



European Network of Economic Policy
Research Institutes

AHEAD POLICY BRIEF

JUNE 2007

WORK PACKAGE II ON HEALTH AND MORBIDITY IN THE NEW MEMBER STATES

Policy Implications from ENEPRI RESEARCH REPORT NO. 28

HEALTH AND MORBIDITY IN SELECTED NEW MEMBER STATES COUNTRY REPORT – HUNGARY

EDIT REMÁK, RÓBERT I. GÁL AND RENÁTA NÉMETH

NOVEMBER 2006



AHEAD Policy Briefs present the policy implications of research carried out under the AHEAD project (Ageing, Health Status and the Determinants of Health Expenditure), which was funded for a three-year period by the European Commission under the 6th Research Framework Programme (contract no. SP21-CT-2003-502641). The research, carried out by a CEPS-led consortium of 18 partner institutes, was organised into nine Work Packages, the results of which have been published in the Research Report series of ENEPRI (European Network of Economic Policy Research Institutes). ENEPRI publications are available for free downloading on the CEPS online bookshop (<http://shop.ceps.eu>).

A brief description of the AHEAD project and a list of its partner institutes and publications can be found on the last pages of this Policy Brief.

1. Introduction

Expenditure on medical treatment has tended to rise as a proportion of national income throughout the European Union. A particular concern is that, with an ageing population and therefore the prospect of more old people around, the pressures for expenditure on health care will increase further. The Aging, Health Status and Determinants of Health Expenditure (AHEAD) project set out to refine existing estimates of the links between aging, reported states of health and use of medical services. The Hungary country report analysed these issues in a country-specific context.

Our main objective was to analyse the prevalence of good and poor health and the use of medical services by people in good and poor health at different ages. We aimed to achieve this objective through a series of tasks: 1) to describe morbidity due to specific diseases in Hungary; 2) to identify social and economic factors behind good or bad health status; 3) to describe health service utilisation by people in good and bad health and 4) to analyse influence of age and other factors on health status and service utilisation.

The full country report, including the complete analyses of the above-mentioned issues is publicly available online.¹ A summary of results in a cross-country comparison for Central and Eastern European countries in the project was also published.²

2. Data sources and methods

2.1 Data sources

Analyses were based on the National Health Interview Survey (NHIS) carried out by the Johan Béla National Center for Epidemiology. (NHIS, 2003) The survey was first undertaken in the year 2000, and then repeated in 2003. The Hungary country report utilised the more recent dataset from 2003.

The NHIS included a random sample of 7,000 individuals, citizens of Hungary, aged 18 and over, from 447 communities of the country, who were selected from the registry of the national census. Data were collected through interviews carried out by the staff of TNS Hungary, a company awarded with the project through an open public procurement tender. In compiling the community sample the primary focus was to give a proportional representation for each of the 19 counties while also ensuring that communities are represented proportionally on the basis of their size. Data collection took place between 30 October and 19 December 2003. Interviewers with TNS Hungary were able to successfully complete 5,072 questionnaires, representing a 72% response rate. It is important to note that a questionnaire-based health survey carried out on a representative sample of the population is also capable of providing data on individuals who have not sought medical treatment for their health problems. The estimates presented in the country report and summarised here are valid for the entire Hungarian adult population.

In order to ensure that the sample is representative for the adult population of Hungary, a three-step weighting procedure was applied to obtain the final weight. The base-weight corrected for the uneven probabilities of the sampling method to be chosen for the sample, while the second set of weights corrected for bias due to non-response. A strong association can be assumed between gender, age, the size of the township and responses to the questionnaire. However, representativeness across these factors was not guaranteed during sampling. Therefore, as a last step, the sample was layered according to these factors to reproduce the population proportions of these factors.

¹ Remák, E., R. I Gál and R. Németh (2006).

² Golinowska, S., A. Sowa and R. Topór-Madry (2006).

Among others, information was collected in the following areas:

- Socio-economic status: age, gender, marital status, living conditions, education, occupation, income;
- Self-reported health status and functional capabilities;
- Self-reported morbidity (confirmed by diagnosis): hypertension, myocardial infarction, other cardiovascular disease, stroke, other cerebrovascular diseases, high total cholesterol level, malignant tumours, diabetes, asthma, allergies, bronchitis, osteoporosis, anxiety or depression, arthritis; and
- Medical resource use in past 12 months: ER visits, GP visits, dental visits, outpatients visits, length of inpatient hospitalisation, drug prescriptions.

