1997 EDITION

EUROSTAT WORKING PAPERS

Now-casts of live births and deaths for 15 countries of the European Economic Area

(E4/1997-7)

EUROPEAN COMMISSION

eurostat

THEME 3
Population and social conditions

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Abstract

Demographic now-casts are forecasts of demographic indicators for the current year. Now-casts can be based on monthly observations. This paper examines the forecast accuracy of four methods which can be used for making now-casts of annual numbers of live births and deaths. Two methods assume the monthly numbers in the last months of the current year to remain constant, whereas the other two methods assume recent change to continue. The methods are applied to data for 16 European countries. The empirical results lead to similar conclusions for most countries: the average errors of methods assuming a constant level are smaller than those of methods projecting a change; methods that are based on seasonally adjusted monthly numbers outperform a method that does not use seasonal adjustment; in about 90% of the cases now-casts project the direction of change of the annual number of the current year compared with that of the preceding year correctly; now-casts of live births are more accurate than now-casts of deaths. On the basis of now-casts of total numbers of live births and deaths now-casts of the total fertility rate and life expectancy at birth can be calculated using recently published population scenarios.

1. Introduction

In order to satisfy the growing need for up-to-date demographic statistics, Statistics Netherlands was commissioned by Directorate General V of the European Commission to investigate the possibilities of making demographic now-casts. Now-casts are short-run forecasts that provide estimates of demographic indicators for the current year. In most countries information on total population size at 31 December is available after some months only. Similarly information on the total fertility rate and life expectancy in a given year usually is not available until several months after the end of the year. Now-casts can provide around the end of each calendar year an estimate of the total population size at 31 December and an estimate of the average level of the total fertility rate and life expectancy during that year.

Timely information on demographic developments is useful for several purposes. Population size is often used as a denominator of social and economic indicators that are used for international comparisons, e.g. GDP per head of the population. Recent information on the number of people aged 15-64 years is of interest for labour market indicators. Estimates of the total fertility rate or life expectancy at birth for the current year are useful for giving insight in the most recent demographic trends.

Apart from providing early estimates at the end of each calendar year, now-casts may also be useful during earlier months in the current year. For example, now-casts made around 1 July can provide an early indication of the tendency of demographic developments during the current year. A comparison of now-casts for the current year with observed figures for the preceding year tends to give a more clear picture of current demographic changes than a direct inspection of seasonally adjusted monthly numbers, which tend to show rather strong random fluctuations between successive months.

Changes in total population size depend on the numbers of births and deaths as well as on the size of net migration. As a first step in making demographic now-casts, this study examines now-casts of births and deaths. These now-casts are based on a projection of monthly numbers. In order to make now-casts of total population size, now-casts of net migration will be needed also.
The present study is not restricted to total numbers of births and deaths. On the basis of now-casts of births and deaths, now-casts of the total fertility rate and life expectancy at birth are made. The latter indicators provide a more useful indicator of demographic trends, as they are not affected by changes in the size and age structure of the population.

The aim of the present study is to examine the possibility of internationally consistent now-casts. Obviously one important criterion is the forecast accuracy of now-casts: how close can they be expected to be to the actual value? However, other criteria should be taken into account also. The requirement that the method is to be used for various countries imposes restrictions on the choice of the method. Data requirements should be as limited as possible. Furthermore, the selected method should be easy to use and the results need to be interpretable. Section 2 discusses four methods that meet these requirements. Section 3 describes the criteria on the basis of which the forecast accuracy of the four methods is tested. Section 4 presents empirical results for 16 countries: 15 countries of the European Economic Area (due to lack of data at the moment this paper was prepared, no results are available for the United Kingdom, Spain and Liechtenstein) and Switzerland. The aim of this section is to choose the optimal method on the basis of an examination of the forecast accuracy of the four

methods and to assess the degree of uncertainty of the now-casts of total numbers of births and deaths. The results are evaluated in section 5. Finally section 6 presents now-casts for 1996 for both total numbers of births and deaths and for the total fertility rate and life expectancy at birth.

2. Methods for demographic now-casts

2.1 Now-casts of births and deaths

Now-casts of total numbers of births and deaths in the current year can be based on an extrapolation of monthly numbers. For example, if monthly numbers up to and including September of the current year are available, the year total can be estimated by adding the projected monthly numbers for the last 3 months of the current year to the observed figures for the first 9 months.

In projecting monthly time series it is essential to take into account seasonal fluctuations. Seasonal patterns differ between European countries. In the North-European countries more babies are born during the first half of the year than during the second half. The opposite applies to South-European countries. If these seasonal patterns would not be taken into account, now-casts for North Europe would tend to be too high, whereas now-casts for South Europe would be too low. Hence a basic requirement for a method for now-casts is that it should take into account seasonal fluctuations.

Apart from seasonal fluctuations, monthly time series show two other types of change, *viz.* a trend and erratic fluctuations. One important criterion for selecting a method for making now-casts is the extent to which the method is capable of disentangling systematic changes described by a trend and irregular fluctuations. There is a trade-off between a quick reaction to changes in the trend and the risk of projecting irregular fluctuations into the future. If a method reacts quickly to changes in the most recent monthly observations, the method is capable of taking into account recent changes in the trend. Obviously this improves forecast accuracy. However, there may be a considerable risk that the recent changes in the monthly numbers are not caused by a change in the trend but rather by irregular temporary fluctuations. This has a negative impact on forecast accuracy. The magnitude of this risk depends on the size of the random fluctuations in the time series. If random fluctuations are relatively large in comparison with changes in the trend, there is a considerable risk that projecting changes in the most recent observations can lead to relatively large forecast errors.

Methods that can be used for making now-casts on the basis of monthly figures range from very simple extrapolation procedures to sophisticated stochastic time-series models. However, the main distinction is *not* that between simple and sophisticated methods.
Rather the decisive distinction is that between methods of which the projections are primarily based on the *level* of the monthly observations and projections based on the size of *changes* in the time series. The former type of methods is based on the assumption that the level of the observations in the last months of the year will be equal to the average level in the last observed months, whereas in using the latter type of methods it is assumed that a change in recent months will continue in the last months of the year.
One disadvantage of the former type of methods is that, if there is a trend in the time series, projections tend to be systematically too low or too high. For example, if there is an increasing trend in the monthly data, projections assuming a constant level will be too low. On the other hand, one disadvantage of the latter type of methods is that the risk of relatively large forecast errors may be considerable. If changes in the most recent monthly data are caused by temporary fluctuations rather than by a trend, the direction of the projected change may be wrong, which may cause relatively large errors. For example, if on the basis of an increase in the last monthly observations, an increase is projected for the remaining months of the current year, whereas the recent increase turns out to be only temporary and hence the last

months of the year will show a decrease, the forecast error may be considerably larger than if a constant level would have been assumed.

Obviously one important criterion for the selection of an optimal method for making now-casts is forecast accuracy. The next sections are devoted to an elaborate empirical study of the forecast accuracy of various methods. However, other criteria are to be taken into account also. One important aim of the present study is that the now-casts should be internationally consistent, i.e. the methodology used for different countries should be similar.
The requirement that the method is to be used for various countries imposes some restrictions on the choice of the method:

- data requirements should be as limited as possible;
- the method should be easy to use;
- the results need to be interpretable.

The forecast accuracy of four methods that meet these requirements will be examined.
Because of the first requirement the methods are applied to absolute numbers of births and deaths rather than to relative fertility and mortality rates.
Because of the second and third requirements it was decided *not* to follow the well-known Box-Jenkins approach of time-series modelling which is aimed at identifying appropriate ARIMA-models for each time series (Box and Jenkins, 1970). First, this method requires considerable expertise in the field of time-series modelling. Secondly, for most users ARIMA-models are a black box. It is difficult to interpret the outcomes. Moreover elaborate empirical research on Dutch demographic data showed that ARIMA-models do not outperform more simple models (De Beer, 1988, 1990). Similar conclusions were derived from extensive empirical studies of a great variety of time series in other areas (see e.g. Makridakis et al., 1982; Makridakis and Hibon, 1979).

The four methods that are tested in this study can be divided into two categories: the first two methods project a constant level for the remaining months of the current year, whereas the other methods assume that recent changes will continue. Three methods are based on seasonally adjusted numbers.

Method 1

Method 1 projects a constant level of the monthly time series. As time series of births and deaths show seasonal fluctuations, the observations in the first months of the year are systematically higher or lower than in the remaining months. In order to avoid systematic forecast errors, the time series needs to be seasonally adjusted.
Method 1 assumes that the seasonally adjusted figures during the remaining months of the current year are equal to the average of the seasonally adjusted figures of the last 6 observed months. Note that in the early months of the year some of the last 6 observed months belong to the previous year. The projection of the year total equals the sum of the seasonally adjusted observations in the first months and the projected seasonally adjusted numbers in the remaining months:

$$\hat{y}_{j|m} = \sum_{i=1}^{m} x_{j,i} + (12-m) \cdot \sum_{i=0}^{5} \frac{x_{j,m-i} D_i + x_{j-1,12+m-i}(1-D_i)}{6}$$

where

$x_{j,m}$ = seasonally adjusted figure for month m in year j
$\hat{y}_{j|m}$ = forecast of year total for year j, made in month m
D_i = 1 if m-i > 0
= 0 otherwise

The choice of 6 months as the base period for calculating the average level is based on an analysis of Dutch data. If a longer period is chosen, the forecasts are less sensitive to incidental fluctuations, but react more slowly to changes in the time series. The opposite applies if a shorter period is chosen. An extended analysis of Dutch data suggests that the choice of 6 months is a reasonable compromise (De Beer, 1990).

Method 2

Similar to method 1, method 2 assumes a constant level in the remaining months of the current year. In contrast with method 1, the projected level does not equal the arithmetic average of seasonally adjusted data in the last 6 months, but equals a 'smoothed' level. The smoothed level in the last observation month is the weighted average of the seasonally adjusted figure of that month and the smoothed level of the previous month ('exponential smoothing'):

$$\hat{y}_{j|m} = \sum_{i=1}^{m} x_{j,i} + (12-m)\cdot c_{j,m}$$

where

$x_{j,m}$ = seasonally adjusted figure for month m in year j
$\hat{y}_{j|m}$ = forecast of year total for year j, made in month m
$c_{j,m} = a \cdot x_{j,m} + (1-a)\cdot[c_{j,m-1}D_i + c_{j-1,12}(1-D_i)]$ $\quad 0 \le a \le 1$
$c_{1,1} = x_{1,1}$
D_i = 1 if m> 1
= 0 otherwise

The weight a that is used for calculating the smoothed level can be estimated on the basis of the observed time series, e.g. by means of minimising the sum of squared forecast errors. Another possibility is to choose a value of a on *a priori* grounds. If a is close to 1, this method reacts quickly to recent observations. For example, if $a = 1$ the projected level equals the seasonally adjusted figure in the last observation month. If a is close to 0, the projections react slowly to changes in the observations.

Method 3

Method 3 assumes that a linear change in the last 12 observation months will continue in the remaining months of the current year. The linear change is calculated as the difference between the average level of the seasonally adjusted data in the last 6 months and that in the preceding 6 months:

$$\hat{y}_{j|m} = \sum_{i=1}^{m} x_{j,i} + (12-m)\cdot x_{j,m} + \sum_{i=1}^{12-m} i \cdot \left(\sum_{i=0}^{5} \frac{x_{j,m-i} D_i + x_{j-1,12+m-i}(1-D_i)}{6} - \sum_{i=6}^{11} \frac{x_{j,m-i} D_i + x_{j-1,12+m-i}(1-D_i)}{6} \right)$$

where

$x_{j,m}$ = seasonally adjusted figure for month m in year j
$\hat{y}_{j|m}$ = forecast of year total for year j, made in month m
D_i = 1 if m-i > 0
= 0 otherwise

Method 4

Method 4 is the only method that does not require seasonal adjustment. This method assumes that the relative change in the first months of the current year compared with the corresponding months in the previous year will continue in the remaining months. This implies that the share of the first months in the annual total of the current year equals the corresponding share in the previous year:

$$\hat{y}_{j|m} = \sum_{i=1}^{m} y_{j,i} \cdot y_{j-1,+} \Big/ \sum_{i=1}^{m} y_{j-1,i}$$

where

$y_{j,m}$ = observed figure for month m in year j
$y_{j,+}$ = year total
$\hat{y}_{j|m}$ = forecast of year total for year j, made in month m.

2.2 Now-casts of total fertility rate and life expectancy at birth

Absolute numbers of births and deaths have only limited value for interpreting changes in fertility and mortality, as they are affected by changes in the age and sex structure of the population. For that reason, the total fertility rate (TFR) and life expectancy at birth are commonly used indicators of the level of fertility and mortality respectively.
One problem in making now-casts of the TFR and life expectancy at birth on the basis of monthly data is that this would require monthly data on the size and age structure of the population.
Calot (1981) developed a method for estimating monthly figures of the TFR. His method is based on the ratio between the TFR and the total number of births. This ratio depends on the number of women in the reproductive ages. Calot calculates the difference between the ratio measured for a given year and an estimate of the ratio for that year on the basis of age-specific rates and numbers of women in the reproductive ages in some previous year. On the basis of a projection of these differences he estimates the ratio for the current year.

Instead of this indirect approach we follow a more direct approach by means of using projections of the number of women in the reproductive ages. These projections are obtained from the baseline scenarios for the countries of the European Economic Area that were compiled and published in 1996 (Eurostat, 1996; De Beer and De Jong, 1996). The use of these scenarios is justified since forecast errors of numbers of women in the reproductive ages in the short run tend to be relatively small.
The baseline scenarios provide information on both total numbers of births and deaths and on the TFR and life expectancy. On the basis of the relationship between the total number of births and the TFR and the relationship between the total number of deaths and the life expectancy at birth according to the baseline scenario in a given year, now-casts of the TFR and life expectancy at birth for that year can be based on the now-casts of the total numbers of births and deaths.

The total fertility rate (TFR) equals the sum of the age-specific fertility rates in a given year. The TFR can be interpreted as the number of children a woman would have if (1) she survived to age 50 and (2) throughout her reproductive life (15-49) she experienced exactly the age-specific fertility rates for the year in question.
Now-casts of the TFR can be obtained by dividing the now-cast of the number of live births in year t by the number of live births in t according to the baseline scenario and multiplying this by the TFR according to the baseline scenario:

$$TFR_{t,\,now-cast} = \left(\frac{number\ of\ live\ births\ in\ year\ t,\ now-cast}{number\ of\ live\ births\ in\ year\ t,\ baseline\ scenario} \right) \cdot TFR_{t,\,baseline\ scenario}$$

Now-casts of life expectancy at birth can be obtained on the basis of now-casts of age-specific mortality quotients. The latter now-casts can be obtained by multiplying the mortality quotients according to the baseline scenario for year t by the ratio of the number of deaths in t according to the now-cast and the number of deaths according to the baseline scenario. For both males and females the same ratio is used. Subsequently now-casts of life expectancy of males and females are calculated on the basis of the now-casts of the age- and gender-specific mortality quotients.

3. Criteria for evaluating methods of now-casts

The selection of an optimal method can be based on various criteria. In this study eight criteria are examined. The criteria emphasise different aspects of forecast accuracy. For example, one criterion tests whether annual numbers are systematically under- or overestimated. Another criterion emphasises the importance of avoiding large errors. Furthermore, one criterion examines whether the direction of change is correct, irrespective of the size of the error.

1. Mean forecast error
The forecast error is defined as the forecast (i.e. the now-cast) minus the observation. The main use of the mean forecast error is to examine whether a method under- or overestimates the annual figures. A negative value of the mean forecast error means that the annual numbers are underestimated, a positive value means the opposite.

2. The mean absolute forecast error
One drawback of the mean forecast error is that its value may be low even though the separate forecast errors may be large, due to the cancellation of large errors of different signs.. To avoid this problem the mean of the absolute values of the forecast errors can be calculated.

3. The root mean square error
This criterion emphasises the importance of large errors.

4. The mean absolute percentage forecast error
In comparison with criterion 2, this criterion allows a better comparison of the results between countries.

5. The root mean square percentage error
Compared with criterion 3, this criterion is better suited for comparing results of different countries.

6. Minimum or maximum error
6.1. Maximum absolute forecast error
This criterion is useful if avoiding large forecast errors is important. If a method produces a low value of the maximum error, the risk of a large error is small.
6.2. Minimum absolute forecast error
This criterion is not aimed at selecting the best method, but rather at identifying a poor method. If the minimum error of a method is not small, the method is not suitable.

7. Number of times that one method performs better than another
This criterion examines how often a method produces better forecasts than another method. The method is based on a comparison of the absolute forecast errors. Forecasts per month are compared one to another. The method with the smaller error performs better than the other method. If the difference between two methods is smaller than some threshold value, the two methods are considered to perform equally well. On the basis of an empirical examination for the Netherlands the threshold is put equal to 200 for births and deaths. For the other countries the threshold value is determined on the basis of the ratio of the population size of each country and the population size of the Netherlands (see appendix 1 table 17).

8. Number of times the direction is forecast correctly

This criterion does not examine the size of forecast errors, but only tests whether the direction of the change was forecast correctly, i.e. whether the forecast that the number of births or deaths in the current year is higher or lower than in the preceding year is correct. If the change between the current and previous year is small, it is assumed that the direction is projected correctly if the difference between the forecast and the observation of the preceding year is smaller than some threshold value. On the basis of empirical results for the Netherlands this threshold value is assumed to equal 1000. For the other countries the threshold value is determined on the basis of the ratio of the population size of each country and the population size of the Netherlands (see appendix 1 table 17).

4. Empirical results

The four methods for now-casts discussed in section 2 are tested on the basis of the eight criteria discussed in section 3. Methods 1 and 2 assume a constant level of the monthly numbers during the remainder of the year, whereas methods 3 and 4 project a change. Methods 1, 2 and 3 are based on seasonally adjusted numbers. For that purpose the seasonal adjustment program Census X-11 is used. Method 4 does not require seasonal adjustment. The forecast accuracy of the four methods is examined on the basis of monthly data for the period 1981-1995.
This section discusses empirical results for 16 countries, i.e. 15 countries of the European Economic Area (due to lack of data no results are available for the United Kingdom, Spain and Liechtenstein) and Switzerland.
The tables with the empirical results can be found in Appendix 1. In these tables the forecast errors are divided by 100. Appendix 3 presents a number of graphs of forecast errors.
The results of the countries are discussed in the order of population size. We start with the country with the smallest population.

Before using method 2 for making now-casts the value of the weighing factor a needs to be determined. The value of a is chosen on the basis of two criteria: the lowest mean absolute forecast error and root mean square error. For some countries these two criteria did not yield a clear conclusion. In those cases, the other criteria were taken into account also.
For births the weighing factor $a = 0.4$, 0.5 or 0.6 turns out to lead to the best forecasts of the annual figures. In the case of deaths, the factor $a = 0.1$ gives the best now-casts for almost all countries. The selected value of a for each country is given in table 18 in Appendix 1.

4.1. Iceland

Live births
The mean forecast error shows that methods 1 and 2 tend to overestimate the annual figures, while method 4 in general underestimates the yearly numbers of live births. According to both the mean absolute forecast error and the root mean square error methods 1 and 2 perform better than the other two methods. The mean absolute percentage error shows that when using method 1 or 2 the error of now-casts made after the August data are available is 1% or less. The root mean square error indicates that the size of errors of now-casts made after data of April are available is twice that of now-casts made 4 months later. The maximum absolute forecast error shows that when method 1 or 2 is used, the error made when the August data are available is less than 100. According to the mean errors, the forecast accuracy of methods 1 and 2 hardly differ. However, looking at the number of times method 1 yields a smaller absolute error than method 2 or *vice versa*, method 2 turns out to perform better than method 1. In the majority of cases all methods predict the right direction of change. If the June data are available, methods 1, 2 and 3 turn out to project the right direction in 13 out of 15 cases.

Deaths
In the first months of the year methods 1, 2 and 3 underestimate the annual number of deaths, whereas the estimates of method 4 are too high. The absolute and squared errors show that methods 1 and 2 perform better than methods 3 and 4. The percentage errors exceed those for births, although the absolute errors are smaller. The direction of change is forecast less often correctly than for births. According to most criteria method 2 performs better than method 1. Using method 2 the maximum error based on observations up to and including June is less

than 100. Method 4, the only method that does not use seasonally adjusted numbers, clearly performs less well than methods 1 and 2.

4.2. Luxembourg

Live births
Forecasts based on methods 1 and 2 underestimate the yearly numbers of live births in Luxembourg, while methods 3 and 4 in most cases lead to an overestimation of the annual numbers. Most criteria indicate that methods 1 and 2 perform better than methods 3 and 4. The size of the forecast errors is similar to those for Iceland. The differences between methods 1 and 2 are smaller than for Iceland.

Deaths
On average now-casts of deaths according to all four methods were too high during the period 1981-1995. Method 2 clearly performs better than the other three methods, particularly during the first half of the year. Even though the mean percentage errors in the first months are smaller than those for Iceland, the maximum forecast errors in the early months are clearly larger. Particularly methods 3 and 4 may produce large errors in the first months of the year. All methods have problems in projecting the correct direction of change on the basis of monthly data for the first half of the year.

4.3. Ireland

Live births
Now-casts based on the methods 1 and 2 tend to overestimate the number of live births in Ireland. This can be explained by the fact that the number of births has declined in Ireland, whereas methods 1 and 2 assume a constant level. The average errors of methods 3 and 4, which project a change, are small. However, this does not imply that the forecasts of methods 3 and 4 are more accurate, as the absolute and squared errors of methods 3 and 4 are not smaller than those of the other methods. The direction of change is forecast correctly in almost all cases by all methods if data up to and including May are available. The differences between the four methods are small. The percentage errors are smaller than those for Iceland and Luxembourg.

Deaths
In the first months of the year the annual number of deaths in Ireland tends to be overestimated, whereas the now-casts produced in the second half of the year are generally too low. The forecast accuracy of method 2 is clearly better than that of the other methods, particularly in the first months of the year. For all methods the percentage errors are larger than those for births. The direction of change is forecast more often correctly than for Luxembourg. The results of method 4 are clearly worse than those of the other methods. Hence it is worthwhile to seasonally adjust the monthly figures.

4.4. Norway

Live births
In Norway now-casts according to methods 1 and 2 underestimated the number of live births during the years 1981-1995. The average errors of method 4 are small. However, the absolute

and squared errors of method 4 are larger than that of methods 1 and 2. The errors of methods 1 and 2 hardly differ. The percentage errors are smaller than in Ireland. On the basis of data up to and including May the percentage errors are below 1%. However, the direction of change is forecast less often correctly than in Ireland.

Deaths
Methods 1 and 2 underestimated the number of deaths in Norway in the years 1981-1995. The absolute and percentage errors are larger than those of births. The percentage errors are smaller than those for Ireland. The average errors of method 2 are smaller than those of the other methods, although the maximum errors in the second half of the year are higher than those of methods 1 and 3.

4.5. Finland

Live births
Now-casts produced by the first method result in a slight overestimation of the annual number of live births in Finland, whereas forecasts based on the other three methods sometimes are too low and sometimes too high. According to most criteria, method 2 produces the most accurate forecasts, although the difference with method 1 is small. The errors are slightly higher than in Norway. In most cases methods 1, 2 and 3 forecast the right direction of change during the second half of the year.

Deaths
Most now-casts during the period 1981-1995 were too low. This can be explained by the increase of the annual number of deaths in the 1980s. In the first months of the year method 2 performs better than the other methods. After July there are hardly differences between methods 1, 2 and 3. The maximum errors of method 2 are rather stable after March: the maximum error in each month equals about 1,100. The percentage errors for deaths exceed those for births. In contrast with births, the errors for deaths in Finland are slightly lower than those in Norway.

4.6. Denmark

Live births
All methods forecast too few live births. This can be explained by the strong increase of the number of births from 51 thousand in 1983 to 70 thousand in 1995. The average errors of methods 3 and 4, which project a change, are smaller than those of methods 1 and 2, which project a constant level. However, this does not imply that methods 3 and 4 are superior to methods 1 and 2: the average absolute and squared errors of methods 1 and 2 are slightly smaller than those of methods 3 and 4. Hence the small average errors of methods 3 and 4 are due to cancellation of errors of different signs. The mean errors of the 4 methods are about equal to those for Finland. Generally during the second half of the year, the direction of change is forecast correctly by methods 1, 2 and 3.

Deaths
Similarly to births, now-casts of deaths are too low and average errors of methods 3 and 4 are smaller than those of methods 1 and 2. Also similarly to births, absolute and squared errors of methods 3 and 4 are larger than those of methods 1 and 2. The errors of the 4 methods are slightly lower than for Finland. Method 2 performs better than the other methods. From April onwards the average and maximum errors of method 2 hardly change. Thus a now-cast made

around April is hardly more uncertain than a now-cast made in the last months of the year. From March method 2 almost always forecasts the right direction. Method 4 produces relatively large minimum errors during the first half of the year. This method is clearly inferior to the other 3 methods. Hence seasonal adjustment is useful.

4.7. Switzerland

Live births
All four methods underestimate the number of births for Switzerland during the period 1981-1995. This is caused by the increase of the number of births from 74 thousand in 1983 to 87 thousand in 1992. The absolute and squared forecast errors are smaller than in Denmark. In the second half of the year almost all now-casts forecast the right direction. The forecast accuracy of methods 1 and 2 hardly differs.

Deaths
Now-casts of deaths for Switzerland tend to be too high. Particularly the forecasts of methods 3 and 4 in the early months of the year are too high. The absolute and squared errors of method 4 in the first half of the year are large. Method 2 performs considerably better than the other methods. The errors of method 2 are about equal to those for births. The maximum errors of now-casts made in August or later are below 1,000. From May onwards, method 2 almost always forecasts the right direction of change of the annual number.

4.8. Austria

Live births
Most now-casts of live births in Austria are too high. Although there was no continuously increasing or decreasing trend of the number of births during the period 1981-1995, there were more years of decrease than years of increase. According to the various criteria there are relatively little differences between the four methods. The errors do not differ a great deal from those of Switzerland.

Deaths
The now-casts of method 2 are too high on average. The mean errors of methods 3 and 4 are clearly smaller than those of methods 1 and 2. However, the absolute and squared errors of the former two methods are clearly higher than those of the latter two. The errors of methods 3 and 4 are clearly larger than for Switzerland. All methods produce relatively large maximum errors even as late as around October.

4.9. Sweden

Live births
In contrast with the results of the other countries, method 4 yields more accurate now-casts of births in Sweden than the other methods. In most cases method 4 project s the correct direction, even in the first months of the year. This can be explained by the strong changes in the number of births in Sweden. There was a sharp increase between the 1980s (from 94 thousand births in 1981 to 124 thousand births in 1990), whereas there was a strong decline in the 1990s (from 124 thousand in 1991 to 103 thousand in 1995). Consequently methods 1 and 2, assuming a constant level, perform worse than method 4 which assumes that the change in the current year equals than in the preceding year.

Deaths
Now-casts of deaths in Sweden were too low on average. Due to cancellation of errors of different signs, the mean error of method 4 is very small. However, the absolute and squared errors of method 4 are worse than that of the other methods. Method 2 yields the best results for deaths. Using method 2 the percentage errors for births and deaths hardly differ. However, the direction of change of the number of deaths is less often projected correctly. Particularly method 4 performs poorly.

4.10. Portugal

Live births
The number of births decreased strongly in Portugal from 152 thousand in 1981 to 107 thousand in 1995. The methods assuming a constant level (methods 1 and 2) produced too high now-casts, whereas the now-casts of methods 3 and 4 were too low, although only slightly. The absolute and squared percentage errors are smaller than in Sweden. The maximum errors of now-casts made in October are less than 1,000. Method 2 produces the smallest forecast errors.

Deaths
All methods project too few deaths in Portugal. Due to cancellation of errors the mean error of method 4 is small. However, the absolute and squared errors of method 4 are twice those of methods 1 and 2. Particularly in the first months of the year the forecasts of method 4 may produce very large errors. The errors for deaths are considerably higher than those for births. Method 2 yields more accurate results than the other methods. In the first three months of the year the direction of change is frequently forecast incorrectly.

4.11. Belgium

Live births
The average error of now-casts of live births in Belgium according to method 4 is much smaller than that of the other methods. The absolute and squared errors show only little differences between the methods. The maximum errors of methods 1 and 2 from August onwards are below 1,000. From April onwards methods 1, 2 and 3 forecast almost always the right direction of the annual change.

Deaths
Now-casts of the number of deaths in Belgium were generally too high. Whereas the average error of method 4 is smaller than that of the other methods, the absolute and squared errors of method 4 are clearly worse. On average method 2 produces the most accurate now-casts. The maximum errors are considerably higher than for births.

4.12 Greece

Live births
Whereas the now-casts of live births in Greece according to methods 1 and 2, which project a constant level, were too high, the now-casts of methods 3 and 4, which project a change, were too low. There was a sharp decline of the number of births in the first half of the 1980s and a gradual decline in the second half. The mean errors of methods 3 and 4 are smaller than those of methods 1 and 2, but the absolute and squared errors of the former methods are larger than

those of the latter methods. The size of the errors of methods 1 and 2 do not differ much. Both methods turn out to forecast the right direction of change quite often.

Deaths
In the first months of the year all methods underestimated the number of deaths. The absolute and squared errors of methods 1 and 2 are considerably smaller than those of methods 3 and 4. Method 2 produces slightly better results than method 1. The percentage errors of method 2 are similar to those for births. However, for deaths the direction of change is projected less accurately.

4.13 The Netherlands

Live births
The number of live births in the Netherlands increased between 1983 and 1991 and decreased after 1991. In the first months of the year the now-casts in the Netherlands according to methods 1 and 2 were too low, whereas the now-casts of method 4 were too high. In the second half of the year there was a slight overestimation by all methods. The absolute and squared errors of methods 1 and 2 are smaller than those of methods 3 and 4. The differences between methods 1 and 2 are very small. In the first half of the year method 4 quite often projects a wrong direction of change.

Deaths
The now-casts of deaths of all four methods are too low. This can be explained by the increase of the number of deaths from 116 thousand in 1981 to 135 thousand in 1995. The absolute and squared errors of methods 1 and 2 are smaller than those of methods 3 and 4. The accuracy of methods 1 and 2 hardly differs. From August the direction of change is almost always forecast correctly.

