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Income, deprivation, and social exclusion: toward a comprehensive poverty measurement in Hong Kong

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ABSTRACT

Multidimensional measurements have become the preferred means to determine levels of poverty in research and policy practice because unidimensional measurements cannot capture the full picture of poverty. This study combines income, deprivation, and social exclusion measures and proposes a comprehensive poverty measurement within the multidimensional framework. Using data from a representative survey in Hong Kong, we applied the comprehensive poverty measurement to an affluent Asian society. We used the Poisson-based framework to analyse the poverty threshold and the Alkire and Foster multidimensional poverty index (MPI). According to the comprehensive poverty measurement, Hong Kong's poverty rate was 6.1%, and MPI was 0.047. Social exclusion contributed the most to poverty, and individuals who differed from the typical profile had distinct disadvantages in all three dimensions of comprehensive poverty. Multivariate regression analysis further revealed that individuals who were immigrants, aged 65 or over, had low levels of education and poor health, and received social assistance were more likely to be comprehensively poor. Through revealing the nuanced needs of the poor population, the comprehensive measurement sheds new light on multidimensional poverty and provides novel policy implications for poverty alleviation.

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Income; Deprivation; Social exclusion; Comprehensive poverty measurement; Hong Kong

1. Introduction

Poverty represents a long-standing societal challenge. Poverty alleviation requires poverty to be defined and those who are poor identified (Ravallion, 2003; Sen, 1976). Income is the most widely used poverty measurement, viewing poverty as a lack of economic resources. However, the monetary approach has been long criticized for its insufficiency (Alkire & Santos, 2013; Ringen, 1988). Deprivation and social exclusion are other measurements of poverty (Saunders & Adelman, 2006; Saunders et al., 2008). 'Deprivation'

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describes a state in which people lack socially perceived necessities because of their unaffordability (Mack & Lansley, 1985). 'Social exclusion' conveys a lack of opportunities and resources to participate in social, economic, and civic activities (Levitas et al., 2007). The three poverty measurements, however, have not been analysed within a multidimensional framework. The present study combines income, deprivation, and social exclusion, covering economic sufficiency, life necessities, and social activities to provide a comprehensive measurement of poverty.

The Hong Kong Special Administrative Region (HKSAR) is an affluent city in the People's Republic of China. With its *laissez-faire* economic philosophy, Hong Kong has topped the Heritage Foundation's Index of Economic Freedom for more than 25 years. Income inequality, however, is marked; a government report on household income distribution notes that the Gini coefficient in HKSAR increased from 0.533 in 2006 to 0.537 in 2011 and further to 0.539 in 2016 (Census and Statistics Department, 2017). Along with the widening income gap, poverty has become a serious issue that draws policy concern in Hong Kong (Chow, 2015; Goodstadt, 2014; Saunders & Wong, 2019).

Although the existence of poverty in Hong Kong had been widely recognized, establishing an official poverty line was long delayed (Fong & Wong, 2015). At the end of 2012, the HKSAR government re-established the Commission on Poverty, which, using relative income as the measure, set the poverty line at half of the median domestic household income before policy intervention. According to this definition, 703,000 households and 1.653 million persons lived below the poverty line before government intervention in 2020, and the poverty rate was 23.6%. When the welfare cash and in-kind benefits were taken into account, the poverty rate was still 7.9% (Government of the HKSAR, 2021, ix).

Many studies have discussed the limitations of determining the official poverty line in Hong Kong on the basis of relative income (Fong & Wong, 2015; Saunders, 2015b; Wong, 2015; Wu, 2015). One major limitation is that it reflects inequality rather than real poverty. The vast number of individuals and households living below the poverty line makes it difficult to know who needs help and what are the most beneficial forms of help. In other words, the relative income approach cannot identify the truly disadvantaged group and their real needs. Furthermore, using income as the sole criterion of poverty fails to provide precise guidance for policymakers to alleviate poverty (Government of the HKSAR, 2022).

Noting the limitations of using only income to measure poverty, some scholars have examined deprivation (K. C. K. Cheung & Chou, 2019; K. C.-K. Cheung et al., 2019; Saunders et al., 2014a; Wong & Chan, 2019) and social exclusion in Hong Kong (Chou, 2018; Lau et al., 2015; Saunders et al., 2014b). Nelson Chow conducted pioneering research in the early 1980s (Chow, 1983, 1986), using ten items to measure material deprivation. Following this approach, Saunders and colleagues used a list of items to measure material deprivation and social exclusion in 2011. They found that material deprivation and social exclusion differed from the shortage of money, and the overlap among the different forms of poverty was relatively low (The Hong Kong Council of Social Service, 2012).

Although there have been studies of deprivation and social exclusion in Hong Kong, the related concepts have not been combined in a multidimensional framework to analyse the poverty situation. Sufficiency of life necessities does not mean actively engaging in social and civic activities because specific groups, such as older people, may encounter certain barriers. In other words, the nuanced needs of poor people have not been well identified. This article proposes a comprehensive poverty measurement to

bridge this research gap. Compared to the current multidimensional measurement (Alkire et al., 2015; Whelan et al., 2014), our comprehensive measurement has more nuanced elements and is better suited for monitoring the poverty situation and evaluating poverty alleviation policies in developed societies like Hong Kong.

2. Review of poverty measurements

2.1. Income, deprivation, and social exclusion

Poverty means the state of lacking resources and abilities to meet basic needs. When monetizing a basket of essential goods (e.g. food, clothing, shelter, and fuel), we can obtain a threshold to identify the incidence of poverty; people with incomes below that poverty line are defined as the poor. The shortage of money reflects the lack of economic resources. Income is the most widely used poverty measurement, although it does not directly measure poverty situations (Ringen, 1988). Income poverty can be measured in absolute or relative terms (Brady, 2003; Madden, 2000). The absolute approach is often used to define extreme poverty. It takes account only of the bare necessities and, therefore, maintains the poverty line at a relatively low level. Absolute poverty exists mainly in developing countries (Chen & Ravallion, 2007). On the other hand, relative definitions of poverty are widely adopted in affluent societies (Couch & Pirog, 2010; Niemietz, 2010). Relative measurements place poverty in the context of welfare and income distribution of the whole society. People are identified as poor because they are disadvantaged compared to others. Although the income poverty approach is widely adopted, it has several limitations. First, it fails to measure real living conditions; second, it is unidimensional and fails to reflect the complexity of poverty; and third, it is solely objective and cannot incorporate subjective feelings (Bedük, 2020; Chan & Wong, 2020).

Deprivation refers to the enforced lack of life essentials (Mack & Lansley, 1985). It indicates that the basic needs of daily life cannot be met because of their unaffordability. Deprivation is usually measured by a list of indicators (Townsend, 1979). Using deprivation rather than money to measure poverty is more likely to reveal the true domestic situation and the objective well-being of individuals and households. Deprivation is a relative concept. The items in the indicator list are contextual and can be adjusted according to place and period (Nolan & Whelan, 2010). The deprivation approach to measure poverty is frequently used to identify the poor directly: the percentage of the population living in material deprivation is used as an indicator to monitor the poverty situation (Gilbert, 2009). Deprivation is a multidimensional concept, and its composition usually includes food, living conditions, health care, and lifestyle (Bellani, 2013; Callan et al., 2008).

Social exclusion provides another perspective for understanding poverty (Brady, 2003; Levitas, 2006; Saunders, 2015a). While income measures economic sufficiency and deprivation deals with the affordability of life necessities, social exclusion focuses on the disparities in abilities and resources that lead to exclusion from social and economic activities. Social exclusion is less concerned with money than rights and participation in social life. It emphasizes the important role of institutional structures and community attitudes in the state of poverty (Saunders et al., 2014b). Social exclusion defines poverty broadly, revealing the process of being poor. Both causes and consequences of poverty can be reflected in social

exclusion. Like deprivation, social exclusion is multidimensional and can be evaluated using a list of indicators (Nolan & Whelan, 2010). Determining the percentage of people at risk of social exclusion is important for poverty alleviation reform and is a valuable supplement to other poverty measures. Some developed countries and societies like the European Union have recognized the consequences of social exclusion and made it a focus of their policy agenda (Whelan et al., 2014).

