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Inequality – It's Bad for Our Health

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Inequality: It's Bad for Our Health

Abstract

Health is a fundamental right of every human being and it is an essential resource that contributes to the prosperity of the individual and the development and growth of the society. The National Health Insurance Law, founded upon "principles of justice, equality, and mutual assistance," seeks to ensure equality in the availability, quality, and accessibility of health services. However, this does not guarantee actual equality in these aspects or in the health status of the entire populace. Along with many countries, Israel joined the World Health Organization's Ottawa Charter, which calls for "Health for All."

Health inequalities

Health inequity refers to inequities in health between population groups that are associated with social factors. These inequalities are preventable and thus unfair. In Israel, there are significant inequalities in life expectancy and infant mortality, as well as inequalities in physical and mental illness between segments of the population, based on socio-economic factors, ethnic origin, and more. The association is monotonic, where each decline in socio-economic position is associated with an increased risk of poor health. In recent decades, there is evidence of widening inequalities. The inequalities in socio-economic position, such as the individual's education and income, are the principal factors explaining the inequalities in health among Jews by country of origin, as well as the inequalities in health between Jews and Arabs.

A combination of factors at the individual, community, and societal levels, and at various stages over the life-course, contributes to the socio-economic inequalities in health. These inequalities are only partially attributed to the lack of material resources and problems of accessibility or infrastructure of health services, as the production function of health does not only depend on input from the health system, but also on many external factors.

The economic cost of health inequalities

Poor health has an economic cost: lower employment, growth, and productivity; a direct cost to the social welfare system; and harm to the wellbeing of the population. An initial calculation of the economic costs of the health inequalities in Israel is based on costs linked to early death (a social value), on the loss of work days, and on the costs of medical care. This calculation indicates a very significant economic burden—about 7% of GDP, a sum that is just slightly below the national expenditure on health. A similar calculation conducted in the European Union showed a similar percentage.

The barriers to narrowing inequalities in health

Despite the potential economic benefit associated with narrowing health inequalities, there are numerous barriers preventing tackling the problem: lack of awareness of the scope and consequences of health inequalities for the society and the economy; lack of an integrative perspective shared by the investing organization (for example, the HMO) and the organization that receives the return on the investment (for example, the social welfare system); a significant time gap between the dates of investment and return; lack of awareness regarding the prices; and the need for a substantial initial investment.

Ways to narrow inequalities in health

It is not possible to completely eliminate inequalities in health, but it is possible to narrow them. The awareness of socio-economic inequalities in health has increased in Israel during the past decade and, as a result, dedicated activity has been initiated to reduce them. However, these activities are still limited. Activities should be based on changing the factors underlying the inequalities. Therefore, comprehensive action is required that combines the forces of the health system with other support systems (social welfare, education, and more), as well as collaboration with the business sector and the third sector in order to achieve an ongoing and sustainable reduction in inequalities.

Tools incorporating assessment and evaluation should be developed to help translate the overall economic benefit to be derived from narrowing the inequalities as a result of investment in suitable interventions. Possible approaches include:

- Creating a mechanism to fund initiatives for narrowing inequalities in view of the associated benefits—for example, by using social impact bonds.
- Creating incubators for funding feasibility studies of initiatives aimed at narrowing the inequalities.
- Adopting *Health (disparities) in All Policies* by defining a mandatory standard for examining the repercussions of key decisions in the work of all government ministries on health and on the widening inequalities in health.
- Activity aimed at narrowing inequalities at the local level.
- Expanding the range of organizations and frameworks engaged in health promotion and disease prevention, including employers, community leaders, and religious leaders.
- Developing dedicated programs in the framework of National Service (*Sherut Leumi*).
- Removing the regulatory barriers to virtual medical services in order to reduce geographic inequalities in accessibility.

Conclusions

Spending on health is an investment that yields positive returns for the economy. Inequality in health has a price, just as there is a price to inequality in income. Improving the health of the weaker segments of the society will lead to an increase in the average level of health in the population, will bring additional groups into the work force, and increase economic growth.

- The investment in narrowing inequalities that produces the best results is investment that focuses on health promotion and disease prevention.
- Intervention should be targeted at the specific points over the lifecourse that will yield a high return on investment.
- In light of the high cost of health inequalities for the individual and the society, and the identified barriers for narrowing them, a clear government policy should be adopted that includes inter-ministerial and cross-sector activity to reduce the inequalities. The narrowing of health inequalities will help individuals to realize their potential and enable them to pursue full and productive lives; it will foster a sense of fairness and enhance the level of social solidarity; it will yield financial savings, stimulate economic growth, and strengthen the vitality of the society.

Introduction

Gabi Bin Nun

Most developed countries adopt today an approach that views health as a fundamental right of every human being and as an essential resource that contributes to the prosperity of the individual and to the economic development, growth, and stability of the society. In Israel, this view is expressed in the National Health Insurance Law, which is based on "principles of justice, equality, and mutual assistance." The law aims to ensure equity in the availability, quality, and accessibility of health services. But this is not enough to ensure equality in the health status of the entire populace. The problem of health inequalities is important in light of the changes in Israeli society and in light of the changes in the health system.

The national expenditure on health as a percentage of gross domestic product (GDP) is on the rise in all of the OECD countries due to their aging populations, technological advances that make treatment more costly, and a rising standard of living, together with patterns of consumer behavior that have also been adopted in the health sector.

The trend of higher national expenditure on health also applied to Israel in the past: During the 1960s, the health expenditure as a percentage of GDP stood at about 6%, while in 1995 (when the National Health Insurance Law was in acted) it was 7.7%. Up until 1995, both the level of national expenditure on health and it's rate of change in Israel were largely in line with the parallel figures in OECD countries.

However, data from the past decade indicates a change in the trend of national health spending in Israel. In most OECD countries, the trend of rising health expenditure as a percentage of GDP has continued, while health expenditure as a percent of GDP has leveled off in Israel, and the disparity in the level of health expenditure between Israel and the other member states of the OECD has grown. The percentage of national expenditure on health in Israel in 2011 was 7.7% (the same level as in 1995), compared to a median percentage in OECD countries of 9.4%.[1] The low level of national expenditure on health in Israel does not change even after accounting for the age distribution of the population, which is characterized by a relatively high percent of young individuals.

An additional difference in the trend of national expenditure on health in Israel is expressed in an analysis of the sources of funding the expenditure. While in most OECD countries public funding remains stable at about 75% of the national expenditure for health, in Israel there has been

* Many thanks to Sigal Sheffer-Benton, from the Israel National Institute for Health Policy Research, for her assistance in preparing this document.

1 The Central Bureau of Statistics, *National Expenditure on Health for 2011 and Estimate for 2012*, Jerusalem: Central Bureau of Statistics, July 2013; 2011, OECD Health File.

a decline in public funding of the health system from about 70% in 1995 to about 60% during the current decade.[1]

The trend of stability in health spending in Israel is thus surprising: It is exceptional in comparison to the trends in OECD countries and also in light of the fact that the main health indicators in Israel, such as life expectancy and infant mortality, have continued to improve. At the beginning of the 1970s, the life expectancy in Israel was 70.1 years for men and 73.4 for women. In 1995, the figures were 75.5 for men and 78.5 for women; and in 2011 – 80 for men and 83.6 for women. The rate of infant mortality at the beginning of the 1970s was 23.5 deaths per 1,000 live births, compared to about 6 deaths per 1,000 live births in 1995 and 3.5 in 2011. Recently (2012), the OECD published the Better Life index in which Israel was ranked a respectable fifth in the level of health services. Only Switzerland, New Zealand, Australia and Canada were ranked higher than Israel on the list.

We can conclude, therefore, that the Israeli health system is one of the most efficient of all of the health systems in OECD countries because the level of expenditure on health in Israel is relatively low, while the system's health accomplishments as expressed in life expectancy and infant mortality are among the best in the world.

Is that truly the case?

A more in-depth analysis suggests that we cannot make such a decisive conclusion about the efficiency of the Israeli health system, due to following reasons:

1. The health system is not the only factor affecting the health of the population. Therefore, attrition in the health system will not necessarily be immediately reflected in a decline in the population's state of health. The contribution of the health system to life expectancy and infant mortality is only partial. These indexes are influenced more by the population's standard of living and education than by the level of expenditure on health.
2. There is a time lag between the level of health spending and the system's achievements. The impact of the erosion of the health system infrastructure cannot be identified immediately, and it is liable to surface later due to the time lag between the expenditure and the outcome. This is similar to what has occurred in the education system – the decline in educational achievements in Israel was not reflected immediately after the budget cutback, but only after a number of years.
3. The indexes of life expectancy and infant mortality are not the end-all and be-all; as noted, the health system has only a partial impact on health outcomes (life expectancy and infant mortality). Nonetheless, the system has a significant effect on the quality of life of individuals in the population who have reached old age and require its services. Indexes of quality of life are not as popular for assessment and citation as health outcomes.

However, in addition to these arguments, a central assertion against the assumption of the Israeli health system's efficiency focuses on the fact that data on health outcomes at the national level

represent average values that conceal substantial inequalities in health between different segments of the population – for example, between poor and wealthy, Jews and Arabs, central Israel and the periphery. Moreover, there is evidence indicating that these inequalities have even widened in recent decades.

Of course, among individuals in the population there are health inequalities that cannot be prevented – for example, the differences between young people and elderly people. However, inequity in health entails preventable inequalities in the health status between individuals or population groups. For this reason, these inequalities are *unfair*.

Inequalities in health exact a price at both the individual and societal levels. In light of the strong associations between social deprivation and poverty, on the one hand, and health, on the other hand, and in light of the mutual impact between the inequalities in socio-economic position and health – ongoing inequalities in socio-economic position and health are liable to create a vicious cycle that prevent weak sections of the society from climbing the social ladder.

Indeed, this is the situation in Israel in the second decade of the 21st century. Israeli society is characterized by significant disparities in income: In 2011, the poverty rate reached nearly 20%, twice the average level in OECD countries. The Gini index (after transfer payments and taxes) placed Israel very high among OECD countries in the level of income inequity. Only Chile, Mexico, Turkey, and the U.S. have higher levels. Moreover, the income inequalities have grown. For example, during the years 1999–2011, the Gini index rose by 5.6%, real income (which rose by about 20% on average during 2002–2012) increased by only 12% in the lowest income quintile, and the percentage of "chronic poor" among the poor rose.[2] Significant inequalities also characterize the achievements of pupils in the Israeli school system – for example, between poor and rich, between Jews and Arabs, and between pupils whose parents have higher education and those whose parents lack such education. In the international comparison of PISA tests conducted by the OECD, the inequalities in reading achievements of pupils in Israel are among the largest in the world, a third higher than the OECD average. Of 60 countries that participated in the tests, only Qatar, Bulgaria, and Trinidad showed wider inequalities.[3] These trends will be the fuel for creating social inequalities in health in the future.

Narrowing health inequalities will help individuals realize their potential and pursue full and productive lives, will enhance the sense of fairness, raise the level of social solidarity, and reinforce the society's strength. However, beyond this there is the ethical aspect that Israel has recognized and thus, together with many countries, joined the Ottawa Charter of the World Health

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2 Miri Endweld, Netanela Barkali, Daniel Gottlieb, and Alexander Fruman, *Poverty and Social Gaps: Annual Report*, Jerusalem: Research and Planning Administration, National Insurance Institute, 2011 (Hebrew).