4.14. Italy

Live births
Methods 1 and 2 produced too high now-casts of live births in Italy in the period 1981-1995, whereas the now-casts of methods 3 and 4 were too low. In the first half of the 1980s the number of births dropped sharply. Between 1986 and 1992 the number of births fluctuated. From 1992 to 1995 there was another sharp decline. The forecast accuracy of methods 1 and 2 is better than that of methods 3 and 4. The results of methods 1 and 2 do not differ much. The direction of change is projected correctly in almost all cases. Apart from the first months of the year, the average percentage errors of methods 1 and 2 are below 1%.

Deaths
Now-casts of deaths were too high in most cases. According to various criteria methods 1 and 2 perform much better than methods 3 and 4. From July methods 1 and 2 project the direction of change nearly perfectly. The errors of method 2 are smaller than those of method 1 in most cases.

4.15 France

Live births
Whereas methods 1 and 2 tend to overestimate the number of live births in France during the period 1981-1995, the now-casts according to method 4 are generally too low. The number of

births declined in the early 1980s and also between 1988 and 1994. According to the absolute and squared errors the differences between the four methods are rather small. The errors are slightly smaller than in Italy, but for Italy the direction of change is projected correctly more often.

Deaths
The now-casts of deaths by methods 1, 2 and 3 are generally too high, whereas method 4 does not show a systematic over- or estimation. However, the absolute and squared errors of method 4 are larger than those of the other methods. Method 2 performs slightly better than method 1.

4.16. Germany

Live births
Methods 1 and 2 forecast too few live birth for Germany. For methods 3 and 4 there is some cancellation of positive and negative errors, leading to a smaller mean error. The number of births declined in the early 1980s, increased in the late 1980s and decreased again in the early 1990s. According to absolute and squared errors , the results for methods 1, 2 and 3 differ hardly. Method 4 clearly performs worse than the other methods. In the second half of the year the direction of change is forecast correctly by methods 1, 2 and 3. The percentage errors for Germany are larger than those for France and Italy.

Deaths
Whereas the now-casts of methods 1, 2 and 3 were too high in 1981-1995, the average value of the errors of now-casts of method 4 was almost zero. However, this is due to cancellation of relatively large errors, as the absolute and squared errors show: the errors of method 4 are larger than those of the other methods. The results of methods 1 and 2 hardly differ. The percentage errors for deaths in Germany are smaller than those for Italy and France.

5. Evaluation

In Section 4 the forecast accuracy of now-casts according to 4 methods is examined.
Method 1 assumes that the average level of the seasonally adjusted numbers in the remainder of the current year will be equal to the average level of the last 6 observation months.
Method 2 assumes that the level in the last months of the year equals a smoothed level.
Method 3 assumes that a linear change during the last 12 observation months will continue in the remaining months of the current year.
Method 4 assumes that the change of the average level in the remaining months of the current year compared with the corresponding months in the previous year will be equal to that in the observed months of the current year.
From the empirical results described in section 4 a number of conclusions can be drawn.

1. In section 2 it was emphasised that the main distinction between methods for now-casts is that between methods projecting a constant level during the last months of the year (methods 1 and 2) and methods projecting a change (methods 3 and 4). The empirical results confirm this dichotomy. Methods projecting a constant level tend to lead to a systematic over- or underestimation more often than methods projecting a change. As a result the average errors of methods 3 and 4 tend to be closer to zero than those of methods 1 and 2. However, in using methods that project a change there is a considerable risk of relatively large errors. Consequently the absolute and squared errors of methods 3 and 4 tend to be larger than those of methods 1 and 2.
2. Now-casts of births are more accurate than those of deaths. This can be explained by the fact that the monthly numbers of deaths show stronger random fluctuations than the numbers of births, particularly during the months in the winter.
3. In most countries the average error of now-casts of the number of births and deaths based on monthly observations up to and including July is less than 1%. In most countries at the end of the year observations for at least 9 months are available. Errors of now-casts based on those numbers are generally lower than 0.5% for births and slightly over 0.5% for deaths.
4. On average the errors of method 2 are smaller than those of method 1. It should be noted, however, that method 2 contains a smoothing parameter of which the value is determined on the basis of the size of the forecast errors during the period under study. Hence the presented forecast errors should be considered as *ex post* errors. If these estimated parameters are used for now-casts in a different period, the *ex ante* errors may be higher.
5. In the majority of cases the now-casts project correctly the direction of change of the annual total number of births and deaths compared with the number in the preceding year. If observations for at least 6 months are available, the direction of change is projected correctly in about 90% of the cases.
6. The errors of now-casts in large countries are slightly smaller than those in small countries. This is explained by the fact that in small countries irregular fluctuations are relatively larger.
7. Method 4 is the only method that does not use seasonal adjustment. As the results of this method generally are worse than those of the other methods, it can be concluded that seasonal adjustment is worthwhile.

One general conclusion is that the empirical results for most countries are similar. Hence it is possible to select one single method for all countries.

The empirical results indicate that a 'conservative' method, i.e. a method assuming a constant level during the remainder of the year, tends to lead to smaller errors than a method projecting changes.
As method 2 generally produces smaller errors than method 1, it might be recommended to use method 2 for all countries. However, it should be noted that generally the differences between methods 1 and 2 are rather small. As method 1 is more simple to use than method 2 (method 2 requires a parameter value to be determined), it can also be justified to employ method 1.

The methods discussed in this report are purely mechanistic. They are based on observations in previous months without taking into account explanations of these changes. Now-casts might be improved by taking into account expert knowledge. For example, the occurrence of an influenza epidemic in the early months of the year may result in an exceptional high number of deaths. If this is not taken into account when making now-casts, the estimate of the total number of deaths may be too high. Another example is the impact of extremely hot or cold weather which tend to affect the number of deaths.

One important caveat in interpreting the empirical results is that for a number of countries the monthly numbers in the current year are provisional. These numbers may be corrected at some later time. This may lead to higher errors than those shown in this study which are based on definitive figures.

6. Now-casts for 1996

In the previous sections the accuracy of now-casts for numbers of births and deaths according to four methods is examined for the period 1981-1995. This section presents now-casts for the total fertility rate (TFR) and life expectancy at birth for 1996. As these now-casts are based on now-casts of births and deaths, the latter now-casts are presented first.

6.1 Live births and deaths

Tables 1 through 16 of Appendix 2 present now-casts of numbers of live births and deaths for 1996. In addition, the table present forecast intervals. These intervals are assumed to correspond with a probability of 67%, i.e. it is assumed that the odds are 2 to 1 that the interval will cover the true value. The width of the intervals is derived from empirical forecast errors, *viz.* the absolute percentage forecast errors in the period 1981-1995.
For the sake of comparison the tables show also the observed numbers of births and deaths in the years 1981-1995.

Live births
According to the now-casts of births for 1996, in some countries the direction of change has changed. For example, in Germany the number of births decreased considerably between 1990 and 1995: from 906 thousand in 1990 to 765 thousand in 1995. For 1996 now-casts based on monthly observations up to and including October project an increase to about 790 thousand. Similarly in Italy according to the now-casts for 1996 the decrease of the number of births in the preceding years (from 567 thousand in 1992 to 521 thousand in 1995) turns into an increase in 1996 (to about 540 thousand). In France the number of births increased in 1995 after a decrease between 1988 and 1994. According to the now-casts the increase is continued in 1996. In some other countries (Finland, Austria, Switzerland and Portugal) the decrease of births in preceding years is continued in 1996 according to the now-casts. In the remaining countries the now-casts project only little change in 1996.

Deaths
In most countries there has been no systematic increase or decrease of the annual number of deaths in the first half of the 1990s. The now-casts for 1996 present a mixed picture: for some countries there is an increase, for some countries there is a decrease and in some countries the number of deaths hardly changes.
For a number of countries now-casts made during the first months of 1996 indicated an increase of the number of deaths. However in those countries for which observations for later months are available, the increase turned out to be a temporary fluctuation only. For example in Germany, the now-casts made on the basis of the observations up to and including March indicated that the number of deaths might increase from 885 thousand in 1995 to about 920 thousand in 1996, whereas according to the now-casts based on the observations up to and including October the number of deaths hardly change. Similar patterns can be seen in Finland, Denmark, Switzerland, Austria, Sweden, Portugal and Belgium.

6.2 Total fertility rate and life expectancy at birth

Now-casts of the total fertility rate (TFR) and life expectancy at birth can be based on the now-casts of numbers of births and deaths and on the fertility and mortality assumptions underlying the baseline scenario of population scenarios for the countries of the European

Economic Area published in 1996 (De Beer and De Jong, 1996). Section 2.2 describes the method which is used for this purpose.
Since for Switzerland no population scenarios were compiled, no now-casts of the TFR and life expectancy at birth are made.

Table 17 in Appendix 2 presents the values of the TFR and the number of live births in 1996 according to the baseline scenario. The ratio between both figures for each country is used to make now-casts of the TFR on the basis of the latest now-cast of the number of births of each country presented in tables 1 through 16.
Table 18 in Appendix 2 presents the now-casts of the TFR according to the four methods examined in this paper. For the sake of comparison observed values for 1990-1995 are given also.
According to methods 1 and 2 the TFR decreased sharply in Sweden. In Greece there was a considerable decrease also, but the now-cast for Greece is based on observations up to and including April only. Hence the now-cast for 1996 is rather uncertain. Furthermore the TFR declined in Finland, Denmark and Portugal. In the countries with the lowest value of the TFR in 1995, *viz.* Italy and Germany, the TFR increased in 1996.

Table 20 in Appendix 2 presents now-casts of life expectancy at birth for 1996. The now-casts indicate that life expectancy increased in most countries compared with 1995. In 10 countries the increase of life expectancy according to the latest now-cast was higher than according to the baseline assumptions of the population scenarios.

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APPENDIX 1

Tables by country

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1A. Live births, Iceland

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	0.1	0.2	0.2	-0.3
Febr.	0.4	0.5	1.5	0.1
March	0.2	0.3	-0.2	-0.1
April	0.1	0.1	-0.2	-0.2
May	0.0	-0.1	-0.5	-0.2
June	0.0	0.0	-0.1	-0.1
July	0.0	0.0	0.0	-0.1
Aug.	-0.1	0.0	-0.1	0.0
Sept.	0.0	0.1	0.2	0.0
Oct.	0.0	0.1	0.0	0.0
Nov.	0.0	0.0	0.0	0.0
Mean	0.1	0.1	0.1	-0.1

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	1.1	0.9	1.9	1.9
Febr.	1.3	1.2	3.5	2.7
March	0.9	0.9	1.1	1.7
April	0.8	0.8	1.6	1.2
May	0.6	0.6	1.8	1.2
June	0.6	0.5	1.2	1.1
July	0.5	0.4	0.6	0.9
Aug.	0.4	0.4	0.5	0.7
Sept.	0.4	0.3	0.4	0.6
Oct.	0.3	0.3	0.2	0.5
Nov.	0.2	0.2	0.2	0.3
Mean	0.6	0.6	1.2	1.2

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	1.3	1.3	2.5	2.4
Febr.	1.6	1.6	5.2	3.7
March	1.1	1.1	1.5	2.2
April	0.9	1.0	1.9	1.4
May	0.8	0.7	2.2	1.4
June	0.7	0.6	1.4	1.3
July	0.7	0.5	0.8	1.1
Aug.	0.5	0.5	0.6	0.9
Sept.	0.4	0.4	0.6	0.7
Oct.	0.3	0.3	0.3	0.6
Nov.	0.2	0.2	0.2	0.3
Mean	0.8	0.8	1.6	1.4

1A. Live births, Iceland

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	2.4	2.1	4.2	4.2
Febr.	2.9	2.8	8.4	6.5
March	2.1	2.0	2.6	4.1
April	1.9	1.9	3.5	2.8
May	1.5	1.2	4.1	2.6
June	1.4	1.1	2.8	2.6
July	1.2	1.0	1.5	2.0
Aug.	1.0	0.9	1.2	1.7
Sept.	0.8	0.8	0.9	1.4
Oct.	0.7	0.6	0.6	1.1
Nov.	0.4	0.4	0.4	0.6
Mean	1.5	1.3	2.7	2.7

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	3.0	2.8	5.6	5.4
Febr.	3.7	3.7	12.8	8.9
March	2.6	2.6	3.5	5.2
April	2.2	2.2	4.3	3.2
May	1.8	1.6	5.1	3.1
June	1.7	1.5	3.3	2.9
July	1.5	1.2	2.0	2.4
Aug.	1.1	1.1	1.5	2.0
Sept.	1.0	1.0	1.4	1.6
Oct.	0.8	0.8	0.7	1.3
Nov.	0.5	0.5	0.5	0.7
Mean	1.8	1.7	3.7	3.3

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	3.2	3.6	5.4	5.3
Febr.	3.2	3.4	16.7	8.2
March	2.2	2.4	3.2	4.4
April	1.8	2.0	3.5	2.4
May	1.5	1.5	5.1	2.3
June	1.5	1.3	2.7	2.0
July	1.4	1.1	1.8	1.9
Aug.	0.9	0.9	1.4	1.5
Sept.	0.9	0.8	1.6	1.1
Oct.	0.6	0.7	0.8	0.9
Nov.	0.5	0.5	0.5	0.7
Mean	1.6	1.6	3.9	2.8

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.1	0.0	0.0	0.0
Febr.	0.1	0.0	0.2	0.4
March	0.1	0.0	0.0	0.0
April	0.1	0.1	0.0	0.2
May	0.0	0.0	0.0	0.2
June	0.0	0.0	0.1	0.2
July	0.1	0.0	0.0	0.0
Aug.	0.0	0.0	0.0	0.0
Sept.	0.1	0.0	0.0	0.0
Oct.	0.1	0.0	0.0	0.0
Nov.	0.0	0.0	0.0	0.1
Mean	0.1	0.0	0.0	0.1

1A. Live births, Iceland

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 5.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	6	8	8	7	8	7	10	4	10	5	6	8
Febr.	6	8	12	2	11	4	12	3	11	4	5	10
March	5	10	8	6	9	6	9	6	10	5	9	6
April	7	6	11	4	10	3	11	4	11	4	5	10
May	5	9	11	4	11	3	12	3	14	1	6	9
June	5	9	11	3	12	2	13	2	14	1	7	7
July	2	9	8	7	11	4	9	5	12	2	12	2
Aug.	4	9	7	8	12	3	10	5	11	3	9	6
Sept.	3	6	6	8	10	4	8	6	9	5	11	4
Oct.	3	5	6	8	10	4	6	6	11	4	12	2
Nov.	1	2	4	6	11	2	4	5	11	2	10	4
Sum	47	81	92	63	115	42	104	49	124	36	92	68
<5	37		10		8		12		5		5	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 25: the number of times the forecast differs less than 25 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	12	13	13	12
Febr.	10	11	10	11
March	12	12	12	11
April	13	12	10	11
May	13	12	12	12
June	13	13	13	12
July	13	13	14	12
Aug.	14	14	14	13
Sept.	14	14	13	13
Oct.	14	14	13	13
Nov.	15	15	14	14
Mean	143	143	138	134

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1B. Deaths, Iceland

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	-0.3	-0.4	-0.5	0.2
Febr.	-0.3	-0.3	-0.3	0.3
March	-0.2	-0.3	-0.1	0.2
April	-0.1	-0.1	0.5	0.2
May	0.1	0.0	0.5	0.1
June	0.1	0.0	0.0	0.1
July	0.0	-0.1	0.0	0.0
Aug.	0.1	0.0	0.1	0.0
Sept.	0.1	0.0	0.1	0.0
Oct.	0.0	0.0	0.0	0.0
Nov.	0.0	0.0	0.0	0.0
Mean	0.0	-0.1	0.0	0.1

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	0.7	0.7	1.1	1.3
Febr.	0.7	0.6	1.7	1.3
March	0.7	0.7	1.3	1.1
April	0.6	0.5	1.2	0.9
May	0.4	0.4	1.0	0.8
June	0.4	0.4	0.5	0.6
July	0.3	0.3	0.7	0.5
Aug.	0.2	0.2	0.4	0.4
Sept.	0.3	0.2	0.3	0.4
Oct.	0.2	0.1	0.2	0.3
Nov.	0.1	0.1	0.1	0.1
Mean	0.4	0.4	0.8	0.7

3. Root mean square absolute error
1981-1995

Method	1	2	3	4
Jan.	0.9	0.9	1.3	1.5
Febr.	0.9	0.8	2.1	1.6
March	1.0	0.8	1.7	1.6
April	0.7	0.6	1.6	1.1
May	0.5	0.5	1.6	1.0
June	0.5	0.4	0.7	0.8
July	0.4	0.3	0.9	0.6
Aug.	0.3	0.3	0.5	0.5
Sept.	0.3	0.3	0.4	0.5
Oct.	0.2	0.2	0.2	0.3
Nov.	0.1	0.1	0.1	0.2
Mean	0.5	0.5	1.0	0.9

1B. Deaths, Iceland

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	4.3	3.9	6.4	7.7
Febr.	3.9	3.6	9.8	7.6
March	4.4	3.9	7.8	6.8
April	3.3	3.1	7.1	5.0
May	2.5	2.5	5.7	4.5
June	2.1	2.1	3.2	3.4
July	1.8	1.6	4.3	2.6
Aug.	1.3	1.2	2.4	2.2
Sept.	1.5	1.3	1.9	2.3
Oct.	1.0	0.9	1.2	1.5
Nov.	0.4	0.4	0.6	0.7
Mean	2.4	2.2	4.6	4.0

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	5.2	5.0	7.5	8.9
Febr.	5.3	4.8	12.2	9.7
March	5.8	4.8	10.1	9.6
April	4.0	3.7	9.4	6.2
May	3.1	2.8	8.7	5.6
June	2.6	2.4	3.9	4.5
July	2.3	1.9	5.2	3.5
Aug.	1.8	1.5	3.1	2.7
Sept.	2.0	1.6	2.4	2.8
Oct.	1.3	1.1	1.3	2.0
Nov.	0.6	0.6	0.7	1.0
Mean	3.1	2.8	5.9	5.1

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	1.8	1.8	2.4	2.8
Febr.	1.9	2.0	4.5	3.4
March	1.9	1.6	4.1	4.3
April	1.4	1.5	3.8	2.0
May	1.3	1.0	5.2	2.5
June	1.3	0.8	1.4	2.0
July	1.0	0.8	2.1	1.2
Aug.	0.8	0.6	1.1	1.1
Sept.	0.7	0.6	0.7	1.1
Oct.	0.5	0.5	0.3	0.9
Nov.	0.3	0.3	0.2	0.5
Mean	1.2	1.0	2.4	2.0

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.1	0.1	0.1	0.3
Febr.	0.0	0.0	0.4	0.2
March	0.0	0.0	0.0	0.0
April	0.1	0.1	0.1	0.0
May	0.0	0.1	0.1	0.1
June	0.1	0.0	0.0	0.0
July	0.1	0.0	0.2	0.0
Aug.	0.0	0.0	0.0	0.0
Sept.	0.0	0.0	0.0	0.1
Oct.	0.0	0.0	0.1	0.0
Nov.	0.0	0.0	0.0	0.0
Mean	0.0	0.0	0.1	0.1

1B. Deaths, Iceland

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 5.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	5	9	9	6	11	4	11	3	11	4	8	7
Febr.	5	7	14	1	12	3	13	1	12	3	3	12
March	8	7	11	4	11	4	12	3	12	2	5	9
April	5	8	9	6	11	4	10	5	10	5	7	8
May	8	5	12	3	14	1	11	3	12	2	8	7
June	7	5	8	5	9	4	9	5	10	5	8	6
July	5	7	12	3	8	5	11	4	8	4	4	11
Aug.	5	9	10	4	11	3	9	5	11	2	7	7
Sept.	3	9	8	5	9	6	9	3	11	3	8	5
Oct.	5	7	9	4	11	3	10	3	11	1	8	7
Nov.	2	2	9	3	9	4	9	4	10	2	5	6
Sum	58	75	111	44	116	41	114	39	118	33	71	85
<5	32		10		8		12		14		9	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 25: the number of times the forecast differs less than 25 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	8	10	10	10
Febr.	10	12	8	9
March	8	9	8	8
April	8	11	11	7
May	11	13	12	9
June	13	14	14	12
July	13	14	12	12
Aug.	12	13	13	12
Sept.	12	13	12	12
Oct.	13	13	14	13
Nov.	15	15	15	14
Mean	123	137	129	118

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2A. Live births, Luxembourg

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	-0.6	-0.7	-0.3	0.0
Febr.	-0.4	-0.5	0.4	0.1
March	-0.3	-0.4	0.2	0.2
April	-0.2	-0.2	0.5	0.2
May	0.0	-0.2	0.3	0.2
June	-0.1	-0.1	0.0	0.2
July	-0.1	-0.2	-0.1	0.2
Aug.	0.0	-0.1	0.1	0.1
Sept.	0.0	0.0	0.1	0.1
Oct.	0.0	0.0	0.0	0.0
Nov.	-0.1	-0.1	-0.1	0.0
Mean	-0.2	-0.2	0.1	0.1

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	1.0	1.1	2.1	2.3
Febr.	1.2	1.1	2.8	2.5
March	0.9	0.9	1.6	1.6
April	1.0	0.9	1.7	1.7
May	0.7	0.6	0.9	1.1
June	0.6	0.5	1.5	0.9
July	0.6	0.5	0.9	0.9
Aug.	0.5	0.5	0.9	0.8
Sept.	0.3	0.3	0.7	0.4
Oct.	0.3	0.3	0.5	0.5
Nov.	0.2	0.2	0.2	0.3
Mean	0.7	0.6	1.2	1.2

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	1.3	1.3	2.6	2.9
Febr.	1.4	1.3	3.8	3.2
March	1.1	1.1	2.0	2.2
April	1.2	1.1	2.2	2.0
May	0.8	0.7	1.1	1.4
June	0.8	0.8	2.0	1.3
July	0.7	0.7	1.3	1.2
Aug.	0.7	0.6	1.1	1.1
Sept.	0.4	0.3	0.9	0.6
Oct.	0.3	0.4	0.6	0.6
Nov.	0.2	0.2	0.3	0.3
Mean	0.8	0.8	1.6	1.5

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2A. Live births, Luxembourg

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	2.2	2.3	4.7	5.1
Febr.	2.6	2.3	6.1	5.5
March	2.0	1.9	3.5	3.6
April	2.3	2.1	3.7	3.7
May	1.5	1.3	2.0	2.4
June	1.2	1.1	3.1	1.8
July	1.2	1.1	1.9	2.0
Aug.	1.0	1.1	1.9	1.6
Sept.	0.6	0.6	1.5	1.0
Oct.	0.6	0.6	1.0	1.1
Nov.	0.3	0.4	0.5	0.6
Mean	1.4	1.3	2.7	2.6

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	2.9	2.8	5.8	6.5
Febr.	3.1	2.8	8.4	7.2
March	2.4	2.4	4.4	4.9
April	2.6	2.4	4.7	4.5
May	1.8	1.6	2.3	3.2
June	1.6	1.6	4.1	2.7
July	1.5	1.5	2.8	2.6
Aug.	1.3	1.3	2.5	2.2
Sept.	0.8	0.7	1.9	1.3
Oct.	0.7	0.8	1.2	1.3
Nov.	0.4	0.4	0.7	0.7
Mean	1.7	1.7	3.5	3.4

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	2.7	2.5	5.8	5.4
Febr.	3.1	2.9	11.1	6.4
March	2.1	2.1	3.6	5.2
April	2.1	2.0	6.3	3.9
May	1.5	1.4	2.1	3.7
June	1.9	2.1	4.5	3.0
July	1.4	1.7	3.5	2.8
Aug.	1.5	1.6	2.5	2.4
Sept.	0.7	0.7	2.0	1.6
Oct.	0.7	0.7	1.4	1.5
Nov.	0.5	0.5	0.7	0.6
Mean	1.6	1.6	4.0	3.3

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.0	0.1	0.2	0.1
Febr.	0.2	0.2	0.3	0.3
March	0.1	0.0	0.1	0.1
April	0.1	0.2	0.1	0.1
May	0.1	0.1	0.3	0.1
June	0.1	0.0	0.3	0.0
July	0.1	0.0	0.0	0.1
Aug.	0.0	0.1	0.0	0.0
Sept.	0.0	0.0	0.0	0.0
Oct.	0.0	0.0	0.1	0.0
Nov.	0.0	0.0	0.0	0.0
Mean	0.1	0.1	0.1	0.1

2A. Live births, Luxembourg

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 5.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	7	7	12	3	11	4	11	4	11	4	7	8
Febr.	5	10	11	3	11	4	13	2	13	2	7	8
March	7	7	9	5	9	6	9	6	9	6	7	8
April	6	9	10	5	9	6	10	4	9	6	6	8
May	4	10	10	4	9	5	11	4	11	4	8	7
June	5	8	14	1	9	5	14	1	9	5	3	11
July	4	7	9	6	9	4	10	4	9	5	8	6
Aug.	8	6	9	6	8	7	9	6	9	6	9	6
Sept.	5	8	12	3	8	5	12	3	9	6	4	10
Oct.	4	4	10	4	13	2	10	3	13	2	8	7
Nov.	5	0	9	5	10	3	9	4	9	3	11	4
Sum	60	76	115	45	106	51	118	41	111	49	78	83
<5	29		5		8		6		5		4	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 25: the number of times the forecast differs less than 25 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	10	11	9	8
Febr.	10	10	11	8
March	13	11	11	10
April	12	13	11	11
May	13	14	12	11
June	13	14	10	13
July	14	14	12	13
Aug.	15	15	12	15
Sept.	15	15	11	14
Oct.	15	15	14	15
Nov.	15	15	15	14
Mean	145	147	128	132

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2B. Deaths, Luxembourg

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	0.2	0.3	0.8	0.9
Febr.	0.3	0.4	0.6	0.4
March	0.3	0.3	0.1	0.0
April	0.3	0.3	0.3	0.0
May	0.3	0.3	0.5	0.0
June	0.2	0.2	0.1	0.0
July	0.0	0.1	-0.3	0.0
Aug.	0.0	0.1	0.0	0.0
Sept.	0.0	0.0	-0.1	0.0
Oct.	0.0	0.0	-0.1	0.0
Nov.	-0.1	-0.1	-0.1	0.0
Mean	0.1	0.2	0.2	0.1

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	1.5	0.9	4.1	5.5
Febr.	1.4	0.9	2.3	3.7
March	1.3	0.9	2.8	2.6
April	1.4	0.9	1.9	2.3
May	1.1	0.7	1.2	1.7
June	0.9	0.6	1.2	1.4
July	0.5	0.5	1.0	0.9
Aug.	0.3	0.4	0.6	0.6
Sept.	0.3	0.3	0.4	0.5
Oct.	0.4	0.3	0.5	0.5
Nov.	0.2	0.2	0.2	0.4
Mean	0.9	0.6	1.5	1.8

3. Root mean square absolute error
1981-1995

Method	1	2	3	4
Jan.	1.6	1.0	5.7	8.4
Febr.	1.6	1.1	3.4	4.8
March	1.6	1.1	3.8	3.1
April	1.7	1.2	2.3	2.7
May	1.3	0.9	1.5	1.9
June	1.1	0.8	1.7	1.6
July	0.6	0.5	1.2	1.1
Aug.	0.4	0.4	0.8	0.8
Sept.	0.4	0.4	0.5	0.6
Oct.	0.4	0.4	0.6	0.6
Nov.	0.3	0.3	0.3	0.5
Mean	1.0	0.7	2.0	2.4

2B. Deaths, Luxembourg

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	3.8	2.2	10.4	14.0
Febr.	3.6	2.3	5.9	9.5
March	3.3	2.3	7.1	6.6
April	3.5	2.4	4.7	5.8
May	2.7	1.8	3.1	4.2
June	2.1	1.5	3.1	3.4
July	1.3	1.2	2.5	2.2
Aug.	0.9	0.9	1.5	1.6
Sept.	0.8	0.7	1.0	1.3
Oct.	1.0	0.9	1.2	1.2
Nov.	0.6	0.5	0.6	0.9
Mean	2.2	1.5	3.7	4.6

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	4.2	2.6	14.3	21.2
Febr.	4.1	2.8	8.4	12.1
March	3.9	2.8	9.6	7.9
April	4.2	2.9	5.8	6.8
May	3.3	2.3	3.7	4.8
June	2.8	1.9	4.3	4.0
July	1.6	1.4	3.1	2.8
Aug.	1.1	1.1	1.9	2.1
Sept.	1.1	0.9	1.3	1.6
Oct.	1.1	1.0	1.5	1.5
Nov.	0.8	0.7	0.8	1.2
Mean	2.5	1.9	5.0	6.0

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	3.2	2.4	16.9	26.1
Febr.	3.1	2.1	10.2	11.8
March	3.5	2.8	8.8	6.5
April	3.6	2.6	4.2	5.7
May	2.9	2.1	3.9	4.2
June	2.5	1.9	4.7	3.4
July	1.5	1.0	2.8	2.5
Aug.	0.9	1.0	1.5	2.0
Sept.	0.8	0.9	1.3	1.1
Oct.	0.8	0.8	0.9	1.1
Nov.	0.8	0.8	0.8	1.0
Mean	2.1	1.7	5.1	5.9

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.7	0.3	0.2	0.0
Febr.	0.1	0.0	0.3	0.6
March	0.1	0.0	0.6	0.1
April	0.3	0.2	0.3	0.2
May	0.1	0.0	0.2	0.2
June	0.1	0.1	0.1	0.3
July	0.1	0.1	0.1	0.0
Aug.	0.0	0.0	0.0	0.0
Sept.	0.0	0.0	0.0	0.1
Oct.	0.1	0.1	0.0	0.0
Nov.	0.0	0.0	0.0	0.0
Mean	0.1	0.1	0.2	0.1

2B. Deaths, Luxembourg

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 5.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	0	15	13	2	12	3	13	2	13	2	9	6
Febr.	1	12	8	7	12	3	11	4	14	1	12	3
March	1	13	9	5	10	3	13	2	13	1	9	6
April	1	12	8	7	12	3	11	4	12	3	9	6
May	2	13	7	8	13	2	10	5	13	2	10	4
June	2	13	8	7	13	2	9	6	14	1	8	7
July	7	7	10	5	9	5	11	4	9	6	5	10
Aug.	7	5	8	6	9	5	9	6	10	3	5	10
Sept.	5	8	7	6	10	5	8	6	11	4	8	6
Oct.	4	10	8	2	6	8	10	5	8	5	6	8
Nov.	3	7	5	7	9	4	4	5	9	4	10	4
Sum	33	115	91	62	115	43	109	49	126	32	91	70
<5	17		12		7		7		7		4	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 25: the number of times the forecast differs less than 25 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	4	8	6	6
Febr.	6	8	8	6
March	7	8	5	7
April	7	7	5	6
May	8	8	8	5
June	8	9	11	8
July	11	9	10	9
Aug.	11	12	12	9
Sept.	11	11	11	9
Oct.	10	12	11	11
Nov.	14	14	15	12
Mean	97	106	102	88