2.2 Methods

Associations between variables and differences across categories were examined using cross-tabulations and assessed by Pearson's Chi-square tests to describe morbidity due to specific diseases in Hungary, to identify social and economic factors behind good or bad health status as well as to describe health service utilisation by people in good and bad health. In addition, odds ratios were calculated as risk estimators.

Logistic regressions models were built using a stepwise selection method with removal testing based on the likelihood ratio to analyse influence of age and other factors on health status and service utilisation. All categorical variables were redefined as a series of dummy variables, with the worst category serving as the base-case, and individuals belonging to other categories represented by indicator dummies. Therefore results of the logistic regression analyses should be interpreted compared to the following reference case:

- Age-group: 18-34
- Gender: male
- Single with 1 or 2 people in household
- Education: primary school only
- Household income: \leq HUF 50,000/month
- Living in township with $<1,000$ inhabitants
- Occupation: not working

Please note that the NHIS2003 is a cross-sectional dataset. Therefore the conclusions drawn from the analyses will be valid for the current situation and current generations, but do not necessarily predict the health service utilisation behaviour of the population over time.

3. Main results

3.1 Morbidity due to specific diseases in Hungary

Some 30% and 11% of the population reported high blood pressure and high cholesterol levels, respectively. 4% had already suffered a heart attack. 8% of the respondents had diabetes, and 9% reported to be suffering from anxiety or depression. The prevalence of all of these diseases increases with age (see Figure 1).

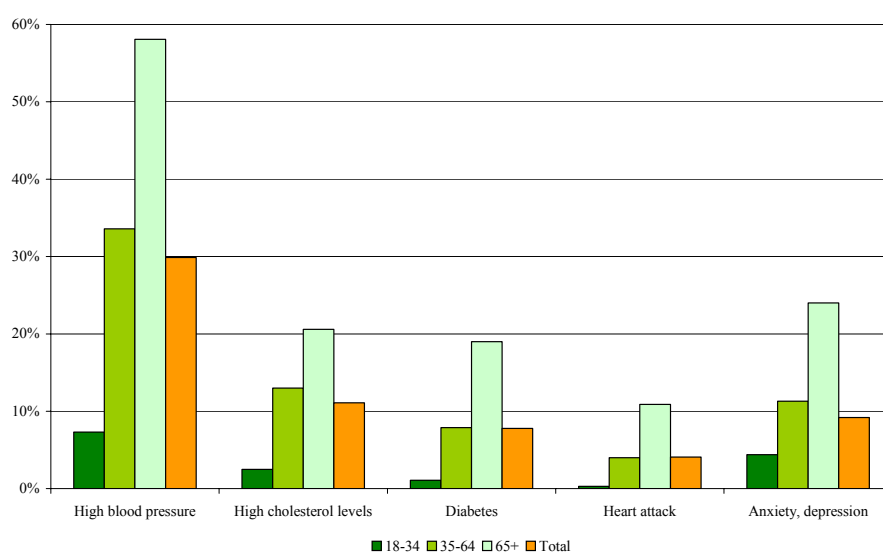
Controlling for age groups, women were associated with a significantly higher risk of hypertension, high cholesterol levels, and anxiety/depression, and with a significantly lower rate of heart attacks than men. These differences were not significant for the 18-34 age group, but showed the above pattern for the two age groups above 35.

The prevalence of all selected diseases was lowest among single people, higher among those who were married or living with a partner, and highest among those who were separated, divorced or widowed. Households with more than three people showed significantly lower prevalence rates than households with only one or two people.

Education had a non-linear impact on diseases prevalence. Those with primary school education only showed the highest prevalence rates, with fewer of those with higher education reporting morbidity. However, people with 5-year university degrees or higher also had higher disease prevalence rates than those with lower education (except, of course, the 'primary school only' category).

Pensioners and disability pensioners reported much higher prevalence rates for all diseases than people in other economic activity categories (e.g. those working or unemployed). On the other hand, those not working had significantly higher prevalence rate of all selected diseases compared to those working in any occupational category.