2.2. A comprehensive measurement of poverty

Each poverty measurement has a particular focus. The conventional monetary measurement reflects economic sufficiency and is concise to compute. Income-based measurement is useful in policy evaluation and helpful when comparing regions. Deprivation focuses on socially perceived necessities and considers the real situation of a poverty-stricken life (Mack & Lansley, 1985). Social exclusion deals with social barriers to participation in socioeconomic activities (Levitas et al., 2007). Combining these measurements would form a more complete picture of poverty, which we define as a comprehensive poverty measurement.

The multidimensional poverty framework helps to understand comprehensive poverty measurement. Sen's (1999) capability approach was one of the first multidimensional measurements, stimulating a series of similar studies. However, the primary weakness of these studies is that the poverty indicators are very limited; education, health, and living standard are the widely used indicators (Alkire & Santos, 2014). The social dimension of poverty, which relates to disparities in resources and opportunities for engaging in social and civic activities, is generally overlooked. The comprehensive poverty measurement considers economic sufficiency, life necessities, and social activities within a coherent framework and corrects the balance.

According to Maslow's classic hierarchy of needs, basic needs (bottom-up) are physiological, safety, love, esteem, and self-actualization (Maslow, 1943). The five-stage model can also be categorized into deficiency needs and growth needs. Normally people must satisfy lower-level needs first and then progress to meet higher-level needs. If we regard poverty as an inadequacy of basic needs, monetary shortage and deprivation reflect unmet deficiency needs, and social exclusion indicates unfulfillment of growth needs. The comprehensive poverty measurement combines income, deprivation, and social exclusion covering all basic needs. The diagram in [Figure 1](#) illustrates the concepts of comprehensive poverty. Within the analytical framework of multidimensional poverty, a person identified as poor on one dimension may not be poor on another. The truly disadvantaged are identified as poor on multiple dimensions.

Poverty manifests differently in developing countries and developed societies (Atkinson, 2019). The comprehensive poverty measurement is more useful in developed societies with better overall socioeconomic conditions. Its dimensions are more capable of registering the more nuanced situation of poverty. When deficiency needs such as food and clothing are met, equal opportunity and social inclusion may still be deficient. The comprehensive poverty measurement includes these more intangible elements.

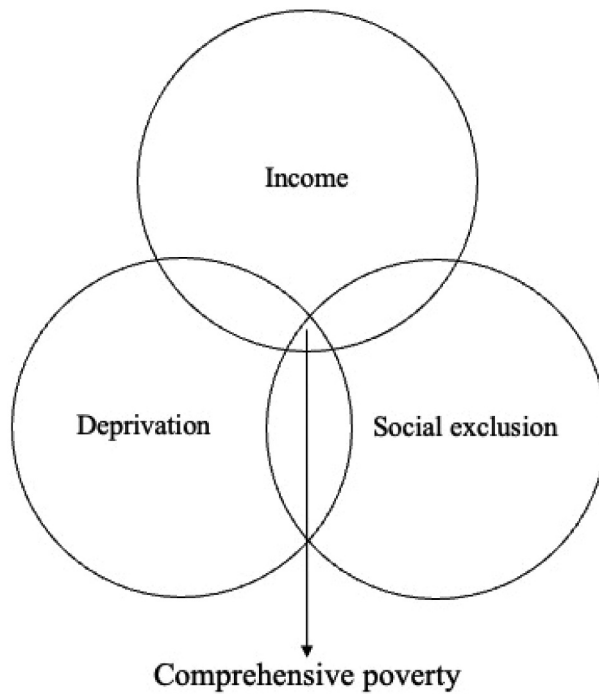


Figure 1. Diagram Illustrating the Concepts of Comprehensive Poverty.

3. Data and methods

3.1. *The dynamics of poverty in Hong Kong*

We used data from a citywide representative survey, the Dynamics of Poverty in Hong Kong (hereafter, the poverty survey), to analyse comprehensive poverty. The poverty survey was conducted by the Center for Applied Social and Economic Research at The Hong Kong University of Science and Technology in late 2014. It utilized the stratified random sampling method and the computer-assisted personal interviewing (CAPI) system. As a poverty supplement, the poverty survey was part of the Hong Kong Panel Study of Social Dynamics (HKPSSD), the first household-based longitudinal survey covering demographic, social, and economic issues in Hong Kong (Wu, 2016). The poverty survey focused particularly on issues of deprivation and social exclusion. It was based on interviews with 892 adults from 505 households (after removing cases with missing variables, the sample size was 841). Using the 2011 Hong Kong Population Census data as a reference, the individual data were weighted based on sex, age group, main economic activity status, and the highest level of education completed (Wu, 2015).

Income was measured at the household level (the average monthly disposable income consisting of earnings, bonuses, rental income, interest, and government welfare payments). It was self-reported by a household member who was familiar with the household situation. We compared the household income with the government poverty line in 2014

for the household size to determine whether a household and its members were below the line.¹

We employed the indicators of deprivation and social exclusion developed by Saunders and colleagues in 2011. Saunders and colleagues identified five categories of deprivation measured by 35 indicators and six categories of social exclusion measured by 16 indicators (The Hong Kong Council of Social Service, 2012). Tables 1 and 2 show the categories and indicators of deprivation and social exclusion, respectively. Cronbach's alpha was 0.90 for the deprivation indicators and 0.70 for the social exclusion indicators, confirming the high reliability of these two measurements.

To measure deprivation, respondents were asked whether they owned certain items and, if not, whether they could afford them. Those who did not own the items

Table 1. Categories and Indicators of Material Deprivation in Hong Kong.

Categories and indicators	Do not have it because of affordability
Accommodation, Food, and Clothing	8.2%
Have safe living environment without structural dangers.	1.3%
Have sufficient living space at home, with no need to stay in bed all day.	2.9%
Have bathroom inside a self-contained apartment, with no need to share with other families.	1.0%
Have at least one window in the home.	0.0%
Can go to a teahouse sometimes in leisure time.	2.5%
Have breakfast every day.	0.2%
Have fresh fruit at least once a week.	0.4%
Can buy one or two items of new clothing in a year.	1.1%
Have at least one set of decent clothes.	1.6%
Have enough warm clothes for cold weather.	0.0%
Medical care	21.1%
Older people can receive adequate care services if needed.	3.1%
Can travel to and from hospital by taxi when needed.	6.3%
Able to have periodic dental checkup.	16.3%
Able to consult Chinese medicine practitioner when needed.	2.9%
Can consult private doctor in case of emergency without waiting for public outpatient service.	5.9%
Able to purchase medicines prescribed by doctors.	7.1%
Social Connections	6.3%
Can take transport to visit relatives and friends.	2.1%
Able to return to hometown if needed.	2.0%
Can offer a monetary gift for a wedding.	2.9%
Can give lucky money to friends and relatives during Chinese New Year.	1.7%
Have a mobile phone.	1.2%
Have leisure activities and holidays.	1.3%
Training and Education	6.8%
Students can buy reference books and supplementary exercises.	2.4%
Students have school uniforms of proper size every year.	2.2%
Students have access to computer and Internet at home.	1.4%
Students can participate in extracurricular activities.	2.3%
Working parents can use childcare services when needed.	3.0%
Have the opportunity to learn computer skills.	3.2%
Able to attend vocational training.	3.5%
Living Conditions	8.3%
Have a television at home.	0.2%
Have air-conditioner at home.	1.0%
Have a camera in the family.	6.7%
Have a refrigerator at home.	0.4%
Can have a hot shower in cold weather.	0.6%
Can pay for spectacles if needed.	1.2%

Note: Data are weighted.

Table 2. Categories and Indicators of Social Exclusion in Hong Kong.