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3A. Live births, Ireland

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	10.0	7.9	-3.4	0.6
Febr.	9.2	8.4	1.9	-0.6
March	8.4	8.0	2.6	-0.6
April	7.7	6.4	2.1	-0.7
May	5.9	4.5	0.2	-0.7
June	4.7	3.2	0.1	-0.2
July	3.8	2.6	0.7	0.0
Aug.	2.7	1.8	0.3	0.2
Sept.	1.8	1.3	0.2	0.3
Oct.	0.5	-0.1	-1.2	0.3
Nov.	0.5	0.4	0.5	0.3
Mean	5.0	4.0	0.4	-0.1

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	12.5	11.4	16.4	20.0
Febr.	11.2	10.8	10.6	11.5
March	10.0	8.9	8.9	7.3
April	8.7	7.6	8.4	6.2
May	6.6	6.2	8.1	5.9
June	5.6	5.4	6.3	5.3
July	4.7	4.3	3.4	4.6
Aug.	3.6	2.9	2.5	4.1
Sept.	2.7	2.2	1.8	3.6
Oct.	1.4	1.7	3.2	2.1
Nov.	1.0	1.2	1.4	1.0
Mean	6.2	5.7	6.5	6.5

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	15.2	14.1	18.9	22.3
Febr.	13.7	13.5	14.4	13.8
March	11.5	10.5	11.4	8.5
April	10.2	9.2	10.6	8.2
May	8.0	7.6	10.9	7.3
June	6.8	6.4	7.7	6.5
July	5.6	5.0	4.3	5.9
Aug.	4.4	3.7	3.3	4.8
Sept.	3.4	2.9	2.2	4.1
Oct.	1.8	2.1	3.6	2.4
Nov.	1.3	1.5	1.9	1.4
Mean	7.4	6.9	8.1	7.8

3A. Live births, Ireland

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	2.2	2.0	2.9	3.5
Febr.	1.9	1.8	1.9	2.1
March	1.7	1.5	1.6	1.3
April	1.5	1.3	1.5	1.2
May	1.1	1.0	1.4	1.1
June	1.0	0.9	1.1	1.0
July	0.8	0.7	0.6	0.8
Aug.	0.6	0.5	0.4	0.7
Sept.	0.5	0.4	0.3	0.6
Oct.	0.2	0.3	0.6	0.4
Nov.	0.2	0.2	0.3	0.2
Mean	1.1	1.0	1.1	1.2

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	2.6	2.4	3.4	3.9
Febr.	2.3	2.3	2.6	2.5
March	2.0	1.8	2.1	1.6
April	1.7	1.6	1.9	1.6
May	1.4	1.3	1.8	1.4
June	1.1	1.1	1.3	1.2
July	1.0	0.8	0.8	1.1
Aug.	0.7	0.6	0.5	0.9
Sept.	0.6	0.5	0.4	0.7
Oct.	0.3	0.4	0.6	0.4
Nov.	0.2	0.3	0.3	0.3
Mean	1.3	1.2	1.4	1.4

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	27.2	28.1	34.9	37.4
Febr.	23.1	26.5	29.0	25.8
March	19.5	20.6	19.6	16.1
April	17.0	18.8	22.7	18.5
May	14.5	15.7	30.5	15.6
June	11.8	12.0	18.0	13.3
July	9.8	9.2	8.8	12.1
Aug.	8.4	8.3	7.4	8.7
Sept.	7.7	7.4	5.6	7.7
Oct.	3.6	4.1	6.0	5.0
Nov.	2.8	3.5	4.1	3.5
Mean	13.2	14.0	17.0	14.9

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.9	0.5	1.4	5.4
Febr.	0.4	0.2	0.1	0.0
March	1.9	1.3	0.8	0.5
April	0.2	0.5	0.2	0.0
May	0.5	0.8	0.5	0.2
June	0.3	0.3	0.2	0.5
July	0.3	0.0	0.6	0.6
Aug.	0.4	0.0	0.1	1.2
Sept.	0.1	0.0	0.2	0.2
Oct.	0.0	0.1	0.9	0.1
Nov.	0.1	0.1	0.1	0.0
Mean	0.5	0.3	0.5	0.8

3A. Live births, Ireland

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 50.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	6	9	11	4	10	5	11	4	11	4	9	6
Febr.	4	8	8	7	7	8	8	6	8	7	8	5
March	6	9	6	9	6	9	6	8	6	8	8	7
April	6	8	6	9	6	9	7	7	6	9	7	8
May	6	8	8	6	6	8	8	5	5	8	6	9
June	4	9	6	8	7	7	6	8	8	7	4	10
July	4	7	4	10	8	7	5	10	7	8	8	5
Aug.	3	8	5	8	10	5	5	6	9	4	9	4
Sept.	3	8	4	9	9	4	4	9	9	3	11	4
Oct.	8	2	13	0	11	1	10	0	6	4	3	10
Nov.	5	1	9	3	6	5	3	1	5	6	3	5
Sum	55	77	80	73	86	68	73	64	80	68	76	73
<50	33		12		11		28		17		16	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 250: the number of times the forecast differs less than 250 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	11	12	11	12
Febr.	11	12	12	14
March	14	14	12	13
April	13	13	12	13
May	14	14	14	13
June	14	14	15	15
July	14	15	15	15
Aug.	15	15	15	15
Sept.	15	15	15	15
Oct.	15	15	15	15
Nov.	15	15	15	15
Mean	151	154	151	155

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3B. Deaths, Ireland

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	2.1	2.2	5.8	1.3
Febr.	1.1	1.2	-2.3	0.1
March	1.0	1.1	0.8	0.9
April	1.0	0.9	0.6	0.3
May	0.6	0.7	0.3	0.3
June	0.1	0.5	-0.4	0.3
July	-0.5	0.2	-1.5	0.3
Aug.	-0.5	-0.1	-1.1	0.2
Sept.	-0.6	-0.3	-1.0	0.3
Oct.	-0.8	-0.6	-1.1	0.2
Nov.	-0.6	-0.5	-0.5	0.1
Mean	0.3	0.5	0.0	0.4

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	10.4	8.5	24.4	30.0
Febr.	9.8	7.6	19.4	21.7
March	8.7	5.8	16.4	16.4
April	7.0	4.7	7.4	11.6
May	5.5	4.1	6.5	8.9
June	4.0	3.2	4.4	6.6
July	3.8	2.9	5.0	6.1
Aug.	2.9	2.5	3.0	5.0
Sept.	2.5	2.6	3.2	5.1
Oct.	2.2	2.2	2.4	4.1
Nov.	1.6	1.5	1.8	2.5
Mean	5.3	4.1	8.5	10.7

3. Root mean square absolute error
1981-1995

Method	1	2	3	4
Jan.	13.5	10.1	35.2	41.8
Febr.	12.2	9.1	25.7	27.9
March	11.2	7.4	21.7	19.7
April	9.2	6.0	9.6	14.1
May	7.2	5.1	7.3	11.0
June	5.5	4.2	5.0	8.4
July	4.8	3.8	6.1	7.6
Aug.	3.3	3.4	3.9	6.5
Sept.	3.0	3.4	3.9	6.4
Oct.	2.9	3.1	3.1	5.4
Nov.	2.6	2.6	3.1	4.1
Mean	6.9	5.3	11.3	13.9

3B. Deaths, Ireland

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	3.3	2.6	7.6	9.4
Febr.	3.1	2.4	6.0	6.8
March	2.7	1.8	5.1	5.1
April	2.2	1.5	2.3	3.6
May	1.7	1.3	2.0	2.8
June	1.3	1.0	1.4	2.1
July	1.2	0.9	1.5	1.9
Aug.	0.9	0.8	0.9	1.6
Sept.	0.8	0.8	1.0	1.6
Oct.	0.7	0.7	0.7	1.3
Nov.	0.5	0.5	0.6	0.8
Mean	1.7	1.3	2.7	3.4

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	4.2	3.2	11.1	13.1
Febr.	3.8	2.9	8.0	8.8
March	3.5	2.3	6.7	6.2
April	2.9	1.9	2.9	4.4
May	2.2	1.6	2.3	3.5
June	1.7	1.3	1.6	2.7
July	1.5	1.2	1.9	2.4
Aug.	1.0	1.0	1.2	2.0
Sept.	0.9	1.1	1.2	2.0
Oct.	0.9	1.0	1.0	1.7
Nov.	0.8	0.8	1.0	1.3
Mean	2.1	1.7	3.5	4.4

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	30.4	20.0	89.5	107.5
Febr.	21.9	16.4	56.6	65.7
March	21.1	14.9	51.3	33.7
April	18.3	12.2	24.2	27.7
May	14.5	10.2	11.5	21.9
June	11.0	9.6	8.7	16.4
July	8.8	8.9	15.3	12.9
Aug.	5.9	8.0	8.5	12.5
Sept.	7.3	8.8	8.8	12.7
Oct.	8.4	8.9	8.5	12.1
Nov.	8.9	9.0	9.0	11.1
Mean	14.2	11.5	26.5	30.4

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.7	0.2	0.9	0.2
Febr.	0.9	0.6	1.0	2.6
March	0.6	0.6	2.5	1.9
April	0.5	0.6	0.2	1.6
May	0.3	0.8	1.9	0.1
June	0.3	0.4	1.4	0.3
July	0.1	0.2	0.0	0.8
Aug.	1.4	0.4	0.2	0.1
Sept.	0.1	0.1	0.5	0.3
Oct.	0.1	0.1	0.4	0.1
Nov.	0.3	0.2	0.2	0.1
Mean	0.5	0.4	0.8	0.7

3B. Deaths, Ireland

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 50.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	4	11	11	3	13	2	12	3	13	2	9	6
Febr.	2	12	10	5	12	2	10	5	13	1	8	7
March	4	11	9	5	13	2	11	4	13	2	8	7
April	2	11	9	6	12	3	9	6	12	3	8	7
May	4	10	9	6	13	2	10	4	13	2	8	5
June	5	10	7	5	8	6	9	5	11	3	7	8
July	4	7	8	5	11	3	8	6	13	2	8	7
Aug.	4	9	6	8	7	7	8	7	9	2	8	7
Sept.	7	5	9	5	8	5	8	2	8	3	8	6
Oct.	4	5	6	6	8	6	7	4	8	4	8	5
Nov.	0	2	2	6	6	6	4	6	6	6	9	2
Sum	40	93	86	60	111	44	96	52	119	30	89	67
<50	32		19		10		17		16		9	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 250: the number of times the forecast differs less than 250 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	7	8	6	4
Febr.	7	8	10	6
March	8	10	10	8
April	10	10	13	7
May	10	10	11	8
June	12	13	13	8
July	13	13	12	9
Aug.	13	13	14	12
Sept.	13	13	12	12
Oct.	13	13	13	12
Nov.	13	13	14	12
Mean	119	124	128	98

4A. Live births, Norway

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	-4.4	-3.8	-0.2	1.4
Febr.	-3.4	-2.6	1.0	0.4
March	-2.5	-2.1	0.8	-0.4
April	-2.0	-1.8	0.6	-0.8
May	-1.6	-1.4	0.6	-0.9
June	-0.9	-0.5	1.8	-0.4
July	-0.8	-0.7	0.0	-0.2
Aug.	-0.4	-0.2	0.8	0.1
Sept.	-0.2	-0.1	0.2	0.2
Oct.	-0.2	-0.2	-0.1	0.2
Nov.	0.1	0.1	0.2	0.3
Mean	-1.5	-1.2	0.5	0.0

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	6.8	7.4	11.9	12.9
Febr.	7.3	8.2	15.7	13.6
March	6.7	6.1	9.5	10.5
April	5.5	4.6	8.3	7.9
May	4.4	3.8	5.1	6.6
June	3.5	2.7	3.3	5.0
July	2.4	2.3	3.5	3.7
Aug.	2.0	2.0	2.7	2.9
Sept.	2.6	2.9	4.3	3.7
Oct.	1.6	1.4	1.0	2.4
Nov.	0.9	0.9	1.0	1.6
Mean	4.0	3.8	6.0	6.4

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	9.2	10.0	14.9	16.8
Febr.	8.6	10.3	18.7	17.4
March	8.5	8.3	11.5	13.5
April	7.3	6.5	9.2	10.6
May	6.1	5.1	6.1	8.4
June	4.8	3.8	4.9	6.4
July	3.3	3.1	4.0	4.5
Aug.	2.7	2.8	3.5	3.8
Sept.	3.1	3.6	5.3	4.4
Oct.	1.9	1.6	1.2	2.9
Nov.	1.3	1.2	1.5	2.0
Mean	5.2	5.1	7.4	8.3

4A. Live births, Norway

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	1.2	1.3	2.1	2.3
Febr.	1.3	1.5	2.8	2.4
March	1.2	1.1	1.7	1.9
April	1.0	0.8	1.5	1.4
May	0.8	0.7	0.9	1.2
June	0.6	0.5	0.6	0.9
July	0.4	0.4	0.6	0.6
Aug.	0.3	0.3	0.5	0.5
Sept.	0.5	0.5	0.8	0.6
Oct.	0.3	0.2	0.2	0.4
Nov.	0.2	0.2	0.2	0.3
Mean	0.7	0.7	1.1	1.1

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	1.6	1.8	2.6	2.9
Febr.	1.5	1.9	3.4	3.0
March	1.5	1.5	2.1	2.3
April	1.3	1.2	1.7	1.8
May	1.1	0.9	1.1	1.5
June	0.8	0.7	0.9	1.1
July	0.6	0.5	0.7	0.8
Aug.	0.5	0.5	0.6	0.6
Sept.	0.5	0.6	0.9	0.8
Oct.	0.3	0.3	0.2	0.5
Nov.	0.2	0.2	0.2	0.4
Mean	0.9	0.9	1.3	1.4

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	19.7	25.6	33.6	39.4
Febr.	18.8	24.7	31.0	37.0
March	20.1	21.2	23.0	28.7
April	18.2	16.4	14.3	21.2
May	15.6	11.8	11.2	16.7
June	12.1	10.1	11.3	12.8
July	9.4	8.1	7.4	9.2
Aug.	6.8	6.7	8.0	7.8
Sept.	5.7	6.9	9.5	9.9
Oct.	3.6	3.5	2.0	6.5
Nov.	4.0	3.8	4.5	5.4
Mean	12.2	12.6	14.2	17.7

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.4	0.5	1.5	0.1
Febr.	2.6	1.0	0.2	2.1
March	0.2	0.6	0.3	1.0
April	1.2	0.9	1.1	0.2
May	0.4	0.4	0.8	0.8
June	0.1	0.2	0.2	0.9
July	0.3	0.3	0.6	0.7
Aug.	0.1	0.1	0.1	0.1
Sept.	0.2	0.0	0.1	0.4
Oct.	0.6	0.4	0.1	0.0
Nov.	0.0	0.1	0.0	0.1
Mean	0.5	0.4	0.5	0.6

4A. Live births, Norway

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 50.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	9	5	10	4	11	4	9	5	10	5	8	7
Febr.	10	4	12	3	8	6	12	3	10	5	7	8
March	5	8	9	6	10	5	10	5	10	4	9	6
April	4	11	9	5	8	6	10	4	9	6	4	10
May	5	8	8	7	8	5	8	4	8	6	8	7
June	4	10	5	8	8	5	7	6	10	3	10	3
July	4	8	11	1	10	2	10	3	10	1	7	5
Aug.	7	5	7	3	10	4	9	3	8	6	7	6
Sept.	5	2	10	2	10	4	10	4	10	5	6	9
Oct.	0	2	5	7	10	5	5	7	11	4	10	3
Nov.	0	1	5	3	10	2	5	2	10	1	9	2
Sum	53	64	91	49	103	48	95	46	106	46	85	66
<50	48		25		14		24		13		14	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 250: the number of times the forecast differs less than 250 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	11	8	11	9
Febr.	9	8	8	8
March	9	11	11	11
April	10	11	10	12
May	11	14	13	13
June	14	14	14	14
July	14	14	14	13
Aug.	14	14	12	14
Sept.	13	13	9	12
Oct.	14	14	15	13
Nov.	14	14	13	14
Mean	133	135	130	133

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4B. Deaths, Norway

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	-0.9	-2.0	3.8	3.0
Febr.	-0.9	-1.8	1.1	1.5
March	-1.0	-1.9	-1.2	0.7
April	-0.3	-1.1	2.9	1.1
May	-0.4	-1.2	-0.8	0.8
June	-0.6	-1.2	-0.7	0.4
July	-0.8	-1.1	-0.9	0.3
Aug.	-0.6	-0.8	0.0	0.0
Sept.	-0.4	-0.7	-0.4	-0.1
Oct.	-0.5	-0.6	-0.5	-0.4
Nov.	-0.4	-0.5	-0.4	-0.4
Mean	-0.6	-1.2	0.3	0.6

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	10.5	7.9	27.9	40.8
Febr.	12.8	8.9	24.9	29.9
March	11.7	8.0	11.6	20.6
April	9.4	6.3	9.1	16.1
May	7.0	5.1	4.9	11.5
June	4.8	4.3	3.7	8.4
July	3.3	3.9	4.6	6.9
Aug.	3.0	3.5	5.1	5.9
Sept.	3.0	3.4	3.5	5.2
Oct.	2.9	2.9	2.6	4.4
Nov.	2.2	2.2	1.7	3.4
Mean	6.4	5.1	9.0	13.9

3. Root mean square absolute error
1981-1995

Method	1	2	3	4
Jan.	15.5	11.0	37.2	50.2
Febr.	16.6	11.6	29.4	39.1
March	15.2	10.5	13.8	25.9
April	12.6	8.8	10.3	19.3
May	9.1	7.1	5.8	13.9
June	6.2	6.0	4.6	10.9
July	5.0	5.9	6.2	10.0
Aug.	4.5	5.5	6.4	9.0
Sept.	4.5	5.0	4.5	8.4
Oct.	4.3	4.6	4.0	7.8
Nov.	3.4	3.5	2.8	5.8
Mean	8.8	7.2	11.4	18.2

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4B. Deaths, Norway

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	2.3	1.8	6.3	9.2
Febr.	2.9	2.0	5.7	6.8
March	2.6	1.8	2.6	4.7
April	2.1	1.4	2.0	3.6
May	1.6	1.1	1.1	2.6
June	1.1	1.0	0.8	1.9
July	0.7	0.9	1.0	1.5
Aug.	0.7	0.8	1.1	1.3
Sept.	0.7	0.7	0.8	1.2
Oct.	0.7	0.7	0.6	1.0
Nov.	0.5	0.5	0.4	0.8
Mean	1.4	1.1	2.0	3.1

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	3.4	2.4	8.3	11.3
Febr.	3.7	2.6	6.7	8.8
March	3.4	2.3	3.2	5.8
April	2.8	1.9	2.3	4.3
May	2.0	1.6	1.3	3.1
June	1.4	1.3	1.0	2.4
July	1.1	1.3	1.4	2.2
Aug.	1.0	1.2	1.5	2.0
Sept.	1.0	1.1	1.0	1.8
Oct.	0.9	1.0	0.9	1.7
Nov.	0.7	0.8	0.6	1.3
Mean	2.0	1.6	2.6	4.1

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	42.1	26.3	95.1	107.3
Febr.	39.7	26.6	55.9	77.5
March	34.7	24.4	22.8	52.7
April	28.2	22.1	20.0	41.7
May	21.3	19.1	12.2	32.5
June	15.9	17.0	10.1	27.2
July	14.9	17.4	14.9	24.6
Aug.	14.4	17.1	13.2	23.8
Sept.	14.1	15.9	11.7	22.3
Oct.	14.1	15.1	13.1	21.8
Nov.	11.5	12.0	9.2	15.6
Mean	22.8	19.4	25.3	40.6

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	1.7	1.3	1.2	2.5
Febr.	1.0	0.9	2.5	0.4
March	0.1	0.9	0.3	0.3
April	0.5	0.4	2.0	2.1
May	0.3	0.2	0.5	3.3
June	0.1	0.3	0.5	1.0
July	0.2	0.1	0.4	0.1
Aug.	0.1	0.0	0.1	0.2
Sept.	0.1	0.3	0.6	0.0
Oct.	0.1	0.1	0.2	0.1
Nov.	0.1	0.0	0.1	0.2
Mean	0.4	0.4	0.8	0.9

4B. Deaths, Norway

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 50.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	5	8	11	4	15	0	13	1	15	0	12	3
Febr.	3	9	14	1	11	4	13	2	11	4	7	8
March	4	9	8	6	11	4	11	4	12	3	10	5
April	2	10	6	7	12	2	9	6	13	2	10	4
May	3	10	6	8	11	4	9	5	12	3	13	2
June	6	6	6	8	10	5	7	8	10	4	11	4
July	6	4	7	6	10	4	7	5	10	4	9	6
Aug.	7	7	7	3	10	5	6	7	9	3	6	8
Sept.	7	5	10	4	9	5	8	6	11	3	7	6
Oct.	4	4	3	7	6	6	2	4	8	5	8	6
Nov.	3	2	2	7	7	5	3	6	7	4	8	2
Sum	50	74	80	61	112	44	88	54	118	35	101	54
<50	41		24		9		23		12		10	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 250: the number of times the forecast differs less than 250 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	10	8	8	8
Febr.	7	9	5	10
March	7	10	9	10
April	10	11	11	10
May	11	11	10	12
June	13	13	12	12
July	14	13	12	13
Aug.	14	13	12	12
Sept.	14	13	13	12
Oct.	14	13	14	13
Nov.	14	14	14	14
Mean	128	128	120	126

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5A. Live births, Finland

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	0.0	0.3	0.8	1.6
Febr.	0.5	1.3	2.3	1.0
March	0.7	0.9	1.2	0.2
April	0.1	-0.3	-1.3	0.1
May	0.2	-0.5	-0.4	-0.1
June	0.5	0.7	1.9	0.0
July	0.1	-0.1	-0.7	0.0
Aug.	0.0	0.0	0.0	0.0
Sept.	-0.2	-0.3	-0.6	-0.1
Oct.	0.1	0.1	0.4	-0.1
Nov.	0.1	0.1	0.1	0.2
Mean	0.2	0.2	0.3	0.3

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	13.8	13.3	17.3	16.5
Febr.	12.0	10.5	15.8	12.2
March	10.1	7.1	11.7	10.9
April	7.9	5.4	8.1	8.6
May	6.0	5.4	6.8	8.8
June	4.7	5.0	7.2	7.0
July	3.7	3.9	3.8	5.7
Aug.	3.1	2.7	2.9	4.5
Sept.	2.3	2.0	3.0	4.1
Oct.	1.3	1.3	1.8	2.9
Nov.	0.9	0.9	1.2	1.6
Mean	6.0	5.2	7.2	7.5

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	16.7	15.5	20.3	20.5
Febr.	13.9	12.6	20.1	15.4
March	11.8	8.4	13.8	13.0
April	9.1	7.6	11.3	10.5
May	7.5	7.0	8.9	10.9
June	6.2	6.4	8.5	9.2
July	4.9	5.2	4.5	7.4
Aug.	4.0	3.8	4.2	5.7
Sept.	3.0	2.6	4.0	5.1
Oct.	1.6	1.6	2.2	3.2
Nov.	1.2	1.4	1.6	1.9
Mean	7.3	6.5	9.1	9.3

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5A. Live births, Finland

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	2.2	2.1	2.7	2.6
Febr.	1.9	1.6	2.5	1.9
March	1.6	1.1	1.8	1.7
April	1.2	0.8	1.3	1.3
May	0.9	0.8	1.1	1.4
June	0.7	0.8	1.1	1.1
July	0.6	0.6	0.6	0.9
Aug.	0.5	0.4	0.5	0.7
Sept.	0.4	0.3	0.5	0.6
Oct.	0.2	0.2	0.3	0.4
Nov.	0.1	0.1	0.2	0.3
Mean	0.9	0.8	1.1	1.2

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	2.6	2.4	3.2	3.2
Febr.	2.2	2.0	3.1	2.4
March	1.9	1.3	2.2	2.0
April	1.4	1.2	1.8	1.6
May	1.2	1.1	1.4	1.7
June	1.0	1.0	1.3	1.4
July	0.8	0.8	0.7	1.1
Aug.	0.6	0.6	0.6	0.9
Sept.	0.5	0.4	0.6	0.8
Oct.	0.2	0.3	0.4	0.5
Nov.	0.2	0.2	0.3	0.3
Mean	1.1	1.0	1.4	1.5

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	30.2	23.6	43.1	38.2
Febr.	20.1	29.5	47.7	31.7
March	19.3	14.3	26.4	22.0
April	14.5	20.4	34.0	19.2
May	14.5	16.3	17.9	19.4
June	14.2	14.0	20.0	18.1
July	11.1	10.5	10.9	15.1
Aug.	8.4	10.1	10.2	11.4
Sept.	6.4	5.9	8.9	8.9
Oct.	2.8	3.3	4.6	5.3
Nov.	2.9	3.5	3.8	4.0
Mean	13.1	13.8	20.7	17.6

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.5	0.5	2.0	0.7
Febr.	2.5	1.3	0.0	0.3
March	0.8	0.3	0.5	0.5
April	0.1	0.2	0.1	0.5
May	0.0	0.6	0.0	1.0
June	0.5	0.7	0.7	0.1
July	0.2	0.3	0.1	0.3
Aug.	0.2	0.1	0.3	0.5
Sept.	0.1	0.2	0.5	0.1
Oct.	0.1	0.0	0.2	0.8
Nov.	0.0	0.0	0.2	0.1
Mean	0.4	0.4	0.4	0.4

5A. Live births, Finland

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 50.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	6	7	9	6	9	6	9	5	9	6	9	6
Febr.	4	8	9	6	8	6	11	4	8	6	5	10
March	3	12	8	5	8	7	12	3	9	4	4	10
April	3	11	6	9	10	5	10	5	10	5	7	8
May	6	7	8	6	10	5	9	5	12	2	10	5
June	7	7	9	6	8	6	10	5	9	5	7	8
July	6	7	9	5	9	6	8	6	8	6	7	8
Aug.	5	7	8	6	6	7	6	7	8	6	6	8
Sept.	4	7	8	7	11	4	9	4	11	3	9	3
Oct.	8	5	8	5	11	0	6	3	10	3	9	5
Nov.	2	2	8	3	10	2	6	1	9	1	7	4
Sum	54	80	90	64	100	54	96	48	103	47	80	75
<50	31		11		11		21		15		10	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 250: the number of times the forecast differs less than 250 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	9	9	9	9
Febr.	11	10	10	9
March	12	11	11	10
April	12	12	13	11
May	12	12	12	12
June	13	13	13	12
July	13	13	14	11
Aug.	13	14	14	11
Sept.	13	13	14	12
Oct.	14	15	15	12
Nov.	15	15	15	15
Mean	137	137	140	124

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5B. Deaths, Finland

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	-2.8	-2.7	-2.0	0.2
Febr.	-2.4	-2.7	-0.6	-3.2
March	-1.5	-2.1	2.6	-2.3
April	-1.3	-1.9	0.0	-1.0
May	-1.2	-1.8	-0.3	-0.5
June	-1.5	-1.8	-1.5	-0.5
July	-0.6	-1.1	1.5	-0.3
Aug.	-0.7	-1.1	-0.7	-0.4
Sept.	-0.6	-0.9	-0.4	-0.2
Oct.	-0.6	-0.7	-0.5	-0.2
Nov.	-0.5	-0.6	-0.4	-0.3
Mean	-1.2	-1.6	-0.2	-0.8

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	12.0	8.9	28.6	31.7
Febr.	11.7	8.1	24.5	28.3
March	8.4	5.5	19.1	18.5
April	7.4	4.4	10.7	13.3
May	6.4	3.8	8.0	11.3
June	5.8	4.0	7.4	9.5
July	5.2	4.2	9.1	9.1
Aug.	3.9	3.7	4.3	7.5
Sept.	3.2	3.1	3.0	5.9
Oct.	2.5	2.5	2.2	4.5
Nov.	2.0	2.0	1.8	3.0
Mean	6.2	4.6	10.8	13.0

3. Root mean square absolute error
1981-1995

Method	1	2	3	4
Jan.	15.3	12.1	36.1	36.7
Febr.	14.1	10.2	29.5	33.5
March	10.0	6.8	24.4	22.7
April	8.5	5.6	13.5	17.4
May	7.4	5.1	10.3	14.3
June	7.0	5.2	8.8	12.1
July	6.8	5.7	11.0	11.1
Aug.	5.2	5.0	5.3	9.0
Sept.	4.6	4.3	4.1	7.0
Oct.	4.0	3.7	3.6	6.0
Nov.	3.2	3.0	2.9	4.7
Mean	7.8	6.1	13.6	15.9

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5B. Deaths, Finland

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	2.5	1.9	5.9	6.6
Febr.	2.4	1.7	5.1	5.9
March	1.8	1.2	4.0	3.9
April	1.6	0.9	2.3	2.8
May	1.3	0.8	1.7	2.4
June	1.2	0.8	1.5	2.0
July	1.1	0.9	1.9	1.9
Aug.	0.8	0.8	0.9	1.6
Sept.	0.7	0.6	0.6	1.2
Oct.	0.5	0.5	0.5	0.9
Nov.	0.4	0.4	0.4	0.6
Mean	1.3	1.0	2.2	2.7

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	3.2	2.5	7.4	7.5
Febr.	2.9	2.1	6.1	7.0
March	2.1	1.4	5.1	4.9
April	1.8	1.2	2.9	3.7
May	1.6	1.1	2.1	3.0
June	1.5	1.1	1.8	2.6
July	1.4	1.2	2.3	2.3
Aug.	1.1	1.0	1.1	1.9
Sept.	0.9	0.9	0.8	1.5
Oct.	0.8	0.7	0.7	1.2
Nov.	0.6	0.6	0.6	1.0
Mean	1.6	1.3	2.8	3.3