Figure 1. Prevalence of selected diseases by age



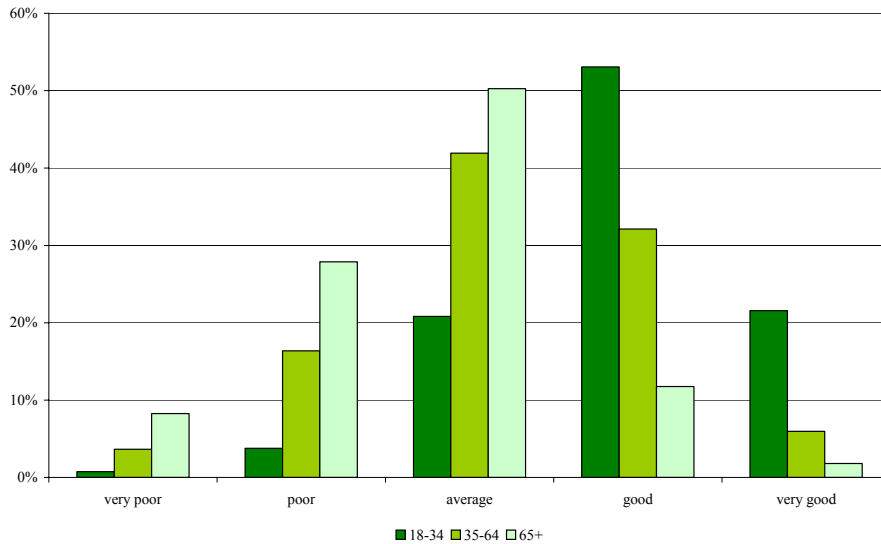
3.2 Social and economic factors behind good or bad health status

Overall, 82% of the population reported themselves to be in average/satisfactory, good or very good health. However, there were significant differences across age groups (see Figure 2). A higher proportion of people aged 65+ reported themselves to be in poor or very poor health status, than those aged 35-64. The prevalence of good health was highest among the youngest age group.

Females were significantly less likely to report good health than males with an odds ratio of 0.6. This gender difference was true for all age categories. Larger households (with three or more people) were more likely to report good health than smaller households with an odds ratio of 2.4.

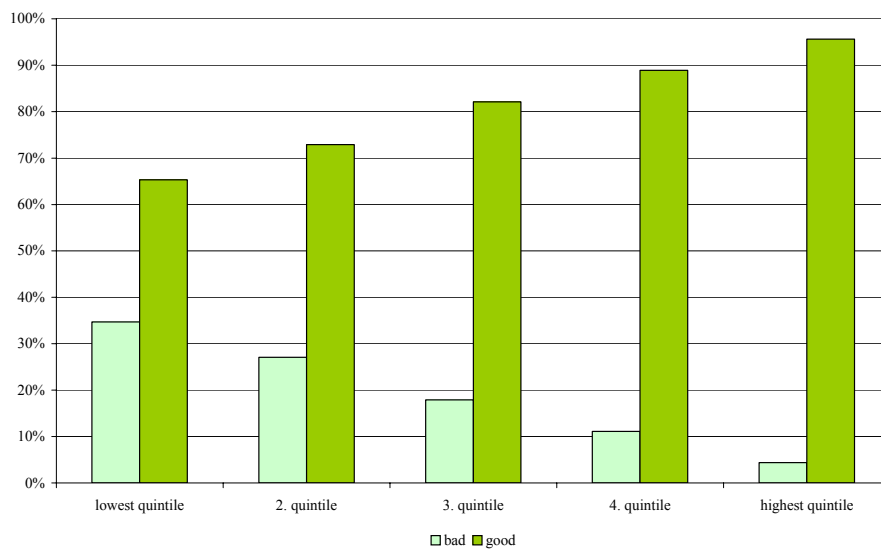
Good health was associated with higher education. The rate of good health showed a clear upward trend with the number of years spent in school. Prevalence of good health ranged from 68% to 95% from education categories “primary school only” to “5-year university”. Not surprisingly, the probability of reporting good health was higher for those working than for those not working. 70% of non-workers reported themselves to be in good health versus above 89% for any work categories.

Figure 2. Self-reported health status by age



Individuals from lower income households were more likely to report bad health status (see Figure 3). The proportion of people reporting bad health status from households in the lowest quintile was more than eight times the proportion reporting bad health status from households in the highest quintile.

