables and to determine their influence on the general model. The subsample used to established the current model was 21 740 respondents (i.e. 86.9%).

Results: It was found that 16 factors were used to predict the economic wellbeing of Jamaicans, and there was 92.1% variability in economic wellbeing. Moreover, four factors accounted for 82% of the variability in economic wellbeing. The factors were assets owned, number of children ages 14 years and less, consumption per head, and living arrangement. Assets owned and the number of children in the household accounted for 61% of the total explanation of the change in economic wellbeing of an individual. Individuals in the two wealthiest quintiles had greater economic wellbeing than their counterparts in the two poorest quintiles; but, those in the latter had better health status.

Conclusion: The number of children and access to economic resources had a strong influence on wellbeing with the former being a future economic investment for the parents. This suggests that that objective wellbeing is still a better measure of wellbeing in Jamaica than subjective indexes.

Key Words: economic wellbeing; assets owned; consumption; Jamaica

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Introduction

Prior to the 1900, health was proxied by ill-health (dysfunctions, or illnesses), which were from a biomedical approach. It was not until the late 1940s, when the WHO [1] expanded on this uni-directional model that in the 1950s, Engel

[2],[3],[4],[5] introduced the bio-psychosocial model which was in keeping with the WHO's broad definition. This model includes social and economic wellbeing, other tenets, and not merely illnesses. This led to a discourse in which some researchers like Bok [6] argued that it was elusive and 'too broad' to capture. Despite that discourse, traditional economic perspective was that standard of living can be capture by income (i.e. Gross Domestic Product per capita or Income per capita) as this was objective and by extension a good tool to assess wellbeing.

Numerous studies and investigations have examined the relationship between income and subjective wellbeing (happiness) [7],[8],[9]. There are studies that have found that happiness provides a good proxy for wellbeing (quality of life) [10],[11],[12]. The use of subjective wellbeing to proxy people's quality of life is primarily owing to the scope of happiness in measuring people's life satisfaction as against income (economic wellbeing), which focuses on tangible instead of the intangible events [13]. Crisp opined that wellbeing is what is 'good' for people, suggesting that income fails to capture this complex phenomenon [14]. Some researchers like Sen [15] and Easterlin [16] have even endorse the perspective that wellbeing must include the non-market elements; and Gross Domestic Product (GDP) per capita does not take into account the physical condition of the individual, people's choices, entitlement, capabilities, empowerment and civic participation. Happiness, according to Easterlin [17] is associated with wellbeing, and so does ill-being (e.g. depression, anxiety, dissatisfaction). Easterlin [17] argued that material resources have the capacity to improve one's choices, comfort level, state of happiness and leisure, which militates against static wellbeing. From Crisp's perspective [14], wellbeing is related to health, and the strength of those associations.

The use of income, a relatively old indicator of wellbeing is still applicable in contemporary societies. As income still affords an individual to purchase the best preventative care, information through education and preceding this, it allows for the acquisition and use of the necessary components that either prevents or delays particular latent health concerns, from lifestyle practices. In addition, the assets owned can be use as a form of investment in older years with which the aged is able to use to acquire earnings [18]. Within the computation of GDP are consumption expenditure, investment expenditure, inventory, imports and exports, which means that this construct include income from work, income from ownership of property that would have been accumulated in previous years. Therefore, from an objective perspective it constitutes total domestic income, which is available to the population of a geographic space. Thus, the aged is able to use assets (houses, buildings etc.) which were acquired in earlier years to earn valuable income upon which wellbeing can be sustained in the future. In addition, pension and other social security benefits that the retired received because of having reached 60 years and beyond are also important contributors to increased wellbeing of the aged [19].

Wellbeing can be computed from either the direct or the indirect approach [20]. The former is calculated using consumption expenditure, whereas the latter uses disposable income. Ringen noted that in order to use income as a proxy for wellbeing, it must be assumed that: (1) income is the only resource, and (2) all persons operate in identical market places [20]. On the other hand, the direct approach has two key assumptions. These are: (1) what is bought is what can be consumed and (2) what is consumed is an expression of wellbeing [20]. Moreover, based on the aforementioned literature, despite the challenges that are inherent in economic wellbeing, it provides germane information about the choices of a society and health status of a people.