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	34.9	27.5	85.3	65.7
Febr.	31.3	22.6	60.4	66.3
March	21.1	15.1	53.5	48.5
April	15.1	10.9	28.4	39.3
May	13.9	10.8	23.7	34.2
June	13.7	11.0	16.5	27.7
July	16.0	11.7	23.6	19.8
Aug.	11.7	11.4	14.4	13.4
Sept.	12.2	10.9	10.9	12.5
Oct.	12.5	10.9	11.8	13.3
Nov.	10.6	10.0	9.5	11.6
Mean	17.5	13.9	30.7	32.0

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.3	0.7	1.8	1.2
Febr.	2.1	0.5	4.6	3.4
March	0.7	0.6	1.1	3.7
April	1.5	0.6	1.2	0.0
May	1.2	0.2	0.6	0.5
June	1.2	0.4	0.6	1.4
July	0.4	0.2	0.6	0.3
Aug.	0.4	0.0	0.0	0.7
Sept.	0.3	0.2	0.1	0.0
Oct.	0.1	0.0	0.0	0.0
Nov.	0.4	0.2	0.1	0.1
Mean	0.8	0.3	1.0	1.0

5B. Deaths, Finland

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 50.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	3	11	12	3	13	2	13	1	14	1	8	7
Febr.	1	13	10	5	11	4	11	3	13	2	7	8
March	3	10	10	4	11	3	11	4	14	1	9	6
April	2	13	9	5	9	6	13	2	10	5	10	5
May	2	12	7	6	11	3	11	3	10	4	9	6
June	5	10	7	6	10	5	13	1	10	4	8	7
July	5	10	11	4	11	4	12	2	13	2	6	8
Aug.	6	6	7	5	11	4	9	5	12	2	9	5
Sept.	5	7	7	7	11	2	8	6	13	2	11	3
Oct.	3	3	5	6	9	3	5	6	11	3	11	3
Nov.	1	3	3	8	8	4	3	7	7	4	8	5
Sum	36	98	88	59	115	40	109	40	127	30	96	63
<50	31		18		10		16		8		6	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 250: the number of times the forecast differs less than 250 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	7	13	7	7
Febr.	9	11	11	9
March	10	12	10	11
April	13	13	12	12
May	13	13	13	13
June	13	13	12	13
July	13	13	11	13
Aug.	13	13	12	12
Sept.	12	13	14	12
Oct.	13	13	12	12
Nov.	14	14	14	12
Mean	130	141	128	126

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6A. Live births, Denmark

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	-6.3	-4.9	-1.8	0.8
Febr.	-5.2	-4.6	-1.5	0.1
March	-4.7	-4.9	-2.8	-0.3
April	-4.3	-4.1	-1.7	-1.4
May	-3.7	-2.7	-0.3	-1.8
June	-2.4	-1.1	1.4	-1.6
July	-1.8	-0.9	0.3	-1.3
Aug.	-1.6	-1.3	-0.9	-0.8
Sept.	-1.2	-1.2	-0.8	-0.5
Oct.	-0.6	-0.4	0.2	-0.3
Nov.	0.0	0.2	0.5	-0.1
Mean	-2.9	-2.4	-0.7	-0.6

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	13.7	14.3	16.5	22.4
Febr.	12.2	10.3	13.7	14.0
March	11.2	9.4	11.2	12.1
April	8.8	5.5	4.1	7.9
May	6.3	4.6	6.9	7.8
June	4.3	3.6	4.8	6.3
July	3.0	2.8	2.8	5.0
Aug.	2.6	2.5	3.0	4.5
Sept.	2.1	2.6	3.3	3.0
Oct.	1.6	1.9	2.0	2.6
Nov.	1.0	1.0	1.2	1.4
Mean	6.1	5.3	6.3	7.9

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	16.2	16.4	20.1	26.8
Febr.	14.0	12.6	16.2	17.7
March	12.7	11.0	13.8	15.9
April	9.8	6.7	5.1	11.0
May	7.2	5.6	9.0	9.5
June	5.3	4.4	6.9	7.3
July	3.7	3.5	3.5	6.0
Aug.	3.3	3.5	4.1	5.5
Sept.	3.1	4.1	4.6	5.2
Oct.	2.3	2.6	2.8	4.0
Nov.	1.2	1.3	1.6	1.9
Mean	7.2	6.5	8.0	10.1

6A. Live births, Denmark

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	2.3	2.4	2.8	3.7
Febr.	2.0	1.7	2.3	2.4
March	1.8	1.6	1.9	2.0
April	1.5	0.9	0.7	1.3
May	1.1	0.8	1.2	1.3
June	0.7	0.6	0.8	1.1
July	0.5	0.5	0.5	0.8
Aug.	0.4	0.4	0.5	0.7
Sept.	0.3	0.4	0.5	0.5
Oct.	0.2	0.3	0.3	0.4
Nov.	0.2	0.2	0.2	0.2
Mean	1.0	0.9	1.1	1.3

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	2.6	2.7	3.4	4.4
Febr.	2.3	2.1	2.7	2.9
March	2.0	1.8	2.3	2.6
April	1.6	1.1	0.9	1.8
May	1.2	1.0	1.6	1.6
June	0.9	0.8	1.2	1.3
July	0.6	0.6	0.6	1.0
Aug.	0.5	0.6	0.7	0.9
Sept.	0.5	0.6	0.7	0.8
Oct.	0.3	0.4	0.5	0.6
Nov.	0.2	0.2	0.3	0.3
Mean	1.2	1.1	1.3	1.7

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	30.4	30.4	41.0	44.6
Febr.	27.5	26.4	26.9	38.2
March	28.0	24.0	26.5	34.6
April	21.1	12.3	10.5	23.0
May	12.9	10.1	18.9	19.7
June	9.5	8.6	18.7	13.3
July	8.0	9.0	6.9	11.3
Aug.	7.9	10.3	10.9	12.0
Sept.	9.9	13.4	13.3	14.6
Oct.	7.2	6.6	8.5	10.1
Nov.	3.0	3.4	3.9	5.3
Mean	15.0	14.0	16.9	20.6

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	1.0	1.4	2.0	2.0
Febr.	0.3	0.2	1.7	0.3
March	1.4	0.2	2.5	0.7
April	2.6	0.4	0.2	0.4
May	1.9	0.1	1.0	0.0
June	0.4	0.4	0.1	0.7
July	0.6	0.1	0.2	0.3
Aug.	0.2	0.6	0.5	0.2
Sept.	0.0	0.4	0.2	0.1
Oct.	0.0	0.2	0.1	0.1
Nov.	0.2	0.1	0.0	0.0
Mean	0.8	0.4	0.8	0.5

6A. Live births, Denmark

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 50.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	7	7	8	7	8	7	9	6	8	7	11	3
Febr.	4	11	9	6	8	6	8	5	8	7	9	6
March	4	9	6	8	8	7	8	6	9	5	9	6
April	1	13	2	13	6	9	5	10	8	7	8	6
May	3	11	6	9	7	6	8	7	10	4	8	7
June	4	11	6	8	10	5	6	8	11	4	9	6
July	5	8	7	6	9	6	6	7	11	3	10	4
Aug.	5	6	8	6	8	4	7	5	12	2	10	5
Sept.	8	4	10	4	6	9	10	4	4	5	5	9
Oct.	7	4	8	4	6	3	5	5	6	5	6	8
Nov.	3	2	5	5	7	3	5	3	6	4	9	2
Sum	51	86	75	76	83	65	77	66	93	53	94	62
<50	28		14		17		22		19		9	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 250: the number of times the forecast differs less than 250 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	11	10	10	11
Febr.	11	10	10	11
March	11	9	10	11
April	12	15	14	12
May	13	14	13	12
June	14	14	13	12
July	14	15	15	13
Aug.	15	14	14	13
Sept.	15	14	14	13
Oct.	15	14	15	14
Nov.	14	14	14	14
Mean	145	143	142	136

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6B. Deaths, Denmark

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	-4.3	-4.8	-4.6	1.5
Febr.	-2.3	-3.4	5.7	0.3
March	-1.4	-2.8	2.5	-0.2
April	-1.0	-2.4	1.8	-0.8
May	-0.6	-2.2	1.0	-0.8
June	-1.3	-2.2	-1.5	-0.7
July	-1.2	-2.2	-1.3	-0.8
Aug.	-1.7	-2.1	-1.7	-0.9
Sept.	-1.8	-2.0	-1.9	-1.0
Oct.	-1.7	-1.8	-1.4	-1.0
Nov.	-1.6	-1.6	-1.5	-1.0
Mean	-1.7	-2.5	-0.3	-0.5

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	10.8	10.1	28.2	37.2
Febr.	12.3	8.9	29.1	29.2
March	10.6	6.7	16.3	21.5
April	8.6	4.9	13.1	13.8
May	7.3	4.6	8.0	10.9
June	6.0	3.9	6.3	8.3
July	5.5	3.8	5.3	7.7
Aug.	4.1	3.6	5.2	7.0
Sept.	4.3	3.9	5.0	6.2
Oct.	4.1	3.8	4.3	5.9
Nov.	3.2	3.1	2.6	4.8
Mean	7.0	5.2	11.2	13.9

3. Root mean square absolute error
1981-1995

Method	1	2	3	4
Jan.	14.4	12.1	35.2	42.0
Febr.	15.1	10.8	38.4	37.0
March	13.2	9.1	20.5	26.1
April	10.7	7.1	16.9	15.8
May	9.1	6.6	10.5	12.2
June	7.6	6.3	8.5	9.3
July	7.3	6.7	8.8	9.6
Aug.	6.8	6.9	7.9	10.2
Sept.	6.7	6.7	6.8	9.7
Oct.	6.6	6.4	6.3	9.6
Nov.	5.4	5.4	4.6	7.8
Mean	9.4	7.6	14.9	17.2

6B. Deaths, Denmark

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	1.8	1.7	4.7	6.3
Febr.	2.1	1.5	5.0	5.0
March	1.8	1.1	2.8	3.7
April	1.4	0.8	2.2	2.4
May	1.2	0.8	1.3	1.9
June	1.0	0.6	1.0	1.4
July	0.9	0.6	0.9	1.3
Aug.	0.7	0.6	0.9	1.2
Sept.	0.7	0.6	0.8	1.0
Oct.	0.7	0.6	0.7	1.0
Nov.	0.5	0.5	0.4	0.8
Mean	1.2	0.9	1.9	2.3

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	2.4	2.0	5.9	7.0
Febr.	2.5	1.8	6.6	6.3
March	2.2	1.5	3.5	4.5
April	1.8	1.2	2.9	2.7
May	1.5	1.1	1.8	2.1
June	1.2	1.0	1.4	1.6
July	1.2	1.1	1.4	1.6
Aug.	1.1	1.1	1.3	1.7
Sept.	1.1	1.1	1.1	1.6
Oct.	1.1	1.0	1.0	1.5
Nov.	0.9	0.9	0.7	1.3
Mean	1.5	1.2	2.5	2.9

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	34.9	22.6	90.6	82.4
Febr.	31.0	20.9	94.6	86.2
March	27.8	20.6	37.2	61.6
April	23.8	17.6	46.4	27.3
May	17.6	16.5	24.0	18.4
June	15.7	18.1	21.1	19.9
July	20.2	21.3	30.3	22.8
Aug.	22.2	22.1	24.6	24.2
Sept.	20.8	20.3	17.1	23.4
Oct.	19.6	18.9	17.1	22.4
Nov.	15.5	15.4	12.6	17.6
Mean	22.6	19.5	37.8	36.9

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.4	0.2	0.8	11.3
Febr.	0.7	0.8	0.1	2.4
March	0.2	0.1	1.7	1.6
April	0.3	0.1	1.3	2.0
May	0.8	0.5	1.5	2.1
June	0.2	0.6	0.7	2.9
July	0.2	0.7	0.1	1.6
Aug.	0.2	0.1	0.2	0.1
Sept.	0.7	0.3	0.0	0.4
Oct.	0.1	0.0	0.8	0.3
Nov.	0.0	0.2	0.2	0.4
Mean	0.3	0.3	0.7	2.3

6B. Deaths, Denmark

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 50.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	5	7	14	1	14	1	13	2	14	1	8	6
Febr.	3	8	10	5	9	6	12	3	10	5	7	8
March	3	9	10	4	11	4	12	3	11	4	10	5
April	3	10	8	6	12	3	10	5	13	2	9	6
May	4	11	7	6	12	2	10	4	13	2	11	4
June	3	11	8	6	12	3	11	4	14	1	8	7
July	4	11	4	7	11	4	10	4	13	1	11	4
Aug.	6	6	9	5	9	4	10	3	13	1	8	5
Sept.	3	8	8	6	7	5	8	5	8	5	8	7
Oct.	3	7	5	5	9	5	9	4	10	3	7	6
Nov.	0	1	0	7	9	3	1	8	8	2	10	2
Sum	37	89	83	58	115	40	106	45	127	27	97	60
<50	39		24		10		14		11		8	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 250: the number of times the forecast differs less than 250 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	9	8	6	8
Febr.	9	11	11	10
March	10	14	11	13
April	11	14	11	13
May	13	14	13	12
June	13	14	13	12
July	11	14	12	12
Aug.	12	14	12	12
Sept.	14	14	12	12
Oct.	15	15	14	13
Nov.	15	15	15	14
Mean	132	147	130	131

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7A. Live births, Switzerland

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	-4.2	-4.1	-1.2	-0.4
Febr.	-3.3	-3.1	0.5	-1.2
March	-2.3	-1.3	3.3	-0.9
April	-3.2	-3.8	-5.6	-1.7
May	-2.9	-3.3	-1.9	-1.7
June	-2.4	-2.2	-0.3	-1.6
July	-1.9	-1.6	-0.5	-1.3
Aug.	-1.5	-1.2	-0.5	-0.8
Sept.	-1.0	-0.4	0.4	-0.5
Oct.	-0.3	-0.2	0.1	-0.2
Nov.	-0.3	-0.3	-0.3	-0.1
Mean	-2.1	-1.9	-0.5	-0.9

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	12.5	12.5	13.5	15.2
Febr.	10.5	9.4	15.7	15.9
March	8.7	7.9	11.0	13.8
April	8.1	8.2	13.8	11.5
May	5.8	5.6	6.1	8.7
June	5.0	4.3	5.0	6.5
July	3.6	2.9	2.8	5.7
Aug.	3.2	2.8	4.3	4.4
Sept.	2.4	2.0	3.5	3.2
Oct.	1.6	1.9	2.1	3.1
Nov.	1.1	1.2	1.5	1.5
Mean	5.7	5.3	7.2	8.1

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	15.3	14.3	16.4	18.5
Febr.	12.7	11.7	20.6	19.2
March	10.7	10.1	16.4	17.1
April	9.9	10.1	17.7	13.3
May	7.2	7.3	8.1	10.4
June	6.2	5.8	5.9	8.2
July	4.7	4.5	3.8	6.5
Aug.	4.1	3.6	5.1	5.6
Sept.	2.8	2.4	4.2	4.0
Oct.	1.9	2.2	2.6	3.6
Nov.	1.3	1.4	1.8	1.9
Mean	7.0	6.7	9.3	9.9

7A. Live births, Switzerland

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	1.6	1.6	1.7	1.9
Febr.	1.3	1.2	1.9	2.0
March	1.1	1.0	1.4	1.7
April	1.0	1.0	1.8	1.4
May	0.7	0.7	0.8	1.1
June	0.6	0.5	0.6	0.8
July	0.4	0.4	0.4	0.7
Aug.	0.4	0.4	0.5	0.6
Sept.	0.3	0.3	0.4	0.4
Oct.	0.2	0.2	0.3	0.4
Nov.	0.1	0.2	0.2	0.2
Mean	0.7	0.7	0.9	1.0

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	1.9	1.8	2.0	2.3
Febr.	1.6	1.4	2.5	2.4
March	1.3	1.2	2.1	2.1
April	1.2	1.3	2.3	1.6
May	0.9	0.9	1.0	1.3
June	0.8	0.7	0.7	1.0
July	0.6	0.6	0.5	0.8
Aug.	0.5	0.4	0.6	0.7
Sept.	0.3	0.3	0.5	0.5
Oct.	0.2	0.3	0.3	0.5
Nov.	0.2	0.2	0.2	0.2
Mean	0.9	0.8	1.2	1.2

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	30.5	25.9	37.5	38.9
Febr.	27.2	21.9	46.2	41.6
March	23.3	20.9	36.6	33.9
April	18.9	16.7	39.3	27.2
May	13.0	12.4	22.2	20.1
June	12.3	12.9	11.7	16.2
July	10.1	14.4	11.2	13.1
Aug.	8.5	8.4	8.7	10.5
Sept.	5.0	4.1	8.7	7.6
Oct.	3.8	5.1	5.1	6.0
Nov.	2.9	3.1	3.3	4.1
Mean	14.1	13.2	20.9	19.9

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	1.8	2.6	0.7	0.6
Febr.	1.3	0.9	1.2	1.2
March	0.3	0.8	0.4	0.1
April	0.9	0.2	1.5	1.8
May	0.4	0.0	1.3	2.3
June	0.7	0.1	1.0	0.1
July	0.2	0.0	0.3	0.3
Aug.	0.5	0.5	0.3	0.1
Sept.	0.0	0.1	0.6	0.1
Oct.	0.1	0.3	0.3	0.2
Nov.	0.1	0.4	0.1	0.1
Mean	0.6	0.5	0.7	0.6

7A. Live births, Switzerland

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 100.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	5	7	7	7	7	7	7	8	9	6	8	6
Febr.	5	7	9	6	10	5	10	5	10	4	7	7
March	5	8	7	7	9	4	7	7	12	3	9	6
April	7	7	10	4	8	5	10	4	7	6	7	8
May	5	7	7	7	10	4	6	8	11	3	10	4
June	3	6	8	6	11	3	8	6	8	5	6	6
July	4	7	5	8	10	2	6	7	12	3	12	3
Aug.	1	5	7	6	8	2	9	3	9	2	9	3
Sept.	1	4	7	4	7	5	9	3	8	3	6	7
Oct.	3	0	6	2	8	0	4	3	8	0	7	3
Nov.	0	0	4	3	5	2	3	0	4	2	4	4
Sum	39	58	77	60	93	39	79	54	98	37	85	57
<100	68		28		33		32		30		23	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 500: the number of times the forecast differs less than 500 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	8	10	10	10
Febr.	14	12	11	10
March	12	12	13	12
April	11	11	11	12
May	13	12	14	12
June	13	15	12	12
July	15	15	15	14
Aug.	15	15	13	14
Sept.	15	15	15	14
Oct.	15	15	15	15
Nov.	15	15	15	15
Mean	146	147	144	140

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7B. Deaths, Switzerland

1. Mean forecast error
   1981-1995

Method	1	2	3	4
Jan.	-1.6	-2.8	10.0	7.4
Febr.	1.4	-0.4	14.0	3.7
March	3.4	1.1	11.3	4.2
April	2.8	0.6	1.6	3.2
May	2.6	0.1	0.8	1.7
June	2.1	-0.2	1.0	1.0
July	1.2	0.1	1.4	0.6
Aug.	0.4	0.2	0.3	0.3
Sept.	-0.1	0.2	-0.3	0.2
Oct.	0.0	0.1	-0.1	0.0
Nov.	-0.4	-0.4	-0.9	-0.2
Mean	1.1	-0.1	3.5	2.0

2. Mean absolute forecast error
   1981-1995

Method	1	2	3	4
Jan.	10.4	7.3	46.5	61.4
Febr.	14.1	8.0	41.9	48.8
March	12.9	7.7	29.2	36.8
April	12.0	7.0	14.0	29.6
May	9.5	5.1	5.0	19.7
June	7.4	3.6	6.4	14.1
July	4.4	3.2	6.1	10.3
Aug.	2.5	3.0	3.6	8.3
Sept.	2.2	2.0	3.0	5.6
Oct.	1.8	1.6	2.6	4.0
Nov.	1.5	1.4	1.7	2.8
Mean	7.2	4.5	14.5	21.9

3. Root mean square absolute error
   1981-1995

Method	1	2	3	4
Jan.	14.1	8.6	76.3	84.5
Febr.	16.9	9.8	50.3	60.5
March	16.3	9.7	36.8	44.5
April	14.9	8.6	18.1	35.0
May	11.8	6.2	6.4	23.2
June	9.4	5.0	7.4	17.2
July	6.1	4.5	8.2	13.4
Aug.	3.6	4.0	5.4	10.3
Sept.	2.6	2.8	3.7	6.9
Oct.	2.2	2.0	2.9	4.6
Nov.	1.9	1.9	2.1	3.4
Mean	9.1	5.7	19.8	27.6

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7B. Deaths, Switzerland

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	1.7	1.2	7.5	9.9
Febr.	2.3	1.3	6.9	8.0
March	2.1	1.3	4.8	6.0
April	2.0	1.2	2.3	4.8
May	1.6	0.8	0.8	3.2
June	1.2	0.6	1.1	2.3
July	0.7	0.5	1.0	1.7
Aug.	0.4	0.5	0.6	1.4
Sept.	0.4	0.3	0.5	0.9
Oct.	0.3	0.3	0.4	0.6
Nov.	0.2	0.2	0.3	0.5
Mean	1.2	0.7	2.4	3.6

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	2.3	1.4	12.1	13.5
Febr.	2.7	1.6	8.2	9.8
March	2.7	1.6	6.0	7.3
April	2.4	1.4	3.0	5.7
May	1.9	1.0	1.1	3.8
June	1.5	0.8	1.2	2.8
July	1.0	0.7	1.3	2.2
Aug.	0.6	0.7	0.9	1.7
Sept.	0.4	0.5	0.6	1.1
Oct.	0.3	0.3	0.5	0.7
Nov.	0.3	0.3	0.3	0.5
Mean	1.5	0.9	3.2	4.5

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	40.2	17.3	260.7	225.0
Febr.	45.7	18.6	106.0	153.3
March	36.6	21.5	84.1	97.0
April	33.1	19.0	43.3	80.5
May	27.8	14.6	14.7	53.4
June	20.1	13.7	15.1	41.8
July	14.4	12.2	21.0	33.3
Aug.	9.1	9.5	14.8	24.3
Sept.	5.1	6.3	8.2	16.0
Oct.	4.1	4.1	5.7	10.4
Nov.	3.7	4.5	4.6	8.1
Mean	21.8	12.8	52.6	67.5

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.8	1.1	2.6	8.9
Febr.	3.4	0.2	10.4	6.0
March	0.7	0.1	2.3	1.8
April	3.0	0.5	0.0	1.5
May	1.2	0.3	0.4	1.7
June	0.5	0.1	0.0	0.4
July	0.0	0.1	0.3	2.0
Aug.	0.2	0.1	0.4	0.7
Sept.	0.4	0.0	0.0	0.1
Oct.	0.1	0.0	0.9	1.1
Nov.	0.1	0.1	0.1	0.7
Mean	0.9	0.2	1.6	2.3

7B. Deaths, Switzerland

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 100.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	4	8	13	2	14	0	13	2	15	0	9	5
Febr.	0	13	13	1	13	2	14	1	13	2	11	3
March	1	11	12	3	13	2	13	2	12	3	9	6
April	2	12	8	6	13	2	12	2	14	1	12	3
May	1	11	2	10	12	2	6	7	13	1	13	1
June	1	13	6	7	10	3	11	2	13	1	13	2
July	4	7	8	4	10	3	9	4	12	0	11	4
Aug.	7	2	7	4	13	0	7	5	9	1	12	3
Sept.	4	4	7	5	11	2	7	4	10	1	9	5
Oct.	3	4	8	2	11	2	10	3	11	1	8	3
Nov.	0	0	4	0	12	0	3	1	11	1	9	1
Sum	27	85	88	44	132	18	105	33	133	12	116	36
<100	53		33		15		27		20		13	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 500: the number of times the forecast differs less than 500 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	11	10	10	8
Febr.	9	11	9	10
March	12	11	13	13
April	12	12	12	13
May	13	14	14	13
June	13	14	11	14
July	13	14	10	14
Aug.	14	14	14	13
Sept.	15	15	15	14
Oct.	15	15	15	15
Nov.	15	15	15	15
Mean	142	145	138	142

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8A. Live births, Austria

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	0.8	1.5	0.0	2.9
Febr.	2.8	3.9	8.0	2.0
March	2.3	2.2	0.9	1.8
April	2.5	1.5	1.9	1.2
May	2.4	2.1	3.7	0.5
June	2.5	2.5	3.8	0.5
July	1.5	0.9	-0.6	0.9
Aug.	0.6	0.2	-0.8	1.0
Sept.	0.4	0.2	-0.1	0.8
Oct.	-0.2	-0.5	-1.0	0.7
Nov.	-0.1	0.0	0.1	0.3
Mean	1.4	1.3	1.4	1.1

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	12.8	12.8	12.4	16.1
Febr.	10.6	11.5	19.3	12.0
March	9.8	10.4	13.9	11.0
April	9.4	8.5	14.0	8.5
May	8.1	7.2	11.1	9.4
June	6.5	5.1	7.1	7.7
July	4.7	3.9	3.9	5.4
Aug.	3.4	3.2	3.3	4.4
Sept.	2.3	2.1	2.7	3.4
Oct.	1.8	2.2	2.8	3.2
Nov.	0.9	1.0	1.4	1.3
Mean	6.4	6.2	8.4	7.5

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	16.3	15.6	16.0	20.5
Febr.	13.8	13.8	25.2	15.7
March	12.4	12.4	15.9	13.4
April	11.0	9.5	15.5	11.5
May	9.4	9.2	13.6	11.6
June	7.9	7.6	9.5	9.1
July	5.8	4.8	5.4	6.3
Aug.	4.2	3.9	4.9	5.5
Sept.	2.7	2.4	3.1	3.9
Oct.	2.0	2.5	3.8	3.5
Nov.	1.2	1.3	1.8	1.6
Mean	7.9	7.6	10.4	9.3

8A. Live births, Austria

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	1.4	1.4	1.4	1.8
Febr.	1.2	1.3	2.1	1.3
March	1.1	1.2	1.5	1.2
April	1.0	0.9	1.5	0.9
May	0.9	0.8	1.2	1.0
June	0.7	0.6	0.8	0.9
July	0.5	0.4	0.4	0.6
Aug.	0.4	0.4	0.4	0.5
Sept.	0.2	0.2	0.3	0.4
Oct.	0.2	0.2	0.3	0.4
Nov.	0.1	0.1	0.2	0.1
Mean	0.7	0.7	0.9	0.8

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	1.8	1.7	1.7	2.2
Febr.	1.5	1.5	2.8	1.7
March	1.4	1.4	1.8	1.5
April	1.2	1.1	1.7	1.3
May	1.0	1.0	1.5	1.3
June	0.9	0.8	1.0	1.0
July	0.6	0.5	0.6	0.7
Aug.	0.5	0.4	0.6	0.6
Sept.	0.3	0.3	0.3	0.4
Oct.	0.2	0.3	0.4	0.4
Nov.	0.1	0.1	0.2	0.2
Mean	0.9	0.8	1.2	1.0

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	38.4	34.0	42.8	40.9
Febr.	31.2	23.5	57.4	35.8
March	23.9	27.3	26.0	28.6
April	16.4	15.7	24.8	22.7
May	17.1	19.8	29.8	22.0
June	20.1	23.8	27.4	15.2
July	13.6	9.3	14.8	9.9
Aug.	11.1	8.2	13.6	11.1
Sept.	6.0	4.3	5.4	7.8
Oct.	3.7	4.9	10.7	6.5
Nov.	2.7	3.0	5.2	3.0
Mean	16.7	15.8	23.4	18.5

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	1.3	0.0	0.2	0.1
Febr.	0.3	0.8	0.2	0.7
March	0.1	0.6	3.5	1.0
April	0.8	1.4	0.2	0.9
May	0.7	0.2	0.2	0.0
June	1.2	1.0	0.7	1.0
July	0.7	0.1	0.9	0.6
Aug.	0.5	0.5	0.1	0.3
Sept.	0.1	0.3	0.0	0.3
Oct.	0.2	0.2	0.1	1.1
Nov.	0.0	0.0	0.4	0.0
Mean	0.5	0.5	0.6	0.6

8A. Live births, Austria

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 100.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	6	8	7	8	8	6	6	7	8	6	7	7
Febr.	6	8	10	4	6	9	10	4	6	8	4	10
March	7	3	10	4	7	8	9	6	7	7	6	9
April	5	7	10	4	6	8	11	4	8	7	6	9
May	6	6	9	4	10	5	11	3	9	6	7	8
June	2	10	8	7	8	7	9	5	10	5	7	6
July	2	10	3	11	7	5	6	8	7	6	8	5
Aug.	4	5	5	9	7	6	5	8	6	6	9	4
Sept.	0	4	8	5	10	3	8	3	10	1	10	5
Oct.	2	0	8	2	10	2	6	2	8	4	8	4
Nov.	0	0	8	1	5	2	4	1	6	4	4	4
Sum	40	61	86	59	84	61	85	51	85	60	76	71
<100	64		20		20		29		20		18	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 500: the number of times the forecast differs less than 500 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	11	12	10	11
Febr.	12	11	11	12
March	13	12	10	11
April	12	11	11	12
May	12	13	13	11
June	13	14	14	12
July	14	14	12	12
Aug.	14	13	14	12
Sept.	14	14	14	14
Oct.	14	14	14	13
Nov.	13	13	14	13
Mean	142	141	137	133

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8B. Deaths, Austria

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	5.0	9.8	3.1	3.3
Febr.	4.8	9.7	6.1	3.5
March	5.8	9.7	8.7	3.1
April	4.2	7.7	-2.0	2.2
May	3.0	6.0	-2.0	0.9
June	2.7	4.6	-0.7	0.0
July	1.8	3.6	-0.1	0.1
Aug.	1.7	3.4	2.3	-0.2
Sept.	1.0	2.6	0.4	-0.1
Oct.	0.9	1.8	0.4	-0.1
Nov.	0.6	1.0	0.2	-0.3
Mean	2.9	5.4	1.5	1.1

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	12.9	13.9	54.5	74.1
Febr.	16.7	13.2	47.6	53.6
March	16.2	12.1	38.2	39.7
April	12.9	9.4	12.8	28.7
May	8.6	7.1	10.6	18.9
June	6.9	6.1	9.0	12.3
July	5.4	5.7	7.7	10.7
Aug.	5.0	6.0	8.2	11.0
Sept.	3.9	4.7	4.3	8.1
Oct.	3.9	4.1	4.5	6.6
Nov.	3.1	3.1	3.1	4.9
Mean	8.7	7.8	18.2	24.4