3 The National Authority for Measurement and Evaluation in Education, PISA 2009 Report: Literacy of 15-Year-Olds in Reading, Mathematics and Science, *International Studies*, 2010 (Hebrew). http://cms.education.gov.il/EducationCMS/Units/Rama/MivchanimBenLeumiyim/MivchanimBein_Pisa_2009.htm

Organization in 1978, which called for "Health for All." In 2008, the organization published a report on the social determinants of health and declared that *inequities in health kill*.[4]

Inequalities in health do not only exist between those at the two ends of the socio-economic scale (the poorest and the richest) or between ethnic minorities and the majority group in the population, and do not only derive from a lack of material resources or from problems of accessibility or infrastructure of health services. The picture is much more complex, and the challenge of reducing the inequalities is particularly complicated.

The session on health at the 2013 Eli Hurvitz Conference on Economy and Society will try to clarify these issues and will comprehensively address the reduction of health inequalities in Israel. The first part of the document below will present the factual basis for the existence of health inequalities among sections in the population and the main trends in the development of these inequalities over time. This section will also explain the principal causes leading to the inequalities, present principles of policy for narrowing inequalities and review examples of interventions aimed at reducing them. The second part will attempt to assess the economic cost of the widening inequalities at the national level – the direct economic cost, as well as the cost resulting from the loss of GDP growth and decline in productivity. Finally, in the third section, we will present recommendations for change and for narrowing the inequalities, including the creation of a mechanism ("clearing house") to bridge between those bearing the burden of costs and those benefiting from the yields at the national level.

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[4] Commission on Social Determinants of Health, Final Report, *Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health***,** Geneva: World Health Organization, 2008.

Inequalities in Health in Israel: The Current Situation, Explanations, and Ways to Reduce Inequalities

Varda Soskolne, Nihaya Daoud, Emma Averbuch, Asher Elhayany

Introduction

Despite an increase in life expectancy and improvement in health indexes in all groups of the population in Israel, there is consistent evidence of preventable health inequalities that stem from social factors. There are many groups in the population that over the years suffer from poorer states of physical and mental health relative to other groups. The question today is how to broaden our understanding of the determinants of these inequalities, and what can be done to reduce them. This chapter in the document will present the scientific knowledge on the extent of socio-economic disparities in health in Israel and the changes that have occurred over time, and will explain the range of factors that explain the disparities. The chapter will also present examples of intervention and propose principles for policy to narrow disparities.

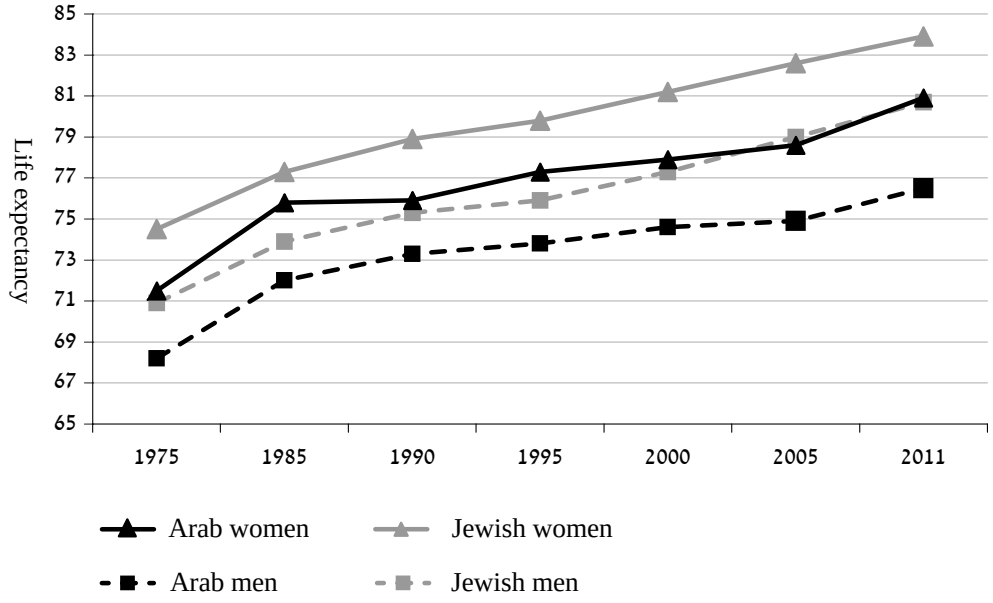
Evidence of inequalities in health

The inequalities in health are evident in the main indexes that are customarily used to assess the state of health in a population – that is, life expectancy, general mortality rates, infant mortality rates, and disease. In this document, we will primarily focus on inequalities based on socio-economic status (according to education and income), but also by population sector.

Scope of inequalities and changes over time

Life expectancy. In 2011, the life expectancy at birth in Israel was 80 years among men and 83.6 among women. However, while life expectancy rose in all of the population groups, there are inequalities between Jews and Arabs and the scope of these inequalities has not changed. Among men, it has even increased: In 1995, the life expectancy of Jewish men was 2.7 years higher than that of Arab men, and the discrepancy grew to 4.2 years in 2011. The discrepancy between Jewish women and Arab women was 3 years in both 1975 and in 2011.

Diagram 1 **Life expectancy by gender and population group, 1975-2011**



Source: Emma Averbuch, *Coping with Health Inequalities*, Jerusalem: The Department of Health Economics and Insurance, Ministry of Health, 2012, p. 8. (Hebrew).

Mortality rates: The salient findings come from mortality studies conducted in Israel among the Jewish population in two waves – in 1992 and in 2004.[5] Diagram 2 shows the mortality risk ratio between those of various education levels and those with the highest level of education (16 or more years).

We can see that the inequalities are not only between the people at the extreme levels of education. Rather, there is a *social gradient in health*: The state of health declines as we descend the socio-economic ladder. Thus, among men with 13 to 15 years of education, the mortality risk is 1.2 times higher than those with 16 or more years of education; among those with 9 to 12 years of schooling, it is 1.6 times higher; and among those with 0 to 8 years of education, it is 2.1 times higher. Further study revealed a disturbing fact: Not only did the inequalities in mortality rates persist over the years, they even grew wider. Between the two waves of research, the risk ratio between those with lowest levels of education (0 to 8 years of study) and those with higher education levels (13 years and above) rose from 1.7 to 2.3 among men and from 1.4 to 2.2 among women.[6]

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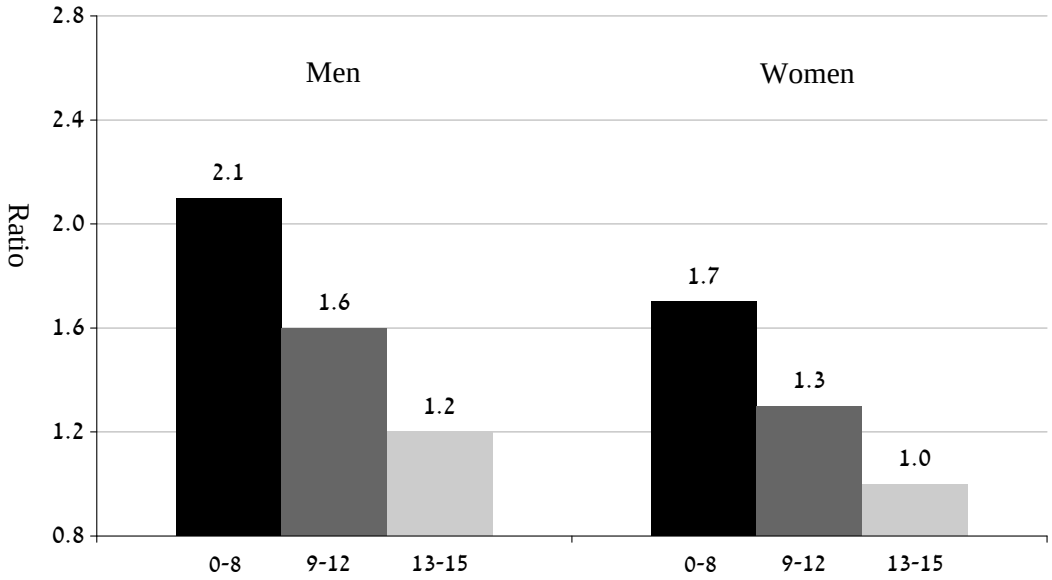
5 D. H. Jaffe, Y. D. Neumark, Z. Eisenbach, and O. Manor, "Educational Inequalities in Mortality among Israeli Jews: Changes Over Time in a Dynamic Population," *Health and Place* 14(2) (2008): 287–298.

6 Ibid.

Diagram 2 **Risk ratio of mortality in comparison to education of 16+ years (adjusted for age and origin)**

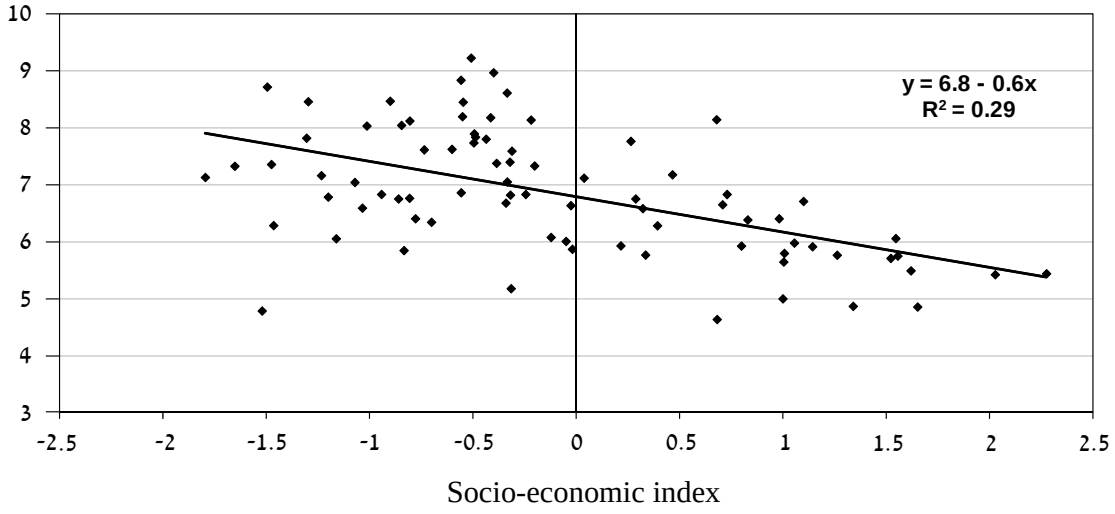


Source: O. Manor, Z. Eisenbach, E. Peritz, and Y. Friedlander, "Mortality Differentials among Israeli Men," *American Journal of Public Health* 89 (1999): 1807–1813; O. Manor, Z. Eisenbach, A. Israeli, and Y. Friedlander, "Mortality Differentials among Israeli Women: The Israel Longitudinal Mortality Study," *Social Sciences & Medicine* 51 (2000): 1175–1188.

In the two waves of research, differences were also found according to country of origin – mortality rates among emigrants from North Africa were higher in comparison to emigrants from Europe-America. However, the differences disappeared after socio-economic status was taken into account.