It is within this construct that we extensively review the literature in Jamaica in order to garner material on this vital phenomenon. No study has been found that sought to explain the factors that influence the wellbeing of Jamaicans. Furthermore, in 2007, 30% of Jamaicans were in poverty and 14.5% were below the poverty line compared with 29% in poverty in 1997 and 13.4% below the poverty in

the same year [21]. It is within this general framework and the importance of income to purchase medicine, improve water quality, sanitary and provide a particular nutrition, that a study on economic wellbeing is critical to development. Therefore the study investigated the factors that influenced the wellbeing of Jamaicans. In addition the study sought to ascertain the power of each factor that influenced wellbeing.

Materials and Method
Theoretical Framework

The theoretical framework that will be modified and used to interpret this work is one that was done by Rojas [7]. In attempting to examine the association between happiness and income, he used Ordinary Least Square (OLS) technique to estimate the linear regression. The model that was developed by Rojas [7] was on subjective wellbeing; however, this paper is on economic wellbeing. It is this difference within the current work that there will be more variables than that used by Rojas; and this will mean a different outcome variable, economic wellbeing (proxied by expenditure).

Measure

The current study used one of the World Bank's Living Standard Measurement Surveys (LSMS) modified surveys [Jamaica Survey of Living Conditions (JSLC)]. The study used cross-sectional survey data collected by the Planning Institute of Jamaica (PIOJ) and the Statistical Institute of Jamaica (STATIN) [22]. The survey was drawn using stratified random sampling. This design was a two-stage stratified random sampling design where there was a Primary Sampling Unit (PSU) and a selection of dwellings from the primary units. The PSU is an Enumeration District (ED), which constitutes of a minimum of 100 dwellings in rural areas and 150 in urban areas. An ED is an independent geographic unit that shares a common boundary. This means that the country was grouped into a strata of equal size based on dwellings (EDs). The JSLC began in 1988, but the one that was used for the current study was conducted between June and October 2002, using a detailed administered questionnaire. The survey was a nationally representative stratified random sample of 25 018 respondents, and the data were weighted to represent the population.

Model

For this study multivariate analyses is used because the application of this approach is better than bivariate analyses as many variables can be tested simultaneously for their impact (if any) on a dependent variable. The model that will be tested in this study is given in Eqn [2], below:

$$\ln W_i = f(L_i, R_i, \ln C_i, En_i, AR_i, CR_i, (\textstyle\sum_{i=1}^{2} NP_i, PP_i), ED_i, HH_i, A_i, HI_i, M_i, F_i, NC_i, \ln MC_i, D_i, PQ_i, \varepsilon_i)$$

$\ln W_i$ (i.e. logged per capita economic wellbeing of person i in household) is a function of living arrangement of person i, 1 if living alone, 0 if not living alone; L_i is the retirement benefits of person i, 1 if receiving private and/or government pension, 0 if otherwise; R_i is logged consumption expenditure per head for person i, in dollars; $\ln C_i$ is the physical environment of person i, 1 if in the lived milieu there has been flooding, soil erosion, and landslide, 0 if no; En_i the area of residence of person i, Other Towns, urban areas with the referent group being rural areas; AR_i is crowding in the household of person i; CR_i is psychological conditions $(\textstyle\sum_{i=1}^{2} NP_i, PP_i)$,- where NP_i is the summation of all negative affective psychological conditions of person i, and PP_i is the summation of all positive affective psychological conditions; educational level of the person i, in categories, with primary and below education being the reference group; ED_i is household head of person i, 1 if yes, 0 if no; HH_i is the age of person i, in years;, A_i is the self-reported ownership of private health insurance coverage of person i, 1 if have a health insurance policy, 0 if otherwise; HI_i is the number of male in household of person i; M_i number of female in household of person i; F_i, number of children below 14 years in household of person i; NC_i is the logged medical expenditure of person i in Jamaican dollars; $\ln MC_i$ assets owned by individual i, 1, if yes and 0 if otherwise; D_i income quintile, 1, if rich (i.e. those in the

richest two quintiles) and 0 if otherwise (i.e. in the two poorest quintiles) PQ_i and an error term (i.e. residual error), ε_i.