3. Root mean square absolute error
1981-1995

Method	1	2	3	4
Jan.	17.1	18.3	63.8	80.2
Febr.	18.4	15.7	57.1	64.2
March	19.1	15.7	48.2	49.9
April	15.9	12.5	16.1	33.5
May	12.1	9.7	13.1	22.9
June	9.9	8.0	11.1	16.2
July	8.0	7.1	9.9	14.1
Aug.	6.1	6.9	11.4	13.0
Sept.	5.0	5.2	5.3	9.7
Oct.	5.3	5.0	6.1	8.8
Nov.	4.4	4.2	4.0	7.4
Mean	11.0	9.8	22.4	29.1

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8B. Deaths, Austria

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	1.5	1.6	6.4	8.7
Febr.	2.0	1.5	5.5	6.2
March	1.9	1.4	4.4	4.6
April	1.5	1.1	1.5	3.3
May	1.0	0.8	1.2	2.2
June	0.8	0.7	1.1	1.4
July	0.6	0.7	0.9	1.2
Aug.	0.6	0.7	1.0	1.3
Sept.	0.5	0.5	0.5	1.0
Oct.	0.5	0.5	0.5	0.8
Nov.	0.4	0.4	0.4	0.6
Mean	1.0	0.9	2.1	2.8

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	2.1	2.2	7.5	9.5
Febr.	2.2	1.8	6.5	7.4
March	2.2	1.8	5.5	5.7
April	1.8	1.4	1.9	3.8
May	1.4	1.1	1.5	2.6
June	1.1	0.9	1.3	1.8
July	0.9	0.8	1.1	1.6
Aug.	0.7	0.8	1.4	1.5
Sept.	0.6	0.6	0.6	1.2
Oct.	0.6	0.6	0.7	1.1
Nov.	0.5	0.5	0.5	0.9
Mean	1.3	1.1	2.6	3.4

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	45.1	46.2	128.1	128.3
Febr.	27.5	32.2	121.0	114.7
March	45.0	35.6	114.7	110.7
April	35.1	27.1	31.3	67.9
May	33.5	25.3	29.8	51.8
June	26.2	18.1	23.0	36.1
July	19.4	15.6	23.8	30.3
Aug.	10.4	11.0	32.3	22.5
Sept.	10.6	9.9	12.3	17.2
Oct.	12.7	10.8	13.0	18.6
Nov.	10.1	9.3	9.1	17.3
Mean	25.1	21.9	48.9	56.0

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.0	1.9	1.7	32.3
Febr.	4.3	1.4	0.7	5.6
March	5.7	1.6	5.0	0.4
April	0.3	0.1	0.4	11.5
May	0.1	0.1	2.5	3.3
June	0.9	0.3	0.3	0.4
July	0.2	1.0	0.6	0.6
Aug.	0.2	1.9	0.6	1.3
Sept.	0.1	1.0	0.1	0.1
Oct.	0.3	0.7	0.0	0.1
Nov.	0.0	0.3	0.6	0.3
Mean	1.1	0.9	1.1	5.1

8B. Deaths, Austria

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 100.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	5	8	13	2	15	0	13	2	15	0	9	5
Febr.	3	11	13	1	12	0	13	2	13	2	7	8
March	2	13	10	5	13	2	13	2	12	3	8	7
April	3	11	5	9	14	1	7	5	14	1	12	3
May	5	9	10	4	13	2	11	4	12	2	11	3
June	4	10	7	5	11	3	9	6	11	4	8	6
July	6	4	10	5	13	2	9	6	12	3	9	6
Aug.	9	2	8	4	11	2	8	7	11	3	8	5
Sept.	6	3	7	6	11	4	7	7	11	4	11	4
Oct.	5	4	5	2	12	3	4	6	10	4	11	4
Nov.	1	1	5	3	7	2	5	2	8	3	7	4
Sum	49	76	93	46	132	21	99	49	129	29	101	55
<100	40		26		12		17		7		9	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 500: the number of times the forecast differs less than 500 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	7	9	7	6
Febr.	9	8	9	9
March	9	10	8	10
April	9	11	11	9
May	12	13	11	9
June	14	14	10	10
July	13	15	11	13
Aug.	12	14	10	11
Sept.	15	15	13	12
Oct.	15	15	15	12
Nov.	15	15	13	13
Mean	130	139	118	114

9A. Live births, Sweden

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	9.4	-0.3	-7.5	-0.3
Febr.	7.4	1.0	-2.0	0.4
March	6.1	1.6	-1.0	0.8
April	4.5	0.9	-1.8	0.5
May	2.1	1.0	-2.6	0.5
June	0.6	1.1	-2.7	1.1
July	0.7	0.1	-2.1	1.0
Aug.	0.2	-0.6	-1.9	0.9
Sept.	-0.3	-1.0	-1.8	0.7
Oct.	-0.4	-0.4	-0.7	0.8
Nov.	0.0	0.3	0.3	0.4
Mean	2.8	0.3	-2.2	0.6

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	40.4	26.8	28.9	21.9
Febr.	32.8	17.8	22.4	13.7
March	27.0	14.3	17.9	10.4
April	21.6	14.0	17.3	9.7
May	15.3	9.1	11.7	7.0
June	10.2	9.6	13.7	6.3
July	7.4	5.9	6.2	5.1
Aug.	5.4	3.3	5.4	3.9
Sept.	4.1	5.5	6.4	4.9
Oct.	2.5	3.1	3.8	4.1
Nov.	1.4	1.8	2.0	2.1
Mean	15.3	10.1	12.3	8.1

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	64.5	31.1	33.7	28.7
Febr.	49.5	20.7	27.4	17.7
March	37.6	17.2	26.4	13.0
April	28.1	18.0	25.7	13.3
May	18.3	10.8	21.2	9.9
June	12.2	11.0	21.9	8.4
July	9.5	6.9	10.9	6.5
Aug.	6.8	4.4	7.7	5.1
Sept.	4.9	7.1	9.0	5.7
Oct.	3.3	4.5	5.4	5.0
Nov.	1.9	2.5	2.8	2.5
Mean	21.5	12.2	17.5	10.5

9A. Live births, Sweden

4. Mean absolutc percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	3.9	2.5	2.7	2.0
Febr.	3.1	1.6	2.1	1.2
March	2.6	1.3	1.7	0.9
April	2.0	1.3	1.7	0.9
May	1.4	0.8	1.2	0.6
June	0.9	0.9	1.3	0.6
July	0.7	0.6	0.6	0.5
Aug.	0.5	0.3	0.5	0.4
Sept.	0.4	0.5	0.6	0.4
Oct.	0.2	0.3	0.3	0.4
Nov.	0.1	0.2	0.2	0.2
Mean	1.4	0.9	1.2	0.7

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	6.6	2.9	3.1	2.6
Febr.	5.1	1.9	2.6	1.5
March	3.8	1.6	2.7	1.1
April	2.8	1.6	2.5	1.1
May	1.7	1.0	2.2	0.8
June	1.1	1.0	2.2	0.7
July	0.8	0.7	1.1	0.6
Aug.	0.6	0.4	0.8	0.4
Sept.	0.4	0.6	0.8	0.5
Oct.	0.3	0.4	0.5	0.5
Nov.	0.2	0.2	0.3	0.2
Mean	2.1	1.1	1.7	0.9

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	219.7	63.5	61.7	66.5
Febr.	163.6	36.5	62.3	40.3
March	116.6	29.2	82.0	28.2
April	79.0	47.7	69.0	29.0
May	40.2	20.7	74.0	24.8
June	26.3	20.5	72.9	17.6
July	18.0	11.7	37.0	16.2
Aug.	11.7	10.9	24.0	13.1
Sept.	10.7	18.7	24.4	10.4
Oct.	7.5	12.1	12.8	9.6
Nov.	5.1	6.8	7.6	5.9
Mean	63.5	25.3	48.0	23.8

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.2	2.4	6.9	0.4
Febr.	0.1	0.3	4.3	0.2
March	2.7	0.8	0.7	0.5
April	1.0	0.1	0.7	0.3
May	0.2	0.5	0.1	0.2
June	1.4	0.5	1.0	0.5
July	0.1	0.2	0.4	0.1
Aug.	0.2	0.2	0.1	0.3
Sept.	0.0	1.2	0.4	0.4
Oct.	0.2	0.4	0.3	0.4
Nov.	0.0	0.1	0.0	0.4
Mean	0.5	0.6	1.4	0.3

9A. Live births, Sweden

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 100.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	6	9	6	8	6	8	8	7	5	10	6	9
Febr.	5	8	4	10	4	11	7	7	6	9	6	9
March	4	11	3	11	4	11	6	9	5	10	3	10
April	6	8	6	9	3	12	8	6	6	8	4	9
May	3	11	4	10	3	12	6	8	5	9	5	7
June	4	8	6	8	2	13	8	6	4	11	5	9
July	5	8	7	8	5	9	6	9	4	10	7	7
Aug.	3	9	8	5	4	9	7	4	7	6	6	7
Sept.	9	4	8	5	7	3	5	5	6	6	7	6
Oct.	6	5	7	4	8	3	7	2	7	4	6	5
Nov.	6	2	6	3	7	4	1	0	5	5	6	5
Sum	57	83	65	81	53	95	69	63	60	88	61	83
<100	25		19		17		33		17		21	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 500: the number of times the forecast differs less than 500 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	12	12	13	12
Febr.	13	13	13	13
March	12	13	12	13
April	13	12	11	13
May	13	14	15	14
June	14	13	12	13
July	15	15	15	14
Aug.	15	15	14	14
Sept.	15	14	14	14
Oct.	14	14	14	15
Nov.	15	15	15	15
Mean	151	150	148	150

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9B. Deaths, Sweden

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	-1.6	-1.9	-9.1	3.0
Febr.	-2.2	-2.6	-4.3	-0.3
March	-1.1	-1.8	3.5	-0.6
April	-0.2	-1.0	3.9	0.2
May	-0.7	-1.5	-2.2	0.0
June	-2.4	-1.7	-3.2	-0.3
July	-1.8	-1.8	-2.3	-0.6
Aug.	-1.7	-1.9	-2.1	-0.7
Sept.	-2.1	-2.0	-2.4	-0.6
Oct.	-2.2	-2.0	-2.2	-0.7
Nov.	-2.1	-2.1	-2.2	-0.5
Mean	-1.6	-1.8	-2.0	-0.1

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	24.7	19.2	46.7	62.8
Febr.	22.9	15.6	42.7	44.5
March	20.1	13.8	34.7	35.5
April	14.4	9.4	11.3	22.2
May	9.3	6.7	11.5	14.5
June	8.1	6.7	12.0	11.8
July	6.9	7.7	11.4	10.9
Aug.	6.0	6.6	7.2	9.2
Sept.	6.8	6.7	9.3	9.5
Oct.	6.4	6.4	6.3	9.6
Nov.	5.3	5.1	4.7	8.4
Mean	11.9	9.4	18.0	21.7

3. Root mean square absolute error
1981-1995

Method	1	2	3	4
Jan.	33.7	24.8	57.4	75.2
Febr.	28.5	20.8	52.7	52.5
March	24.0	17.2	39.9	41.0
April	16.7	12.3	15.7	25.4
May	11.9	9.6	12.9	16.9
June	10.5	9.7	14.3	15.4
July	9.1	10.4	14.0	15.1
Aug.	7.8	9.1	9.0	13.2
Sept.	9.7	9.7	12.0	14.2
Oct.	9.5	9.2	9.1	14.2
Nov.	8.2	8.2	7.5	12.8
Mean	15.4	12.8	22.2	26.9

9B. Deaths, Sweden

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	2.6	2.1	5.0	6.7
Febr.	2.4	1.7	4.6	4.7
March	2.1	1.5	3.7	3.8
April	1.5	1.0	1.2	2.4
May	1.0	0.7	1.2	1.5
June	0.9	0.7	1.3	1.3
July	0.7	0.8	1.2	1.2
Aug.	0.6	0.7	0.8	1.0
Sept.	0.7	0.7	1.0	1.0
Oct.	0.7	0.7	0.7	1.0
Nov.	0.6	0.5	0.5	0.9
Mean	1.3	1.0	1.9	2.3

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	3.6	2.7	6.1	8.1
Febr.	3.0	2.2	5.6	5.6
March	2.6	1.8	4.3	4.4
April	1.8	1.3	1.7	2.7
May	1.3	1.0	1.4	1.8
June	1.1	1.0	1.5	1.6
July	1.0	1.1	1.5	1.6
Aug.	0.8	0.9	1.0	1.4
Sept.	1.0	1.0	1.3	1.5
Oct.	1.0	1.0	0.9	1.5
Nov.	0.9	0.8	0.8	1.4
Mean	1.6	1.3	2.4	2.9

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	75.8	49.6	122.0	177.6
Febr.	55.3	43.2	115.1	106.0
March	54.4	42.2	76.2	80.0
April	38.1	31.7	39.3	43.3
May	29.4	26.5	25.2	28.4
June	25.6	26.4	29.2	31.9
July	21.3	27.1	24.5	33.4
Aug.	18.4	22.0	21.3	30.7
Sept.	26.0	23.4	29.4	30.8
Oct.	26.6	24.2	26.6	30.6
Nov.	23.9	23.0	22.3	28.2
Mean	35.9	30.9	48.3	56.4

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.6	4.5	1.1	13.9
Febr.	1.4	0.0	2.0	6.6
March	6.2	1.7	9.1	2.1
April	5.8	0.6	1.2	2.1
May	1.0	0.8	3.1	1.0
June	0.2	0.1	0.0	0.1
July	1.1	0.3	0.2	0.2
Aug.	0.2	0.9	1.2	0.1
Sept.	0.1	0.1	0.1	0.3
Oct.	0.1	1.3	0.4	0.1
Nov.	0.5	0.7	0.1	0.1
Mean	1.6	1.0	1.7	2.4

9B. Deaths, Sweden

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 100.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	4	10	12	3	14	1	12	2	14	0	11	4
Febr.	1	14	10	4	12	3	13	2	13	1	7	8
March	1	10	11	3	10	4	12	2	12	3	6	9
April	1	12	6	9	8	6	8	7	10	4	10	5
May	2	11	12	3	11	3	12	3	13	1	8	6
June	4	8	9	6	10	4	12	3	12	3	7	8
July	7	5	10	4	10	4	9	6	9	3	7	7
Aug.	6	4	9	4	9	4	8	5	10	5	6	7
Sept.	7	7	10	2	6	6	11	4	9	5	6	8
Oct.	6	4	6	5	7	4	5	5	7	6	9	5
Nov.	0	0	3	5	7	3	3	6	8	4	8	5
Sum	39	85	98	48	104	42	105	45	117	35	85	72
<100	41		19		19		15		13		8	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 500: the number of times the forecast differs less than 500 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	6	8	5	2
Febr.	5	9	5	4
March	6	10	7	6
April	7	11	12	8
May	12	14	9	9
June	13	13	9	9
July	12	11	9	10
Aug.	12	12	12	12
Sept.	11	12	10	12
Oct.	11	14	13	13
Nov.	13	14	14	13
Mean	108	128	105	98

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10A. Live births, Portugal

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	20.6	15.6	-3.7	-2.7
Febr.	17.9	15.7	1.3	-3.4
March	15.2	11.4	-2.2	-1.8
April	11.1	6.2	-6.8	-1.7
May	9.4	6.6	-0.4	-1.7
June	8.1	6.5	1.6	-1.6
July	5.9	3.9	-0.8	-1.9
Aug.	4.1	2.6	-0.2	-2.0
Sept.	2.3	0.8	-1.5	-1.4
Oct.	1.7	0.9	0.4	-0.9
Nov.	0.7	0.3	0.0	-0.3
Mean	8.8	6.4	-1.1	-1.8

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	24.0	19.9	24.9	29.1
Febr.	20.8	15.9	26.1	18.0
March	17.0	12.7	16.2	14.1
April	14.4	13.0	20.5	15.2
May	12.1	10.7	10.3	11.6
June	10.5	9.7	10.8	11.6
July	8.5	7.1	5.8	11.4
Aug.	7.0	6.2	6.7	10.8
Sept.	4.0	3.3	4.6	7.4
Oct.	3.0	3.4	3.7	5.3
Nov.	1.8	1.5	1.8	2.4
Mean	11.2	9.4	12.0	12.5

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	34.4	26.1	31.9	32.4
Febr.	28.3	21.7	32.4	21.4
March	22.4	16.7	21.6	16.0
April	17.7	15.7	25.3	18.2
May	14.6	12.2	11.9	14.5
June	12.5	12.7	14.2	14.5
July	9.9	8.8	7.9	14.0
Aug.	8.2	7.3	8.0	12.8
Sept.	5.4	4.4	5.8	9.4
Oct.	3.9	4.0	4.3	6.6
Nov.	2.1	2.0	2.1	2.8
Mean	14.5	12.0	15.0	14.8

10A. Live births, Portugal

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	1.9	1.6	2.0	2.3
Febr.	1.7	1.3	2.1	1.4
March	1.3	1.0	1.3	1.1
April	1.1	1.0	1.6	1.2
May	0.9	0.8	0.8	0.9
June	0.8	0.8	0.9	0.9
July	0.7	0.6	0.5	0.9
Aug.	0.6	0.5	0.5	0.8
Sept.	0.3	0.3	0.4	0.6
Oct.	0.2	0.3	0.3	0.4
Nov.	0.1	0.1	0.1	0.2
Mean	0.9	0.7	1.0	1.0

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	2.7	2.0	2.5	2.6
Febr.	2.2	1.7	2.6	1.7
March	1.7	1.3	1.7	1.2
April	1.4	1.2	2.0	1.4
May	1.1	1.0	1.0	1.1
June	1.0	1.1	1.2	1.1
July	0.8	0.7	0.7	1.1
Aug.	0.7	0.6	0.7	1.0
Sept.	0.4	0.4	0.5	0.7
Oct.	0.3	0.3	0.3	0.5
Nov.	0.2	0.2	0.2	0.2
Mean	1.1	0.9	1.2	1.1

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	91.1	55.0	60.9	60.7
Febr.	71.9	39.1	67.4	42.9
March	54.3	42.8	45.4	29.3
April	32.5	33.6	44.9	35.0
May	26.4	26.5	22.3	28.3
June	23.2	25.5	30.0	29.3
July	18.5	17.6	20.1	27.2
Aug.	15.4	13.7	15.6	27.3
Sept.	14.7	11.6	11.0	18.5
Oct.	8.1	7.8	8.7	13.1
Nov.	4.8	5.4	4.3	6.0
Mean	32.8	25.3	30.1	28.9

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.2	0.3	0.4	6.9
Febr.	2.3	0.1	1.9	1.5
March	0.9	0.0	0.5	0.9
April	0.9	0.1	1.4	1.0
May	1.3	1.8	1.7	2.2
June	1.0	0.6	1.2	0.0
July	2.0	0.1	0.4	0.4
Aug.	1.7	0.3	0.9	1.3
Sept.	0.0	0.0	0.7	1.1
Oct.	0.4	0.2	0.3	0.8
Nov.	0.5	0.1	0.0	0.1
Mean	1.0	0.3	0.9	1.5

10A. Live births, Portugal

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 150.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	7	7	9	6	10	5	8	7	12	3	8	5
Febr.	4	9	9	3	8	6	9	3	7	7	7	8
March	6	7	7	8	6	9	8	5	11	4	6	9
April	6	7	10	3	8	6	9	4	9	6	4	9
May	5	6	7	7	9	5	6	7	7	7	6	8
June	4	6	7	7	8	6	7	3	7	6	8	6
July	2	7	3	9	8	6	4	7	9	6	10	2
Aug.	2	8	5	8	10	5	7	6	12	2	11	4
Sept.	5	8	8	7	9	4	7	4	9	4	10	4
Oct.	6	3	9	3	10	1	3	2	8	6	7	5
Nov.	0	2	2	3	6	2	2	0	5	4	5	4
Sum	47	70	76	64	92	55	70	48	96	55	82	64
<150	48		25		18		47		14		19	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 750: the number of times the forecast differs less than 750 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	13	12	12	11
Febr.	11	10	9	11
March	13	12	13	12
April	13	13	12	11
May	13	14	12	14
June	12	14	14	12
July	14	14	13	12
Aug.	15	15	14	12
Sept.	15	15	14	14
Oct.	15	15	15	15
Nov.	15	15	15	15
Mean	149	149	143	139

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10B. Deaths, Portugal

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	-7.1	-11.7	-16.8	6.5
Febr.	-6.8	-11.5	-10.3	-1.4
March	-4.2	-8.9	4.7	-2.4
April	-3.0	-7.8	-0.2	-1.7
May	-2.5	-6.8	-0.6	-1.0
June	-2.4	-4.3	4.5	-0.7
July	-0.6	-3.2	1.9	-0.2
Aug.	-0.8	-3.1	-2.0	-0.3
Sept.	-1.3	-2.6	-1.4	-0.1
Oct.	-2.0	-2.8	-3.0	0.0
Nov.	-2.0	-2.4	-2.0	0.2
Mean	-3.0	-5.9	-2.3	-0.1

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	40.0	29.5	101.9	145.6
Febr.	42.6	31.4	64.3	99.8
March	30.5	23.3	44.9	51.2
April	27.5	21.4	29.1	39.8
May	23.8	19.1	28.8	31.6
June	19.1	18.6	23.2	31.8
July	16.1	15.4	15.5	27.9
Aug.	11.2	12.4	12.9	23.8
Sept.	9.3	10.8	7.9	21.4
Oct.	9.1	9.3	9.4	19.4
Nov.	6.6	6.7	4.8	14.3
Mean	21.4	18.0	31.2	46.1

3. Root mean square absolute error
1981-1995

Method	1	2	3	4
Jan.	44.4	35.4	114.6	158.3
Febr.	47.1	36.0	79.8	108.0
March	36.1	27.1	61.2	58.4
April	32.2	24.2	36.4	46.2
May	27.6	21.9	34.8	39.0
June	21.8	20.9	39.5	40.2
July	17.8	17.3	17.5	34.6
Aug.	13.3	14.3	15.1	27.8
Sept.	11.4	12.5	10.1	24.9
Oct.	11.3	11.7	12.2	22.1
Nov.	8.4	8.6	6.5	16.0
Mean	24.7	20.9	38.9	52.3

10B. Deaths, Portugal

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	4.0	2.9	10.3	14.7
Febr.	4.3	3.1	6.6	10.1
March	3.1	2.3	4.6	5.2
April	2.8	2.1	3.0	4.0
May	2.4	1.9	2.9	3.2
June	1.9	1.9	2.4	3.3
July	1.6	1.6	1.6	2.9
Aug.	1.1	1.2	1.3	2.4
Sept.	0.9	1.1	0.8	2.2
Oct.	0.9	0.9	1.0	2.0
Nov.	0.7	0.7	0.5	1.4
Mean	2.2	1.8	3.2	4.7

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	4.4	3.5	11.7	15.9
Febr.	4.7	3.6	8.1	10.9
March	3.6	2.7	6.3	5.9
April	3.2	2.4	3.8	4.7
May	2.8	2.2	3.5	4.0
June	2.2	2.1	4.1	4.1
July	1.8	1.7	1.8	3.6
Aug.	1.3	1.4	1.5	2.8
Sept.	1.1	1.2	1.0	2.5
Oct.	1.1	1.2	1.2	2.2
Nov.	0.8	0.9	0.6	1.6
Mean	2.5	2.1	4.0	5.3

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	86.5	64.4	211.7	249.3
Febr.	88.5	61.4	163.6	178.1
March	73.9	48.1	186.0	120.3
April	60.3	41.7	84.0	88.4
May	51.4	39.3	76.5	77.7
June	42.3	38.2	130.7	66.1
July	31.9	29.0	32.4	59.4
Aug.	29.2	27.3	24.9	43.8
Sept.	24.4	27.2	24.4	40.8
Oct.	22.2	24.0	29.6	36.4
Nov.	17.0	17.0	13.5	26.0
Mean	48.0	38.0	88.8	89.7

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	16.2	2.3	12.1	13.3
Febr.	18.1	5.0	3.5	14.0
March	2.1	0.3	17.9	16.1
April	4.8	1.7	3.6	2.4
May	2.5	0.1	5.8	3.8
June	2.8	2.3	1.1	0.6
July	5.1	0.1	2.0	1.3
Aug.	2.4	0.1	0.2	1.2
Sept.	0.3	0.8	0.7	0.2
Oct.	2.4	0.7	0.1	5.0
Nov.	1.0	0.4	0.6	4.2
Mean	5.2	1.2	4.3	5.6

10B. Deaths, Portugal

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 150.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	4	11	13	2	14	1	14	1	14	1	9	5
Febr.	4	11	7	7	14	1	9	6	14	1	11	3
March	4	11	8	4	13	1	11	4	13	1	9	4
April	5	10	7	8	10	4	8	7	13	2	9	5
May	5	9	10	5	9	4	8	7	10	4	7	8
June	7	8	6	8	11	3	7	8	11	4	10	5
July	6	7	7	7	10	5	7	8	10	4	10	5
Aug.	8	4	7	6	11	4	8	5	11	3	12	3
Sept.	9	3	5	8	11	4	4	10	11	4	11	3
Oct.	5	4	5	6	13	2	6	6	12	2	10	3
Nov.	2	3	0	9	12	3	1	10	13	2	12	2
Sum	59	81	75	70	128	32	83	72	132	28	110	46
<150	25		20		5		10		5		9	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 750: the number of times the forecast differs less than 750 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	5	8	5	5
Febr.	4	7	9	5
March	10	9	11	7
April	11	10	11	9
May	11	11	12	11
June	12	12	14	11
July	12	12	15	10
Aug.	13	13	12	11
Sept.	14	13	14	12
Oct.	14	14	14	12
Nov.	14	14	14	12
Mean	120	123	131	105

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11A. Live births, Belgium

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	4.4	6.1	7.2	1.4
Febr.	5.9	7.9	10.4	-0.5
March	6.6	6.8	7.5	0.4
April	3.8	2.3	-2.9	-1.4
May	3.1	1.7	0.9	-1.3
June	2.3	0.6	-0.9	-0.5
July	1.4	0.8	0.3	-0.3
Aug.	1.1	1.5	1.4	0.4
Sept.	0.2	0.3	-1.4	0.5
Oct.	0.8	0.8	1.0	0.3
Nov.	0.8	0.8	0.7	0.3
Mean	2.8	2.7	2.2	-0.1

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	18.3	15.0	27.6	26.7
Febr.	16.8	14.4	22.5	20.9
March	12.7	9.9	14.4	16.0
April	9.3	9.9	16.6	12.1
May	6.5	6.6	10.1	8.7
June	5.3	6.6	8.0	7.2
July	5.0	4.4	6.6	5.8
Aug.	3.2	3.3	5.3	3.7
Sept.	2.9	3.8	6.3	4.1
Oct.	1.9	2.2	2.7	2.6
Nov.	1.6	1.6	1.7	2.0
Mean	7.6	7.1	11.1	10.0

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	22.7	17.5	37.1	33.8
Febr.	21.0	21.0	37.4	30.6
March	15.4	13.9	19.5	18.7
April	12.4	12.3	22.4	14.0
May	8.8	8.0	12.3	10.8
June	7.0	8.2	10.2	8.6
July	6.2	5.1	8.5	7.0
Aug.	3.6	4.0	6.4	5.0
Sept.	3.7	4.8	8.5	5.0
Oct.	2.5	2.7	3.6	3.1
Nov.	2.1	2.1	2.2	2.4
Mean	9.6	9.1	15.3	12.6

11A. Live births, Belgium

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	1.5	1.3	2.3	2.2
Febr.	1.4	1.2	1.9	1.7
March	1.1	0.8	1.2	1.3
April	0.8	0.8	1.4	1.0
May	0.5	0.6	0.8	0.7
June	0.4	0.6	0.7	0.6
July	0.4	0.4	0.5	0.5
Aug.	0.3	0.3	0.4	0.3
Sept.	0.2	0.3	0.5	0.3
Oct.	0.2	0.2	0.2	0.2
Nov.	0.1	0.1	0.1	0.2
Mean	0.6	0.6	0.9	0.8

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	1.9	1.5	3.0	2.8
Febr.	1.7	1.7	3.1	2.5
March	1.3	1.1	1.6	1.6
April	1.0	1.0	1.9	1.2
May	0.7	0.7	1.0	0.9
June	0.6	0.7	0.9	0.7
July	0.5	0.4	0.7	0.6
Aug.	0.3	0.3	0.5	0.4
Sept.	0.3	0.4	0.7	0.4
Oct.	0.2	0.2	0.3	0.3
Nov.	0.2	0.2	0.2	0.2
Mean	0.8	0.8	1.3	1.0

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	52.5	30.8	72.5	65.4
Febr.	47.2	63.2	124.4	68.8
March	36.6	36.6	49.0	34.6
April	31.8	25.1	52.6	26.5
May	21.4	16.2	26.4	18.6
June	16.4	18.9	19.9	17.7
July	12.7	8.2	22.0	14.2
Aug.	5.8	8.2	17.1	14.1
Sept.	7.5	9.5	22.6	10.3
Oct.	5.1	5.8	9.9	5.6
Nov.	4.7	5.1	5.3	4.2
Mean	22.0	20.7	38.3	25.4

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	1.1	1.7	0.1	0.1
Febr.	1.6	1.4	1.0	0.2
March	4.5	0.3	2.3	0.9
April	1.0	0.8	1.8	2.4
May	1.1	1.2	0.2	0.1
June	0.0	1.2	0.1	1.9
July	0.1	0.2	0.6	0.7
Aug.	0.1	0.4	0.6	0.0
Sept.	0.0	0.3	0.3	0.5
Oct.	0.0	0.1	0.5	0.4
Nov.	0.1	0.2	0.0	0.1
Mean	0.9	0.7	0.7	0.7