An examination of mortality rates according to a socio-economic index of the community also reveals a clear social gradient – a decline on the socio-economic index entails an increase in mortality rates (Diagram 3).

Diagram 3 **Adjusted* mortality rates by socio-economic index (communities with 10,000 or more residents), 1998-2002**



* The rates are adjusted by age for 1,000 residents (the Y axis)

Source: Emma Averbuch, Nir Kaidar, and Tuvia Horev, *Coping with Health Inequalities*, Jerusalem: The Department of Health Economics and Insurance, Ministry of Health, 2010, p. 36.

Infant mortality. In this index too, it was found that the lower the education level (of the mother), the higher the infant mortality rate per 1,000 births; and the disparity is widening. In 2000–2002, the risk ratio between mothers with low levels of education and mothers with high levels of education was 4.3. In the mid-1990s, it was "only" 3.5.[7]

Physical illness. The social gradient is also found in indexes of morbidity. For example, according to a self-assessment of health, the percentage of those reporting poor health was 27% among those with monthly income of less than NIS 2,000, 22% among those with monthly income of NIS 2,001-4,000 and 11% among those with monthly income of NIS 4,001 and more.[8] Data from two separate studies on limiting longstanding illness among the Jewish population and among the Arab population conducted in the mid-2000s show a social gradient (Table 1). In the Arab population, the risk of limiting longstanding illness among those with low levels of education was 2.5 times higher than among those with high levels of education. In the Jewish population, this ratio stood at 1.82.

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7 E. Averbuch, N. Kaidar, and T. Horev, *Coping with Health Inequalities*, Jerusalem: The Department of Health Economics and Insurance, Ministry of Health, 2010, p. 44. (Hebrew).

8 Ibid., p. 60.

Table 1 **Risk ratio (OR) for limiting longstanding illness in the Jewish population and in the Arab population, adjusted for age**

Education	Arabs (total: 902)		Jews (total: 1,328)	
		OR		OR
Low	(0-8 years)	2.50	(0-8 years)	1.82
Medium	(9-11 years)	1.03	(9-12 years)	1.66
Medium-High	(12 years)	0.99	(13-15 years)	0.99
High	(13+ years)	1.00	(16+ years)	1.00
		p<0.001		p<0.01

Source: N. Daoud, V. Soskolne, and O. Manor, "Examining Cultural, Psychosocial, Community and Behavioral Factors in Relationship to Socio-economic Inequalities in Limiting Longstanding Illness Among the Arab Minority in Israel," *Journal of Epidemiology and Community Health* 63 (2009): 351–358; V. Soskolne and O. Manor, "Health Inequalities in Israel: Explanatory Factors of Socio-economic Inequalities in Self-rated Health and Limiting Longstanding Illness," *Health & Place* 16 (2010): 242–251.

Similar data was also found in regard to specific illnesses, such as heart disease and diabetes. For example, among people 65 and older, about 30% of those with 0 to 8 years of education reported having diabetes, compared to 17% of those with 13 to15 years of education.[9]

Mental illness. The rates of mild mental disorders (depression and anxiety) were two times higher among native-born Israelis with a high level of education (16+ years) than among native-born Israelis with low levels of education. No such disparity was found among those who were born abroad.[10] However, the rates of severe mental illness were 4.4 times higher among those with low income, compared to those with high income.[11]

Implications of the socio-economic inequalities in health

The social gradient in health inequalities illustrates that even those who are slightly above the poverty line are at risk of declining health. In addition, health expenditures (including tax

[9] Ibid., p.53.

[10] O. Nakash, I. Levav, and G. Gilad, "Common Mental Disorders in Immigrant and Second-generation Respondents: Results from the Israel Based World Mental Health Survey," *International Journal of Social Psychiatry*, 7 May 2012 (online)

[11] C. Hudson and V. Soskolne, "Disparities in the Geography of Serious Mental Illness in Israel," *Health & Place* 18 (2012): 898–910.

payments) of those above the poverty line can push them below the line. This is evident in the rate of those who refrain from taking medication due to its cost: 37% among those with monthly income of up to NIS 4,000, 23.2% at the income level of NIS 4,000-8,000 and 5.6% among those with income above NIS 8,000.[12] Deterioration in health clearly has a negative impact on economic productivity, and health ceases to be a resource. A follow-up study conducted for about five years found, for example, that, as expected, the chance of leaving the workforce was higher among those of ages 50–69 whose physical health has deteriorated. And among this age group, the lower the education level, the higher the chance of leaving the workforce.[13]

The socio-economic inequalities in health and ethnic inequalities

Many studies show that despite the fact that a sense of discrimination and exposure to racism are linked to ethnic inequalities in health, socio-economic inequalities (such as the individual's education and income) are the factors that account for ethnic inequalities in health.[14] In Israel, the inequalities in life expectancy, infant mortality, physical illness and depression to the detriment of the Arab population have not narrowed during the past three decades, and a substantial part of these inequalities derives from socio-economic inequality between the populations or from related factors , such as the use of health services.[15]

Explanations for socio-economic inequalities in health and their significance for planning interventions

Here are the main explanations offered for the socio-economic inequalities in health:

1. A lack of material resources: Recent studies show that material deficiency (lack of income) is only a partially contributing factor. Some studies indicate that the level of income relative to other people is more important.[16]
2. The psycho-social environment: This includes factors pertaining to the individual (health literacy, exposure to stressful situations, personal resources, employment conditions, discrimination, income relative to others, etc.) and factors pertaining to the community (a low sense of social involvement, low social capital and problems in the neighborhood).[17]

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[12] Averbuch, Kaidar, and Horev (above, n. 7), p. 102.

[13] A. Tur-Sinai and L. Ahdut, personal source.

[14] J. Y. Nazroo, "The Structuring of Ethnic Inequalities in Health: Economic Position, Racial Discrimination, and Racism," *American Journal of Public Health* 93 (2003): 277–284.

[15] N. Khattab and S. Kagya, *Health Inequality of Arabs and Jews in Israel*, Jerusalem: Israel Democracy Institute, 2011. (Hebrew).

[16] R. G. Wilkinson and K. E. Pickett, "Income Inequality and Social Dysfunction," *Annual Review of Sociology* 35 (4) (2009): 93–511.

[17] M. G. Marmot and R.G. Wilkinson, "Psychosocial and Material Pathways in the Relation Between Income and Health: A Response to Lynch et al.," *British Medical Journal* 322 (7296) (2001): 1233–1236.

3. Life course factors: There is considerable evidence that the socio-economic situation during early childhood (and even as a fetus) is linked to morbidity and mortality in adulthood, in addition to deprivation that is experienced during the course of life.[18]
4. "Upstream" factors, at the macro level, also have an effect on the creation of inequalities. The reference here is to structural factors at the community level (for example – living conditions, infrastructure, supply of services in the community/neighborhood), as well as the economic and social resources (opportunities for acquiring education, employment), the political structure and the social policies – which all combine to shape the socio-economic status of the individual.[19]

There is consensus today among researchers that the factors cited above work in conjunction and affect health directly or via health behaviors (of lifestyle, such as smoking, nutrition and physical activity), exposure to pathogenic factors and use of health services. Health behaviors are the factors at the individual level that are most immediate in their impact on health, and are also "downstream" factors in affecting health. Here too, inequality is clearly evident. For example, smoking rates in Israel increase as the education level declines. Thus, the percentage of smokers among those with a low level of education is double the percentage of smokers among the academically educated, and the percentage of those engaging in physical activity decreases with the decline in income;[20] socio-economic inequalities in lifestyle are expressed in obesity, which constitutes a risk factor for illness; the lower the socio-economic status of the area of residence, the higher the percentage of overweight people. For example, the percentage of people suffering from obesity in low socio-economic communities is 16%, compared to 10.8% in high socio-economic communities.[21] It is important to emphasize that the inequalities in weight begin already in childhood, even at age two.[22] This underscores the importance of investing in intervention during early childhood.

Nonetheless, it is important to remember that in addition to the risk factors that explain the inequalities in health, certain characteristics of people and communities were found to be factors that protect health (salutogenic), such as the individual's resilience, social involvement, solidarity and social support. All of these contribute to the good health of individuals and communities at a

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[18] N. E. Adler and J. Stewart, "Health Disparities Across the Lifespan: Meaning, Methods, and Mechanisms," *Annals of the New York Academy of Sciences* 1186 (2010): 5–23.

[19] P. Braveman, S. Egerter, and D. R. Williams, "The Social Determinants of Health: Coming of Age," *Annual Reviews of Public Health* 32 (2011): 381–398.

[20] *Society in Israel*, Jerusalem: Central Bureau of Statistics, 2012, Chapter 5: Health. (Hebrew).

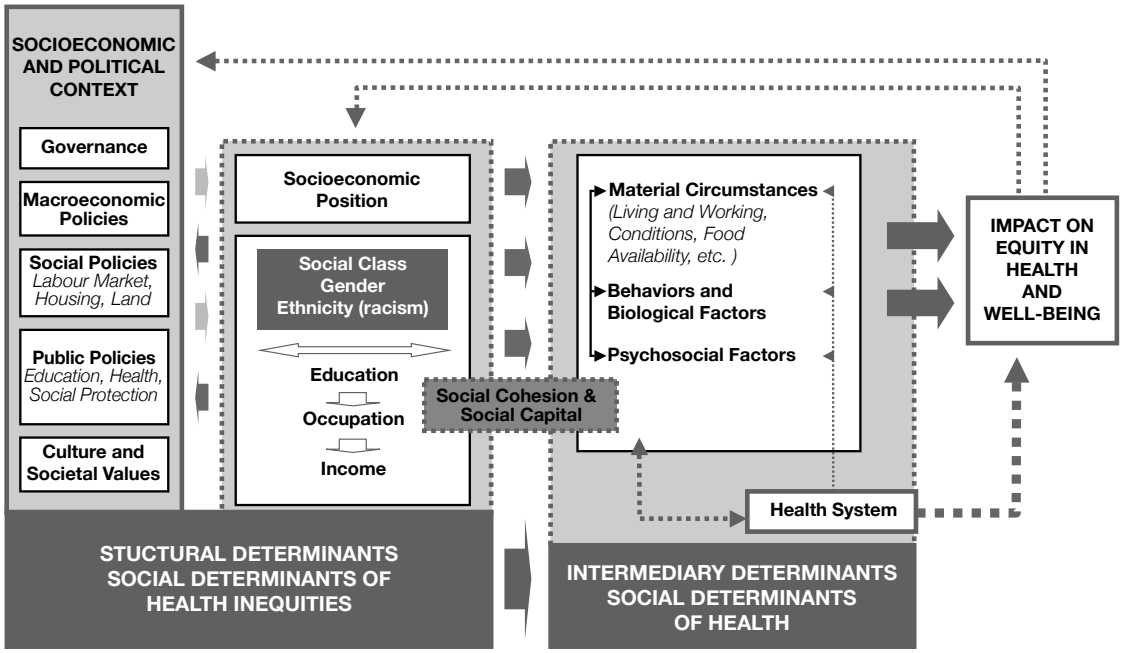
[21] Ibid.