The data was be used to test for statistical significance ($P < 0.05$) of each of the predisposed variables identified in Eqn [2]. Having tested for the statistical significance, using the principle of parsimony, the final model constitute of only those variables that are significant ($P < 0.05$), after which the data will be used to ascertain the parameter estimates for the variables, b_i, and α as identified in the function Eqn [3] .

$$lnW_i = \alpha - b_1 L_i + b_2 D_i + b_3 lnC + b_4 NC_i + b_5 M + b_6 F + b_7 CR + b_7 CR - b_8 A_i - b_9 E_n + b_{10} ED + b_{ij}\left(\sum_{i=1}^{2} NP_i, PP_j\right) + b_{13} PQ_i - b_{14} R_i + b_{15} lnM_{Ci} - b_{16} HH_i + \varepsilon_i$$

Other Measures

Per capita economic wellbeing is proxied by total expenditure of person i in Jamaican dollars divided by the number of persons in household of person i.

Self-reported health conditions: A dummy variable, where 1 = self-reported ailments, injuries or illnesses suffered in the last four weeks.

Household crowding:

$$\frac{1}{\sum_{i=1}^{n} f_i} \sum_{i=1}^{n} x_i$$ Where x_i represents each individual, and $\sum_{i=1}^{n} x_i$ is the summation of the all the individuals with the household, and 'i' denotes first person to the last person, n, and $\sum_{i=1}^{n} f_i$ is the summation of number of rooms in the house excluding kitchen, bathroom(s) and verandah.

Physical environment: the number of responses from people who indicated suffering landsides, property damage due to rains, flooding and soil erosion.

Negative affective psychological condition: the number of responses from a person on having loss a breadwinner and/or family member, loss of property, made redundancy, failure to meet household and other obligations.

Positive affective psychological condition: the number of responses with regards to being hopeful, optimistic about the future and life generally

$$Crime\ Index\ 1 = \sum_{i=1}^{n} (k_i\ T_j)$$ [Table/Fig 6].

where k_i represents the frequency with which an individual witnessed or experience a crime, where i denotes 0, 1 and 2, in which 0 indicates not witnessing or experiencing a crime, 1 means witnessing 1 to 2, and 2 symbolizes seeing 3 or more crimes. T_i denotes the degree of the different typologies of crime witnessed or experienced by an individual, where j = 1 …4, which 1 = valuables stolen, 2 = attacked with or without a weapon, 3 = threatened with a gun, and 4 = sexually assaulted or raped. The summation of the frequency of crime by the degree of the incident ranges from 0 and a maximum of 51.

Average consumption per head: total amount of money that is spent on consumption goods, in Jamaican dollars divided by the number of persons in the household of person i.

Statistical Analysis

Descriptive statistics such as mean, standard deviation (SD), frequency and percentage were used to analyze the socio-demographic characteristics of the sample. Chi-square was utilized to examine non-metric variables. Stepwise technique in multiple regressions was utilized to establish the parameter of the explanatory variables and to determine their influence on the general model. The level of significance used in this research was 5% (i.e. 95% confidence interval). The correlation matrix was examined in order to ascertain if autocorrelation or collinearity existed between variables. Where collinearity existed ($r > 0.7$), variables were entered independently into the model to help determine which one should be retained during the final model construction (the decision was based on the variable's contribution to the predictive power of the model and the goodness of fit).