Categories and indicators	Do not have it
Respect and Acceptance by Others	4.0%
Are treated with respect by other people.	3.3%
Are accepted by others for who you are.	1.5%
Access to Transportation	6.3%
Can take transport to visit relatives and friends.	2.7%
Have access to convenient public transportation in the neighbourhood.	3.8%
Social Custom	9.3%
Can offer a monetary gift for a wedding.	3.4%
Can give lucky money to friends and relatives during Chinese New Year.	7.3%
Have at least one set of decent clothes.	1.6%
Social Support	17.0%
Have someone to look after you and help you with housework when you are sick.	7.8%
Have someone to turn to for money (up to HKD3000) in case of emergency.	9.2%
Have someone to give advice about an important decision in your life.	5.5%
Capability to Connect with Others	33.2%
Have basic English speaking and reading skills.	32.7%
Have a mobile phone.	3.6%
Participation in Leisure and Social Activities	17.1%
Have leisure and sports facilities in your neighbourhood.	8.8%
Have a public place to gather with neighbours and friends in your neighbourhood.	5.6%
Can go to a teahouse sometimes in leisure time.	3.5%
Have leisure activities and holidays.	4.4%

Note: Data are weighted.

because they were unaffordable were considered materially deprived. The five categories of deprivation were ‘accommodation, food, and clothing’, ‘medical care’, ‘social connections’, ‘training and education’, and ‘living conditions’. Each category was measured by several indicators. We considered individuals to be deprived in a certain category if they were without any of the indicators for that category. [Table 1](#) shows the percentages of individuals according to deprivation categories and indicators.² Of the five categories, medical care had the highest rate of deprivation.

The six categories of social exclusion were ‘respect and acceptance by others’, ‘access to transportation’, ‘social customs’, ‘social support’, ‘capacity to connect with others’, and ‘participation in leisure and social activities’. [Table 2](#) shows the percentages of individuals according to each social exclusion category and indicator. ‘Capability to connect with others’ was the primary form of social exclusion, although ‘social support’ and ‘participation in leisure and social activities’ were also commonly cited.

In addition to the deprivation and social exclusion indicators, we had various data about individuals and their households. Individual-level attributes included gender, age group (youth, adults, or older people [those aged 65 years or over]), marital status (unmarried, married, or divorced/widowed), immigration status (local or immigrant), education (primary or less, lower secondary, upper secondary, college, and university), and self-rated health (poor, normal, and good). Household-level characteristics included household age profile (older people only, older people and adults, or adults only), work status (working or unemployed), whether receiving comprehensive social security assistance (CSSA), housing type (public rental housing, Home Ownership Scheme [HOS], private, or other), and neighbourhood socioeconomic status (SES) (Miao & Wu, 2023). A neighbourhood with an SES score lower than 20 is considered a low-SES neighbourhood.³

3.2. The poisson-based poverty cut-off

Determining a poverty cut-off is a methodological challenge. Deciding on the number of measures to use can be arbitrary (Alkire & Foster, 2011a). We adopted the Poisson-based framework proposed by Babones et al. (2016) to address this issue.

The Poisson distribution is a discrete probability distribution expressing the probability that an event will happen at a fixed time, assuming the event occurs independently and randomly with a fixed frequency. If we regard the states of income poverty, deprivation, social exclusion, and comprehensive poverty as events, we can use the mean of these states as the mean in the Poisson distribution and thus determine their probability. The observed empirical frequency and the frequency modelled by the Poisson distribution may differ. When the former exceeds the latter, something beyond random chance must be driving the coincidence of poverty-related states (i.e. actual poverty). Thus, the poverty cut-off will be the point at which the empirical frequency exceeds the Poisson frequency (Babones et al., 2016). The Poisson framework enables us to set the poverty cut-off for all the states where the empirical frequency exceeds the Poisson frequency. Under this framework, the poverty status reflects an excess over the random incidence of various economic and social difficulties. People in poverty are those systematically experiencing multiple problems due to a lack of resources. With the poverty cut-off, we can identify the poor as defined by deprivation, social exclusion, and comprehensive poverty.

3.3. The AF method of MPI

Alkire and Foster (2011a, 2011b) proposed a methodology (often called the AF method) to calculate the MPI based on Sen's capability approach (Sen, 1999). The AF method is widely applied to analyse poverty from a multidimensional perspective. The United Nations Development Programme (UNDP) and the Oxford Poverty and Human Development Initiative (OPHI) both used it to construct the global MPI, which aims to measure progress against the Sustainable Development Goal (UNDP, & OPHI, 2022). We provide a brief summary of the AF method for the purposes of this article; a more detailed account can be found in Alkire and Foster (2011a, 2011b).

Individual identification and group aggregation are two preliminary steps in MPI computation. First, we used a dual cut-off approach to identify who is poor. For each state of poverty, a cut-off is employed to determine whether or not an individual can be categorized as belonging to that state. The sum of the weighted scores is the person's overall score.⁴ Then, we used a poverty cut-off (k) to determine whether the person is multidimensionally poor. If a person is identified as multidimensionally poor, their overall score should be equal to or higher than k .

In the aggregation step, we computed the poverty incidence (H) and poverty intensity (A) to construct MPI, which is the adjusted headcount ratio. MPI can be expressed in the following equation:

$$MPI = H \times A = \frac{q}{n} \times \frac{c(k)}{qd},$$

where q is the number of persons identified as multidimensionally poor, n is the total population, d is the number of poverty states, and $c(k)$ is the total number of states of

poverty experienced by multidimensionally poor people. H is the proportion of multidimensionally poor people, whereas A is the average proportion of states of poverty among the poor. Any decrease in H or A can reduce MPI. H and A are useful to policy-makers who wish to evaluate cases of multidimensional poverty.

MPI has two useful features for poverty analysis: subgroup decomposability and dimensional breakdown. Subgroup decomposability enables us to compare subgroups; if we divide the population into mutually exclusive groups, the overall MPI can be understood as a weighted average of each subgroup’s MPI. Thus, we can compare different subgroups’ MPI, H , and A . The dimensional breakdown indicates that we can break down the adjusted headcount ratio (MPI) into the censored headcount ratio (CHR) of each dimension, which is the percentage of the population that is multidimensionally poor and simultaneously suffering from that particular dimension of poverty. CHR also indicates the percentage contribution of each dimension to the overall MPI. This feature enables us to prioritize dimensions when considering policies to alleviate poverty. Details of the calculations can be found in the [Appendix](#).

4. Empirical findings

4.1. Poverty cut-offs and poverty rates

The first step of poverty analysis is choosing a cut-off based on poverty measurement. A rigorously reasoned, rather than arbitrary, poverty cut-off helps to compute a more accurate poverty rate (Babones et al., 2016). We used the Poisson-based framework to calculate the poverty cut-offs for deprivation, social exclusion, and the comprehensive measurement. [Table 3](#) reports the empirical frequencies and Poisson frequencies of different measures.

Deprivation is measured by five categories, and the mean of these categories was 0.506. The empirical frequency, derived from our data, and the Poisson frequency given the same mean, are shown in the left columns of [Table 3](#). The empirical distribution and Poisson distribution of the number of deprivation categories are shown in [Figure 2](#). The empirical frequency exceeds the Poisson frequency when the number of categories is

Table 3. Empirical Frequencies and Poisson Frequencies of Deprivation, Social Exclusion, and Comprehensive Poverty.

Number of deprived dimensions	Deprivation		Social Exclusion		Comprehensive Poverty	
	Empirical frequency	Poisson frequency	Empirical frequency	Poisson frequency	Empirical frequency	Poisson frequency
0	602	507	408	353	666	631
1	132	257	262	306	124	181
2	61	65	91	133	35	26
3	19	11	39	39	16	3
4	18	1	36	8	N. A.	N. A.
5	9	0	5	1	N. A.	N. A.
6	N. A.	N. A.	0	0	N. A.	N. A.
Total	841	841	841	841	841	841

Note: Data are weighted. The means of deprived dimensions are 0.506 in deprivation, 0.869 in social exclusion, and 0.287 in comprehensive poverty. The Poisson frequency of the three indicators in social exclusion was 38.586, which we rounded to 39.