11A. Live births, Belgium

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 150.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	6	8	6	6	9	6	10	5	10	5	8	7
Febr.	4	9	9	5	8	6	10	5	7	7	8	7
March	4	8	7	6	8	7	7	6	9	6	8	5
April	7	6	10	5	8	5	8	5	7	6	6	8
May	7	4	10	3	9	5	8	6	8	7	8	7
June	8	3	9	5	8	4	8	5	9	4	7	7
July	3	8	9	3	7	2	7	5	6	4	6	6
Aug.	4	4	9	4	6	5	9	3	6	4	4	10
Sept.	7	1	9	1	8	2	8	2	6	5	6	8
Oct.	0	1	8	4	6	4	6	3	6	3	7	4
Nov.	0	0	0	2	4	2	0	1	4	2	2	3
Sum	50	52	86	44	81	48	81	46	78	53	70	72
<150	63		35		36		38		34		23	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 750: the number of times the forecast differs less than 750 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	12	12	12	12
Febr.	12	12	11	11
March	12	13	14	11
April	14	14	14	12
May	14	15	15	13
June	15	15	14	12
July	15	15	14	13
Aug.	15	15	14	15
Sept.	15	15	15	15
Oct.	15	15	15	15
Nov.	15	15	15	15
Mean	154	156	153	144

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11B. Deaths, Belgium

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	1.1	3.7	-4.8	1.6
Febr.	5.9	6.7	21.9	0.8
March	7.9	7.7	15.4	2.4
April	8.2	7.0	8.3	2.1
May	6.8	5.2	2.0	1.3
June	4.3	4.0	1.1	1.3
July	3.1	2.9	0.0	0.9
Aug.	1.0	2.1	-1.0	0.9
Sept.	-0.3	1.1	-1.9	0.7
Oct.	-1.3	-0.2	-2.8	0.2
Nov.	-2.1	-1.6	-3.0	-0.4
Mean	3.1	3.5	3.2	1.1

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	19.2	16.7	52.8	55.7
Febr.	24.0	18.5	73.2	59.8
March	22.1	14.6	38.7	38.2
April	21.2	13.7	29.4	29.1
May	15.5	10.3	11.3	21.2
June	12.4	9.5	10.5	18.0
July	9.4	8.4	12.2	14.1
Aug.	8.1	8.6	12.0	14.6
Sept.	8.3	8.7	11.0	15.6
Oct.	7.8	7.9	7.6	14.8
Nov.	5.9	5.9	5.6	11.1
Mean	14.0	11.2	24.0	26.6

3. Root mean square absolute error
1981-1995

Method	1	2	3	4
Jan.	25.7	20.3	63.3	70.6
Febr.	33.5	23.9	102.0	72.4
March	33.5	22.1	59.5	55.2
April	31.2	20.9	38.8	42.8
May	23.6	16.3	12.6	31.1
June	19.2	15.0	15.9	26.6
July	14.6	12.8	15.1	21.5
Aug.	11.3	12.4	15.5	20.5
Sept.	11.2	11.9	12.3	20.4
Oct.	11.6	11.8	12.6	19.3
Nov.	10.3	10.2	9.9	15.9
Mean	20.5	16.1	32.5	36.0

11B. Deaths, Belgium

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	1.8	1.6	4.9	5.2
Febr.	2.2	1.7	6.7	5.5
March	2.0	1.3	3.6	3.5
April	2.0	1.3	2.7	2.7
May	1.4	0.9	1.0	2.0
June	1.1	0.9	1.0	1.7
July	0.9	0.8	1.1	1.3
Aug.	0.8	0.8	1.1	1.4
Sept.	0.8	0.8	1.0	1.5
Oct.	0.7	0.7	0.7	1.4
Nov.	0.5	0.5	0.5	1.0
Mean	1.3	1.0	2.2	2.5

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	2.4	1.9	5.9	6.6
Febr.	3.1	2.2	9.3	6.7
March	3.1	2.0	5.4	5.1
April	2.9	1.9	3.6	4.0
May	2.2	1.5	1.2	2.9
June	1.8	1.4	1.5	2.5
July	1.3	1.2	1.4	2.0
Aug.	1.0	1.1	1.4	1.9
Sept.	1.0	1.1	1.1	1.9
Oct.	1.1	1.1	1.2	1.8
Nov.	1.0	1.0	0.9	1.5
Mean	1.9	1.5	3.0	3.4

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	70.8	42.6	142.9	159.0
Febr.	78.7	58.6	317.8	152.6
March	95.4	66.0	157.2	144.0
April	86.0	56.7	82.5	108.4
May	62.8	43.1	19.3	79.6
June	57.5	38.1	41.1	64.5
July	38.4	31.5	27.3	51.3
Aug.	32.7	32.6	34.0	43.7
Sept.	31.4	32.1	29.1	39.3
Oct.	33.5	34.8	37.9	41.1
Nov.	35.0	35.0	34.9	38.9
Mean	56.6	42.8	84.0	83.8

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.5	2.1	7.2	7.9
Febr.	0.4	0.7	14.6	7.6
March	0.7	1.5	0.3	0.8
April	3.8	1.2	4.3	1.8
May	0.1	0.2	3.3	0.9
June	0.9	0.5	0.5	1.9
July	0.0	0.1	0.8	0.2
Aug.	1.3	0.2	0.6	0.9
Sept.	0.6	1.4	5.4	2.3
Oct.	1.1	0.0	0.4	0.9
Nov.	0.1	0.1	0.3	1.7
Mean	0.9	0.7	3.4	2.4

11B. Deaths, Belgium

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 150.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	3	10	14	1	11	4	14	1	12	3	7	6
Febr.	4	10	13	2	14	1	13	2	14	1	8	7
March	4	11	9	5	9	5	10	4	10	5	7	8
April	4	10	10	3	7	6	13	2	11	4	6	8
May	3	10	6	7	6	6	10	4	10	5	8	5
June	3	11	5	8	6	7	7	4	9	3	7	3
July	4	8	7	6	9	6	9	5	8	5	5	8
Aug.	6	6	9	5	9	5	9	4	9	4	6	8
Sept.	4	5	9	4	10	3	10	3	11	1	5	7
Oct.	3	3	5	6	10	1	7	5	11	1	8	3
Nov.	1	0	4	4	12	1	4	5	12	1	12	0
Sum	39	84	91	51	103	45	106	39	117	33	79	63
<150	42		23		17		20		15		23	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 750: the number of times the forecast differs less than 750 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	8	11	8	8
Febr.	7	8	6	6
March	8	9	8	9
April	8	11	6	9
May	9	11	11	11
June	10	11	12	11
July	10	11	14	11
Aug.	13	12	10	12
Sept.	12	12	12	9
Oct.	13	12	12	9
Nov.	13	13	12	12
Mean	111	121	111	107

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12A. Live births, Greece

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	18.5	10.7	-7.5	-1.1
Febr.	17.5	13.8	7.9	-3.3
March	14.8	11.9	1.6	-2.2
April	9.9	5.3	-10.5	-2.8
May	9.3	7.3	4.4	-2.9
June	5.1	3.0	-6.9	-3.4
July	3.6	1.8	-2.7	-3.0
Aug.	1.9	1.4	-1.6	-2.2
Sept.	0.9	0.8	-1.3	-1.6
Oct.	0.1	-0.3	-1.7	-1.1
Nov.	-1.0	-1.2	-1.8	-0.7
Mean	7.3	4.9	-1.8	-2.2

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	24.1	29.5	49.6	65.3
Febr.	20.4	24.4	34.6	36.6
March	20.1	21.2	29.1	29.5
April	15.6	14.5	28.9	23.0
May	13.8	14.5	24.4	21.2
June	12.9	10.9	22.8	18.1
July	9.1	8.9	13.6	14.2
Aug.	7.7	8.2	9.8	12.5
Sept.	5.2	5.0	5.8	9.5
Oct.	4.3	4.0	4.8	7.6
Nov.	2.9	3.1	4.4	3.9
Mean	12.4	13.1	20.7	22.0

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	33.0	39.7	67.4	77.9
Febr.	28.8	32.6	52.4	50.4
March	27.9	29.5	41.4	43.9
April	21.5	20.0	35.5	30.0
May	19.3	22.2	33.0	26.6
June	16.5	13.8	29.5	22.7
July	12.5	11.6	15.9	18.7
Aug.	10.4	10.1	11.7	16.8
Sept.	7.1	6.5	7.8	13.2
Oct.	5.9	5.7	6.6	10.6
Nov.	3.4	3.7	5.8	4.6
Mean	16.9	17.8	27.9	28.7

12A. Live births, Greece

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	2.1	2.5	4.2	5.7
Febr.	1.7	2.1	3.1	3.2
March	1.7	1.8	2.6	2.5
April	1.3	1.2	2.6	2.0
May	1.2	1.2	2.1	1.9
June	1.1	1.0	2.0	1.6
July	0.8	0.7	1.2	1.2
Aug.	0.6	0.7	0.9	1.1
Sept.	0.4	0.4	0.5	0.8
Oct.	0.4	0.4	0.4	0.7
Nov.	0.3	0.3	0.4	0.3
Mean	1.1	1.1	1.8	1.9

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	2.8	3.4	5.7	6.7
Febr.	2.4	2.8	4.8	4.5
March	2.3	2.5	3.7	3.8
April	1.7	1.7	3.2	2.6
May	1.6	1.9	2.9	2.4
June	1.4	1.2	2.6	2.0
July	1.0	0.9	1.4	1.6
Aug.	0.9	0.8	1.0	1.4
Sept.	0.6	0.6	0.7	1.1
Oct.	0.5	0.5	0.6	0.9
Nov.	0.3	0.3	0.5	0.4
Mean	1.4	1.5	2.5	2.5

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	65.8	83.6	170.3	144.2
Febr.	62.2	67.1	156.7	130.4
March	57.3	56.8	100.8	119.0
April	47.0	41.2	67.1	62.4
May	41.3	56.1	81.7	52.5
June	34.1	29.7	78.2	46.6
July	29.2	26.2	29.0	37.1
Aug.	25.9	23.1	22.8	30.8
Sept.	17.1	12.8	18.7	27.4
Oct.	15.6	16.4	18.6	26.9
Nov.	5.7	8.6	16.0	8.8
Mean	36.5	38.3	69.1	62.4

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	1.7	1.1	1.7	3.6
Febr.	0.4	2.6	2.9	5.1
March	0.9	2.0	0.9	0.0
April	1.1	0.2	0.9	2.4
May	0.6	0.1	0.3	1.1
June	2.5	0.1	2.5	0.7
July	0.4	0.1	0.5	0.1
Aug.	0.1	2.3	1.2	0.8
Sept.	0.1	0.0	0.3	0.1
Oct.	0.2	0.2	0.2	0.7
Nov.	0.3	0.5	0.2	0.1
Mean	0.7	0.8	1.1	1.4

12A. Live births, Greece

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 150.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	7	6	11	4	12	3	11	4	12	2	10	5
Febr.	7	7	8	6	8	7	8	4	8	6	5	9
March	6	7	8	7	7	6	10	5	8	7	7	7
April	4	7	13	2	10	5	13	2	10	4	3	11
May	6	7	10	5	10	3	12	1	11	3	6	9
June	4	8	10	5	8	6	12	3	9	6	8	7
July	4	8	9	5	10	4	9	2	8	3	6	8
Aug.	5	5	10	4	8	3	6	3	9	4	9	5
Sept.	3	5	7	6	7	4	9	6	7	3	7	5
Oct.	1	3	5	4	8	2	5	3	7	2	9	2
Nov.	3	1	5	3	7	3	8	2	8	3	7	5
Sum	50	64	96	51	95	46	103	35	97	43	77	73
<150	51		18		24		27		25		15	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 750: the number of times the forecast differs less than 750 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	14	12	11	10
Febr.	14	14	14	13
March	14	14	12	15
April	13	13	11	14
May	14	13	13	14
June	13	13	13	14
July	14	14	13	14
Aug.	14	14	15	15
Sept.	14	15	15	15
Oct.	14	14	14	14
Nov.	14	15	15	14
Mean	152	151	146	152

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12B. Deaths, Greece

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	-9.4	-9.4	3.2	-3.5
Febr.	-9.3	-9.2	-11.6	-5.0
March	-7.2	-8.1	-3.3	-6.5
April	-6.4	-7.8	-6.7	-4.6
May	-4.4	-6.8	-1.4	-3.3
June	-2.9	-5.5	0.7	-2.7
July	1.2	-1.0	14.9	-1.9
Aug.	0.9	-1.2	0.0	-1.6
Sept.	0.5	-1.0	0.3	-1.2
Oct.	0.4	-0.7	0.1	-0.6
Nov.	0.2	-0.3	0.1	0.0
Mean	-3.3	-4.6	-0.3	-2.8

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	21.8	18.4	67.0	61.6
Febr.	22.5	18.0	51.8	55.9
March	20.6	15.6	47.4	45.7
April	16.8	12.4	22.0	35.4
May	13.2	9.8	13.2	24.5
June	10.9	9.2	22.6	16.0
July	11.1	8.9	31.4	17.5
Aug.	8.3	6.7	11.8	14.3
Sept.	6.0	5.3	5.7	11.4
Oct.	3.5	3.1	3.8	8.1
Nov.	3.1	2.7	2.9	4.9
Mean	12.5	10.0	25.4	26.8

3. Root mean square absolute error
1981-1995

Method	1	2	3	4
Jan.	24.9	22.2	97.3	92.0
Febr.	25.8	22.1	62.3	66.3
March	23.3	17.8	52.7	53.4
April	19.1	14.6	26.0	39.5
May	15.4	12.4	18.0	27.2
June	12.7	11.0	28.5	19.4
July	17.3	12.5	63.3	22.8
Aug.	13.5	8.9	16.3	17.4
Sept.	9.6	7.1	6.8	13.9
Oct.	5.1	3.9	4.8	9.8
Nov.	3.8	3.1	3.8	6.3
Mean	15.5	12.3	34.5	33.5

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12B. Deaths, Greece

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	2.3	2.0	7.2	6.5
Febr.	2.4	1.9	5.5	6.0
March	2.2	1.7	5.1	4.9
April	1.8	1.3	2.4	3.8
May	1.4	1.0	1.4	2.6
June	1.2	1.0	2.5	1.7
July	1.2	1.0	3.3	1.9
Aug.	0.9	0.7	1.3	1.5
Sept.	0.6	0.6	0.6	1.2
Oct.	0.4	0.3	0.4	0.9
Nov.	0.3	0.3	0.3	0.5
Mean	1.3	1.1	2.7	2.9

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	2.7	2.4	10.4	9.8
Febr.	2.7	2.3	6.7	7.1
March	2.5	1.9	5.6	5.7
April	2.0	1.6	2.8	4.3
May	1.6	1.3	1.9	2.9
June	1.3	1.2	3.1	2.0
July	1.8	1.3	6.6	2.4
Aug.	1.4	0.9	1.7	1.8
Sept.	1.0	0.7	0.7	1.5
Oct.	0.5	0.4	0.5	1.0
Nov.	0.4	0.3	0.4	0.7
Mean	1.6	1.3	3.7	3.6

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	39.9	36.5	234.1	257.3
Febr.	46.7	49.0	141.2	146.2
March	36.6	34.8	87.3	99.7
April	28.9	31.6	55.7	65.4
May	23.4	30.4	49.8	47.0
June	26.9	22.2	69.6	40.4
July	53.8	36.8	224.3	59.5
Aug.	43.2	24.6	45.5	39.3
Sept.	29.9	18.3	11.7	32.6
Oct.	15.5	8.4	10.2	19.0
Nov.	8.8	5.2	9.3	13.6
Mean	32.2	27.1	85.3	74.5

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	2.2	1.8	5.3	5.9
Febr.	2.7	1.5	9.4	0.9
March	3.1	4.6	2.7	2.0
April	1.6	2.9	0.5	1.0
May	0.3	0.9	1.2	3.9
June	1.0	0.2	0.9	1.8
July	0.0	0.5	1.9	0.5
Aug.	0.4	0.2	0.3	0.5
Sept.	0.4	0.2	0.1	2.7
Oct.	0.1	0.1	0.5	0.2
Nov.	0.2	0.3	0.2	0.4
Mean	1.1	1.2	2.1	1.8

12B. Deaths, Greece

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 150.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	5	8	10	5	9	6	11	3	11	4	9	6
Febr.	6	8	13	2	13	2	11	3	14	1	7	8
March	5	9	13	1	11	4	12	3	12	3	8	6
April	4	11	10	4	13	2	12	3	13	2	11	4
May	3	10	6	9	12	3	6	7	11	4	12	3
June	5	8	12	3	12	3	11	3	10	5	5	10
July	4	9	10	5	11	4	10	4	11	3	6	8
Aug.	4	7	9	4	10	5	12	3	11	4	9	6
Sept.	7	6	6	4	11	3	7	4	11	3	10	5
Oct.	4	4	7	5	12	2	6	5	12	3	12	2
Nov.	0	1	2	2	9	2	2	4	8	1	9	2
Sum	47	81	98	44	123	36	100	42	124	33	98	60
<150	37		23		6		23		8		7	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 750: the number of times the forecast differs less than 750 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	10	9	10	10
Febr.	9	8	7	8
March	10	9	10	11
April	10	11	12	11
May	11	12	11	11
June	11	13	10	11
July	12	13	10	11
Aug.	14	14	11	12
Sept.	13	15	13	14
Oct.	15	15	14	14
Nov.	15	15	15	15
Mean	130	134	123	128

13A. Live births, The Netherlands

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	-5.0	-6.2	-9.4	6.2
Febr.	-3.8	-3.4	0.7	4.8
March	-3.2	-2.4	-1.8	4.4
April	-2.5	-2.0	-1.4	0.9
May	-1.8	-0.9	0.9	0.5
June	0.0	0.5	3.7	1.1
July	0.7	0.4	1.7	0.8
Aug.	0.5	0.4	1.1	0.5
Sept.	0.4	0.3	0.5	0.3
Oct.	0.5	0.3	0.6	0.5
Nov.	0.8	0.8	1.1	0.5
Mean	-1.2	-1.1	-0.2	1.9

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	27.3	25.9	35.2	34.5
Febr.	23.0	23.7	34.2	36.6
March	22.3	23.2	28.5	35.9
April	17.2	16.9	24.4	31.1
May	14.4	13.7	19.9	25.9
June	11.1	10.1	19.7	18.2
July	9.7	9.4	10.4	15.6
Aug.	7.0	6.2	7.1	11.3
Sept.	6.3	5.8	7.4	9.4
Oct.	4.5	4.7	5.6	6.9
Nov.	2.4	2.3	3.2	3.3
Mean	13.2	12.9	17.8	20.8

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	31.5	30.9	42.7	41.6
Febr.	27.8	27.7	42.3	42.7
March	25.4	25.9	33.5	43.0
April	19.8	19.7	34.5	35.5
May	16.0	15.4	24.4	29.8
June	13.1	13.6	26.0	22.2
July	11.5	11.7	14.4	17.7
Aug.	8.9	7.9	8.4	12.7
Sept.	7.3	7.1	8.8	10.3
Oct.	5.2	5.5	6.8	7.6
Nov.	3.2	3.1	3.9	4.1
Mean	15.4	15.3	22.3	24.3

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13A. Live births, The Netherlands

4. Mean absolute percentage forccast error 1981-1995

Method	1	2	3	4
Jan.	1.5	1.4	1.9	1.8
Febr.	1.2	1.3	1.8	2.0
March	1.2	1.2	1.5	1.9
April	0.9	0.9	1.3	1.7
May	0.8	0.7	1.1	1.4
June	0.6	0.5	1.1	1.0
July	0.5	0.5	0.6	0.8
Aug.	0.4	0.3	0.4	0.6
Sept.	0.3	0.3	0.4	0.5
Oct.	0.2	0.3	0.3	0.4
Nov.	0.1	0.1	0.2	0.2
Mean	0.7	0.7	1.0	1.1

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	1.7	1.6	2.3	2.2
Febr.	1.5	1.5	2.3	2.3
March	1.3	1.4	1.8	2.3
April	1.0	1.0	1.9	1.9
May	0.8	0.8	1.3	1.6
June	0.7	0.7	1.4	1.2
July	0.6	0.6	0.8	1.0
Aug.	0.5	0.4	0.4	0.7
Sept.	0.4	0.4	0.5	0.6
Oct.	0.3	0.3	0.4	0.4
Nov.	0.2	0.2	0.2	0.2
Mean	0.8	0.8	1.2	1.3

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	65.0	58.2	101.9	81.4
Febr.	56.2	50.7	94.7	76.7
March	44.1	46.4	69.5	74.1
April	34.1	34.8	84.6	58.7
May	25.0	33.1	54.7	45.8
June	28.8	33.1	62.5	41.0
July	26.3	23.4	42.8	32.9
Aug.	20.0	14.2	14.8	19.2
Sept.	13.2	12.6	15.4	16.4
Oct.	9.8	10.1	13.1	13.9
Nov.	7.4	7.5	9.2	10.6
Mean	30.0	29.5	51.2	42.8

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	5.5	3.6	6.1	4.7
Febr.	3.1	1.4	2.8	3.2
March	2.9	4.0	10.7	2.9
April	1.4	0.2	2.3	0.4
May	1.6	0.3	0.6	3.5
June	0.3	0.2	0.2	0.5
July	0.3	0.6	2.2	3.0
Aug.	0.3	0.2	0.1	0.9
Sept.	1.7	0.8	0.6	1.6
Oct.	0.2	0.3	1.3	1.8
Nov.	0.0	0.2	0.1	0.1
Mean	1.6	1.1	2.5	2.0

13A. Live births, The Netherlands

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 200.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	5	7	9	6	7	8	8	6	7	7	8	7
Febr.	7	5	11	4	9	5	12	2	8	5	7	8
March	6	3	8	6	9	6	9	5	9	6	9	6
April	5	6	7	8	11	4	8	6	11	3	9	6
May	4	6	8	6	10	4	9	5	11	4	9	6
June	4	7	10	5	11	4	10	5	11	4	6	8
July	4	5	5	9	11	4	6	8	12	3	10	4
Aug.	3	4	5	3	11	3	8	4	12	3	10	5
Sept.	3	5	7	4	12	3	8	2	11	3	9	4
Oct.	1	2	6	5	9	2	6	5	7	3	8	3
Nov.	0	1	7	3	6	2	5	2	8	1	5	4
Sum	42	51	83	59	106	45	89	50	107	42	90	61
<200	72		23		14		26		16		14	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 1000: the number of times the forecast differs less than 1000 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	7	9	9	10
Febr.	10	9	8	6
March	10	9	9	7
April	10	9	13	7
May	12	12	12	7
June	13	13	11	11
July	13	13	12	11
Aug.	14	14	15	11
Sept.	15	15	14	13
Oct.	15	15	13	13
Nov.	15	15	14	13
Mean	134	133	130	109

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13B. Deaths, The Netherlands

1. Mean forecast error
   1981-1995

Method	1	2	3	4
Jan.	-10.0	-16.6	-7.7	-0.4
Febr.	-9.5	-15.5	-4.7	-4.4
March	-7.8	-13.3	0.9	-2.2
April	-6.1	-11.6	0.2	-1.7
May	-6.1	-10.8	-4.8	-1.8
June	-7.0	-9.5	-4.8	-1.5
July	-4.4	-7.2	0.9	-1.3
Aug.	-3.4	-5.9	-1.6	-0.8
Sept.	-3.2	-5.0	-2.4	-0.9
Oct.	-3.3	-4.4	-3.4	-1.2
Nov.	-2.9	-3.5	-2.6	-1.2
Mean	-5.8	-9.4	-2.7	-1.6

2. Mean absolute forecast error
   1981-1995

Method	1	2	3	4
Jan.	25.9	23.6	54.7	70.8
Febr.	25.8	19.2	45.9	44.1
March	24.9	17.0	45.5	31.8
April	20.5	14.5	26.1	26.0
May	14.8	12.5	11.1	15.2
June	11.8	11.1	12.2	13.1
July	11.3	11.0	20.5	15.5
Aug.	9.0	10.3	12.1	16.6
Sept.	9.0	9.6	9.1	15.9
Oct.	8.9	8.8	10.0	15.0
Nov.	6.6	6.5	5.7	11.3
Mean	15.3	13.1	23.0	25.0

3. Root mean square absolute error
   1981-1995

Method	1	2	3	4
Jan.	34.0	29.8	82.8	97.6
Febr.	33.7	26.5	72.1	55.2
March	30.1	22.1	66.0	43.7
April	26.7	18.9	32.9	33.9
May	18.8	15.5	13.4	22.1
June	15.1	14.4	14.5	17.8
July	13.9	15.1	27.4	19.7
Aug.	13.1	15.4	17.5	21.9
Sept.	13.9	14.3	12.7	21.4
Oct.	13.7	13.4	13.3	20.9
Nov.	9.8	9.8	7.6	15.5
Mean	20.2	17.8	32.8	33.6

13B. Deaths, The Netherlands

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	2.0	1.8	4.3	5.6
Febr.	2.0	1.5	3.6	3.5
March	2.0	1.3	3.6	2.5
April	1.6	1.1	2.1	2.1
May	1.2	1.0	0.9	1.2
June	0.9	0.9	1.0	1.0
July	0.9	0.9	1.6	1.2
Aug.	0.7	0.8	0.9	1.3
Sept.	0.7	0.7	0.7	1.2
Oct.	0.7	0.7	0.8	1.2
Nov.	0.5	0.5	0.4	0.9
Mean	1.2	1.0	1.8	2.0

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	2.6	2.3	6.5	7.7
Febr.	2.6	2.0	5.6	4.4
March	2.3	1.7	5.2	3.5
April	2.1	1.5	2.6	2.7
May	1.5	1.2	1.0	1.8
June	1.2	1.1	1.1	1.4
July	1.1	1.1	2.1	1.5
Aug.	1.0	1.2	1.3	1.7
Sept.	1.0	1.1	1.0	1.6
Oct.	1.0	1.0	1.0	1.6
Nov.	0.7	0.7	0.6	1.2
Mean	1.6	1.4	2.5	2.6

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	71.4	74.9	255.6	242.6
Febr.	69.1	64.7	198.5	110.3
March	57.0	52.5	185.0	111.8
April	55.7	47.0	73.8	87.5
May	37.4	34.4	22.9	62.3
June	32.4	31.0	28.9	46.8
July	25.7	36.5	71.5	35.4
Aug.	32.8	41.4	49.4	51.6
Sept.	38.7	38.6	34.5	50.9
Oct.	38.1	36.4	34.7	49.9
Nov.	24.7	24.7	18.4	32.5
Mean	43.9	43.8	88.5	80.2

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	1.4	0.4	3.1	9.2
Febr.	0.3	0.1	3.3	0.4
March	2.9	0.0	0.4	3.5
April	3.8	0.8	4.1	3.5
May	2.0	1.0	0.2	0.4
June	0.8	0.0	1.3	0.1
July	0.8	0.2	1.6	0.9
Aug.	0.0	0.7	2.0	0.1
Sept.	0.2	0.1	0.3	1.5
Oct.	0.8	0.2	0.4	0.4
Nov.	0.0	0.1	0.7	0.3
Mean	1.2	0.3	1.6	1.8

13B. Deaths, The Netherlands

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 200.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	7	4	10	4	11	4	10	5	12	3	9	6
Febr.	5	7	10	5	11	4	9	4	10	4	9	5
March	3	8	9	4	6	8	10	3	7	7	5	8
April	4	7	11	4	8	6	12	3	8	6	5	9
May	7	6	7	8	6	8	6	8	6	7	9	5
June	5	5	7	7	7	7	11	3	7	7	4	7
July	7	4	10	5	6	6	10	4	8	6	5	9
Aug.	5	3	10	4	7	4	9	5	7	5	7	6
Sept.	5	3	7	6	8	3	6	7	6	5	8	6
Oct.	4	3	6	4	7	2	5	3	7	3	9	5
Nov.	0	0	1	4	11	2	3	4	8	2	9	3
Sum	52	50	88	55	88	54	91	49	86	55	79	69
<200	63		22		23		25		24		17	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 1000: the number of times the forecast differs less than 1000 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	9	7	8	6
Febr.	10	8	10	8
March	10	9	9	11
April	11	12	11	13
May	12	14	12	14
June	12	14	10	13
July	13	14	11	13
Aug.	15	15	15	12
Sept.	14	15	14	12
Oct.	15	15	14	11
Nov.	15	15	15	12
Mean	136	138	129	125

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14A. Live births, Italy

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	45.6	37.6	-18.5	-2.7
Febr.	42.4	38.6	11.3	-4.8
March	25.6	22.8	-38.6	-9.5
April	21.2	21.2	-6.6	-12.4
May	13.7	13.0	-20.4	-13.6
June	9.0	7.7	-14.7	-14.3
July	8.1	8.4	1.0	-12.7
Aug.	4.0	5.4	-5.0	-10.1
Sept.	7.0	8.1	9.1	-6.9
Oct.	5.2	5.8	2.8	-3.5
Nov.	1.9	1.6	-0.9	-2.1
Mean	16.7	15.5	-7.3	-8.4

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	63.4	57.3	90.6	69.3
Febr.	56.8	66.4	139.4	109.8
March	54.0	61.2	117.7	107.2
April	50.7	57.5	94.4	86.2
May	48.2	53.6	103.3	88.2
June	42.2	41.3	45.8	65.8
July	35.9	33.5	40.6	42.1
Aug.	27.8	25.5	25.4	32.1
Sept.	16.8	15.7	20.8	22.9
Oct.	12.3	14.5	16.3	19.8
Nov.	7.7	7.6	6.5	11.4
Mean	37.8	39.4	63.7	59.5

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	76.9	71.2	121.3	80.7
Febr.	68.0	80.6	201.8	154.9
March	65.0	73.8	141.7	139.8
April	60.1	68.9	113.0	106.5
May	59.8	67.7	122.1	105.6
June	56.3	54.7	60.2	78.7
July	47.2	43.8	52.5	56.5
Aug.	35.5	30.8	36.6	40.8
Sept.	20.2	17.7	26.7	26.9
Oct.	15.3	16.9	21.4	21.9
Nov.	9.9	9.9	8.3	14.0
Mean	46.7	48.7	82.3	75.1

14A. Live births, Italy

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	1.1	1.0	1.6	1.2
Febr.	1.0	1.2	2.5	1.9
March	0.9	1.1	2.1	1.9
April	0.9	1.0	1.7	1.5
May	0.9	1.0	1.8	1.6
June	0.8	0.7	0.8	1.2
July	0.6	0.6	0.7	0.8
Aug.	0.5	0.5	0.4	0.6
Sept.	0.3	0.3	0.4	0.4
Oct.	0.2	0.3	0.3	0.3
Nov.	0.1	0.1	0.1	0.2
Mean	0.7	0.7	1.1	1.1