Results

The sampled population was 25 018 respondents, of which there were 49.3% males and 50.7% females. The mean age was 28.8 (± 22 years). The majority of the sampled respondents was never married (67.3%); and 73.2% had secondary or tertiary level education. The majority of the sampled respondents did not report a health condition (83.6%). Moreover, 40% of the respondents were poor, with 20% falling below the poverty line [Table/Fig 1].

(Table/Fig 1) Demographic Characteristics Of Sampled Population

	n	Percent
Gender		
Male	12,332	49.3
Female	12,675	50.7
Marital Status		
Married	4,050	25.2
Never married	10,813	67.3
Divorced	123	0.8
Separated	185	1.2
Widowed	905	5.6
Per capita Population quintile		
Quintile 1 – Poorest 20%	4,975	19.9
Quintile 2	4,956	19.8
Quintile 3	4,984	19.9
Quintile 4	5,023	20.1
Quintile 5 – Richest 20%	5,076	20.3
Self-reported Health conditions		
No	20,361	83.6
Yes	4,008	16.4
Educational Level		
Primary and below	3,007	20.9
Secondary and post-secondary	10,540	73.2
Tertiary	860	6.0
Crowding	2.0 (± 1.4); Range = 11, 12, 0	
Age	28.8 years (± 22.0 years); Range = 0, 99	
Median total annual expenditure	$259,504.66	
Median consumption per head	$26,590.75	

Further examination of health conditions by rich or poor revealed that nearly one-fifth (16%) of respondents reported at least one health dysfunctions (illness, ailment or injury). Just under one-fifth (18.1%) of those who were in the two wealthiest quintiles indicated that they suffered from at least one health condition compared to 15.3% of those in the two poorest quintiles ($\chi^2(1) = 34.173$, $P < 0.001$), suggesting that the lifestyle behaviour of the affluent is adversely affecting their health status [Table/Fig 2]. A part of this explanation is owing to the disparity of crime and victimization that are levied against the two groups. A cross-tabulation between those two phenomena showed a statistical difference between crime and victimization that affected the more wealthy (25.1%) and the poor (21.8%; $\chi^2(1)= 36.6$, $P < 0.001$; Table 3) [Table/Fig 3].

(Table/Fig 2) Percentage In Self-Reported Health Conditions By Poor Or Rich

		Poor or Rich		
		Poor	Rich	Total
Self-reported Health conditions:	None	84.7	81.9	83.6
	At least one	15.3	18.1	16.4
Total		14609	9760	24369

$\chi^2(1)= 34.173$, P < 0.001

(Table/Fig 3) Percentage In Crime And Victimization Against A Person By Poor/Rich

		Poor/Rich		
Crime and victimization against a person		Poor	Rich	Total
Crime and victimization	No	78.2	74.9	76.8
	Yes	21.8	25.1	23.2
Total		14890	10067	24957

$\chi^2(1)= 36.6$, P < 0.001

A cross-tabulation between area of residence and the two poorest versus the two wealthiest quintiles revealed that poverty is substantially concentrated in rural areas (70.2%) and the least in the urban areas, (9.4%). A similar distribution was observed for those in the two wealthiest quintiles [Table/Fig 4]. There is exists inequality of income distribution in the geopolitical zones in Jamaica as for every 100 wealthiest people in rural areas there were 148 of those in the two poorest income quintiles. In urban areas, for every 100 people in the two wealthiest income quintiles there are 49 in the two poorest income quintiles. The dissimilarity was lower in Other Towns as for every 100 of those in the two wealthiest quintiles there were 61 in the poorest quintiles.