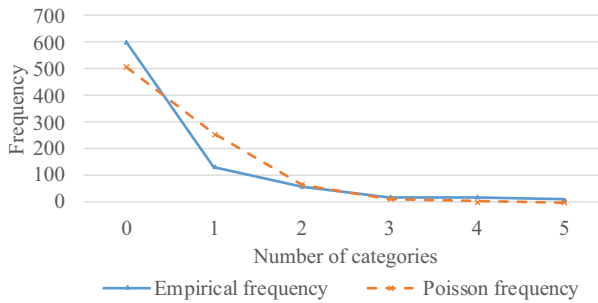


Figure 2. Empirical Distribution and Poisson Distribution of the Number of Deprivation Categories. *Note:* Data are weighted. The mean is 0.506.

three, four, and five.⁵ Thus, three is the poverty cut-off for deprivation; a household falls into poverty if it experiences three or more categories of deprivation.

Social exclusion is measured by six categories; the mean of the social exclusion categories was 0.869. The empirical frequency and Poisson frequency are shown in the middle columns of Table 3. Their distributions are shown in Figure 3. The empirical frequency exceeds the Poisson frequency when the number of categories exceeds is three, four, and five. No individual was deprived in all social exclusion categories. Using social exclusion as the poverty measurement, we find that the poverty threshold is three. A household with three or more categories of social exclusion falls into poverty.

The comprehensive poverty measurement has three dimensions, and the mean of these dimensions was 0.287. The right section of Table 3 shows the empirical frequency and Poisson frequency for comprehensive poverty. Figure 4 illustrates the empirical distribution and Poisson distribution of the comprehensive poverty dimensions. The empirical frequency exceeds the Poisson frequency when the number of dimensions equals two or three. Therefore, two is the poverty cut-off of the comprehensive poverty measurement. A household with two or more dimensions is identified as being comprehensively poor.

Having established the poverty cut-offs, we next compared poverty rates. Table 4 summarizes the various measures of poverty. The poverty rate calculated based on household income in our data was 13.8%, similar to the poverty rate published by the

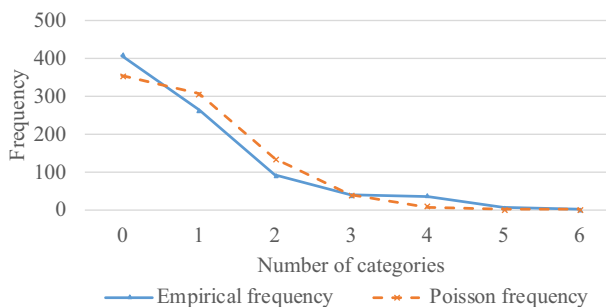


Figure 3. Empirical Distribution and Poisson Distribution of the Number of Social Exclusion Categories. *Note:* Data are weighted. The mean is 0.869.

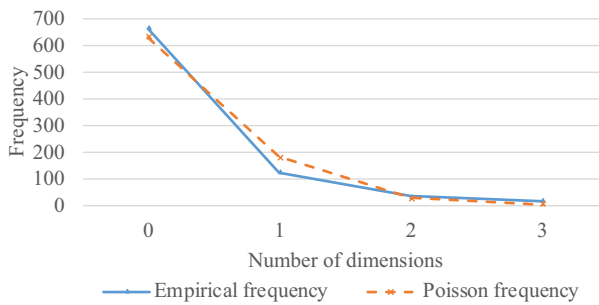


Figure 4. Empirical Distribution and Poisson Distribution of the Number of Comprehensive Poverty Dimensions. *Note:* Data are weighted. The mean is 0.287.

Table 4. Summary of Different Measures on Poverty.

Poverty operationalization	Threshold	Incidence	Poverty rate
Income	50% of median	116	13.8%
Deprivation	$k \geq 3$	45	5.4%
Social exclusion	$k \geq 3$	80	9.5%
Comprehensive poverty	$k \geq 2$	51	6.1%

Note: Data are weighted. The sample size is 841. Deprivation has five categories whereas social exclusion has six categories. Comprehensive poverty combines income, deprivation, and social exclusion, which means it has three dimensions.

government.⁶ Using deprivation as the poverty measurement, 45 respondents lived in poverty – a rate of 5.4%, much lower than that calculated by relative income. When social exclusion was the poverty measure, the poverty rate was 9.5% – higher than deprivation but still lower than income. When applying the comprehensive poverty measurement, the poverty rate was 6.1%. People in this category are truly disadvantaged. The comprehensive poverty measurement enables us to identify individuals in dire need.

4.2. Using the AF method to analyse comprehensive poverty

The AF method is well-suited to analysing poverty from a multidimensional perspective. Figures 5 and 6 show the results of using the AF method to analyse comprehensive poverty in the whole population and specific social groups.⁷ Full results can be found in Appendix Table A1. Figure 5 illustrates MPI, H (poverty incidence), and A (poverty intensity). In the total population, MPI was 0.047, H was 0.061, and A was 0.769, meaning that 6.1% of individuals were comprehensively poor and were deprived in 76.9% of dimensions. Given that comprehensive poverty has three dimensions, each comprehensively poor individual was deprived of 2.31 dimensions on average.

MPI, H , and A varied in different social groups. People living in households comprising older people only had the highest MPI (0.310), closely followed by CSSA recipients with an MPI of 0.295. Individuals in poor health and living in households whose members were unemployed also had high MPIs – 0.218 and 0.217, respectively. If we look at both H and A , individuals in households consisting of older people only had the highest incidence (42.1%), whereas the divorced/widowed had the highest

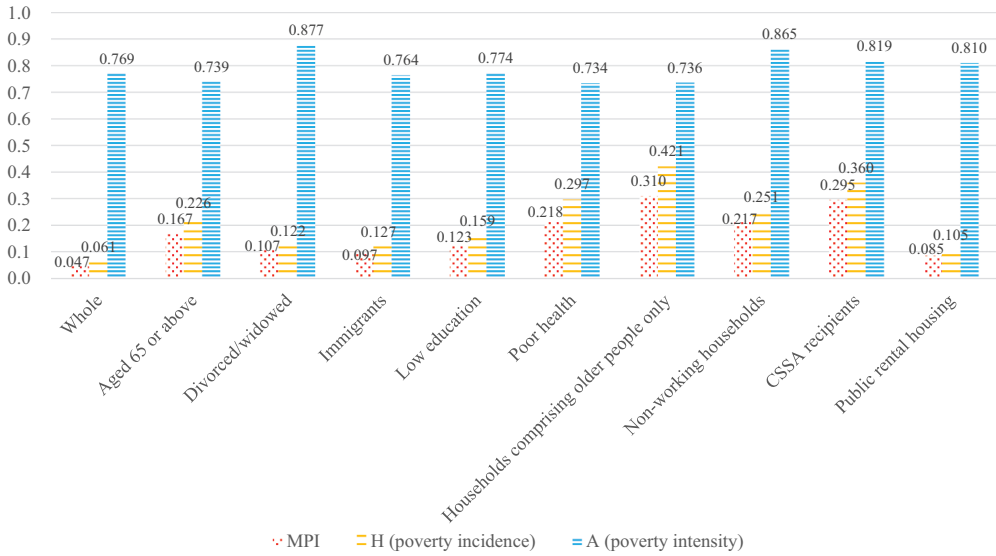


Figure 5. Comprehensive Poverty in Different Social Groups. Note: Data are weighted.

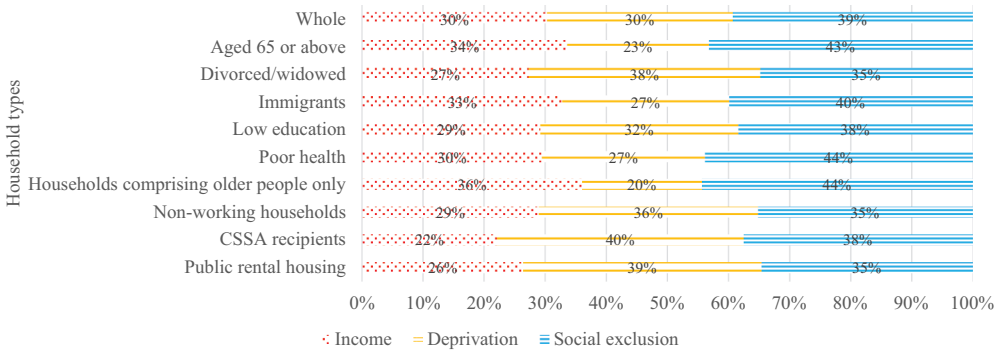


Figure 6. Percentage Contribution of Each Dimension to Comprehensive Poverty in Different Social Groups. Note: Data are weighted.

intensity (87.7%). In sum, using the comprehensive poverty measurement, we found that people in households comprising older people only were the most disadvantaged.