[22] L. M. Rossen and K. C. Schoendorf, "Measuring Health Disparities: Trends in Racial-ethnic and Socioeconomic Disparities in Obesity Among 2 to 18 year-old Youth in the United States, 2001-2010," *Annals of Epidemiology* 22 (10) (2012): 698–704.

low socio-economic status.[23] It is important to strengthen these protective factors in addition to reducing risk factors when designing the foci in plans to reduce health inequalities.

In summary, inequalities in health are caused by a combination of factors. Therefore, solutions based solely on boosting income, changing lifestyles or improving the provision of health services are not enough. Interventions aimed at reducing the inequalities should focus on a combination of factors, at various levels (see below "interventions"). This understanding is what led the World Health Organization to draft their model (Diagram 4) as a basis for intervention planning.

Diagram 4 **The impact of social factors on inequity in health: conceptual framework**



Source: O. Solar and A. Irwin, *A Conceptual Framework for Action on the Social Determinants of Health*, Social Determinants of Health Discussion Paper 2 (Policy and Practice), Geneva: World Health Organization, 2010, www.who.int/social_determinants/corner/SDHDP2.pdf

[23] E. Chen, "Protective Factors for Health Among Low-socioeconomic-status Individuals," *Current Directions in Psychological Science* 21 (3) (2012): 189–193.

Intervention to reduce health inequalities

In a World Health Organization document,[24] four principles were proposed for reducing inequalities in health:

1. Tackling the inequalities in the socialdistribution power, status, income and wealth.
2. Reducing exposure to health risk factors that plague those of low social standing.
3. Follow-up and monitoring of exposure to conditions detrimental to health among those of low social standing.
4. Developing interventions via the health sector in order to reduce the impact on morbidity and prevent additional deterioration in the weak strata of the population.

These principles emphasize that actions aimed at reducing inequalities in health cannot be implemented solely by the health system. Rather, they require a government commitment and multi-system activity, including inter-ministerial and cross-sector collaboration.
When setting goals and selecting ways to achieve them, it is customary to distinguish between three main approaches to reducing inequalities:

A. **"Upstream" intervention at the macro level**. Places emphasis on addressing the socio-economic factors that contribute to the creation of inequalities. For example, narrowing inequalities in education, employment and income. This activity is not the role of the health system; it is the responsibility of all of the social systems and characterizes the Scandinavian countries, which focus their activity for reducing inequalities on investing in the social welfare system, in revising the system of taxation, and so on.
B. **"Midstream" intervention**. Is conducted via the health system to enhance the accessibility of services or to strengthen weak communities.
C. **"Downstream" intervention**. Its objective is to address factors at the individual level. For example: health promotion programs aimed at changing health behavior.

Examples in the world of "upstream" policies

Sweden. Reducing segregation in housing and in social isolation, and increasing participation in physical activity; transferring resources to needy schools; lowering unemployment among immigrants.

Canada. One of the first countries to address socio-economic factors in promoting health in the population. The first document emphasizing these factors was presented by the minister of health

[24] World Health Organization, *Closing the Health Equity Gap, Policy Options and Opportunities for Action*, Geneva: World Health Organization, 2013.

(in 1974), Marc Lalonde, who argued that the promotion of health in the population depends not only on the health system, but also on other social systems. Starting in the 1990s, the policy included activity related to all the diverse socio-economic factors that affect health, and in 1998 it was decided to focus on reducing inequalities in income, social support, education, employment, working conditions, the growth and development of children, and health services.

England. In 1997, the Blair government announced a national program to improve health services and the population's state of health, including reducing inequalities in the field of health. The program included, for example, multidisciplinary strategies such as Health Action Zones and the establishment of centers for medical and social treatment in early childhood (Sure Start Centers). A study evaluating the situation until 2010 showed a significant general improvement in health indexes ; but the goals of reducing health inequalities (life expectancy, smoking, etc.) were not achieved, with the exception of some reduction in infant mortality, which appeared only toward the end of the Labour government's term of office– a decrease of 25% in the risk ratio between those of low social standing and the overall population.[25] Perhaps a longer period of time is required for reducing health inequalities, compared to the time required for improving health indexes in general.

Examples from Israel: The Ministry of Health and HMOs

The Ministry of Health defined the reduction of inequalities in health as one of the central strategic goals in its work plan for the coming years. In light of its limited control in influencing the factors at the "upstream" level, the ministry focused its main efforts on addressing inequalities at the level of the health system and offered incentives to the health organizations to conduct intervention on the individual level. The interventions by the Ministry of Health and HMOs to reduce inequalities are aimed at improving the state of health of the entire social gradient, as well as defined weak populations.

Levers of change via inter-ministerial and cross-sector collaboration by the Ministry of Health

The activity was directly mainly at two target populations – residents of outlying areas ("the geographic periphery") and people of low socio-economic status ("the social periphery"). It was also decided to enhance the service provided to populations characterized by cultural and linguistic diversity.

Below are the operative goals the Ministry of Health defined for itself in the framework of reducing inequality, as part of the ministry's objectives for the years 2011–2014. Examples of activities the ministry conducted in pursuit of these goals are also provided.

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[25] P. Vizard and P. Obolenskaya, *Labour's Record on Health (1997–2010)*, London: The Center for Analysis on Social Exclusion, London School of Economics and Political Science, 2013.

1. **Reducing the inequalities in economic accessibility to health services**. Expanding the system of discounts and exemptions for the weak groups. For example: canceling the fee for well-baby clinics; lowering the co-payment for generic medication; dental treatment for children up to the age of 12 as part of the health system's "basket" of services; reducing co-payment for elderly Holocaust survivors.
2. **Reducing the impact of cultural differences on the use of health services or on the quality of these services**. Standards of service were defined to promote linguistic and cultural adaptation of health services for the various populations, and long-term, systemic responses were developed to achieve this objective.

   For example: publication of a directive from the director-general of the Ministry of Health on this subject in 2011; training for officials responsible for improving cultural accessibility in health organizations; establishing a multilingual telephone center for medical translation; translating the ministry's Internet site to additional languages.
3. **Placing high-quality and professional medical personnel in the periphery in sufficient numbers and improving the physical infrastructure in peripheral areas**. This entails systemic changes that should improve the balance of deployment of medical personnel and technology between central Israel and the periphery. For example: adding job positions, hospital beds and professional units to hospitals in the periphery; establishing a (fifth) school of medicine in Safed; establishing emergency medical centers in localities in the periphery.
4. **Offering incentives for the HMOs to conduct activity aimed at reducing inequity**. Incentives were developed for health organizations to invest in reducing the inequalities in weak populations. For example: support tests for HMOs that provide refunds for activities that are likely to improve infrastructure in the periphery; intervention programs in weak populations.
5. **Building a database on morbidity, accessibility and availability of services, and effective interventions for reducing health inequities.**

In addition to all of the above, there is collaborative activity of government ministries, local authorities and the third sector that is aimed at reducing inequalities. The salient example is the national program for promoting an active and healthy lifestyle, which was launched in 2011 and whose aims include reducing obesity in the population through boosting physical activity, lowering the daily consumption of salt, reducing the number of hours of television viewing by children, and more. The program set differential objectives for the Jewish and Arab populations, with the goal of achieving a real reduction of obesity in the Arab population, where this problem is more prevalent. The program is operating in 15 localities, with three strategies: enriching knowledge, creating an environment that promotes health, and providing incentives to organizations and authorities to be involved in promoting health. Some of the operating principles of the program – such as joint planning, combining fields of policy and shared funding – mirror the World Health Organization's HiAP (Health in All Policies) approach for promoting equity in

health.[26] Another example of inter-ministerial and cross-sector collaboration (the government, the Union of Local Authorities and JDC Israel) is the national program for treating children and teenagers at risk/in distress from low socio-economic backgrounds, and in populations that have a unique social and cultural character (immigrants, Arabs and ultra-Orthodox Jews). The program provides professional responses for promoting physical and developmental health, learning, mental well-being, social systems, and more.

Examples of intervention programs by the HMOs

In recent years, there were a number of independent programs initiated by the various HMOs that succeeded in reducing inequalities in health by lowering co-payments, cultural adaptation, focusing on at-risk populations and adapting intervention measures to language, culture, literacy and comprehension levels. Below are several examples demonstrating that it is possible – relatively quickly and with a modest investment – to significantly reduce the inequalities that exist today in the health indexes:

The Lotus project: Lowering co-payments leads to higher response to treatment in chronic diseases and to rapid clinical improvement in stabilizing the illnesses. In the central district of the Clalit HMO, in the cities of Ramla and Lod, there is a population of low socio-economic standing with a high incidence of chronic illness and low adherence to treatment (which is one of the factors for lack of stability and control in chronic morbidity).

A donor agreed to cover the cost of co-payments for patients of low socio-economic status who do not purchase the medication for themselves. Patients with chronic illnesses (hyperlipidemia, high blood pressure, diabetes) were identified. In these conditions, adherence and disease control could be measured. Of these, 235 people from a low socio-economic status were selected who do not purchase their prescribed medications on a regular basis. They received a "credit card" and used it to pay for the medications. Already after six months, a very high adherence to treatment was found (92%), and a significant improvement was achieved in controlling diabetes, high blood pressure and blood lipids. Both the adherence and the improvement in control were maintained for a period of one to two years. The project was expanded to additional areas, and included about 1,300 complex chronic patients. The investment by the donor was about NIS one million per year.

The conclusion: Lowering the co-payment in purchasing medication boosts adherence to treatment and improves the control measures of chronic patients of low socio-economic status.

Use of parlor meetings for Arab women to improve their response to treatment for chronic illnesses. In the northern district of the Meuhedet HMO, parlor meetings for women (a means of influence that is familiar from election campaigns) were used, adapting them culturally

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[26] Y. Kranzler, N. Davidovich, Y. Fleischman, I. Grotto, D. S. Moran, and R. Weinstein, "A Health in All Policies Approach to Promote Active, Healthy Lifestyle in Israel," *Israel Journal of Health Policy Research* 2 (1) (2013): 1–16.

to encourage women to respond to medical examinations and to improve control and treatment of chronic illness. In 2011, women with a strong social standing in the community hosted parlor meetings in their homes. The meetings combined a social get-together with professional guidance from Arabic-speaking nurses on how to improve the women's health. A total of about 5,500 women participated in the meetings. There was an improvement in testing among diabetes patients (the number of exams increased by tens of percentage points and, consequently, control of diabetes improved by 20%).

Improvement in indexes of clinical quality by adapting means of intervention to language, culture and the unique ways of influencing a weak target population. Such activity was conducted at the Jaffa clinic of the Maccabi HMO. (Most of the members of the HMO in Jaffa are Arabs from a low socio-economic status.) The results of the intervention indicated that during a relatively short time (nine months), a disparity of nearly 30% in control of diabetes between the clinic's population versus the average level of all Maccabi members was closed.

In both of the latter projects, the investments were negligible and were made simultaneously with the ongoing work.

In summary

During the past decade, awareness of socio-economic inequalities in health has grown. Consequently, dedicated activities were initiated to reduce the health inequalities in Israel. These activities are still limited in scope, but there is initial evidence of intervention results that are focused on weak populations within the health system. Based on the evidence that a combination of factors at various levels and at all stages of life are the determinants of socio-economic inequalities in health, we believe that more extensive – cross-system – activity is required for reducing inequalities.