(Table/Fig 4) Percentage Of Area Of Residence By Two Poorest Income Quintiles/Two Wealthiest Income

		Two Poorest/Wealthiest Income Quintiles		Total
		Poorest	Wealthiest	
Area of Residence	Rural Areas	70.2	47.4	61.0
	Other Towns	20.4	33.2	25.6
	Urban areas	9.4	19.3	13.4
Total		14915	10099	25014

$$\chi^2(2)= 1338.3, P < 0.001$$

Using the econometric analysis, the final model is expressed in a multiple regression that is capture in Eqn [3]. Approximately 87% of the sampled population was used to establish the final model. Of all the predisposed variables, 16 of them explain 92.1% of the variability in economic wellbeing. These variables include: assets owned, consumption per head, number of children in household below 14 years old, number of adults living in the household, crowding, age of respondents, psychological conditions, property ownership, retirement income, household head, medical expenditure, educational attainment, physical environment, and income quintile of respondents. Moreover, the model is a good fit - F statistic = 5474.67, $P < 0.001$ [Table/Fig 5].

(Table/Fig 5) Modeling Economic Wellbeing Of Jamaicans By Explanatory Variable, n = 21 740

Explanatory Variable	Unstandardized Coefficients		P	95% CI	
	B	Std. Error		Lower Bound	Upper Bound
Constant	2.273	0.064	0.000	2.148	2.399
Assets owned	0.025	0.001	0.000	0.023	0.027
LnConsumption per head	0.908	0.006	0.000	0.896	0.920
No. of children (age <= 14 yrs)	0.134	0.002	0.000	0.130	0.138
Living alone	-0.618	0.010	0.000	-0.638	-0.599
No. of adult males	0.145	0.002	0.000	0.140	0.149
No. of adult females	0.141	0.002	0.000	0.137	0.146
lnCrowding	0.129	0.005	0.000	0.119	0.140
Age of individual	-0.001	0.000	0.000	-0.001	-0.001
Physical environment	-0.036	0.005	0.000	-0.046	-0.026
Tertiary education	0.072	0.010	0.000	0.052	0.093
Negative affective	0.006	0.001	0.000	0.004	0.007
Property ownership	0.031	0.005	0.000	0.021	0.042
Total positive affective	0.006	0.001	0.000	0.004	0.008
Rich	0.043	0.007	0.000	0.028	0.057
Retirement income	-0.068	0.014	0.000	-0.095	-0.041
Household head	-0.047	0.019	0.014	-0.084	-0.009
Log medical expenditure	0.004	0.002	0.014	0.001	0.007

R= 0.960
R-squared = 0.921
Adjusted R-squared=0.921
F statistic = 5474.67, P < 0.001
Std. Error of the Estimate = 0.20488

Deconstructing the explanatory variables of the final model showed that the two most crucible factors determining the economic wellbeing of an individual were assets owned (38.1%), number of children below 14 years old (22.7%) followed by consumption per head (10.8%) and living alone (10.0%) [Table/Fig 6]. There are some factors whose contribution to economic wellbeing were minimal (less than 1%) - crowding 0.7%, physical environment 0.1%, age of respondents 0.1% and 7 factors accounted for approximately 0% of the variability in wellbeing. These include: psychological conditions, property ownership, income quintile, retirement income, medical expenditure and being head of household. Embedded in those findings are minimal contributions of owning a home, an individual's affective psychological state, retirement income, medical expenditure, being head of household, the physical environment, age of respondents and the number of person living in a room (crowding) and educational achievement.

(Table/Fig 6) Deconstructing Explanatory Variables In The Final Model

Explanatory Variables in Final Model	R	R Square	Adjusted R Square	Std. Error	R Square Change
Assets owned	0.617	0.381	0.381	0.57190	0.381
Logged consumption per head	0.700	0.489	0.489	0.51946	0.108
Number of children below 14 years	0.847	0.717	0.717	0.38693	0.227
Living arrangement	0.904	0.817	0.817	0.31129	0.100
Number of males in household	0.932	0.869	0.869	0.26315	0.052
Number of females in household	0.954	0.911	0.910	0.21749	0.042
Crowding	0.958	0.917	0.917	0.20910	0.007
Age of respondents	0.958	0.918	0.918	0.20833	0.001
Physical environment	0.958	0.919	0.918	0.20762	0.001
Tertiary level education	0.959	0.919	0.919	0.20707	0.000
Negative affective psychological condition	0.959	0.919	0.919	0.20657	0.000
Property ownership	0.959	0.920	0.920	0.20618	0.001
Positive affective psychological condition	0.959	0.920	0.920	0.20575	0.000
Rich – income quintile	0.959	0.920	0.920	0.20537	0.000
Retirement benefits	0.959	0.921	0.920	0.20505	0.001
Household head	0.959	0.921	0.920	0.20499	0.000
Medical expenditure	0.960	0.921	0.921	0.20492	0.000