The comprehensive poverty measurement consists of three dimensions, each of which may contribute differently to overall poverty. Figure 6 shows the percentage contribution of each dimension to comprehensive poverty. In the whole population, social exclusion contributed the most (39%), whereas income and deprivation had similar contributions (30%). The three dimensions of comprehensive poverty also had a different distribution among those with higher MPIs. Social exclusion contributed the most to MPIs for older people, immigrants, individuals with little education, and individuals in poor health. Deprivation contributed the most for the divorced/widowed, individuals in households whose members were unemployed,

CSSA recipients, and individuals living in public rental housing. Indeed, income was not the most important factor for disadvantaged people.

The AF method and its analysis of comprehensive poverty cannot provide causal identification. The various categorizations of our sample were not mutually exclusive. Our findings above were based on descriptive analysis and provided a picture of the poverty situation of various social groups. The analysis encourages us to consider the complexity of poverty

4.3. Determinants of poverty

To reveal the determinants of poverty, we further used binary logit models to regress the incidence of poverty on individual, household, and neighbourhood characteristics. The coefficients are plotted in Figure 7, and the full results can be found in Appendix Table A2. Model 1 used income poverty as the dependent variable; Model 2 used deprivation poverty; and Model 3, social exclusion poverty. The comprehensive poverty measurement was the dependent variable in Model 4. All dependent variables were dummy variables, where 1 indicated being poor.

We found that sociodemographic characteristics had different associations with the incidence of poverty as defined by different concepts. All else being equal, youth were more likely to be income poor (coefficient = 1.065, $p < 0.05$) but did not significantly differ from adults in comprehensive poverty. After controlling for other factors, immigrants were more likely to be income poor (coefficient = 1.059, $p < 0.001$) and comprehensively poor (coefficient = 1.016, $p < 0.01$). There were no significant differences between

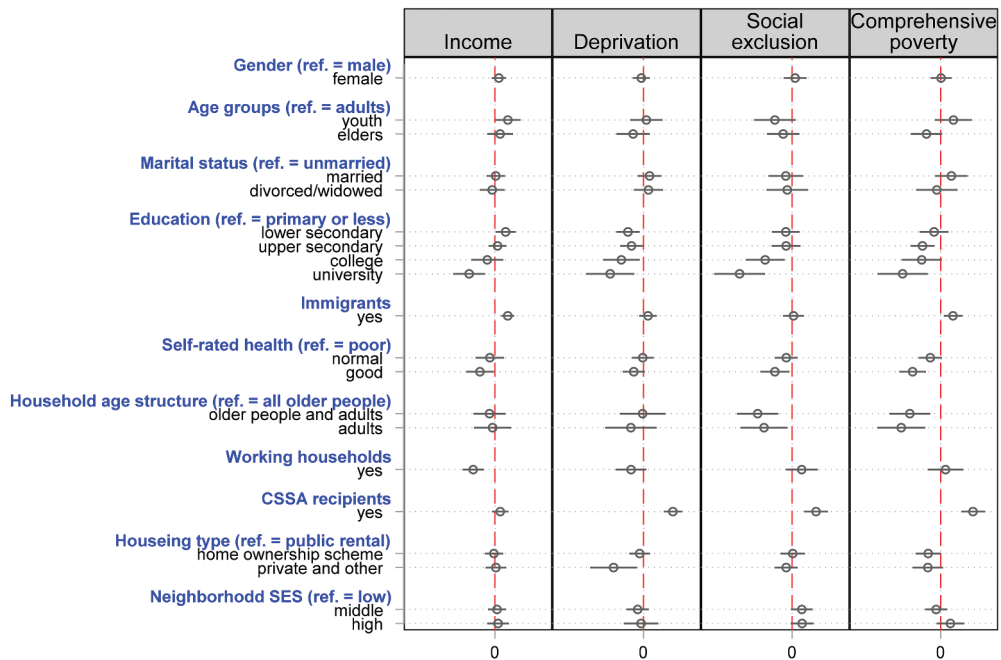


Figure 7. Logit Models of the Poverty Incidence.

immigrants and local people in terms of deprivation and social exclusion. People with a university degree were less likely to be poor on all dimensions than people with primary school education or less. Individuals in poor health were more likely to be poor on the dimensions of income and social exclusion and in the comprehensive measurement than those in good health. Older people in households comprising only older people were more likely to be comprehensively poor and poor on the dimension of social exclusion than others. All else being equal, individuals in households where members were employed are less likely to be income poor (coefficient = -1.780 , $p < 0.001$). Although CSSA recipients and non-CSSA recipients did not significantly differ in terms of income, the former were more likely to suffer from deprivation (coefficient = 2.424 , $p < 0.001$), social exclusion (coefficient = 1.970 , $p < 0.001$), and comprehensive poverty (coefficient = 2.661 , $p < 0.001$). People living in public rental housing did not differ from those living in other types of housing in terms of comprehensive poverty.

5. Discussion and conclusion

This article proposes a comprehensive poverty measurement that takes into account income, deprivation, and social exclusion and uses it to describe the poverty situation in Hong Kong. According to the Poisson-based framework we adopted, Hong Kong's poverty rate was approximately 6.1%. The MPI using the AF method was 0.047. The three dimensions of poverty did not contribute equally; social exclusion contributed the most. Multivariate regression analysis further showed that individuals who were immigrants, had less education, were in poor health, lived in households consisting of older people only, and received social assistance were more likely to be comprehensively poor. These people were truly disadvantaged in Hong Kong.

This study contributes to the literature on poverty measurement. The comprehensive poverty measurement provides a better means of determining multidimensional poverty. This new measurement is beneficial when analysing poverty in developed societies because the dimensions cover the full range of poverty (Marlier & Atkinson, 2010). We adopted the Poisson-based framework (Babones et al., 2016) to ensure our poverty cut-off was rigorously assessed and combined it with the AF method of MPI (Alkire & Foster, 2011a, 2011b). This approach avoids the arbitrary choice of a poverty threshold and allows for the scope of multidimensional poverty.

The poverty rate determined by the comprehensive poverty measurement should be interpreted with caution. We found that 6.1% of Hong Kong residents were comprehensively poor. Although this figure is similar to the 'core poverty rate' found by Saunders et al (2014a, 2014b), it is much lower than poverty rates calculated using the official poverty line. According to the Hong Kong Poverty Situation Report 2014, the poverty rate before policy intervention was 19.6%, and the poverty rate after considering the welfare cash and in-kind benefits was 9.6% (Government of the HKSAR, 2015). Our new measurement does not mean official poverty rates are overestimated; each measurement has its own priorities and thresholds, so discrepancies are inevitable. The comprehensive poverty measurement contains not only income but also deprivation and social exclusion. The multidimensional feature of poverty suggests that people with low incomes do not necessarily experience deprivation or social exclusion.

The decomposition feature of the AF method enables us to further evaluate the contribution of each dimension to overall poverty, which provides policy implications for poverty alleviation. Overall, social exclusion contributed the most to comprehensive poverty, whereas income and deprivation had similar contributions. Such findings suggest that anti-poverty policies should not only focus on increasing economic efficiency, but also on meeting life necessities and, more importantly, promoting social integration.

Our study draws attention to the fact that certain groups are more likely to suffer from certain dimensions of poverty. In Hong Kong, CSSA is the government's primary means of poverty alleviation (Government of the HKSAR, 2015). Our multivariate regression results showed that while CSSA recipients did not significantly differ from non-CSSA recipients in the income dimension of poverty, they were more likely to be poor in terms of deprivation, social exclusion, and comprehensive poverty. This suggests that the current CSSA does not adequately alleviate poverty; it only addresses income shortages. More support should be provided to CSSA recipients for medical care, actual living conditions, and social integration to lift them out of comprehensive poverty. Affluent societies like Hong Kong should be able to achieve better outcomes for this population.