We recommend formulating a comprehensive government policy for reducing health inequalities, while developing strategies adapted to Israel's socio-economic context. The optimal timing of intervention for reducing inequalities, though not the only one, can be in early childhood; this is an investment in prevention that will yield long-term benefits.

The Economic Burden Caused by Inequalities in Health

Amir Shmueli, Eran Politzer, Nir Kaidar, Gur Ofer

Background

During the past decade, there has been growing interest in the potential economic benefit from improving the population's state of health. In 2001, the World Health Organization (WHO) published a report by the Commission on Macroeconomics and Health indicating that an improvement in the state of health is the principal way to boost the pace of economic growth, raise the standard of living and reduce poverty in countries with low and medium income per capita.[27] Two reports by the European Union from 2005 and 2008 expanded the range of discussion to countries with high per capita income.[28] The main message is that there are substantial economic benefits to investing in health and that if the European Union is interested in improving its standing in the competitive global environment, it must invest in human capital, including the health of its citizenry. The economic benefit derives from a view of health as a capital good that improves productivity and growth, as well as a consumer good that yields benefit in itself (good health) as an important component in the well-being of the population.

These connections usually measure and focus on the *average* health of the population. But wherever this subject was examined, large health inequalities were found between population groups of different socio-economic backgrounds. The typical finding is that groups of low socio-economic status in terms of education, employment and income suffer an inferior state of health, higher mortality and higher levels of disability. Improving the state of health of weak groups is one of the surest ways to raise the average level of health in the populace.

One of the important pieces of data in improving the state of health of weak socio-economic groups is an assessment of the economic burden of inequity in health – and consequently, an estimate of the economic benefit to be derived from reducing this burden. Two studies – one in England and the other in the European Union – recently focused on assessing this burden.

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27 World Health Organization, *Commission on Macroeconomics and Health: Working Group 5: Improving Health Outcomes of the Poor*, Geneva: World Health Organization, 2001.

28 M. Suhrcke et al., *The Contribution of Health to the Economy on the European Union*, Brussels: European Commission, 2005; M. Suhrcke et al., *The Economic Costs of Ill Health in the European Region*, Copenhagen: World Health Organization, Europe, 2008.

As part of the work of the committee assigned to propose ways to reduce health inequalities in England after 2010 (*The Marmot Review*), the costs of inequity in health were calculated.[29] The goal was to focus on the main components of this burden and to arrive at an estimate of its approximate magnitude. In accordance with the findings of earlier studies on health inequity, the work focused on three primary groups of costs resulting from inequalities in health:

- **Early death and disabilities**. There is significant disparity in life expectancy and life expectancy without disability between localities and neighborhoods of different socio-economic standing. By using the social value of a year of life and a year of life without disability, it is possible to estimate the economic burden of loss of years of life and years of life with disability that result from socio-economic inequity.
- **Loss of work days**. Morbidity and disability in the working-age population causes a decline in productivity and in the contribution to GDP. The loss of work days due to morbidity and death also leads to a decline in tax revenues and an increase in transfer and support payments. (The government bears this cost. From the economy's perspective, these are transfers between the players.)
- **Costs of additional medical treatment due to inferior health among the weak socio-economic groups**.

The work focused on income-related inequality and defined the reduction of this inequity by means of two scenarios (counterfactuals). In scenario 1, the reduction of health inequity is expressed in an increase in life expectancy and life expectancy without disability to the average level of the upper decile of the neighborhoods, ordered by level of income. In scenario 2, all of the neighborhoods become equal to the average state of health in the upper half of the neighborhoods.

Based on income data, disability, life expectancy and mortality by age in the various neighborhoods, the committee reached the following conclusions for those born in 2010, who will enjoy the fruits of the investment in reducing health inequity according to scenario 2 (the burden can also be calculated for the entire population according to its age structure in the present):

- The total number of years lost due to inequality is 800,000 – that is, 1.3 years per person. The **total** number of years without disability that are lost due to inequality in patterns of disability between the groups is 1.7–2.5 million, or 2.5–3.8 years per person. According to a valuation of human life of 58,000 British pounds (the value used by the England's Ministry of Transportation in calculating the benefits of investment in transportation infrastructure) and a discount rate of 3.5%, the capitalization rate of the lost years of life totals 2.2 million British pounds.

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[29] Frontiers Economics, *Estimating the Costs of Health Inequalities*, A report prepared for the *Marmot Review*, London: Frontiers Economics, 2010, www.cawt.com/Site/11/Documents/Publications/Population%20Health/Economics%20of%20Health%20Improvement/Estimating%20the%20costs%20of%20health%20inequalities.pdf

- The total value of lost production through age 65 due to inequality in morbidity (according to scenario 1, this does not include death before age 65, which also creates a loss of production) is 31 million British pounds. The cost to the government in unemployment allowances and lost tax revenues is a similar sum.
- The cost of additional medical treatment due to inequality comprises about 15% of the cost of medical treatment, or about 5.5 million British pounds. (This estimate is low due to the omission of services.) Thus, the total economic burden of income-related health inequity in England stands at about 39 million British pounds per year. This sum is equivalent to about 16% of the national expenditure on health and about 2% of GDP.

The index of socio-economic status used for estimating the economic burden of health inequity in the European Union in 2004 was level of education.[30] The scenario of equality says that the state of health of half of the population with low education levels will be equal to the average health of half of the population with high education levels. The state of health is measured by mortality and self-assessment of health. (The rate of mortality adjusted to age among 50% of those with low education levels is 36% higher than among half of the population with high levels of education. The age-adjusted rate of those assessing their health as "less than good" among those lacking education is 45% higher than among those with high levels of education.)

The following components were included in calculating the economic burden of inequality in health:

A. Years of life lost due to a higher mortality rate among the uneducated, assessed at 58,000 euros per year.
B. A longer life expectancy in a state of health defined as "less than good" among the uneducated.
C. Greater loss of GDP due to poor health among the uneducated (measured by wage differentials).
D. The additional cost of medical treatment among the uneducated, as anticipated according to the reported state of health.

The results for 25 countries in the European Union show that inequality in health leads to 707,000 incidents of death. Each of them entails a loss of 16 years of life. The total number of years lost due to inequality is 11.4 million. The monetary value of these lost years of life is about 700 billion euro, which is equivalent to about 7% of the European Union's GDP. Another 4.3 million years of life in a "good" state of health are lost due to the inequalities in health. The monetary value of these years is 280 billion euros or 2.7% of GDP. The total loss in GDP (revenues) attributable to inequality is 141

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[30] J. P. Mackenback, W. J. Meerding, and A.E. Kunst, "Economic Costs of Health Inequalities in the European Union," *Journal of Epidemiology and Community* 65 (5) (May 2011): 412–419.

billion euro, or 1.35% of GDP. The total cost of additional medical care due to health inequity is 177 billion euro, or 1.7% of GDP and about 20% of the total national expenditure on health.

The economic burden caused by inequalities in health – an initial estimate

Data

- The economic unit in the analysis is the locality
- Health is measured by life expectancy at birth or by death rates adjusted for age
- Socio-economic status is measured by income or by socio-economic score
- The source of data is the Central Bureau of Statistics and the Ministry of Health[31]

Components of the economic burden

- The social value of lost years of life (the value of life from the perspective of welfare economics)
- The loss of GDP due to working-age early mortality (the value of life from the perspective of human capital)
- The additional cost of medical treatment due to a poor state of health

The scenario of equality

- The localities participating in the analysis (a different series in each component, according to the availability of data) were ordered by average income per standard adult or by socio-economic score.
- The weighted average (by population size) of the state of health was calculated at the high socio-economic level (the “wealthy”). This is the “equality target.”
- The equality scenario describes a state in which "poor" 50% of the localities enjoy an equality target that is equal to the average cited above. The total deviation from the adjusted average in "wealthy" 50% of the localities is 0; thus, the differences among the "wealthy" localities are not included when calculating the burden.
- Nonetheless, since socio-economic status or income does not fully explain the inequalities in health, and since the marginal effect of income / SES on the state of health is not always significant (that is, the trend line is not sufficiently steep), there are "poor" localities that

[31] Pnina Zadka and Ari Paltiel, *Health and Social Profile of the Localities in Israel, 1998-2002*, Jerusalem: Central Bureau of Statistics and the Department of Health Economics and Insurance, Ministry of Health, 2006 (Hebrew).

achieve health results that exceed the target of equality. These localities were removed from the calculation of the burden.

The social value of lost years of life

The state of health is measured here by life expectancy at birth. We have data on life expectancy according to locality only for 27 localities with populations of at least 50,000. (The total population in these localities is 4.3 million residents, the Israeli population is 7.1 million) The data is for the years 2005–2009. The calculation of the burden refers to the discounted value (from the date of death according to life expectancy at birth) of the years of life lost in each and every locality in light of its socio-economic situation.

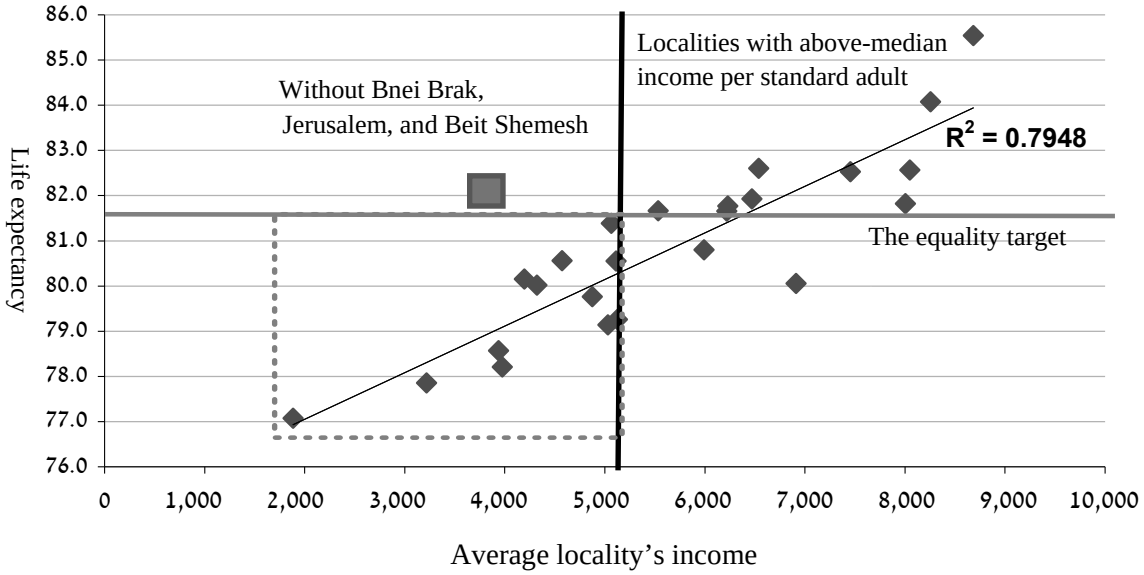
The socio-economic situation is measured by the average income per standard adult in the locality. The data is from 2008. Diagram 1 describes the relationship between life expectancy and income per standard adult in 24 localities. The three localities in which the religious and ultra-Orthodox population is relatively large (Bnei Brak, Jerusalem, and Beit Shemesh) are characterized by a relatively low average income and a relatively high life expectancy (about 82 years). Therefore, in these three cities the low average income is not linked to life expectancy. When these three localities are removed from the calculation, we see a good linear relationship (squared correlation coefficient of 0.8), indicating that as average income in a locality increases, there is a commensurate increase in life expectancy.