Moreover, being male accounted for more of economic wellbeing (5.2%) compared to being females (4.2%). This suggests that the more males in a household, the more likely that household will have a higher economic wellbeing than one with more females. Conversely, a household with one person will have a lower economic wellbeing. Another aspect to the aforementioned finding is fact that union status in which people cohabit will experience a greater economic wellbeing than people who were not in unions. In addition to the abovementioned variables, household that spent more of their income on assets owned will have a greater wellbeing than one that spend on perishable goods (consumer goods).

The study found that 16 variables accounted for 92% of the explanatory power of economic wellbeing. Forty-one percent (41.4%) of the explanatory power is accounted for by asset ownership; number of children in household, 24.6%, per capita consumption, 11.7%, and living arrangement, 10.9%. Concurrently, number of females or males in household and crowding accounted for 11% of the explanatory power of the economic wellbeing model. Other variables such as age, physical environment, education, psychological conditions, property ownership, social class, retirement benefits and household heads contributed between 0.0% and 0.2% individual to the general model. It follows that although some variables are correlated with economic wellbeing of Jamaicans, their contribution is negligible to such a model. On the other hand, whether people reported being ill or otherwise this was not correlated with lower or higher economic wellbeing.

Discussion

This study found a relationship between economic wellbeing and some explanatory variables. A study of economic wellbeing is of importance because a nationally representative probability stratified sampling of 1,338 respondents in Jamaica in 2006 revealed that more than two-thirds of the Jamaicans (68.7%) indicated that their present economic situation was at most average, with 7% mentioned that it was very bad [21]. Just over one-half (57.4%) revealed that their salary and the total of their family's salary did not allow them to satisfactorily cover their needs without some level of difficulty. Nearly three-quarters indicated that they may be left without work or become unemployed during the next 12 months; with 43% indicated that they were 'very concerned' about their employment status; and 42% reported that they were living worse than their parents/guardians [21]. Therefore the factors that accounts for Jamaicans economic wellbeing will give a better understanding and allow the tailoring of policies that are driven by research. Another rationale for the seriousness of right programme is embedded in a critical aspect of the society as approximately 30% (in 2007) were in the two poorest quintiles [21]. Ergo, if we are to structure and formulate programmes that are effective in alleviating poverty, as this is a goal with the United Nations Millennium Declaration Goals, we need to comprehend what affects economic wellbeing.

It is widely held in many societies that children are parent economic investment or future pension, in particular developing countries such as China, Pakistan and India. In this study this is equally the case in Jamaica, as we found that the number of children is the second most influential factor that determines economic wellbeing of Jamaicans. And the preference for a son which is an issue in China is not overtly the case in Jamaica. However, the current research has found that more males in a

household contribute more to economic wellbeing than their female counterparts. Although the study has shown no statistical difference between the economic wellbeing of the gender in Jamaica, embedded herein is the fact that males add more to economic wellbeing than females. This goes further to emphasize the importance of crowding on economic wellbeing of an individual. Even though there are psychological drawbacks to crowding, the more adults in a household, the greater will be the access to income and thereby increased economic wellbeing. The reverse hold true as will less persons in the household there will be lower access to income and by extension economic resources. In this study, the fourth most influential determinant of economic wellbeing is living arrangement.