Public rental housing is one of the most important welfare benefits provided for the needy in Hong Kong (Hu & Chou, 2015; Miao & Wu, 2023; Peng et al., 2019). We found that people in public rental housing did not differ significantly from those in other types of housing in terms of comprehensive poverty, confirming that public rental housing is an effective policy in alleviating poverty on various dimensions. Unfortunately, in 2015, nearly 200,000 people were waiting for accommodation in public rental housing (Census and Statistics Department, 2016), and the average wait time continues to grow.⁸ Our research means the government should spare no effort to provide sufficient public rental housing for people in need.

Hong Kong now faces the challenge of poverty, particularly among older people (Chou, 2018; K. C. K. Cheung & Chou, 2019; Lee & Chou, 2019; Miao et al., 2022). The growing number of older people living alone contributes significantly to Hong Kong's poverty (Government of the HKSAR, 2015). After controlling for other factors, we did not find a significant difference in income and deprivation between older people living alone and other types of households, but the former were more likely to suffer from social exclusion and comprehensive poverty. Hence, more attention should be paid to social integration and participation in social and civic activities, especially for older people living alone, to alleviate negative impact of poverty on the older people.

Some limitations of the study should be noted. First, although the Dynamics of Poverty in Hong Kong survey was citywide representative, and we weighted the survey data based on several demographic and socioeconomic factors (Wu, 2015), the sample size was not particularly large. Given sufficient resources, future studies could increase the sample size. Second, the current analysis was cross-sectional. If longitudinal data were available, future research could investigate poverty dynamics and transitions (Yip et al., 2020). Third, the three dimensions of comprehensive poverty measurement may not be mutually exclusive. The current analytical framework was unable to identify causal chains between them. Finally, indicators of deprivation and social exclusion are contextual and must be adjusted to particular locations and specific timeframes.

Notwithstanding these limitations, this study offers a new approach to analysing multidimensional poverty in the Hong Kong context. The comprehensive poverty

measurement includes income, deprivation, and social exclusion and, therefore, reveals full aspects of poverty that elude studies with a single focus. The research provides excellent input for policymakers wishing to alleviate poverty precisely and applies not only to Hong Kong but also to other affluent societies.

Notes

1. In 2014, the poverty lines (in HKD) for households were 3,500 for one person, 8,500 for two persons, 13,000 for three persons, 16,400 for four persons, 17,000 for five persons, and 18,800 for six persons or more.
2. Overall, the percentages of deprivation indicators due to affordability are lower than the values found by the Hong Kong Council of Social Service (HKCSS). This could be due to the fact that the survey data HKCSS collected in 2011 were only adjusted on the age variable by applying a weighting factor at the individual level. In addition, a much higher percentage of the respondents in that study lived in public housing (63% vs. 30% in the total population according to the Census data in 2011), which could potentially lead to a higher percentage of respondents with lower income deprived of those items (Wu, 2015).
3. The boundaries of neighbourhoods are defined by the District Council Constituency Areas in Hong Kong. The neighbourhood SES is determined by four factors (housing type, household income, education, and occupation) and is standardized as a score from 0 to 100 (Wu, 2016, see also Zeng and Wu (2022)). Detailed neighbourhood SES scores can be found in Wu (2022).
4. We assigned equal weights to different dimensions in the subsequent analysis.
5. We did not consider zero.
6. According to the 2015 Hong Kong Poverty Situation Report, the poverty rates before and after policy intervention were 19.7% and 14.3%, respectively.
7. These social groups reported here are usually considered to be disadvantaged and they are not mutually exclusive. For instance, people in households comprising older people only can be CSSA recipients simultaneously.
8. According to the Hong Kong Housing Authority, at the end of December 2022, the average waiting time for public rental housing was 5.5 years. <https://www.housingauthority.gov.hk/en/about-us/publications-and-statistics/prh-applications-average-waiting-time/index.html> (Accessed February 24 2023).

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References

- Alkire, S., & Foster, J. (2011a). Counting and multidimensional poverty measurement. *Journal of Public Economics*, 95(7), 476–487. <https://doi.org/10.1016/j.jpubeco.2010.11.006>
- Alkire, S., & Foster, J. (2011b). Understandings and misunderstandings of multidimensional poverty measurement. *Journal of Economic Inequality*, 9(2), 289–314. <https://doi.org/10.1007/s10888-011-9181-4>
- Alkire, S., Roche, J. M., Ballon, P., Foster, J., Santos, M. E., & Seth, S. (2015). *Multidimensional poverty measurement and analysis*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199689491.001.0001>
- Alkire, S., & Santos, M. E. (2013). A multidimensional approach: Poverty measurement & beyond. *Social Indicators Research*, 112(2), 239–257. <https://doi.org/10.1007/s11205-013-0257-3>
- Alkire, S., & Santos, M. E. (2014). Measuring acute poverty in the developing world: Robustness and scope of the Multidimensional Poverty Index. *World Development*, 59, 251–274. <https://doi.org/10.1016/j.worlddev.2014.01.026>
- Atkinson, A. B. (2019). *Measuring poverty around the world*. Princeton University Press.
- Babones, S., Simona Moussa, J., & Suter, C. (2016). A Poisson-based framework for setting poverty thresholds using indicator lists. *Social Indicators Research*, 126(2), 711–726. <https://doi.org/10.1007/s11205-015-0919-4>
- Bedük, S. (2020). Missing dimensions of poverty? Calibrating deprivation scales using perceived financial situation. *European Sociological Review*, 36(4), 562–579. <https://doi.org/10.1093/esr/jcaa004>

- Bellani, L. (2013). Multidimensional indices of deprivation: The introduction of reference groups weights. *Journal of Economic Inequality*, 11(4), 495–515. <https://doi.org/10.1007/s10888-012-9231-6>
- Brady, D. (2003). Rethinking the sociological measurement of poverty. *Social Forces*, 81(3), 715–751. <https://doi.org/10.1353/sof.2003.0025>
- Callan, T., Nolan, B., Walsh, J. R., Whelan, C. T., & Maître, B. (2008). *Tackling low income and deprivation: Developing effective policies*. ESRI. <https://doi.org/10.26504/rs1>
- Census and Statistics Department. (2016). *Thematic household survey report no. 60: Housing conditions of sub-divided units in Hong Kong*. https://www.censtatd.gov.hk/en/data/stat_report/product/C0000091/att/B11302602016XXXXB0100.pdf
- Census and Statistics Department. (2017). *2016 Population by-census thematic report: Household income distribution in Hong Kong*. https://www.bycensus2016.gov.hk/data/16BC_Income_Report.pdf
- Chan, S. M., & Wong, H. (2020). Impact of income, deprivation and social exclusion on subjective poverty: A structural equation model of multidimensional poverty in Hong Kong. *Social Indicators Research*, 152(3), 971–990. <https://doi.org/10.1007/s11205-020-02476-8>
- Chen, S., & Ravallion, M. (2007). Absolute poverty measures for the developing world, 1981–2004. *Proceedings of the National Academy of Sciences*, 104(43), 16757–16762. <https://doi.org/10.1073/pnas.0702930104>
- Cheung, K. C.-K., Chan, W.-S., & Chou, K.-L. (2019). Material deprivation and working poor in Hong Kong. *Social Indicators Research*, 145(1), 39–66. <https://doi.org/10.1007/s11205-019-02093-0>
- Cheung, K. C. K., & Chou, K.-L. (2019). Poverty, deprivation, and depressive symptoms among older adults in Hong Kong. *Aging & Mental Health*, 23(1), 22–29. <https://doi.org/10.1080/13607863.2017.1394438>
- Chou, K.-L. (2018). Social exclusion in old age: A validation study in Hong Kong. *Aging & Mental Health*, 22(8), 1072–1079. <https://doi.org/10.1080/13607863.2017.1330870>
- Chow, N. W. S. (1983). *The extent and nature of poverty in Hong Kong*. Department of Social Work, University of Hong Kong.
- Chow, N. W. S. (1986). Measuring poverty in an affluent city: The case of Hong Kong. *Asian Journal of Public Administration*, 8(2), 177–194. <https://doi.org/10.1080/02598272.1986.10800176>
- Chow, N. W. S. (2015). My experience researching poverty over the past 35 years. *China Review*, 15(2), 9–21. <https://www.jstor.org/stable/43710024>
- Couch, K. A., & Pirog, M. A. (2010). Poverty measurement in the U.S., Europe, and developing countries. *Journal of Policy Analysis and Management*, 29(2), 217–226. <https://doi.org/10.1002/pam.20488>
- Fong, F. M., & Wong, C. (2015). Setting the poverty line: Policy implications for squaring the welfare circle in Hong Kong. *China Review*, 15(2), 59–90. <http://www.jstor.org/stable/43710026>
- Gilbert, N. (2009). European measures of poverty and “social exclusion”: Material deprivation, consumption, and life satisfaction. *Journal of Policy Analysis and Management*, 28(4), 738–744. <https://doi.org/10.1002/pam.20471>
- Goodstadt, L. F. (2014). *Poverty in the midst of affluence: How Hong Kong mismanaged its prosperity*. (Revised ed.). Hong Kong University Press. <https://doi.org/10.5790/hongkong/9789888208210.001.0001>
- Government of the HKSAR. (2015). *Hong Kong poverty situation report 2014*. https://www.povertyrelief.gov.hk/pdf/poverty_report_2014_e.pdf
- Government of the HKSAR. (2021). *Hong Kong poverty situation report 2020*. https://www.censtatd.gov.hk/en/data/stat_report/product/B9XX0005/att/B9XX0005E2020AN20E0100.pdf
- Government of the HKSAR. (2022). *Task forces were established to tackle poverty and housing issues (in Chinese)*. https://www.news.gov.hk/chi/2022/07/20220706/20220706_110655_596.html
- The Hong Kong Council of Social Service. (2012). *Final report of research study on the deprivation and social exclusion in Hong Kong*. https://web.swk.cuhk.edu.hk/~hwong/pubfile/researchmono_graph/2012_HKCSS_Deprivation_Report.pdf
- Hu, F. Z. Y., & Chou, K.-L. (2015). The antipoverty effect of public rental housing in Hong Kong. *Habitat International*, 46, 206–213. <https://doi.org/10.1016/j.habitatint.2014.12.005>