Figure 3. Self-reported good/bad health across household income quintiles



3.3 Health service utilisation by people in good and bad health

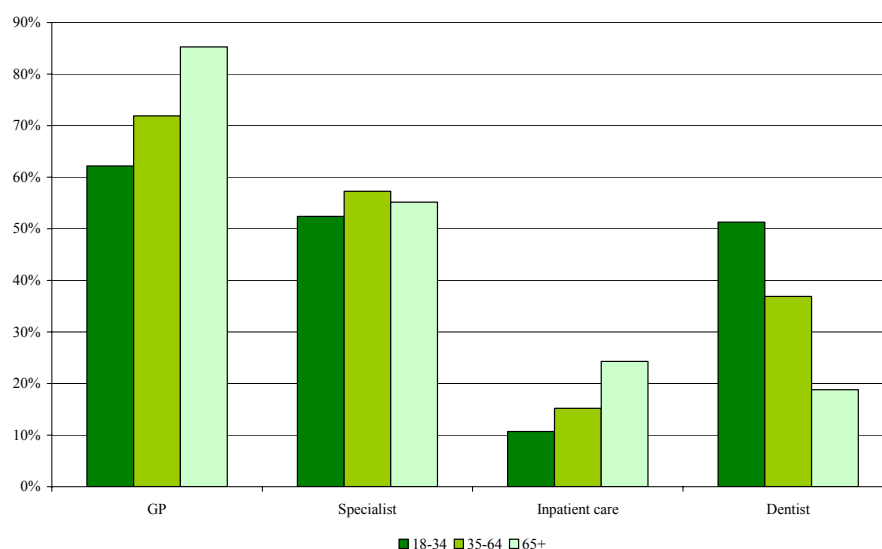
Health service utilisation was high: over 70% of the population reported to have contacted their GP during the last 12 months, 55% had contact with specialist services, and 16% were hospitalised. However, dental contacts were very low, with only 38% reporting to have visited their dentist during the last 12 months.

Age was associated with the proportion of people reporting contact with different types of health services. Proportion contacting their GP and receiving inpatient care showed an increasing trend with age, while proportion visiting the dentist showed a negative trend (see Figure 4).

Individuals with good health were less likely to have contact with health services with the exception of visits to a dentist. Although there was great variability in the number of visits made or the number of days spent in hospital, significant differences were shown between those in good and bad health. For example, people in bad health status visited their GP on average 8 times more than people in good health.

Overall, females were more likely to have contact with all types of health services. However, when age was also taken into account, this turned out to be true only for the two younger age groups (below 65 years). Differences between genders disappeared above the age of 65. The probability of contact with specialists and dentists increased with higher education, while probability of inpatient hospitalisation decreased with higher education. Need for inpatient hospitalisation decreased with higher income, while contact with a dentist increased with higher income.

Figure 4. Proportion reporting contact with health services by age



3.4 The effect of age and other factors on health status

Logit models were developed to describe the influence of explanatory variables explored in previous sections on self-reported health status. The same logit model was run for health service utilisation complemented this time with the variable of self assessed health status. Summary results of the models are shown in Table 1.

Table 1. Summary results of logit models explaining good health and health service utilisation

	Health status self assessment	Health care utilisation		
		Primary	Specialist	Hospital
Sex	<i>Women are less likely to be in good health status</i>	<i>Women are more likely to use health service</i>		
	Confirmed	Confirmed	Confirmed	Not significant
Age	<i>Probability of good health status decreases by age</i>	<i>Probability of health care use increases with age</i>		
	Confirmed	Confirmed	Not confirmed ¹	Not significant
Place of living	<i>Probability of good health status lower for rural population</i>	<i>Rural population is more likely to use health care</i>		
	Not significant	Not significant	Not significant	Not significant
Marital status	<i>Single people are less likely to be in poor health</i>	<i>Single people are less likely to use health care</i>		
	Not significant	Not significant	Confirmed	Confirmed
Number of persons in HH	<i>Probability of being in good health is higher for bigger households</i>	<i>Probability of health care use is lower for bigger households</i>		
	Not significant	Confirmed	Not significant	Not significant
Education level	<i>Persons with higher education levels are more likely to be in good health</i>	<i>Persons with higher education are less likely to use health care</i>		
	Confirmed	Not significant	Confirmed	Not significant
Labour market activity	<i>Inactive people are more likely to be in poor health</i>	<i>Inactive people are more likely to use health care</i>		
	Confirmed	Not significant	Not significant	Not significant
Income²	<i>Probability of being in good health increases with income</i>	<i>Probability of health care use decreases with income</i>		
	Confirmed	Not significant	Not significant	Not significant
Self assessed health status		<i>Probability of health care use increases with poorer health status</i>		
		Confirmed	Confirmed	Confirmed

Notes: The table has a similar structure to Golinowska et al. (2006). 1. Middle aged are more likely to use specialist care than elderly. 2. Income quintiles were used.