If people have lower access to income and economic resources, they will have lower economic wellbeing. In the current work, assets owned is the most critical determinant followed by children and then consumption per head. The poor have lower access to income and economic resources and so they will have lower wellbeing. Income does not only affect an individual's consumption pattern, it also influences health status [23],[24],[25],[26], suggesting how health education towards the poor often fail in its endeavour, although there may be good intervention programme in poor milieus. Powell *et al.'s* work [21] showed that the poorest in Jamaica has the lower health status, using Abraham Maslow's needs hierarchy [27],[28]. Furthermore, when poverty is mixed with being female, living alone, poor environment, ageing, illness, and below tertiary level education, the disadvantage is even more complex.

Poverty is synonymous with rural areas in Jamaica with the least being in urbanized areas [29]. This study investigated rural area residence and found that for every 1 person who is in the two wealthiest income quintiles, there are 2 persons who are in the two poorest quintiles. This represents a massive disparity in income in rural areas compared to urbanized areas in the society; as well as failure of these people to fulfill their 'fullest potential in life', a finding similar to that of Powell *et al.* [21]. In order to

comprehensive understand the state of poverty in rural areas in Jamaica, the matter must be contextualized within a broader situation as in 2007, 61% Jamaican reported that their current economic situation compared to 12 months ago was at most the same, with 25% indicated that it was worse [21]. Furthermore, Jamaicans are pessimistic about the future of the society as in 2007, 75% reported that it was at most the same and 34% said it was likely to become worse.

Within the context that 67% of nation's elderly populace (ages 60 years and older) dwelled in rural areas. Economic hardship is even more intense for this age cohort and the same goes for youth (ages 15 to 25 years) as 59% lived in rural areas. The economic hardship is faced by elderly and those who reside in rural areas does not overshadow the deprivation that is experienced by poor in urban areas - pollution, overcrowding, inadequate water, sanitation and waste disposal, street violence [24], [30], [31]. Moreover, studies have been conducted by Bourne [32],[33] showed that the place in which the elderly resides affect their general wellbeing. However, the findings in this study do not concur with those in the literature. In this study we examine the economic wellbeing of Jamaica while the aforementioned work investigated the social wellbeing of elderly Jamaicans. Another fact that may explain this difference is owing to the composition of wellbeing. In the current work, wellbeing is operationalized as income while in Bourne's work [32],[33], wellbeing was a composite variable that included health conditions and material resources. In this study health condition was used as an independent variable and we found that it does not influence economic wellbeing ($P > 0.5$) when placed in a model of many other variables. However, there exists a bivariate correlation between health condition and economic wellbeing ($P < 0.05$), indicating that this is nullified by the inclusion of other variables such as consumption and number of persons in a household.

Of many of the studies, using multivariate regression analyses, done in the English-speaking Caribbean [34], [35], [36], [37], [38],[39],[40], none had an explanatory power more than 40%. Those researchers used self-

reported health status, self-assessed illness, life satisfaction, and quality of life to measure health (or wellbeing). The present study however, using objective wellbeing (i.e. income measured by expenditure), which showed an explanatory power of 92% (adjusted r-squared). This suggests that objective wellbeing is still a better measure for wellbeing than the identified subjective indexes used by Caribbean scholars. Concurrently, many of the social determinants that were identified as exogenous variables for health by some scholars as well as the WHO [25], [26], [41],[42],[43],[44] were not significant correlated with particular subjective indexes used by different Caribbean scholars to evaluate health, but they are concurred in the present study when objective index (i.e. income) is used to assess wellbeing.

Conclusion

In this study, it is found that 16 factors can be used to predict economic wellbeing of a Jamaican, and there was 92.1% variability in economic wellbeing. Four factors accounted for 82% of the variability in Jamaican's economic wellbeing. The factors are assets owned, number of children ages 14 years and less, consumption per head, and living arrangement; with assets owned and the number of children in the household accounted for 61% of the total explanation of the change in economic wellbeing of an individual. This indicates that children and access to economic resources have a strong influence on economic people and they are an economic investment of parents. This suggests that that objective wellbeing is still a better measure of wellbeing in Jamaica than subjective indexes.

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