The equality target is life expectancy of 81.54 years, which is the weighted average of the life expectancy in the 13 localities with the highest levels of average income (an average income per standard adult of NIS 5,100 divides the localities into two groups of equal size).

The poor localities, where life expectancy is lower than the equality target – and where the loss of years is concentrated – are grouped in Diagram 1 in the box in the lower-left quadrant. If the equality target were achieved in these localities, 2,087,469 years of life would be saved, or an average of 0.92 years per resident, in the poor localities. Since the additional years are added to the end of the current life expectancy, the value of the added years of life (or the years lost due to inequality in life expectancy) should be discounted. We used a discount rate of 3.5%.

The WHO organization recommends assessing a year of life from a social perspective at about three times the per capita GDP. In 2012 prices, this value is NIS 352,701. Thus, the social valuation of years of life lost due to income-linked inequalities in life expectancy totals **NIS 48,550 million annually**. If we adopt the Ministry of Transportation's valuation in its protocol for transportation projects, we receive a value of about NIS 150,000 for a year of life. (The life value of NIS 6 million for someone killed in a traffic accident means a loss of 40 years of life.) Therefore, the estimated loss is about **NIS 20,648 million**. Assuming that these patterns also exist in the other localities, extending the valuations to the entire population (7.1 million people) leads to estimates of burden of **NIS 80,164 million and NIS 34,093 million per year, respectively**.

Diagram 1 **Life expectancy at birth in localities expectancy**



Source: Calculations by the team

Loss of GDP due to early death of working age persons

In the human capital approach, the value of the life of a person who dies before retirement age (65) is the discounted value of the person's income flow in the labor market at the time of death. Early death means an early exit from the labor force and, consequently, a loss of GDP in the amount of the current value of the deceased's future income had he remained alive until retirement age.

Diagram 2B displays the distribution of death rates per 1,000 people according to age in localities with over 10,000 residents by their socio-economic score. The diagram focuses on ages 45–54 and 55–64. Similar diagrams for the younger and older ages are presented in the Appendix in diagrams 2A and 2C, respectively. The total population represented in diagrams 2A and 2C is 5.9 million residents. In all of the age groups, there is a negative correlation between death rates in a locality and its socio-economic score. However, the strength of this correlation varies by age. In ages 0–4 and 55–64, the (squared) correlation is the strongest (0.5); in ages 65–74, the coefficient is 0.42; in ages 45–54, the Coefficient is 0.2; in ages 5–24 and 75+, the explanatory coefficient is 0.1. The weakest correlation was found in ages 25–44 (0.05).

A socio-economic score of 0.12 divides the localities into two equal groups. The equality targets of death rates per 1,000 people are: ages 0 to4 – 0.98; ages 5 to 24 – 0.29; ages 25 to 44 – 0.94; ages 45 to 54 – 2.88; ages 55 to 64 – 7.25; ages 65 to 74 – 20.52; ages 75+ – 79.30. These equality targets appear in the diagrams for the various age groups, with the exception of ages 25–44. Here too there

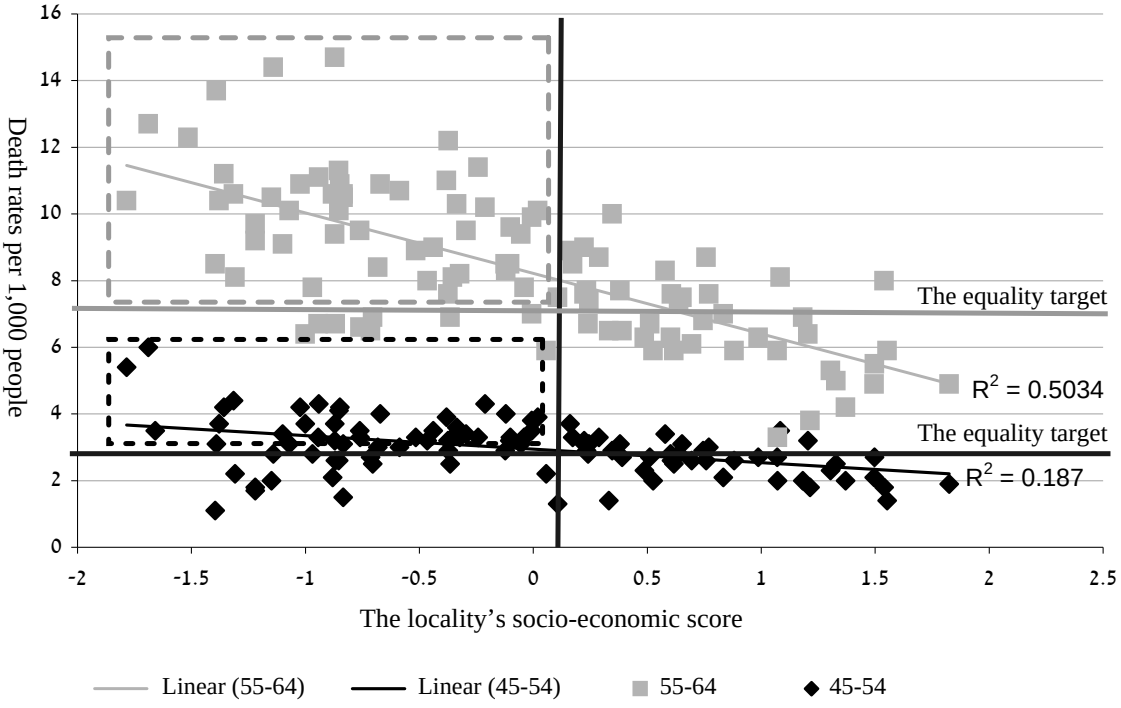
are poor localities whose death rates are lower than the equality target. This list of localities and its size vary from one age group to another: In ages 45–74, there are no such localities, while the list includes 10 to 15 localities in the other age groups. The largest number of localities in the list is at ages 75+. The list includes the localities with a relatively large religious population (for example, Jerusalem, Beit Shemesh, and Bnei Brak), as well as several Arab localities (for example, Arara and Kafr Qassem). These localities were not included in the calculation of the burden of early death in terms of GDP.

The assumptions used in calculating the loss of GDP due to death before the age of 65 include:

- Discount rate – 3.5%
- Employment rate – a uniform 74% for all
- A worker's year was assessed at NIS 343,385, which was the GDP per worker in 2012.
- Age when starting to work – 25
- Retirement age – 65
- If a person died after age 25, the flow of income was discounted from the age of death through age 65
- If a person died before age 25, the flow of income was discounted for the 40 potential years of work for the age at the time of death.

The calculations show that the total number of working years lost is 76,270. About 46,000 of them were caused by inequalities in mortality of children ages 0–4. Another 13,000 stemmed from inequalities in death rates at ages 55–64. The value of lost GDP resulting from inequalities in death rates and loss of working years amounts to **NIS 11,592 million annually**. This sum is mainly attributable inequalities to inequalities in the mortality of children ages 0–4 (NIS 3,814 million) and in the mortality of adults ages 55–64 (NIS 4,125 million). The discounted value of a working life year averages NIS 151,981. Assuming that these patterns also exist in the other localities in Israel, the value of lost GDP in the entire population (7.1 million residents) totals **NIS 13,950 million per year**.

Diagram 2B **Death rates per 1,000 people**



Source: Calculations by the team

The cost of additional medical treatment due to a poor state of health

Diagram 3 plots 243 urban localities (more than 2,000 residents) and regional councils – total population: 7.133 million. The diagram displays the relationship between the socio-economic score of these localities and the hospitalization rate per 1,000 people, adjusted for age (that is, the differences in the rates of hospitalization are not attributable to a different age distribution), during the years 1998–2002. The diagrams (the cloud of observations and the trend line) show a clear negative correlation between the locality's socio-economic level and the rate of hospitalization. The assumption is that the hospitalization rate is an indicator of the state of health (two reservations are raised below).

The equality target is 135.7 hospitalizations per 1,000 people, adjusted for age. This is the weighted average of the rate of hospitalization in 121 wealthy localities (the median socio-economic score is 0.12).

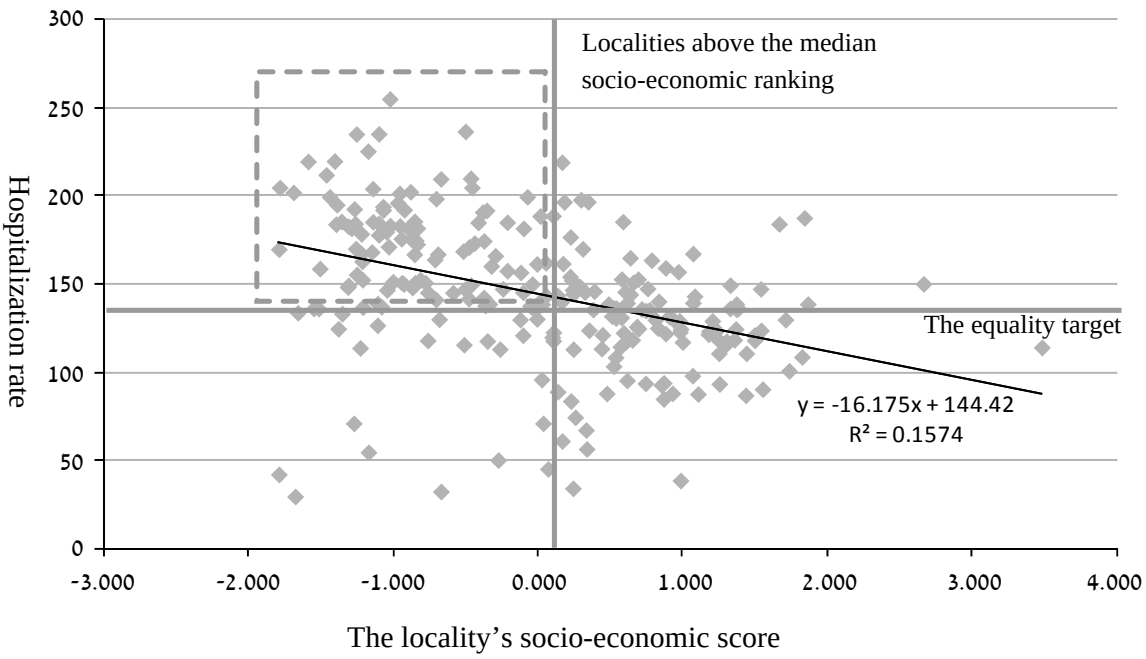
The diagram clearly shows that in many relatively poor localities the rates of hospitalization are low, and even lower than the equality target. These localities are concentrated in Diagram 3 in the lower-left quadrant. There appear to be two types of localities: (1) religious/ultra-Orthodox localities such as Modi'in Ilit, Emmanuel, Kiryat Ya'arim, and Gush Etzion. In these localities, the measured socio-economic level does not correctly represent the socio-economic factors that determine the state of

health and patterns of hospitalization. (2) Localities characterized by a low socio-economic level that suffer from low accessibility to hospitalization services, and therefore the hospitalization rates are low – despite a poor state of health. These localities include, for example, Al-Batuf, Zarzir, and Bustan al-Marj. These localities are not included in the calculation of additional hospitalizations. Therefore, the additional hospitalizations are from the poor localities where the hospitalization rates are higher than the equality target. They are concentrated in the diagram in the upper-left quadrant.