- Lau, M., Gordon, D., Pantazis, C., Sutton, E., & Lai, L. (2015). Including the views of the public in a survey of poverty and social exclusion in Hong Kong: Findings from focus group research. *Social Indicators Research*, 124(2), 383–400. <https://doi.org/10.1007/s11205-014-0802-8>
- Lee, S., & Chou, K. (2019). Assessing the relative contribution of social exclusion, income-poverty, and financial strain on depressive symptoms among older people in Hong Kong. *Aging & Mental Health*, 23(11), 1487–1495. <https://doi.org/10.1080/13607863.2018.1506740>
- Levitas, R. (2006). The concept and measurement of social exclusion. In C. Pantazis, D. Gordon, & R. Levitas (Eds.), *Poverty and social exclusion in Britain* (pp. 123–160). The Policy Press.
- Levitas, R., Pantazis, C., Fahmy, E., Gordon, D., Lloyd, E., & Patsios, D. (2007). *The multidimensional analysis of social exclusion*. University of Bristol.
- Mack, J., & Lansley, S. (1985). *Poor Britain*. George Allen & Unwin.
- Madden, D. (2000). Relative or absolute poverty lines: A new approach. *Review of Income and Wealth*, 46(2), 181–199. <https://doi.org/10.1111/j.1475-4991.2000.tb00954.x>
- Marlier, E., & Atkinson, A. B. (2010). Indicators of poverty and social exclusion in a global context. *Journal of Policy Analysis and Management*, 29(2), 285–304. <https://doi.org/10.1002/pam.20492>
- Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370–396. <https://doi.org/10.1037/h0054346>
- Miao, J., & Wu, X. (2023). Social consequences of homeownership: Evidence from the Home Ownership Scheme in Hong Kong. *Social Forces*, 101(3), 1460–1484. <https://doi.org/10.1093/sf/soac011>
- Miao, J., Wu, X., & Zeng, D. (2022). Promoting ageing in place in Hong Kong: Neighbourhood social environment and depression among older adults. *Journal of Asian Public Policy*, 1–18. <https://doi.org/10.1080/17516234.2022.2040087>
- Niemietz, K. (2010). Measuring poverty: Context-specific but not relative. *Journal of Public Policy*, 30(3), 241–262. <https://doi.org/10.1017/S0143814X10000103>
- Nolan, B., & Whelan, C. T. (2010). Using non-monetary deprivation indicators to analyze poverty and social exclusion: Lessons from Europe? *Journal of Policy Analysis and Management*, 29(2), 305–325. <https://doi.org/10.1002/pam.20493>
- Peng, C., Fang, L., Wang, J. S.-H., Law, Y. W., Zhang, Y., & Yip, P. S. F. (2019). Determinants of poverty and their variation across the poverty spectrum: Evidence from Hong Kong, a high-income society with a high poverty level. *Social Indicators Research*, 144(1), 219–250. <https://doi.org/10.1007/s11205-018-2038-5>
- Ravallion, M. (2003). The debate on globalization, poverty and inequality: Why measurement matters. *International Affairs*, 79(4), 739–753. <https://doi.org/10.1111/1468-2346.00334>
- Ringen, S. (1988). Direct and indirect measures of poverty. *Journal of Social Policy*, 17(3), 351–365. <https://doi.org/10.1017/S0047279400016858>
- Saunders, P. (2015a). Social inclusion, exclusion, and well-being in Australia: Meaning and measurement. *Australian Journal of Social Issues*, 50(2), 139–157, 209–210. <https://doi.org/10.1002/j.1839-4655.2015.tb00341.x>
- Saunders, P. (2015b). Tackling poverty in Hong Kong: Measurement as a prelude to action. *Journal of Poverty & Social Justice*, 23(1), 43–56. <https://doi.org/10.1332/175982714X14177930764683>
- Saunders, P., & Adelman, L. (2006). Income poverty, deprivation and exclusion: A comparative study of Australia and Britain. *Journal of Social Policy*, 35(4), 559–584. <https://doi.org/10.1017/S0047279406000080>
- Saunders, P., Naidoo, Y., & Griffiths, M. (2008). Towards new indicators of disadvantage: Deprivation and social exclusion in Australia. *Australian Journal of Social Issues*, 43(2), 175–194. <https://doi.org/10.1002/j.1839-4655.2008.tb00097.x>
- Saunders, P., & Wong, H. (2019). Poverty and social disadvantage in Hong Kong. *Social Policy & Administration*, 53(6), 817–819. <https://doi.org/10.1111/spol.12537>
- Saunders, P., Wong, H., & Wong, W. P. (2014a). Deprivation and poverty in Hong Kong. *Social Policy & Administration*, 48(5), 556–575. <https://doi.org/10.1111/spol.12042>