Females are less likely to report good health than males, and older people are less likely to report good health than those aged 18 to 34. People with higher education and more prestigious occupations are more likely to report good health. Generally, people with higher income are more likely to report good health.

Self-reported health status, gender, age, and occupation were significant factors explaining whether somebody had contact with their GP during the last 12 months. People in good health had less contact with their GP. Females and older people were more likely to have contacted their GP. People in any occupational categories were less likely to visit their GP than the “not working” reference case. In the case of explaining contact with a GP, the size of the household was also found to be significant. People from larger households were less likely to have contact with a GP.

The same variables were found to influence contact with a specialist. As before, people in good health were less likely, females were more likely to have contact with a specialist, while people with any type of job were less likely to have contact. Higher number of people in the household was associated with lower likelihood of specialist visits. However, according to the regression results, older people are less likely to have visited a specialist during the last 12 months than the youngest age group when all other factors are taken into account. Also, people with higher education were more likely to visit a specialist. This may be explained by increased health awareness and better access to specialist services. Furthermore, younger women of childbearing age are likely to visit a gynaecologist on a regular basis.

The model explaining the need for inpatient hospitalisation included only self-reported health status, marital status and occupation. People in good health were again less likely to need inpatient care. People who are married or separated/widowed had double the odds of requiring inpatient care than single people. As seen consistently in all analyses, those working had a very reduced chance of hospitalisation compared to the “not working” reference case.

The model examining contact with a dentist in the previous 12 months shows the impact of changes in importance of and awareness of dental hygiene across age and education. For example, people with a 5-year university degree were six times more likely to visit a dentist compared to those with primary school education only. Older generations were less likely to visit a dentist than the youngest age group.

4. Conclusions

According to historical data and predictions, the population of Hungary is aging. This is more due to low birth rates than an increase in life expectancy. As a result, the size of the population is decreasing.

Age had a significant impact on prevalence of selected diseases and self-reported health status. A significantly higher proportion of older people reported themselves to be in bad health. Individuals with bad health were more likely to have contact with health services and had a higher number of visits. With the aging of the population pressures for more expenditure on health care is likely to increase further.

References

- Golinowska, S., A. Sowa and R. Topór-Madry (2006), *Health Status and Health Care Systems in Central and Eastern European Countries: Bulgaria, Estonia, Poland, Slovakia and Hungary*, ENEPRI Research Report No. 31 (AHEAD WP II), CEPS, Brussels.
- KSH (2003), Census 2001 – 8. Institutions and institutional households (In Hungarian). Budapest: KSH.
- NHIS (2003), National Health Interview Survey 2003 Hungary – Executive Update. Johan Béla National Center for Epidemiology 2004 (available online at <http://www.antsz.hu/oe/egeszsegstat/NatHealthIntervSurvey2003.pdf>).
- Remák, E., R.I. Gál and R. Németh (2006), *Health and Morbidity in the Accession Countries Country Report – Hungary*, ENEPRI Research Report No. 2. (AHEAD WP II), CEPS, Brussels.

AHEAD Studies Published in the ENEPRI Research Reports Series
(available for free downloading from www.enepri.org or <http://shop.ceps.be>)

- No. 15 *Health and Morbidity by Age and Socio-Economic Characteristics*, Richard Layte, Anne Nolan, Brian Nolan and Tom Van Ourti, November 2005
- No. 16 *The Influence of Supply and Demand Factors on Aggregate Health Care Expenditure with a Specific Focus on Age Composition*, Erika Schulz, November 2005
- No. 17 *The Impact of Death-Related Costs on Health Care Expenditure: A Survey*, Michele Raitano, February 2006
- No. 18 *Demographic Factors and Health Expenditure Profiles by Age: The Case of Italy*, S. Gabriele, C. Cislighi, F. Costantini, F. Innocenti, V. Lepore, F. Tediosi, M. Valerio and C. Zocchetti, May 2006
- No. 26 *Health and Morbidity in the Accession Countries: Country Report – Bulgaria*, Rossitsa Rangelova, December 2006
- No. 27 *Health and Morbidity in the Accession Countries: Country Report – Estonia*, Liis Rooväli, December 2006
- No. 28 *Health and Morbidity in the Accession Countries: Country Report – Hungary*, Edit Remák, Róbert I. Gál and Renáta Németh, December 2006
- No. 29 *Health and Morbidity in the Accession Countries: Country Report – Poland*, Stanisława Golinowska and Agnieszka Sowa, December 2006
- No. 30 *Health and Morbidity in the Accession Countries: Country Report – Slovakia*, Vladimír Kvetan, Viliam Páleník, December 2006
- No. 31 *Health Status and Health Care Systems in Central and East European Countries: Bulgaria, Estonia, Poland, Slovakia and Hungary*, December 2006
- No. 32 *Demographic Changes and Aggregate Health-Care Expenditure in Europe*, Terkel Christiansen, Mickael Bech, Jørgen Lauridsen and Pascal Nielsen, December 2006
- No. 33 *Healthy Life Expectancy in the European Union Member States*, Ehsan Khoman and Martin Weale, December 2006
- No.34 *Incidence of Poor Health and Long-Term Care: Health Transitions in Europe: Results from the European Community Household Panel Survey and Institutional Data*, Andrew Bebbington and Judith Shapiro, December 2006
- No. 35 *Health Status Transitions*, Maria M. Hofmarcher, Monika Riedel, Alexander Schnable and Gerald Sirlinger, June 2007