All in all, there were 1,030,362 hospitalizations in the entire population during this period. If all of the poor localities had reached the equality target, there would have been 73,861 fewer hospitalizations, about 7% of the total number of hospitalizations. The average cost of hospitalization is NIS 10,400 (in 2012 prices). Therefore, the economic burden of the additional hospitalizations attributable to inequality in health totals **NIS 768 million annually**.

The expenditure on hospitalization accounts for about 40% of the total expenditure on health services. Assuming that the patterns are similar in the other health services, we arrive at an initial estimate of the additional cost of health services due to health inequality of **NIS 1,920 million**. It is important to note that extrapolating the cost of additional hospitalization to all medical treatment is imprecise due to possible substitution between ambulatory medical treatment, which is relatively inexpensive, and hospitalizations that are considered relatively expensive medical treatment.

Diagram 3 **Rate of hospitalization per 1,000 people, adjusted for age**



Source: Calculations by the team

Summary: Total economic burden attributable to health inequalities in Israel (an initial and rough estimate)

The main component in the burden is the value of lost years of life due to inequalities in life expectancy among the localities (NIS 34–80 billion). The second in magnitude is the loss of GDP due to early death and early departure from the labor market (NIS 14 billion). The extra cost of medical treatment due to inequalities in health is relatively small (NIS 2 billion.)

If we adopt the valuation of the WHO for a year of lost life, then the total burden is **about NIS 96 billion**. This sum is equivalent to 13% of GDP and is approximately 1.5 times higher that the national expenditure on health in Israel in recent years. If we adopt the Ministry of Transportation's valuation of life, the burden totals about **NIS 50 billion**, or some 7% of GDP, which is slightly lower than the national expenditure on health in Israel. These percentages are higher than those in England (2%), but are close to those found in the European Union (10%).

In conclusion – two notes: First, in combining the two components of the burden – the cost of lost years of life according to the WHO's valuation of a year of life, and the cost of lost years of work – the years of lost work are counted twice. The use of the valuation of years of life as recommended by the Ministry of Transportation reduces the problem because this value represents, according to the prevailing economic theory, the value of the utility of these years, while the value of the lost work year according to an estimate of output represents the productive value of the year.

Secondly, the value of additional medical treatment due to inequalities in health reflects actual operational expenditures. The value of lost years of work also reflects the actual loss in GDP. However, the value of lost years of life reflects the cost of the loss of social welfare.

Ways to Achieve an Ongoing Reduction of Disparities in Health

Ran Balicer, Joseph Rosenblum

Inequalities in health are first and foremost a byproduct of social inequalities and of government policy. The widening gaps in the economic position, education, nutrition and infrastructure also create significant inequalities in health between the population groups. This unwarranted inequity does not necessarily stem from the activities or in activities of the health system.. This chapter will present new approaches to reducing inequalities in health, with an emphasis on models that will be economically sustainable from a national perspective.

Already today, entities within the health system (the Ministry of Health and the HMOs) are making efforts aimed at narrowing the inequalities in health (discussed in the first chapter above). Although these efforts show initial and encouraging signs of achievements, these achievements are still narrow in scope and do not provide a response for the broad problem of disparities in health. Our basic assumption is that the support budgets of the Ministry of Health and internal resources allocated from time to time within the health system contribute to reducing the disparities, but are insufficient for achieving a real reduction of the inequalities in health over time.

No one disputes the fact that a significant reduction of the inequalities in health in Israel can be achieved by narrowing the social gaps (primarily the inequalities in salary and education). However, this deep-rooted problem cannot be tackled solely through activity in the field of health. (We will not focus on this here.)

Instead, we wish to propose solutions based on another paradigm. We contend that by combining the forces of the health system and other support systems (social welfare, education and more), and in collaboration with the business sector and the third sector, it is possible to make an impact on and reduce inequalities in health in an effective way. We also believe that the central entities interested in and capable of effecting a real reduction in health inequalities via targeted and focused activity can be found in the market, and that there is economic logic in having the state utilize them. The main question the team will address is the market failure that today prevents the implementation of such initiatives, which ostensibly bring benefit to all of the parties involved.

The market failure we address derives from the fact that while the inequalities in health indeed create heavy economic costs for the state (as discussed in the second chapter), most of them are not directly imposed on the health system. Most of the economic burden caused by the inequalities – that is, from the deficient health of the weak population – stems from the decline in work productivity and an increase in the costs of support, welfare and assistance for the patient, directly, and also for his nuclear family and principal caretakers. We estimate that in some fields the overall economic

cost caused by the health inequalities is much higher than the cost of the intervention required for reducing them. Therefore, it seems, on the face of it, that the state has an economic interest (regardless of social views) to invest in targeted interventions as instruments for narrowing inequalities in health in well-defined fields in which this assumption applies.

An example of this market failure is acutely affecting the HMOs: The structure of the health market today does not encourage HMOs to engage in this type of activity of reducing inequalities and preventing morbidity, particularly in weak populations. The marginal economic benefit to the HMO in preventing one case of this type of morbidity is very limited because of buffer mechanisms that moderate and offset the economic value from the HMO's perspective. These mechanisms include the hard "floor" for hospital expenditures, the waiting lists and the high occupancy in hospitals most days of the year. Because of these three mechanisms, the prevention of a small number of potential hospitalizations will immediately enable the next patient waiting in line to reach the hospital bed, surgery or imaging station – but will not reduce the overall use of these hospital facilities. Therefore, in many cases the HMO cannot anticipate an economic return on investment, while the social welfare systems expect to see an immediate and clear return – for example, in preventing disability or unemployment allowances, where each decrease in the number of ill or disabled persons translates into real savings.

The burden of proof for the existence of the market failure and the worthwhileness of the investment requires the collection of additional data, and we are now working on this vis-à-vis various entities. However, viewing the market failure as a guideline for developing intervention programs for reducing inequalities can serve as a framework and initial step in planning. It will be relatively easy to demonstrate the market failure and intervene in the clinical fields that meet the following criteria:

1. Illnesses which are more prevalent in weak populations and which lead to chronic disruption of functioning at working age.
2. Illnesses for which there is effective intervention for prevention or for preventing the deterioration in functioning that is associated with the illness.
3. Illnesses for which the intervention aimed at prevention focuses on instruction, monitoring, promotion of health – and not only on prescribing medicinal treatment.

For example, the fields that meet these criteria, in our assessment, include:

1. Identifying and intervening in pre-diabetic situations – to prevent/delay a future onset of diabetes, particularly in the Arab sector.
2. Identifying and intervening in an initial difficulty in kidney function – to prevent/delay a future onset of kidney failure and dialysis, particularly among populations of low socio-economic standing.

3. Identifying and intervening in situations of cardio-vascular risk – to prevent/delay a future onset of ischemic heart disease and congestive heart failure, particularly among populations of low socio-economic position.
4. Preventing smoking and quitting smoking (among men) and maintaining proper weight (among women) in the Arab society – as a way to prevent/delay future onset of chronic heart and lung disease.
5. Genetic counseling in Arab villages that have a high rate of birth defects.

Even if the economic assumption of this market failure is proven, each separate sector and entity will still lack the economic interest (for example, the HMOs) or the practical ability (for example, the National Insurance Institute) to adopt the measures required for reducing inequalities in health. Therefore, it is necessary to develop instruments through which the general benefit to the state from reducing disparities will be translated into cost-saving investment in interventions. These interventions could be conducted by the third sector, with state funding, or could be conducted by national entities (HMOs, local authorities), which could achieve effective results with a given monetary investment. At the same time, economic and administrative tools must be developed to help the entities whose decisions exacerbate the inequalities internalize the full implications of their decisions.

There are several directions of action and policy that are worth examining in an effort to mobilize all of the entities that suffer from the economic repercussions of these inequalities (the ministries of Social Welfare, Economics, Labor, Finance, Interior, local authorities and employers), as well as all of the entities that could contribute in their activity to reducing the health inequalities (government ministries and their agencies in the local authorities, the HMOs, religious entities and the third sector), to participate in activity and funding of steps to reduce health inequalities – all this while relying on ongoing budgets (and not specially-targeted sporadic allocations) aimed at reducing disparities in health.

These directions of action and policy include the following:

1. **Creating an agreed-upon mechanism for funding initiatives for reducing disparities in exchange for the benefit they bring at the national level**. Creating a solution for the market failure via an agreed-upon calculation of the national benefit from success in intervention to promote health; and creating a mechanism of transfer and funding of entities engaged in conducting this intervention, commensurate with defined indexes of success, which can be directly translated into "real" cost-savings for the public entities that invest in this process.

   Theoretically, this process could be funded and conducted by a single governmental or national entity, which would derive economic benefit from measures aimed at preventing the health damages stemming from health inequalities. However, in practice, the entity that develops the intervention array will need to show initiative, energetically engage in coordination

and supervision, and make a large initial investment. It is hard to assume that such a combination will exist without support and direction from above.

One of the most interesting mechanisms worth examining in this context is **social bonds**, which brings the third sector into this process. In many countries today, these bonds are already enabling the translation of social benefit (and in our case, health benefit) to economic value priced for the market by collecting the value from government entities that recognize the real benefit (for example, the National Insurance Institute, which will not need to pay an allowance to each patient whose illness is prevented or delayed to later in life) and transferring it to the entities that are successful in making achievements in the field of health. For example, in Britain it is customary to fund social interventions in rehabilitating prisoners in order to prevent their return to crime. The state invests the money and the return on investment is reflected in preventing the return to prison. In the same way, it is possible to fund intervention to prevent illness in weak populations. In this case, the return on investment for the state is expressed in a decrease in the allowances paid to this population. The process is funded by issuing social bonds that enable the government to share the risk and economic expectancy with business entities that purchase these bonds. These business entities enjoy monetary gain while also contributing to the society. In our assessment, the state has a real interest in supporting and promoting this type of mechanism in reducing disparities in health, and we know that the subject is now being studied at several government ministries.

2. **Establish an incubator for social entrepreneurship in the field of health inequalities**. In order to collect information on interventions that successfully reduce inequalities in health and can be funded in the types of governmental/business frameworks cited above, grants should be awarded for modest projects of feasibility studies under the auspices of "an incubator for social entrepreneurship in the field of health inequalities." Possible monetary sources for funding this activity, in addition to government investment (full funding or matching grants), include philanthropic foundations and business entities (as part of their contribution to the community). In order to demonstrate potential return on investment by the public funding entity, the assessment and presentation of the quantifiable benefit should be also defined in each project as a central objective.