- Saunders, P., Wong, H., & Wong, W. P. (2014b). Signposting disadvantage – Social exclusion in Hong Kong. *Journal of Asian Public Policy*, 7(1), 3–17. <https://doi.org/10.1080/17516234.2013.873338>
- Sen, A. (1976). Poverty: An ordinal approach to measurement. *Econometrica*, 44(2), 219–231. <https://doi.org/10.2307/1912718>
- Sen, A. (1999). *Development as freedom* (1st. ed.). Alfred Knopf.
- Townsend, P. (1979). *Poverty in the United Kingdom: A Survey of household resources and standards of living*. University of California Press.
- UNDP, & OPHI. (2022). *Global MPI 2022 – Unpacking deprivation bundles to reduce multidimensional poverty*. United Nations Development Programme (UNDP), and Oxford Poverty and Human Development Initiative (OPHI), University of Oxford. https://ophi.org.uk/wp-content/uploads/G-MPI_Report_2022_Unpacking.pdf
- Whelan, C. T., Nolan, B., & Maître, B. (2014). Multidimensional poverty measurement in Europe: An application of the adjusted headcount approach. *Journal of European Social Policy*, 24(2), 183–197. <https://doi.org/10.1177/0958928713517914>
- Wong, H. (2015). Is poverty eradication impossible? A critique on the misconceptions of the Hong Kong Government. *China Review*, 15(2), 147–169. <https://www.jstor.org/stable/43710029>
- Wong, H., & Chan, S. (2019). The impacts of housing factors on deprivation in a world city: The case of Hong Kong. *Social Policy & Administration*, 53(6), 872–888. <https://doi.org/10.1111/spol.12535>
- Wu, X. (2015). *Dynamics of poverty in Hong Kong: A supplementary survey*. The Hong Kong University of Science and Technology. https://www.pico.gov.hk/doc/sc/research_reportPDF/2013_A7_005_14A_Final_Report_Prof_Wu.pdf
- Wu, X. (2016). Hong Kong panel study of social dynamics (HKPSSD): Research designs and data overview. *Chinese Sociological Review*, 48(2), 162–184. <https://doi.org/10.1080/21620555.2015.1129495>
- Wu, X. (2022). *Hong Kong panel study of social dynamics: 2011 benchmark survey*. International Chinese Sociological Association. https://caser.shanghai.nyu.edu/publications/#dearflip-df_9067/4/
- Yip, P. S. F., Peng, C., Wong, H. K., & So, B. K. (2020). Social welfare transfers and poverty transitions in Hong Kong: Evidence from two-wave panel data. *Social Indicators Research*, 151(3), 841–864. <https://doi.org/10.1007/s11205-020-02351-6>
- Zeng, D., & Wu, X. (2022). Neighborhood collective efficacy in stressful events: The stress-buffering effect. *Social Science & Medicine*, 306, 115154. <https://doi.org/10.1016/j.socscimed.2022.115154>

Appendices

The censored headcount ratio (CHR) of each dimension is the percentage of the population that is multidimensionally poor and simultaneously suffering from that particular dimension of poverty; h_j denotes the CHR of dimension j , and w_j denotes the weight of dimension j . The MPI can be expressed as the weighted sum of the CHRs of each of the component dimensions:

$$MPI = \sum_{j=1}^d h_j w_j$$

Table A1. Comprehensive Poverty in Different Social Groups.

	Proportion (%)	M0	H (%)	A (%)	Percentage contribution (%)		
					Income	Deprivation	Social exclusion
Whole population	100	0.047	6.1	76.9	30.3	30.4	39.3
Gender							
Male	46.6	0.046	6.2	74.2	30	31.2	38.8
Female	53.4	0.048	6.0	80.0	30.5	29.7	39.7
Age groups							
Youth	14.5	0.017	2.1	81.0	16.2	41.9	41.9
Adults	70.6	0.027	3.4	79.4	27.9	38.1	34
Older people	14.9	0.167	22.6	73.9	33.6	23.2	43.2
Marital status							
Unmarried	32.2	0.016	2.1	76.2	17.8	39.4	42.8
Married	58.6	0.054	7.3	74.0	33.3	26.5	40.1
Divorced/widowed	9.2	0.107	12.2	87.7	27.3	37.9	34.8
Immigration status							
Locals	63.0	0.017	2.2	77.3	22	40.5	37.4
Immigrants	37.0	0.097	12.7	76.4	32.8	27.3	39.9
Education							
Primary or below	26.3	0.123	15.9	77.4	29.2	32.4	38.4
Lower secondary	19.0	0.049	6.3	77.8	42.9	15.5	41.5
Upper secondary	29.6	0.013	1.8	72.2	17.6	44.3	38.2
Sub-degree	9.4	0.01	1.4	71.4	0	50	50
University	15.7	0.001	0.2	50.0	0	50	50
Self-rated health							
Bad	7.0	0.218	29.7	73.4	29.5	26.7	43.9
Normal	32.9	0.068	8.8	77.3	31.3	28.8	39.9
Good	60.1	0.015	1.8	83.3	29.2	40.8	30
Household age structure							
Older people only	6.8	0.31	42.1	73.6	36	19.6	44.3
Older people and adults	23.0	0.039	5.3	73.6	17.4	42.4	40.2
Adults	70.2	0.023	2.8	82.1	30.1	37.6	32.3
Household working status							
Working	90.4	0.028	4.0	70.0	31.4	26	42.7
Non-working	9.6	0.217	25.1	86.5	29	35.9	35.2
CSSA							
Recipients	7.1	0.295	36.0	81.9	22.1	40.4	37.5
Non-recipients	92.9	0.028	3.8	73.7	37	22.2	40.8
Housing type							
Public rental	32.7	0.085	10.5	81.0	26.4	39	34.6
HOS	26.1	0.029	3.8	76.3	23	35.9	41.1
Private and others	41.2	0.027	4.0	67.5	45.3	4.7	50
Neighborhood SES							
Low	36.3	0.068	8.6	79.1	26.4	38.6	35.1
Middle	29.5	0.032	4.1	78.0	18.9	40.4	40.7
High	34.2	0.036	5.1	70.6	46.7	6.6	46.7

Note: Data are weighted.

The statistic of percentage contribution (PCB) helps assess the contribution of each dimension to poverty; \emptyset_j denotes the weighted contribution of dimension j to MPI. The PCB of dimension j to MPI is:

$$\emptyset_j = \frac{h_j}{MPI} w_j$$

Table A2. Logit Models of Poverty Incidence.

Variables	Income Model 1	Deprivation Model 2	Social exclusion Model 3	Comprehensive poverty Model 4
Female	0.323 (0.301)	-0.178 (0.361)	0.258 (0.481)	0.033 (0.443)
Age group (ref. = adults)				
Youth	1.065* (0.536)	0.236 (0.681)	-1.415 (0.871)	1.049 (0.777)
Older people	0.433 (0.543)	-0.849 (0.701)	-0.730 (0.682)	-1.166 (0.662)
Marital status (ref. = unmarried)				
Married	0.073 (0.386)	0.502 (0.503)	-0.514 (0.731)	0.880 (0.677)
Divorced/widowed	-0.220 (0.521)	0.409 (0.608)	-0.397 (0.867)	-0.316 (0.867)
Immigrants	1.059*** (0.274)	0.370 (0.371)	0.120 (0.437)	1.016** (0.392)
Education (ref. = primary or less)				
Lower secondary	0.885* (0.423)	-1.274** (0.491)	-0.514 (0.581)	-0.541 (0.608)
Upper secondary	0.219 (0.380)	-0.980* (0.481)	-0.487 (0.605)	-1.496** (0.507)
College	-0.628 (0.673)	-1.817* (0.772)	-2.211** (0.817)	-1.555 (0.839)
University	-2.114** (0.669)	-2.734** (1.017)	-4.316*** (1.068)	-3.128** (1.056)
Self-rated health (ref. = poor)				
Normal	-0.414 (0.600)	-0.058 (0.455)	-0.472 (0.478)	-0.852 (0.486)
Good	-1.228* (0.588)	-0.798 (0.467)	-1.411* (0.616)	-2.306*** (0.562)
Household age structure (ref. = Older people only)				
Older people and adults	-0.442 (0.672)	-0.071 (0.957)	-2.828** (0.868)	-2.536** (0.858)
Adults	-0.187 (0.777)	-1.035 (1.081)	-2.307* (0.990)	-3.239** (1.013)
Working households	-1.780*** (0.449)	-1.021 (0.641)	0.794 (0.675)	0.403 (0.751)
CSSA recipients	0.445 (0.350)	2.424*** (0.386)	1.970*** (0.495)	2.661*** (0.498)
Housing type (ref. = public rental)				
HOS	-0.080 (0.388)	-0.312 (0.438)	0.058 (0.511)	-1.021 (0.533)
Private and other	0.082 (0.436)	-2.456* (0.983)	-0.483 (0.482)	-1.053 (0.634)
Neighborhood SES (ref. = low)				
Low	0.177 (0.379)	-0.477 (0.469)	0.803 (0.458)	-0.371 (0.469)
High	0.260 (0.456)	-0.197 (0.726)	0.824 (0.482)	0.801 (0.584)
Constant	-0.633 (0.944)	-0.521 (0.957)	0.356 (1.117)	0.206 (1.200)
<i>N</i>	841	841	841	841

Note: Data are weighted. Robust standard errors are in parentheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.