AHEAD Work Packages	
WPI	Health and Morbidity by Age and Socio-economic Circumstances
WPII	Health and Morbidity in the New Member States
WPIII	Incidence of Poor Health and Long-term Care
WPIV	Health Status Transitions
WPV	Healthy Life Expectancy
WPVI	Determinants of Aggregate Health Care Expenditure focusing on age composition
WPVII	Health Costs Prior to Death
WPVIII	Development of Scenarios for Health Expenditure in European Union Countries
WPIX	Development of Scenarios for Health Expenditure in the New Member States



About AHEAD

In February 2004, a CEPS-led consortium of research institutes launched the implementation of a three-year project called AHEAD (Ageing, Health Status and the determinants of Health Expenditure). Most of the consortium's 18 partner institutes are members of the European Network of Economic Policy Research Institutes (ENEPRi – see <http://www.enepri.org> for details). As specified in the call for proposals, the main task of the project is to carry out an “Investigation into different key factors driving health care expenditures and in particular their interaction with particular reference to ageing” in the (enlarged) European Union.

The strategic objectives of AHEAD are to:

- assess pressures on health spending in the existing EU and in selected candidate countries, looking both at those arising directly from ageing and at those affected by changing incomes, social change and methods of expenditure control;
- develop models for projecting future health spending and
- estimate confidence limits for these projections.

Expenditure on medical treatment has tended to rise as a proportion of national income throughout the European Union. A particular concern is that an ageing population and therefore the presence of more old people will create further pressures for expenditure on health care. This issue is of concern both in its own terms and because of its fiscal implications. Rising health expenditures put pressure on the targets of the Stability and Growth Pact. They also raise the question whether budgetary targets should be tightened ahead of projected growth in public expenditures, so as to ‘save up’ for future spending and keep expected future tax rates reasonably constant.

This project has aimed to refine existing estimates of the links between reported states of health and use of medical services. As well as looking at the effects of ageing on health care, the research has taken account of the link between health expenditure and fertility rates and the demands on health services made by non-native populations. Particular attention is paid to the costs of care near death. One study examined factors other than demand (such as methods of financial control) that may influence health spending. An important aspect of this research is that the work is carried out so as to be able to provide not only the familiar projections and scenarios but also standard deviations and confidence limits for predictions of key variables, such as healthy life expectancy and demand-driven expenditure levels. These will allow policy-makers to judge not only possible outcomes but also the risks surrounding them and to assess their implications.

Participating Research Institutes

Centre for European Policy Studies, CEPS, Belgium
National Institute for Economic and Social Research, NIESR, UK
Netherlands Bureau for Economic Policy Research, CPB, The Netherlands
Deutsches Institut für Wirtschaftsforschung, DIW, Germany
Economic and Social Research Institute, ESRI, Ireland
Research Institute of the Finnish Economy, ETLA, Finland
Federal Planning Bureau, FPB, Belgium
Istituto di Studi e Analisi Economica, ISAE, Italy
Institute for Advanced Studies, HIS, Austria
Institute for Public Health, IPH, Denmark
Laboratoire d’Economie et de Gestion des Organisations de Santé, LEGOS, France
Personal Social Services Research Unit, PSSRU, UK
Fundación de Estudios de Economía Aplicada, FEDEA, Spain
Centre for Social and Economic Research, CASE, Poland
Institute of Slovak and World Economy, ISWE, Slovak Republic
Institute of Economics at the Bulgarian Academy of Sciences, IE-BAS, BG
Social Research Centre, TARKI, Hungary
Department of Public Health, University of Tartu, Estonia