3. **Health (disparities) in all policies**. The aging of the population, the continual rise in the rates of chronic illness, pension pressures and the cultural change that emphasizes individual rights and the basic right to health – justify a revision in the executive branch's position vis-à-vis the implications of its policies on the population's state of health and on the widening of gaps in this area. Just as we have witnessed in recent years how the standard of environmental protection has increasingly affected the planning processes in various fields, the same should apply in regard to the field of health. Adapting a mandatory standard for examining the health repercussions (and repercussions on the widening of health inequalities) of key decisions in the work of all

government ministries could greatly contribute to long-term savings on health expenditures. In particular, it is possible to see two main paths of desired change in this context:

- **At the level of all government ministries**: There is a need to present decision-makers with detailed information on the health implications (with an emphasis on widening gaps in health) of each major decision that is liable to exacerbate existing inequalities in education, economics and employment. Rules should be defined for a health impact assessment in decisions that are expected to widen the inequalities in health.

- **At the level of the Ministry of Health**: The ministry should maintain a regular and continuous array of monitoring the key decisions made at other government ministries and the impact of these decisions on health – particularly their potential for widening the gaps in health. The ministry should consider creating a dedicated department whose main assignment would be to conduct and publish complex assessments of this type.

4. **Activity aimed at narrowing health inequalities at the local level**. In general, we can say that the health system in Israel "skips over" the local authorities as an influential, involved and responsible factor in the health of the population. The Healthy Cities Network is an important and significant step in the right direction. However, joining the network today is by choice, and only 28 of the 225 localities are part of the network. With the exception of local **initiatives**, one city hospital and a number of well-baby clinics (in which the municipalities are involved), the localities have no defined, budgeted and assessed activity in the fields of health. The residents' well-being, hygiene and sanitation are viewed (and budgeted) as part of the municipality's direct responsibility, and health should also be added as an important component. Indeed, addressing the welfare and distress of weak populations and contending with the broad health damages in the second and third circles comprise an integral part of the work of the local authority.

   A comprehensive health outlook – as an essential component in serving the citizen – requires a change in attitude at the municipal level and the addition of health promotion and disease prevention to the umbrella of services provided to the local resident. Accordingly, it is possible to consider the allocation of a dedicated and defined budget for developing and promoting health programs in the intermediate stage of instituting the responsibility in the local authorities, with a collaborative approach of the ministries of Health and Interior. In the first stage, the 20 (medium-sized to large) localities with the most problematic health profiles can be selected and targeted with integrated remedial efforts, while compensating the local authority in accordance with its investment and in accordance with how well it meets measurable objectives. In this first stage, a public obligation should be imposed on the mayors to build a health profile for their locality according to criteria and a defined model, and with the assistance of the Ministry of Health, in order to identify the main factors underlying the health inequalities among the local populations and between the locality's population and relevant comparison populations.

5. **Activity by large employers in weak populations**. One of the principal stakeholders in promoting and maintaining health is the echelon of large employers. Tax benefits are offered today to develop a business in regions of low socio-economic standing and in weak population groups. Some of the tax advantages and benefits can be channeled in a way that helps both the employer and the local population. In the long-run, promoting health and preventing disease of employees (background morbidity that is not at all related to the hygiene and safety of the workplace) helps the employers, at least in sectors where the workers are employed for the medium-term or long-term. It has been demonstrated that a worker with an optimal health profile over the years is more efficient and inexpensive in the long run. One of the models that examined this subject found that an improvement of 0.1% in the survival rate of adults raises productivity at work by 8%.[32] Since one of the leading inequalities in health is found in life expectancy, there is a clear correlation between narrowing health inequalities and increasing productivity at work. At the same time, it is important to remember that employers have clear capabilities of influence and persuasion, together with maximal availability and accessibility, and the perception of their responsibility for the employee can be expanded to include components of promoting and maintaining the employee's health. A connection between the workplace and lifestyles that promote and maintain health is today being made in large industries and high-tech firms. Providing economic incentives to employers is likely to promote such programs and enjoy the broad cooperation of the employees.

6. **Expanding the activity of community leaders (including religious leaders) to engage in the field of health**. Investment in initial prevention is the most effective (economically too) in preventing morbidity and, consequently, in narrowing health inequalities. Most of the prevention programs directly engage in modifying lifestyles in various areas. Weak populations tend to smoke more than strong populations, are less physically active, suffer more from obesity and consume less healthy and less balanced food. For example, the rate of smokers among Arab men in Israel is 43.8%, compared to 23.7% among Jewish men. According to the Central Bureau of Statistics, 70% of the Muslims in Israel define themselves as religious or very religious. The Ministry of Interior funds religious services for the various religious denominations. Encouraging leaders in these communities to use their influence in the health context could be a direct and effective way to make an impact. It should be added here that both Islam and Judaism view the protection and care of the body as an explicit commandment. Furthermore, projects conducted in the past by the HMOs in conjunction with these leaders have been successful in promoting the population's health.

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[32] D. E. Bloom and D. Canning, *Health and Economic Growth: Reconciling the Micro and Macro Evidence, CDDRL* Working Papers no. 42 (February 2005).

7. **Developing tracks of the National Service dedicated to promoting health and including additional sectors in National Service**. It is expected that in the near future The National Service will account for a growing share of young people of conscription age. The trends of legislation for equality in the burden make the National Service an alternative to the Israel Defense Forces and sectors that have a problem enlisting (Arabs and ultra-Orthodox Jews) will find it a suitable path for exercising their rights. Today, young women in the National Service are already very successfully deployed in hospitals. In the same way, it is possible to utilize this resource of in specific projects, particularly in weak populations. The placement of young people to teach and instill health habits in schools and in their immediate community (including the family) could be an additional path – one that is viewed as social-oriented and brings the community closer together. Moreover, those serving in the National Service are considered a significant reserve of personnel for the civilian branches of enforcement and supervision. Laws prohibiting smoking, the restricted sale of materials that are harmful to the health, etc. are failing due to a deficient array of enforcement.

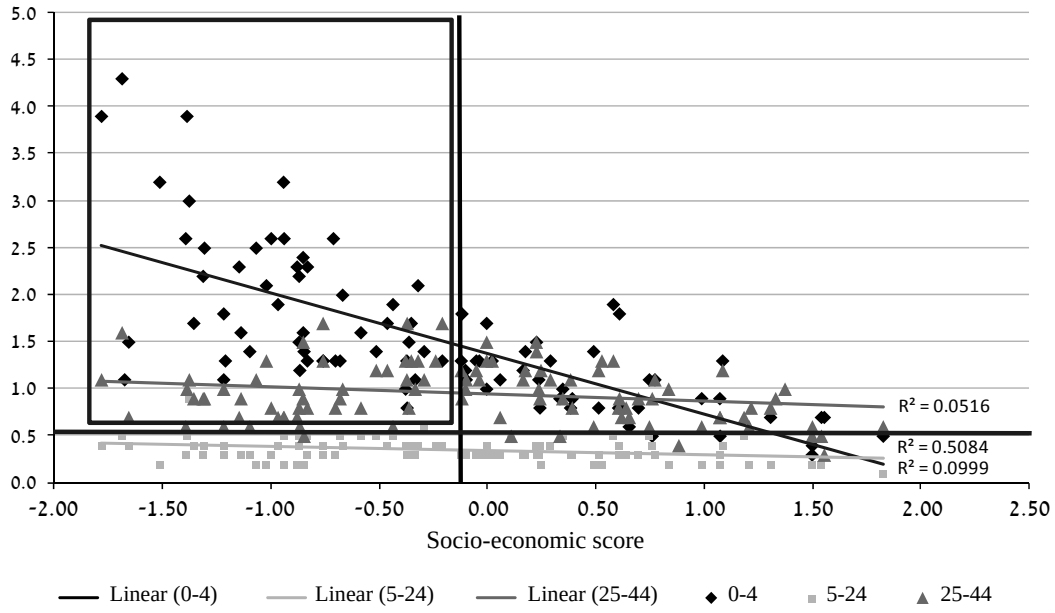
8. **Removing regulatory barriers to virtual medical services in order to reduce geographic inequalities in accessibility**. Geographic inequalities and remoteness from the center are nearly inelastic constraints that exist in every country, particularly in conditions of insufficient resources and personnel. Today it is possible to develop increased accessibility of services based on technologies of telemedicine, virtual visits and the use of technological accessories. It is less expensive and more feasible to create a virtual service whose provider (call center, physician, caregiver, etc.) is located in a geographic location in accordance with the preferences of the service provider instead of transporting the service providers to the far corners of the periphery.

   The Ministry of Health has yet to adopt telemedicine and the virtual visit as legitimate and sometimes preferable technology, and ministry regulations impose conditions and impediments on this. Openness toward removing the impediments and regulatory restrictions, and encouragement of service providers to enter this field are likely to be an additional tool for reducing health disparities between the geographic periphery and the center. Indeed, there are still disparities in access to digital services in the weak populations and, therefore, promoting virtual services in weak populations requires overcoming an additional obstacle – the technological feasibility. However, the myth of computer illiteracy in the older and weak populations is collapsing in a world of massive penetration of cellular telephony. The cost component of the technology is more significant, but today there are inexpensive and accessible computer technologies, and projects such as One Laptop Per Child (OLPC) have demonstrated that a massive distribution of computers at reasonable cost is possible.

In light of the heavy social and economic costs of the inequalities in health, the directions proposed above, as well as additional directions, should be examined in depth in order to achieve an effective and sustainable reduction in these inequalities.

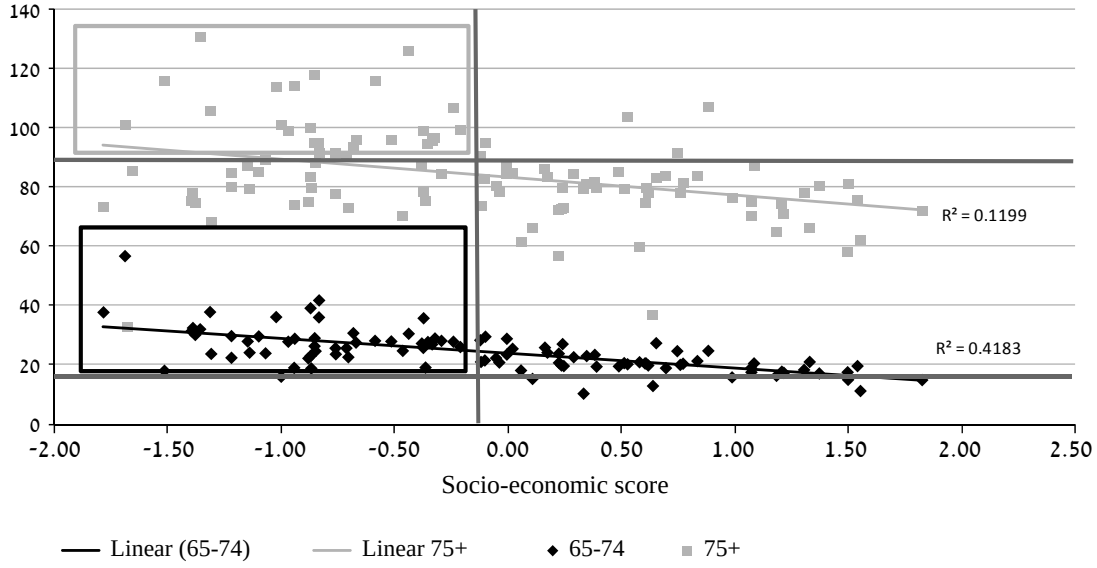
Appendix

Diagram 2A **Death rates per 1,000 people**



Source: Calculations by the team

Diagram 2C **Death rates per 1,000 people**



Source: Calculations by the team