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	1.3	1.2	2.2	1.4
Febr.	1.2	1.4	3.6	2.7
March	1.1	1.3	2.5	2.5
April	1.1	1.2	2.0	1.9
May	1.1	1.2	2.2	1.9
June	1.0	1.0	1.1	1.4
July	0.8	0.8	0.9	1.0
Aug.	0.6	0.5	0.6	0.7
Sept.	0.4	0.3	0.5	0.5
Oct.	0.3	0.3	0.4	0.4
Nov.	0.2	0.2	0.1	0.2
Mean	0.8	0.9	1.5	1.3

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	158.5	158.9	274.0	160.8
Febr.	131.6	166.0	430.4	399.8
March	126.7	167.8	272.7	358.4
April	125.3	132.3	203.4	223.2
May	125.1	142.8	210.4	178.6
June	125.6	132.8	127.7	134.9
July	119.6	113.2	98.6	110.3
Aug.	86.4	61.2	92.3	79.2
Sept.	41.2	34.1	56.0	48.8
Oct.	30.0	31.2	54.4	42.5
Nov.	21.3	22.6	19.8	25.2
Mean	99.2	105.7	167.3	160.2

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	4.6	1.6	0.6	15.2
Febr.	9.9	15.4	1.6	2.7
March	7.5	11.7	0.4	6.8
April	2.9	8.9	2.7	11.3
May	6.3	0.8	1.5	9.2
June	2.8	0.1	0.8	4.3
July	2.3	5.1	2.3	2.6
Aug.	0.7	0.8	2.4	0.4
Sept.	0.1	5.6	0.1	2.2
Oct.	1.3	4.0	0.3	4.9
Nov.	0.6	1.3	0.9	1.3
Mean	3.5	5.0	1.2	5.5

14A. Live births, Italy

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 800.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	3	7	8	7	8	7	9	6	7	7	7	8
Febr.	7	3	10	5	9	6	10	4	9	6	6	8
March	6	3	11	4	12	3	11	4	11	3	6	9
April	7	4	11	3	8	6	11	3	9	5	7	7
May	8	3	11	4	11	4	11	4	9	3	7	6
June	2	4	7	6	9	2	7	5	10	4	8	7
July	3	6	7	6	6	8	9	4	6	8	5	6
Aug.	3	6	5	6	8	5	6	7	8	7	7	6
Sept.	2	4	6	6	8	4	8	4	9	4	8	4
Oct.	1	0	5	2	10	3	4	3	10	4	8	4
Nov.	0	0	1	4	5	1	0	2	5	1	4	1
Sum	42	40	82	53	94	49	86	46	93	52	73	66
<800	83		30		22		33		20		26	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 4000: the number of times the forecast differs less than 4000 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	14	14	14	13
Febr.	14	14	13	13
March	14	14	14	14
April	14	14	11	14
May	14	13	11	13
June	13	13	13	13
July	13	13	14	14
Aug.	14	14	14	14
Sept.	14	14	15	14
Oct.	14	14	14	14
Nov.	14	14	14	14
Mean	152	151	147	150

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14B. Deaths, Italy

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	-14.1	-10.9	-1.9	25.2
Febr.	17.8	14.2	133.8	6.1
March	30.1	19.9	67.6	-6.4
April	28.9	16.3	23.3	-3.7
May	26.0	12.4	15.6	-3.3
June	23.5	10.2	16.1	-3.2
July	21.7	12.7	28.3	1.7
Aug.	6.0	7.4	-8.2	0.1
Sept.	1.5	4.6	-4.3	2.0
Oct.	-0.1	2.0	-3.8	3.1
Nov.	-1.0	-0.1	-2.4	2.3
Mean	12.8	8.1	24.0	2.2

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	103.2	80.6	325.8	504.8
Febr.	106.5	82.3	315.3	384.3
March	91.7	76.5	161.2	242.9
April	80.9	72.5	81.0	167.1
May	72.3	63.5	74.2	117.0
June	60.4	55.6	75.3	96.4
July	48.4	33.7	156.6	56.9
Aug.	30.9	25.2	63.8	45.3
Sept.	26.9	21.0	29.7	32.0
Oct.	24.3	20.2	30.8	24.0
Nov.	15.0	13.1	10.8	14.0
Mean	60.1	49.5	120.4	153.2

3. Root mean square absolute error
1981-1995

Method	1	2	3	4
Jan.	144.2	108.9	494.2	584.8
Febr.	142.6	110.9	428.2	423.6
March	124.2	98.9	221.4	280.8
April	100.5	84.8	112.1	199.8
May	86.3	75.1	89.8	141.6
June	73.0	67.6	87.3	110.6
July	60.7	42.9	199.2	74.3
Aug.	40.1	30.8	83.5	55.4
Sept.	32.7	24.8	35.9	39.0
Oct.	28.6	23.4	34.5	31.2
Nov.	18.2	15.8	13.3	20.0
Mean	77.4	62.2	163.6	178.3

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14B. Deaths, Italy

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	1.9	1.5	6.0	9.3
Febr.	2.0	1.5	5.8	7.1
March	1.7	1.4	3.0	4.5
April	1.5	1.3	1.5	3.1
May	1.3	1.2	1.4	2.2
June	1.1	1.0	1.4	1.8
July	0.9	0.6	2.9	1.0
Aug.	0.6	0.5	1.2	0.8
Sept.	0.5	0.4	0.5	0.6
Oct.	0.4	0.4	0.6	0.4
Nov.	0.3	0.2	0.2	0.3
Mean	1.1	0.9	2.2	2.8

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	2.6	2.0	9.1	10.7
Febr.	2.6	2.0	7.9	7.8
March	2.3	1.8	4.1	5.2
April	1.9	1.6	2.1	3.7
May	1.6	1.4	1.6	2.6
June	1.3	1.2	1.6	2.0
July	1.1	0.8	3.6	1.4
Aug.	0.7	0.6	1.5	1.0
Sept.	0.6	0.5	0.7	0.7
Oct.	0.5	0.4	0.6	0.6
Nov.	0.3	0.3	0.2	0.4
Mean	1.4	1.1	3.0	3.3

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	328.3	232.9	1448.8	1189.0
Febr.	299.2	227.3	1080.1	677.1
March	252.9	206.2	653.9	545.0
April	211.2	166.9	274.5	380.2
May	170.3	136.3	181.3	257.8
June	144.9	118.3	166.4	196.5
July	117.2	80.3	528.0	169.3
Aug.	95.9	63.3	170.7	109.7
Sept.	56.9	43.8	75.6	75.0
Oct.	50.6	41.6	54.0	79.4
Nov.	32.2	27.7	28.0	55.4
Mean	160.0	122.2	423.7	339.5

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	3.2	5.3	16.9	20.8
Febr.	14.6	6.0	44.8	103.8
March	1.5	4.2	12.2	46.2
April	2.4	11.3	13.1	18.8
May	5.2	1.6	1.7	2.2
June	0.9	0.8	4.8	2.8
July	3.2	0.8	17.6	1.1
Aug.	1.6	2.4	1.2	5.9
Sept.	0.6	0.3	5.0	0.6
Oct.	3.6	1.2	6.7	0.8
Nov.	0.2	3.0	0.5	0.1
Mean	3.4	3.3	11.3	18.5

14B. Deaths, Italy

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 800.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	3	10	12	3	14	1	12	3	15	0	11	4
Febr.	3	11	14	1	14	1	15	0	15	0	10	5
March	5	7	9	6	12	2	12	3	14	0	11	4
April	5	6	6	9	9	5	7	5	11	3	11	3
May	4	8	6	9	8	6	8	6	9	4	10	5
June	4	9	8	6	9	4	8	7	10	4	10	4
July	2	9	11	3	3	5	12	2	9	3	4	10
Aug.	3	8	11	4	11	4	9	4	9	3	5	7
Sept.	4	8	7	4	7	3	9	5	8	3	9	3
Oct.	4	7	8	1	4	5	9	1	7	4	3	8
Nov.	1	4	2	7	2	5	2	3	4	5	4	6
Sum	38	87	94	53	93	41	103	39	111	29	88	59
<800	40		18		31		23		25		18	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 4000: the number of times the forecast differs less than 4000 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	10	12	9	8
Febr.	9	10	10	7
March	11	10	10	7
April	11	10	14	10
May	11	10	14	10
June	11	12	13	10
July	14	14	10	14
Aug.	15	15	11	14
Sept.	14	15	14	14
Oct.	14	14	14	13
Nov.	14	14	14	14
Mean	134	136	133	121

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15A. Live births, France

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	20.2	11.5	-33.3	11.4
Febr.	24.2	29.2	28.9	0.6
March	23.5	20.9	-0.9	-2.2
April	14.3	7.0	-21.5	-12.2
May	10.1	5.9	-4.9	-18.5
June	12.5	12.6	15.6	-13.9
July	9.7	7.0	-0.9	-10.5
Aug.	7.0	8.0	6.1	-7.9
Sept.	1.2	-0.7	-10.4	-5.5
Oct.	0.9	-0.5	-1.1	-3.2
Nov.	0.2	-0.3	-0.5	-1.2
Mean	11.3	9.2	-2.1	-5.7

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	94.2	86.1	135.3	119.7
Febr.	72.0	69.9	102.0	100.1
March	61.2	56.8	95.8	86.8
April	58.4	64.3	104.0	87.1
May	48.8	50.2	66.9	73.0
June	45.4	47.1	42.1	61.6
July	37.0	36.5	22.5	52.2
Aug.	29.0	24.9	20.5	35.9
Sept.	26.8	26.8	30.7	30.9
Oct.	14.5	13.9	14.2	21.1
Nov.	7.9	7.8	8.8	9.9
Mean	45.0	44.0	58.4	61.7

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	123.2	104.6	161.4	152.1
Febr.	102.2	94.2	139.3	116.2
March	80.6	76.4	121.2	102.8
April	77.1	85.5	142.6	95.4
May	69.1	71.1	83.3	88.8
June	58.4	57.6	60.6	73.4
July	47.3	44.0	31.9	62.8
Aug.	35.6	28.9	23.4	46.9
Sept.	30.6	31.3	41.7	40.5
Oct.	17.1	17.1	17.7	25.1
Nov.	9.0	8.9	11.0	12.4
Mean	59.1	56.3	75.8	74.2

15A. Live births, France

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	1.3	1.1	1.8	1.6
Febr.	1.0	0.9	1.4	1.3
March	0.8	0.8	1.3	1.2
April	0.8	0.8	1.4	1.2
May	0.6	0.7	0.9	1.0
June	0.6	0.6	0.5	0.8
July	0.5	0.5	0.3	0.7
Aug.	0.4	0.3	0.3	0.5
Sept.	0.4	0.4	0.4	0.4
Oct.	0.2	0.2	0.2	0.3
Nov.	0.1	0.1	0.1	0.1
Mean	0.6	0.6	0.8	0.8

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	1.7	1.4	2.1	2.0
Febr.	1.4	1.3	1.9	1.6
March	1.1	1.0	1.6	1.4
April	1.0	1.1	1.9	1.3
May	0.9	0.9	1.1	1.2
June	0.8	0.8	0.8	1.0
July	0.6	0.6	0.4	0.8
Aug.	0.5	0.4	0.3	0.6
Sept.	0.4	0.4	0.6	0.5
Oct.	0.2	0.2	0.2	0.3
Nov.	0.1	0.1	0.1	0.2
Mean	0.8	0.7	1.0	1.0

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	306.0	219.4	285.4	284.0
Febr.	243.9	251.3	431.4	222.7
March	183.8	205.0	301.5	183.6
April	163.2	166.1	334.0	149.2
May	141.9	170.5	184.5	165.6
June	111.7	114.6	182.2	168.0
July	83.0	77.1	88.0	150.0
Aug.	73.0	63.0	48.5	128.5
Sept.	53.2	58.6	113.6	107.3
Oct.	29.6	37.0	37.9	53.5
Nov.	14.3	14.5	21.9	28.2
Mean	127.6	125.2	184.5	149.2

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	5.1	6.7	12.5	11.5
Febr.	0.4	11.2	17.8	21.2
March	6.5	0.4	0.4	11.9
April	5.9	6.3	5.7	36.5
May	3.4	1.6	2.5	3.4
June	3.2	4.1	1.8	4.9
July	0.2	1.7	2.4	7.0
Aug.	1.6	5.6	0.7	6.0
Sept.	0.1	0.3	4.6	0.6
Oct.	2.0	1.8	0.2	4.3
Nov.	0.6	0.2	0.7	0.0
Mean	2.6	3.6	4.5	9.7

15A. Live births, France

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 800.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	6	6	10	5	6	9	10	5	9	6	6	8
Febr.	7	7	10	4	11	3	8	6	9	5	6	7
March	6	7	10	5	7	5	11	3	9	4	6	6
April	8	4	9	5	11	4	9	4	10	4	7	8
May	7	5	10	4	9	3	8	4	8	4	7	8
June	6	4	6	8	10	4	7	6	9	4	10	5
July	5	6	4	10	7	5	4	9	11	3	11	3
Aug.	4	6	6	7	9	5	4	7	9	5	8	5
Sept.	3	4	5	7	7	6	5	5	5	6	5	5
Oct.	1	3	4	6	9	3	5	6	8	2	7	3
Nov.	1	0	5	4	5	0	2	2	5	4	3	5
Sum	54	52	79	65	91	47	73	57	92	47	76	63
<800	59		21		27		35		26		26	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 4000: the number of times the forecast differs less than 4000 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	12	12	10	12
Febr.	12	12	11	11
March	10	11	9	11
April	10	10	11	11
May	12	10	10	12
June	12	13	12	12
July	15	15	14	10
Aug.	15	15	14	12
Sept.	14	12	12	14
Oct.	15	15	15	14
Nov.	15	14	14	15
Mean	142	139	132	134

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15B. Deaths, France

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	6.9	23.5	54.2	19.2
Febr.	26.9	34.2	101.3	1.8
March	29.8	32.1	43.7	2.8
April	22.5	23.1	-0.4	1.7
May	19.9	17.3	6.4	0.2
June	13.7	12.5	1.8	0.5
July	11.3	13.7	18.2	0.7
Aug.	2.6	9.3	-5.9	1.6
Sept.	-0.4	5.4	-6.1	2.6
Oct.	-1.5	1.7	-5.4	1.4
Nov.	-5.2	-3.6	-8.5	-0.8
Mean	11.5	15.4	18.1	2.9

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	92.6	83.4	296.3	408.4
Febr.	107.1	83.6	285.3	291.6
March	100.4	69.4	161.0	208.0
April	84.6	58.6	72.6	142.6
May	65.1	48.7	48.3	97.9
June	47.0	41.9	44.2	81.6
July	32.2	32.9	59.0	71.3
Aug.	25.2	30.4	29.0	63.4
Sept.	27.1	28.3	31.1	55.3
Oct.	22.6	23.4	22.7	45.1
Nov.	14.7	14.7	14.9	29.0
Mean	56.2	46.8	96.8	135.8

3. Root mean square absolute error
1981-1995

Method	1	2	3	4
Jan.	112.8	102.7	381.0	490.2
Febr.	128.3	98.4	350.2	328.6
March	122.2	82.7	221.8	241.5
April	103.5	69.7	95.7	167.7
May	78.7	56.9	55.2	118.5
June	65.3	51.1	62.0	97.1
July	46.6	42.1	91.2	77.8
Aug.	32.2	39.3	37.5	69.8
Sept.	32.9	35.2	35.9	63.1
Oct.	28.6	29.6	28.4	52.2
Nov.	22.1	22.4	21.7	38.1
Mean	70.3	57.3	125.5	158.6

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15B. Deaths, France

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	1.7	1.6	5.5	7.6
Febr.	2.0	1.6	5.3	5.4
March	1.9	1.3	3.0	3.9
April	1.6	1.1	1.4	2.7
May	1.2	0.9	0.9	1.8
June	0.9	0.8	0.8	1.5
July	0.6	0.6	1.1	1.3
Aug.	0.5	0.6	0.5	1.2
Sept.	0.5	0.5	0.6	1.0
Oct.	0.4	0.4	0.4	0.8
Nov.	0.3	0.3	0.3	0.5
Mean	1.0	0.9	1.8	2.5

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	2.1	1.9	7.1	9.2
Febr.	2.4	1.8	6.5	6.1
March	2.3	1.5	4.1	4.5
April	1.9	1.3	1.8	3.1
May	1.5	1.1	1.0	2.2
June	1.2	0.9	1.1	1.8
July	0.9	0.8	1.7	1.5
Aug.	0.6	0.7	0.7	1.3
Sept.	0.6	0.7	0.7	1.2
Oct.	0.5	0.6	0.5	1.0
Nov.	0.4	0.4	0.4	0.7
Mean	1.3	1.1	2.3	3.0

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	250.5	235.1	896.0	864.8
Febr.	229.8	180.9	849.4	513.8
March	263.1	189.9	560.1	410.2
April	249.0	166.2	229.5	324.9
May	176.4	127.5	94.6	228.8
June	178.8	125.3	180.8	192.6
July	132.6	95.9	296.9	138.3
Aug.	73.8	72.8	85.1	119.2
Sept.	71.0	69.0	63.4	94.3
Oct.	68.7	63.3	62.8	94.1
Nov.	52.7	54.0	61.0	76.8
Mean	158.8	125.5	307.2	278.0

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	3.1	2.8	40.9	26.2
Febr.	4.2	9.3	41.0	41.4
March	13.9	13.8	4.7	66.4
April	8.8	7.0	4.2	31.6
May	12.7	9.1	1.0	10.1
June	1.6	5.2	0.5	1.4
July	2.3	0.5	4.3	19.0
Aug.	3.3	1.7	0.1	13.9
Sept.	1.7	0.2	3.9	3.5
Oct.	1.5	0.3	1.1	5.3
Nov.	0.7	0.1	0.6	1.0
Mean	4.9	4.5	9.3	20.0

15B. Deaths, France

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 800.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	4	8	12	3	13	2	12	2	12	3	11	4
Febr.	3	12	12	3	12	2	13	2	14	1	7	8
March	3	12	9	6	11	4	11	4	13	1	11	4
April	3	11	4	9	10	3	9	6	12	3	12	3
May	3	10	4	9	9	4	6	7	11	4	9	5
June	6	7	7	6	9	4	8	5	10	5	10	3
July	7	7	10	5	12	2	9	5	11	2	9	5
Aug.	6	4	8	3	11	2	6	6	12	1	12	3
Sept.	5	4	6	6	10	3	6	6	12	2	12	3
Oct.	3	3	5	4	11	3	4	5	10	2	11	4
Nov.	1	0	5	3	10	1	4	4	9	0	9	3
Sum	44	78	82	57	118	30	88	52	126	24	113	45
<800	43		26		17		25		15		7	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 4000: the number of times the forecast differs less than 4000 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	8	10	7	8
Febr.	6	10	8	8
March	9	11	11	7
April	10	11	11	9
May	10	12	10	9
June	12	13	11	9
July	11	13	13	10
Aug.	13	13	14	10
Sept.	14	13	13	9
Oct.	15	15	14	11
Nov.	13	14	13	14
Mean	121	135	125	104

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16A. Live births, Germany

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	22.2	-1.0	-92.1	13.7
Febr.	28.9	34.5	26.5	1.5
March	29.7	30.7	4.5	0.1
April	24.9	22.8	1.8	-11.5
May	16.8	3.4	-22.1	-17.1
June	14.2	13.6	12.9	-13.1
July	15.0	9.6	5.1	-10.0
Aug.	10.1	9.4	6.1	-4.4
Sept.	4.3	1.6	-5.9	-1.5
Oct.	2.7	1.7	0.4	0.5
Nov.	-1.0	-2.7	-4.7	1.5
Mean	15.3	11.2	-6.1	-3.7

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	167.0	168.5	230.8	295.6
Febr.	144.6	112.0	116.2	177.5
March	120.3	101.5	106.7	151.6
April	101.6	82.5	116.1	141.0
May	89.9	81.7	95.7	132.3
June	62.4	55.5	58.9	97.8
July	47.9	42.2	35.5	82.5
Aug.	40.7	36.6	34.9	71.2
Sept.	31.6	26.9	27.8	61.0
Oct.	21.1	20.6	25.5	41.8
Nov.	16.8	16.2	15.8	29.4
Mean	76.7	67.7	78.5	116.5

3. Root mean square error
1981-1995

Method	1	2	3	4
Jan.	247.1	233.0	349.2	435.7
Febr.	206.0	161.8	143.4	243.5
March	171.0	131.4	140.7	203.4
April	132.0	108.0	162.7	175.6
May	114.2	102.9	125.5	171.6
June	80.0	69.6	79.7	130.1
July	59.1	50.7	44.4	106.4
Aug.	49.1	43.9	44.4	91.2
Sept.	36.9	33.0	38.6	72.3
Oct.	26.3	27.3	32.6	53.4
Nov.	22.8	24.2	24.8	43.0
Mean	104.0	89.6	107.8	156.9

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16A. Live births, Germany

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	2.0	2.0	2.8	3.6
Febr.	1.7	1.3	1.4	2.2
March	1.4	1.2	1.3	1.8
April	1.2	1.0	1.4	1.7
May	1.1	1.0	1.2	1.6
June	0.8	0.7	0.7	1.2
July	0.6	0.5	0.4	1.0
Aug.	0.5	0.4	0.4	0.9
Sept.	0.4	0.3	0.3	0.7
Oct.	0.3	0.2	0.3	0.5
Nov.	0.2	0.2	0.2	0.4
Mean	0.9	0.8	1.0	1.4

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	3.0	2.8	4.3	5.4
Febr.	2.5	2.0	1.8	3.0
March	2.1	1.6	1.7	2.5
April	1.6	1.3	2.0	2.2
May	1.4	1.3	1.5	2.1
June	1.0	0.9	0.9	1.6
July	0.7	0.6	0.5	1.3
Aug.	0.6	0.5	0.5	1.1
Sept.	0.4	0.4	0.5	0.9
Oct.	0.3	0.3	0.4	0.7
Nov.	0.3	0.3	0.3	0.5
Mean	1.3	1.1	1.3	1.9

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	723.3	551.5	1051.7	1067.1
Febr.	582.7	394.4	370.4	565.8
March	454.0	259.7	312.6	431.9
April	324.2	223.6	412.7	377.8
May	240.8	180.5	327.6	389.1
June	184.2	134.8	232.9	273.0
July	132.6	103.1	112.6	222.2
Aug.	93.8	79.9	108.8	201.4
Sept.	67.1	60.1	113.8	156.7
Oct.	57.3	56.0	81.8	121.2
Nov.	69.2	77.1	82.0	102.1
Mean	266.3	192.8	291.5	355.3

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	0.5	8.7	15.7	29.7
Febr.	6.1	1.3	8.6	6.2
March	6.9	0.5	7.2	4.0
April	8.8	1.1	0.8	24.0
May	2.0	1.0	15.3	0.9
June	1.3	3.3	6.8	0.5
July	6.4	0.0	3.3	2.7
Aug.	5.7	7.7	3.3	7.3
Sept.	1.4	0.6	0.3	20.6
Oct.	0.2	0.2	3.9	7.8
Nov.	2.0	1.9	1.6	1.2
Mean	3.8	2.4	6.1	9.5

16A. Live births, Germany

7. Number of times that one method performs better than another
(based on the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 1000.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	7	8	9	6	9	5	8	6	10	4	9	6
Febr.	4	10	7	7	8	5	8	5	7	6	8	6
March	5	9	8	7	8	6	6	7	9	5	10	4
April	5	10	8	6	9	4	10	4	8	5	9	6
May	6	7	10	5	9	4	7	5	10	3	10	4
June	6	7	4	9	10	2	6	8	9	4	9	3
July	2	7	4	9	10	3	5	8	10	4	9	4
Aug.	2	4	4	7	10	1	4	6	11	2	11	3
Sept.	2	5	4	8	13	0	4	6	13	1	12	1
Oct.	4	4	7	5	9	0	6	2	9	2	10	2
Nov.	0	2	3	2	7	1	1	0	7	1	8	1
Sum	43	73	68	71	102	31	65	57	103	37	105	40
<1000	49		26		32		43		25		20	

8. Number of times the direction is forecast correctly
1981-1995

If the observed change is smaller than 5000: the number of times the forecast differs less than 5000 from the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	13	13	11	11
Febr.	13	12	11	12
March	12	13	12	12
April	12	12	11	12
May	12	12	11	11
June	13	14	13	13
July	14	14	13	13
Aug.	14	14	15	13
Sept.	14	14	14	13
Oct.	15	15	14	13
Nov.	15	15	15	15
Mean	147	148	140	138

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16B. Deaths, Germany

1. Mean forecast error
1981-1995

Method	1	2	3	4
Jan.	28.5	70.4	77.7	23.2
Febr.	14.3	54.7	-48.4	-12.8
March	38.9	67.5	117.1	2.8
April	43.3	64.9	56.0	10.6
May	31.2	48.7	-14.3	4.2
June	34.8	40.7	21.1	0.1
July	21.8	32.7	7.1	-1.1
Aug.	21.1	27.1	14.0	-2.5
Sept.	11.0	20.8	4.5	-2.5
Oct.	4.4	12.4	-2.6	-4.3
Nov.	2.2	5.6	-0.7	-5.5
Mean	22.9	40.5	21.0	1.1

2. Mean absolute forecast error
1981-1995

Method	1	2	3	4
Jan.	111.2	99.7	352.1	564.6
Febr.	119.9	99.4	347.8	388.9
March	119.1	95.0	299.0	248.5
April	106.6	89.5	156.9	193.5
May	83.1	71.6	62.7	139.8
June	72.6	58.7	75.2	100.1
July	56.6	53.7	73.5	67.0
Aug.	44.3	48.3	55.9	69.5
Sept.	34.0	38.9	36.4	67.4
Oct.	31.8	33.7	37.2	56.9
Nov.	21.0	22.0	20.1	38.0
Mean	72.7	64.6	137.9	175.8

3. Root mean square absolute error
1981-1995

Method	1	2	3	4
Jan.	134.0	135.7	539.1	678.2
Febr.	151.5	122.6	417.5	467.1
March	142.2	115.6	470.2	310.7
April	132.6	109.1	184.6	234.9
May	104.9	85.4	87.3	170.5
June	93.1	71.7	96.1	122.7
July	69.9	62.2	95.4	91.8
Aug.	55.3	57.0	75.7	79.6
Sept.	43.6	48.0	41.9	74.4
Oct.	42.8	41.7	48.4	67.0
Nov.	30.0	29.0	24.9	45.4
Mean	90.9	79.8	189.2	212.9

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16B. Deaths, Germany

4. Mean absolute percentage forecast error 1981-1995

Method	1	2	3	4
Jan.	1.2	1.1	3.8	6.2
Febr.	1.3	1.1	3.8	4.2
March	1.3	1.0	3.3	2.7
April	1.2	1.0	1.7	2.1
May	0.9	0.8	0.7	1.5
June	0.8	0.6	0.8	1.1
July	0.6	0.6	0.8	0.7
Aug.	0.5	0.5	0.6	0.8
Sept.	0.4	0.4	0.4	0.7
Oct.	0.4	0.4	0.4	0.6
Nov.	0.2	0.2	0.2	0.4
Mean	0.8	0.7	1.5	1.9

5. Root mean square percentage error 1981-1995

Method	1	2	3	4
Jan.	1.5	1.5	5.8	7.4
Febr.	1.7	1.4	4.6	5.1
March	1.5	1.3	5.1	3.4
April	1.4	1.2	2.0	2.6
May	1.1	0.9	1.0	1.9
June	1.0	0.8	1.0	1.3
July	0.8	0.7	1.1	1.0
Aug.	0.6	0.6	0.8	0.9
Sept.	0.5	0.5	0.5	0.8
Oct.	0.5	0.5	0.5	0.7
Nov.	0.3	0.3	0.3	0.5
Mean	1.0	0.9	2.1	2.3

6.1. Maximum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	288.2	334.5	1550.1	1348.5
Febr.	282.7	235.3	911.4	990.9
March	294.5	218.9	1381.0	708.3
April	296.8	218.9	428.1	444.4
May	232.4	161.2	220.2	334.6
June	211.3	137.9	242.1	244.7
July	181.0	106.3	219.7	206.0
Aug.	121.3	105.6	200.5	160.7
Sept.	101.9	97.9	85.1	131.8
Oct.	108.4	93.4	95.5	123.7
Nov.	67.6	60.7	47.5	93.2
Mean	198.7	161.0	489.2	435.2

6.2. Minimum absolute forecast error 1981-1995

Method	1	2	3	4
Jan.	7.0	5.1	11.7	125.9
Febr.	10.2	2.4	22.8	41.7
March	13.4	8.9	30.5	35.0
April	6.4	0.8	35.6	9.4
May	1.9	4.0	1.1	16.4
June	10.7	2.5	21.9	28.4
July	12.3	3.4	4.5	2.6
Aug.	6.8	3.9	0.6	17.9
Sept.	4.0	1.2	2.8	28.0
Oct.	4.0	0.5	3.0	3.2
Nov.	0.8	3.2	3.0	8.2
Mean	7.1	3.3	12.5	28.8

16B. Deaths, Germany

7. Number of times that one method performs better than another
(on the base of the mean absolute forecast error)
1981-1995

Only the cases in which the difference between two forecasts is at least 1000.
Total number of forecasts per month is 15

Method	1	2	1	3	1	4	2	3	2	4	3	4
Jan.	3	7	11	4	15	0	12	3	14	1	10	4
Febr.	4	9	13	2	14	1	13	2	13	2	11	4
March	5	10	10	4	11	4	12	3	12	2	8	7
April	5	10	10	3	10	5	11	4	12	3	9	6
May	6	7	6	9	9	6	8	7	12	3	12	2
June	4	8	8	5	10	5	7	6	9	3	10	5
July	5	7	7	6	6	9	9	6	7	6	5	8
Aug.	6	3	8	6	9	2	7	5	9	3	8	7
Sept.	5	2	6	6	9	0	4	9	9	3	14	1
Oct.	4	4	7	3	13	2	4	5	11	1	12	2
Nov.	1	2	4	3	11	1	3	5	12	1	10	3
Sum	48	69	90	51	117	35	90	55	120	28	109	49
<1000	48		24		13		20		17		7	

8. Number of times the direction is forecasted correctly
1981-1995

If the observed change is smaller than 5000: the number of times the forecast differs less than 5000 of the observed preceding year total.
Total number of forecasts per month is 15.

Method	1	2	3	4
Jan.	9	12	9	4
Febr.	9	12	7	6
March	9	11	9	8
April	9	11	9	10
May	11	12	12	11
June	12	12	10	10
July	13	13	10	11
Aug.	14	15	13	12
Sept.	15	15	14	12
Oct.	14	15	13	13
Nov.	14	15	14	13
Mean	129	143	120	110

17. Threshold values for criteria 7 and 8

Country	Population 1/1/95	criterion 7	criterion 8
	million		
Iceland	0.3	5	25
Luxembourg	0.4	5	25
Ireland	3.6	50	250
Norway	4.3	50	250
Finland	5.1	50	250
Denmark	5.2	50	250
Switzerland	7.0	100	500
Austria	8.0	100	500
Sweden	8.8	100	500
Portugal	9.9	150	750
Belgium	10.1	150	750
Greece	10.4	150	750
The Netherlands	15.4	200	1000
Italy	57.3	800	4000
France	58.0	800	4000
Germany	81.5	1000	5000

18. Factor *a* used to calculate forecasts based on method 2

Country	Variable	a
Iceland	Live births	0.2
	Deaths	0.1
Luxembourg	Live births	0.2
	Deaths	0.1
Ireland	Live births	0.5
	Deaths	0.1
Norway	Live births	0.4
	Deaths	0.1
Finland	Live births	0.5
	Deaths	0.1
Denmark	Live births	0.5
	Deaths	0.1
Switzerland	Live births	0.4
	Deaths	0.1
Austria	Live births	0.4
	Deaths	0.1
Sweden	Live births	0.8
	Deaths	0.1
Portugal	Live births	0.6
	Deaths	0.1
Belgium	Live births	0.4
	Deaths	0.1
Greece	Live births	0.4
	Deaths	0.1
Netherlands	Live births	0.3
	Deaths	0.1
Italy	Live births	0.3
	Deaths	0.1
France	Live births	0.4
	Deaths	0.1
Germany	Live births	0.5
	Deaths	0.1

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APPENDIX 2

Tables now-casts 1996

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1A. Live births, Iceland

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	4272	2.3	4265	2.3	4186	4.0	4191	4.7
Febr.	4290	3.6	4297	2.9	4419	6.0	4200	5.7
March	4292	2.9	4304	2.2	4306	3.1	4388	3.5
April	4307	2.4	4319	2.2	4344	4.1	4394	2.6
May	4293	1.8	4300	1.4	4244	4.6	4340	3.5
June	4282	1.7	4280	1.2	4227	3.7	4310	2.8
July	4287	1.3	4277	1.3	4276	1.6	4295	2.5
Aug.	4297	1.2	4299	1.1	4338	1.3	4299	2.3
Sept.	4284	1.0	4285	1.1	4263	0.6	4281	1.6
Oct.	4294	0.8	4298	0.7	4312	0.6	4293	1.3
Nov.	4332	0.5	4334	0.4	4360	0.5	4325	0.7

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	4345	1986	3981	1991	4533
1982	4337	1987	4193	1992	4609
1983	4371	1988	4673	1993	4623
1984	4113	1989	4560	1994	4442
1985	3856	1990	4768	1995	4280

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1B. Deaths, Iceland

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	1917	5.4	1878	5.0	1895	7.6	1997	10.3
Febr.	1929	3.8	1884	4.0	1900	8.6	1996	8.6
March	1887	6.9	1867	5.3	1764	8.1	1889	5.5
April	1882	3.3	1869	3.8	1873	7.2	1828	6.0
May	1835	2.8	1846	2.9	1729	4.9	1809	5.0
June	1871	2.4	1871	2.5	1943	3.7	1858	4.0
July	1884	1.7	1884	1.8	1916	4.7	1877	2.9
Aug.	1864	1.2	1869	1.4	1819	3.4	1875	2.3
Sept.	1847	1.6	1849	1.4	1805	2.9	1847	3.1
Oct.	1860	1.0	1861	0.6	1877	1.4	1859	1.5
Nov.	1851	0.4	1850	0.3	1841	0.8	1840	0.6

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	1656	1986	1598	1991	1796
1982	1583	1987	1724	1992	1719
1983	1653	1988	1818	1993	1753
1984	1584	1989	1715	1994	1717
1985	1652	1990	1704	1995	1923

2A. Live births, Luxembourg

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	5522	2.4	5556	2.3	5906	5.1	5874	5.9
Febr.	5579	3.0	5560	2.8	5690	5.7	5719	5.3
March	5498	2.6	5489	3.0	5361	3.9	5466	4.1
April	5545	2.7	5464	2.7	5535	3.8	5452	4.5
May	5484	1.5	5445	1.5	5447	2.3	5431	2.4
June	5418	1.4	5398	0.9	5301	2.5	5373	1.5
July	5392	1.8	5409	1.7	5402	1.6	5402	2.3
Aug.	5453	1.1	5480	0.9	5586	1.6	5489	1.7
Sept.								
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	4414	1986	4309	1991	4986
1982	4300	1987	4238	1992	5149
1983	4185	1988	4603	1993	5353
1984	4192	1989	4665	1994	5451
1985	4104	1990	4936	1995	5421

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2B. Deaths, Luxembourg

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	3813	4.5	3828	2.4	3907	10.6	3852	11.9
Febr.	3806	4.4	3841	2.6	3846	6.1	3942	10.0
March	3842	3.8	3866	2.6	3883	6.1	4136	7.7
April	3846	4.2	3853	3.2	3759	6.2	3998	6.8
May	3855	3.2	3843	2.3	3811	3.2	3905	4.9
June	3833	2.1	3824	1.6	3761	2.8	3868	3.7
July	3781	1.4	3788	1.4	3671	2.7	3778	2.4
Aug.	3703	1.2	3727	1.2	3553	2.0	3691	1.9
Sept.	3694	0.7	3723	1.0	3699	1.4	3693	1.7
Oct.	3671	1.0	3694	0.9	3641	1.6	3681	1.7
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	4115	1986	3970	1991	3744
1982	4133	1987	4012	1992	4021
1983	4129	1988	3840	1993	3915
1984	4072	1989	3984	1994	3800
1985	4027	1990	3773	1995	3797

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3A. Live births, Ireland

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	48271	3.1	48303	2.6	48466	3.5	48684	4.2
Febr.	48741	2.7	49534	2.5	50251	2.7	49680	2.9
March	48690	2.0	48881	1.8	48216	2.9	48794	1.6
April								
May								
June								
July								
Aug.								
Sept.								
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	72158	1986	61620	1991	52718
1982	70843	1987	58433	1992	51089
1983	67117	1988	54600	1993	49461
1984	64062	1989	52018	1994	47928
1985	62388	1990	53044	1995	48530

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3B. Deaths, Ireland

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	30996	3.8	31385	3.1	30557	8.6	32340	9.5
Febr.	31211	3.1	31405	3.4	30746	7.5	31890	7.5
March	30934	4.0	31045	2.3	29380	4.4	29766	6.3
April								
May								
June								
July								
Aug.								
Sept.								
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	32929	1986	33630	1991	31544
1982	32457	1987	31413	1992	30930
1983	32976	1988	31625	1993	31924
1984	32076	1989	32111	1994	30744
1985	33210	1990	31370	1995	31622

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4A. Live births, Norway

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	59899	1.3	59538	1.3	59763	2.1	60292	2.9
Febr.	60011	1.0	60379	1.6	60560	2.9	60823	3.3
March	60010	1.1	60476	1.0	59760	2.4	60806	2.3
April	60359	0.9	60668	0.7	60519	1.7	60890	1.5
May	60331	0.7	60711	0.8	60349	1.3	60843	1.5
June	60598	0.6	60382	0.4	60208	0.5	60354	1.0
July	60606	0.4	60496	0.3	60771	0.7	60239	0.7
Aug.	60557	0.5	60550	0.3	60692	0.6	60108	0.6
Sept.	60475	0.4	60436	0.6	60394	0.8	59996	0.7
Oct.	60598	0.3	60647	0.2	60802	0.2	60306	0.5
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	50708	1986	52514	1991	60813
1982	51245	1987	54027	1992	60109
1983	49937	1988	57526	1993	59678
1984	50274	1989	59303	1994	60092
1985	51134	1990	60939	1995	60292

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4B. Deaths, Norway

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	45277	1.8	45080	1.8	45025	6.1	46728	8.7
Febr.	45518	3.0	45201	1.9	45848	7.6	47171	8.6
March	45225	3.1	44938	1.9	43910	3.0	45814	6.3
April	44968	2.3	44749	1.8	44244	2.3	44616	4.0
May	44789	1.8	44682	1.3	44539	1.3	44540	2.8
June	44383	1.2	44556	0.8	43866	0.8	44572	1.8
July	44159	0.8	44362	0.8	43527	1.1	44434	1.4
Aug.	44117	0.7	44351	0.6	44088	1.4	44523	0.9
Sept.	44133	0.6	44276	0.6	43999	0.9	44519	0.8
Oct.	44150	0.7	44229	0.5	44108	0.6	44496	0.5
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	41893	1986	43560	1991	44923
1982	41454	1987	44959	1992	44731
1983	42224	1988	45354	1993	46597
1984	42528	1989	45173	1994	44071
1985	44372	1990	46021	1995	45190

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5A. Live births, Finland

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	62366	3.2	62943	3.1	62845	3.3	62253	2.5
Febr.	62248	2.7	62524	1.9	61106	2.2	61487	2.1
March	61439	2.3	60464	1.5	57704	2.3	60081	2.3
April	61264	1.6	60676	0.9	60033	1.0	60196	1.8
May	61423	1.1	61571	0.8	61723	1.1	60652	1.9
June	61108	0.6	60707	0.8	59764	1.0	60213	1.5
July	60638	0.4	60465	0.6	59899	0.7	59989	1.2
Aug.	60546	0.4	60572	0.4	60360	0.4	60078	1.0
Sept.	60720	0.3	60698	0.3	60694	0.4	60289	0.9
Oct.	60798	0.2	60837	0.3	60877	0.2	60501	0.6
Nov.	60688	0.1	60705	0.1	60644	0.2	60493	0.3

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	63469	1986	60632	1991	65395
1982	66106	1987	59827	1992	66731
1983	66892	1988	63316	1993	64826
1984	65076	1989	63348	1994	65231
1985	62792	1990	65639	1995	63067

5B. Deaths, Finland

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	50946	3.6	50426	2.3	56880	5.8	58532	8.0
Febr.	51658	3.2	50865	1.9	53909	6.8	56589	7.2
March	51408	2.3	50682	1.2	50776	5.4	53695	3.9
April	51071	1.9	50357	1.0	49808	3.4	52121	2.7
May	50891	1.4	50214	0.7	50403	1.8	51123	2.6
June	50437	1.0	50018	0.7	49657	1.8	50712	2.0
July	49651	1.2	49798	1.0	48845	2.2	50287	2.5
Aug.	49409	1.2	49716	1.0	49129	1.0	50167	2.5
Sept.	49237	0.7	49489	0.8	48776	0.7	49815	1.8
Oct.	49127	0.5	49283	0.4	48853	0.4	49608	0.9
Nov.	49158	0.3	49238	0.4	49159	0.3	49529	0.7

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	44404	1986	47135	1991	49294
1982	43408	1987	47949	1992	49844
1983	45388	1988	49063	1993	50988
1984	45098	1989	49110	1994	48000
1985	48198	1990	50058	1995	49280

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6A. Live births, Denmark

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	69497	2.6	68665	2.9	68748	3.1	67571	4.9
Febr.	69150	2.2	68832	1.9	68611	3.1	67918	2.6
March	68714	2.1	68178	1.9	67191	1.9	67477	3.0
April	68057	1.6	67355	1.2	65883	0.7	67428	1.6
May	67234	1.4	66681	1.0	64978	1.2	67157	1.4
June	67025	1.1	66454	0.7	65480	0.8	66988	1.2
July	66757	0.6	66506	0.5	65920	0.6	66793	0.8
Aug.	66651	0.4	66707	0.4	66424	0.4	66636	0.8
Sept.	66696	0.4	66830	0.4	66679	0.6	66679	0.3
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	53089	1986	55312	1991	64358
1982	52658	1987	56221	1992	67726
1983	50822	1988	58844	1993	67369
1984	51800	1989	61351	1994	69668
1985	53749	1990	63433	1995	69771

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6B. Deaths, Denmark

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	65423	1.5	64086	2.2	70297	4.6	71489	6.7
Febr.	65980	2.6	64374	1.6	68225	5.1	70303	5.9
March	65751	1.9	64087	1.3	65040	3.4	68033	3.8
April	65332	1.9	63727	0.8	64134	2.6	66305	2.5
May	64464	1.2	63164	0.7	62341	1.3	64869	2.1
June	62954	1.1	62964	0.5	61864	1.1	64519	1.6
July	62106	0.8	62529	0.4	60472	0.8	63920	1.3
Aug.	61605	0.5	62171	0.3	60520	0.9	63586	0.9
Sept.	61459	0.5	61915	0.4	60907	0.8	63381	0.7
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	56359	1986	58100	1991	59581
1982	55368	1987	58136	1992	60821
1983	57156	1988	58984	1993	62809
1984	57109	1989	59397	1994	61099
1985	58378	1990	60926	1995	63216

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7A. Live births, Switzerland

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	83231	1.6	83065	1.8	85003	2.1	82694	1.7
Febr.	83892	1.7	84110	1.6	87183	1.6	84464	2.4
March	83171	1.2	82726	1.0	81985	1.4	83241	2.3
April	82223	1.3	81592	1.5	79944	2.0	83339	1.7
May	82384	0.9	82203	1.1	82600	0.8	83478	1.5
June	82311	0.9	82189	0.5	81903	0.8	83308	1.1
July	82589	0.5	82806	0.3	83278	0.4	83323	0.9
Aug.	82382	0.4	82633	0.4	82222	0.7	83199	0.5
Sept.	81905	0.3	81702	0.4	80800	0.6	82361	0.4
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	73747	1986	76320	1991	86200
1982	74916	1987	76505	1992	86910
1983	73659	1988	80345	1993	83762
1984	74710	1989	81180	1994	82980
1985	74684	1990	82980	1995	82203

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7B. Deaths, Switzerland

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	63444	1.5	63213	1.2	64044	7.6	66385	9.1
Febr.	65097	2.2	64374	1.9	70244	8.7	68874	7.7
March	64929	2.1	64243	1.5	64994	4.2	64280	6.5
April	64507	2.0	63917	1.3	63646	2.2	63409	4.9
May	63887	1.6	63418	1.0	62207	0.9	62902	3.8
June	63270	1.1	63084	0.8	62062	1.3	62906	3.0
July	62472	0.7	62542	0.6	60695	1.3	62548	2.1
Aug.	61366	0.4	61956	0.4	59828	0.5	62075	1.4
Sept.	60710	0.4	61296	0.3	59457	0.7	61440	1.0
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	59763	1986	60105	1991	62634
1982	59204	1987	59511	1992	62302
1983	60756	1988	60648	1993	62512
1984	58602	1989	60882	1994	61987
1985	59583	1990	63739	1995	63387

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8A. Live births, Austria

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	86221	1.8	84350	1.6	78491	1.4	78464	2.0
Febr.	86356	1.4	85901	1.7	86206	2.7	83201	1.6
March	86188	1.5	86274	1.4	85398	1.6	84084	1.5
April	86397	1.5	87049	1.3	86917	1.9	85234	1.5
May	86573	1.1	87239	0.9	86687	1.4	86020	1.2
June	86805	0.6	87310	0.4	86967	0.9	86385	1.2
July	87382	0.6	87271	0.4	87497	0.3	86494	0.9
Aug.	87236	0.4	87137	0.5	87160	0.3	86591	0.6
Sept.	87218	0.3	87127	0.3	87233	0.4	86644	0.4
Oct.	87309	0.2	87341	0.3	87540	0.3	86880	0.4
Nov.	87472	0.1	87518	0.1	87615	0.2	87206	0.2

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	93942	1986	86964	1991	94629
1982	94840	1987	86503	1992	95302
1983	90118	1988	88052	1993	95227
1984	89234	1989	88759	1994	92415
1985	87440	1990	90454	1995	88669

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8B. Deaths, Austria

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	81918	1.7	81744	1.4	84337	6.4	84775	10.1
Febr.	82492	2.5	81837	1.7	83347	7.0	84572	6.8
March	82277	2.0	81656	1.8	81796	4.9	83081	4.7
April	82685	1.9	82035	1.3	84637	2.0	82774	3.6
May	82327	1.0	81731	0.8	81420	1.3	82193	1.9
June	81948	0.7	81756	0.7	81982	1.4	82402	2.0
July	81200	0.8	81292	0.8	79737	0.8	81673	1.5
Aug.	80854	0.8	81030	1.0	80082	0.9	81688	1.7
Sept.	80617	0.5	80768	0.6	80041	0.6	81396	1.2
Oct.	80294	0.3	80515	0.5	79985	0.4	81019	0.6
Nov.	80298	0.3	80403	0.3	80263	0.4	80881	0.4

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	92693	1986	87071	1991	83428
1982	91339	1987	84907	1992	83162
1983	93041	1988	83263	1993	82517
1984	88466	1989	83407	1994	80684
1985	89578	1990	82952	1995	81171

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9A. Live births, Sweden

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	99960	2.6	96331	2.7	91800	2.9	94599	2.1
Febr.	98844	2.5	96706	2.2	93039	2.3	94655	1.6
March	97303	2.1	94484	1.8	90432	1.7	93487	1.1
April	96338	1.9	95498	1.4	92288	1.3	94177	0.8
May	95504	1.5	94769	1.1	91820	0.8	93926	0.6
June	94762	1.1	93763	1.1	91513	1.2	93502	0.6
July	95299	0.7	96263	0.7	95704	0.3	94115	0.5
Aug.	95219	0.8	95480	0.4	94726	0.4	94327	0.4
Sept.	95210	0.4	95099	0.4	94799	0.6	94453	0.6
Oct.	95153	0.3	95120	0.3	95050	0.3	94536	0.5
Nov.	95061	0.1	94991	0.1	94966	0.1	94688	0.2

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	94065	1986	101950	1991	123813
1982	92748	1987	104699	1992	122848
1983	91780	1988	112080	1993	117998
1984	93889	1989	116023	1994	112257
1985	98463	1990	123938	1995	103422

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9B. Deaths, Sweden

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	97225	3.0	96226	2.0	108922	5.6	113240	7.8
Febr.	98417	2.7	97018	2.2	102250	5.9	108876	4.9
March	98167	2.1	96646	1.4	96654	4.2	103529	4.5
April	97719	1.5	96178	1.0	96264	0.9	99025	2.9
May	97190	0.9	95786	0.6	95935	1.4	97440	1.6
June	96270	0.9	95430	0.7	94956	1.4	96538	1.2
July	94557	0.9	94873	0.7	92596	1.7	95889	1.3
Aug.	94002	0.7	94625	0.7	93252	0.7	95490	0.8
Sept.	93672	0.8	94183	0.6	92764	1.1	95052	0.8
Oct.	93756	0.5	94076	0.5	93667	0.7	94931	0.8
Nov.	93674	0.4	93833	0.4	93552	0.4	94581	0.7

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	92034	1986	93295	1991	95202
1982	90671	1987	93307	1992	94710
1983	90791	1988	96743	1993	97008
1984	90483	1989	92110	1994	91500
1985	94032	1990	94987	1995	93965

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10A. Live births, Portugal

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	105891	1.6	106490	1.6	104182	2.7	104160	2.5
Febr.	107215	1.9	109368	1.6	110403	2.8	108102	1.5
March	107446	1.5	107849	0.9	107151	1.6	106980	1.1
April	107634	1.0	107465	1.1	107787	2.4	106747	1.3
May	107425	1.0	106614	1.0	106768	1.1	106108	0.9
June	106641	1.1	105573	0.9	105234	1.1	105393	1.2
July	106421	0.8	105703	0.6	105889	0.5	105396	1.2
Aug.	105877	0.6	105648	0.6	105399	0.7	105499	1.2
Sept.	106048	0.3	106232	0.3	106327	0.5	105952	0.7
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	152102	1986	126748	1991	116415
1982	151029	1987	123218	1992	115018
1983	144327	1988	122121	1993	114030
1984	142805	1989	116415	1994	109287
1985	130492	1990	116383	1995	107084

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10B. Deaths, Portugal

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	104982	4.1	102272	3.9	98786	10.9	102020	16.9
Febr.	104857	4.2	102999	4.1	107183	9.4	111503	11.1
March	105140	3.9	103621	2.6	106933	4.1	109897	5.5
April	104844	2.8	103643	2.5	104025	3.0	108474	4.4
May	105162	2.9	104321	2.6	106695	3.5	108906	3.7
June	104893	2.3	104763	2.1	105324	2.4	109170	4.4
July	105346	1.9	104575	1.9	104094	1.7	107834	3.7
Aug.	103781	1.0	103523	1.4	100639	1.7	105750	3.2
Sept.	103581	1.1	103542	1.2	103408	0.8	105281	2.7
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	95892	1986	95828	1991	104361
1982	92551	1987	95423	1992	101161
1983	96367	1988	98236	1993	106384
1984	97227	1989	96220	1994	99232
1985	97339	1990	103115	1995	103475

11A. Live births, Belgium

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	116759	2.1	116120	1.3	119600	2.7	115542	2.4
Febr.	117069	1.7	118054	1.2	121196	1.5	118541	2.0
March	116541	1.4	116427	1.0	115026	1.3	116524	1.5
April	116187	0.8	116054	0.7	115173	1.4	117730	1.1
May	116061	0.7	115999	0.6	115472	1.0	117323	1.1
June	115112	0.5	113893	0.6	111347	0.7	115590	0.7
July	115108	0.4	114780	0.5	115292	0.7	115788	0.5
Aug.	114829	0.3	115014	0.3	114858	0.5	115057	0.4
Sept.	115095	0.3	115279	0.3	115335	0.6	115107	0.5
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	123792	1986	117114	1991	125924
1982	120241	1987	117334	1992	124182
1983	117145	1988	125412	1993	120998
1984	115651	1989	121117	1994	116449
1985	114092	1990	123776	1995	115638

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11B. Deaths, Belgium

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	109143	1.5	108477	1.6	121830	5.8	125364	5.0
Febr.	111130	2.7	110028	1.9	118103	6.8	124953	6.3
March	111689	1.8	109914	1.1	112233	3.0	115936	2.9
April	111585	1.6	109764	0.9	111578	1.9	113709	2.4
May	111272	1.3	109211	0.8	109725	1.3	111106	1.7
June	109412	0.7	108193	0.5	105914	0.8	109285	1.1
July	107175	0.8	107306	0.8	104199	1.5	108187	0.7
Aug.	105432	0.8	106306	1.1	102785	1.0	106818	1.1
Sept.								
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	112326	1986	111343	1991	105150
1982	111871	1987	105426	1992	105717
1983	114534	1988	104552	1993	108170
1984	110687	1989	107619	1994	104894
1985	111608	1990	104818	1995	105933

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12A. Live births, Greece

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	103319	1.4	103137	3.9	106213	4.9	108646	6.8
Febr.	102568	2.2	101651	1.7	101441	2.4	103067	2.5
March	100029	2.3	98131	2.1	93399	2.3	99478	2.2
April	99998	1.6	99633	1.3	100379	2.8	100666	1.7
May								
June								
July								
Aug.								
Sept.								
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	140953	1986	112810	1991	102620
1982	137275	1987	106392	1992	104081
1983	132608	1988	107505	1993	101799
1984	125724	1989	101657	1994	103763
1985	116481	1990	102229	1995	101495

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12B. Deaths, Greece

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	101057	2.9	100517	2.7	102420	5.8	111982	6.5
Febr.	102720	2.9	100972	2.6	104418	6.1	108839	6.1
March	103133	2.8	101508	2.0	105174	5.9	106591	6.8
April	103824	2.4	102476	1.4	107851	2.6	105439	4.9
May								
June								
July								
Aug.								
Sept.								
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	86261	1986	91783	1991	95498
1982	86345	1987	95656	1992	98231
1983	90586	1988	92407	1993	97419
1984	88397	1989	92720	1994	97807
1985	92886	1990	94152	1995	100158

13A. Live births, The Netherlands

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	187257	1.7	186370	1.8	184434	1.9	180268	2.0
Febr.	189219	1.6	189691	1.5	196577	1.9	187620	2.6
March	188117	1.3	187635	1.3	184774	1.7	185344	2.3
April	186293	1.1	186011	1.1	181763	1.3	186540	2.2
May	185213	1.0	185149	0.8	181862	1.3	185922	1.8
June	185008	0.6	184461	0.6	182451	1.2	184963	1.2
July	185254	0.5	184986	0.4	185267	0.5	184963	1.0
Aug.	185216	0.4	185874	0.4	186336	0.5	185605	0.8
Sept.	186466	0.4	187076	0.3	188222	0.5	186566	0.5
Oct.	187518	0.3	187874	0.3	188649	0.4	186828	0.4
Nov.	188373	0.1	188509	0.1	188926	0.2	187465	0.2

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	178566	1986	184330	1991	198606
1982	172071	1987	186651	1992	196547
1983	170237	1988	186645	1993	195725
1984	174262	1989	188999	1994	195477
1985	178091	1990	197905	1995	188310

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13B. Deaths, The Netherlands

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	139666	2.6	137609	2.0	151745	4.2	157639	4.5
Febr.	143198	2.5	140428	1.5	157258	3.2	161347	4.0
March	144074	2.2	140721	1.7	146787	3.7	152763	2.1
April	144557	1.6	140925	1.2	146146	1.9	150097	2.1
May	143806	1.5	140563	1.0	142640	1.0	146705	1.1
June	141691	1.1	139794	1.0	138491	1.2	144545	0.9
July	139779	1.2	139029	1.0	136760	2.0	142433	1.6
Aug.	137630	0.7	138113	0.8	134829	0.6	140650	1.6
Sept.	137301	0.6	137859	0.6	136577	0.7	140231	1.7
Oct.	136943	0.6	137461	0.7	136390	0.8	139564	1.1
Nov.	137113	0.5	137381	0.5	137157	0.4	138910	0.9

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	115510	1986	125297	1991	129909
1982	117277	1987	122210	1992	129856
1983	117738	1988	124125	1993	137745
1984	119703	1989	128893	1994	133242
1985	122655	1990	128789	1995	134912

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14A. Live births, Italy

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	537848	1.2	540680	1.1	591861	1.7	576104	1.5
Febr.	548816	1.3	554773	1.4	599211	2.1	574947	2.2
March	546767	1.0	548191	1.1	550557	2.0	560009	1.6
April	543208	1.0	542839	1.1	539866	2.3	555792	1.6
May	545912	0.9	543228	1.2	549805	2.5	555642	2.1
June	541968	0.9	534902	0.8	527158	0.9	546093	1.6
July								
Aug.								
Sept.								
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	623103	1986	555445	1991	562787
1982	619097	1987	551539	1992	567841
1983	601928	1988	569698	1993	549284
1984	587871	1989	560688	1994	533050
1985	577345	1990	569255	1995	521345

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14B. Deaths, Italy

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	523588	1.9	534884	1.9	451309	6.1	488785	10.0
Febr.	543836	1.8	544425	1.8	582750	6.7	544453	8.9
March	549626	2.2	549089	1.8	570365	3.0	547434	4.7
April	551847	1.9	550593	1.5	561817	1.3	542190	3.6
May	555145	1.5	553653	1.6	570361	1.6	545658	2.7
June	557245	1.6	554978	1.3	564836	1.3	546974	2.2
July								
Aug.								
Sept.								
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	545291	1986	537453	1991	553833
1982	534935	1987	524999	1992	546690
1983	564329	1988	539426	1993	543433
1984	534676	1989	531853	1994	548081
1985	547436	1990	543708	1995	547514

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15A. Live births, France

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	738501	1.4	736341	1.2	757204	2.0	742596	1.8
Febr.	742975	1.1	746133	1.0	771363	1.2	755924	1.3
March	742127	1.1	741537	0.9	745956	1.5	749337	1.3
April	737794	0.8	736097	0.7	731067	1.4	750741	1.4
May	736246	0.5	735092	0.6	732711	0.9	748362	1.3
June	736441	0.6	733957	1.0	732717	0.5	744536	1.0
July								
Aug.								
Sept.								
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	805483	1986	778468	1991	759056
1982	797223	1987	767828	1992	743658
1983	748525	1988	771268	1993	711610
1984	759939	1989	765473	1994	710993
1985	768431	1990	762407	1995	728210

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15B. Deaths, France

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	536362	2.0	533537	1.8	552005	5.2	564055	8.4
Febr.	543858	3.1	539273	2.3	567079	5.7	580940	5.6
March	548030	2.0	541851	1.4	558445	2.9	569071	4.0
April	548449	2.0	541618	1.4	547685	1.4	557983	2.6
May	548226	1.6	541546	1.0	548078	1.2	551465	1.9
June	545218	1.3	540751	1.0	541632	0.8	547493	1.7
July								
Aug.								
Sept.								
Oct.								
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	554823	1986	546926	1991	524685
1982	543104	1987	527466	1992	521530
1983	559655	1988	524600	1993	532263
1984	542490	1989	529283	1994	519965
1985	552496	1990	526201	1995	531340

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16A. Live births, Germany

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	768611	2.3	757765	2.4	761135	2.5	745536	3.3
Febr.	774570	1.5	779891	1.2	810317	1.6	773492	1.7
March	769363	1.5	764669	0.9	758976	1.3	763953	2.2
April	768256	1.4	768463	1.2	769945	1.5	779564	1.9
May	767083	1.4	768047	1.1	763873	1.0	780308	1.7
June	765544	1.1	763281	0.9	757015	0.7	775103	1.2
July	776125	0.8	782481	0.6	797903	0.4	781666	0.9
Aug.	776590	0.7	781927	0.5	781894	0.5	781138	1.0
Sept.	781929	0.4	785457	0.4	788972	0.4	783500	0.7
Oct.	788362	0.2	792176	0.3	796791	0.3	787426	0.4
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	862100	1986	848232	1991	830019
1982	861275	1987	867969	1992	809083
1983	827933	1988	892993	1993	798447
1984	812292	1989	880459	1994	769603
1985	813803	1990	905675	1995	765221

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16B. Deaths, Germany

1. Nowcast 1996

Method	1	f.i. (%)	2	f.i. (%)	3	f.i. (%)	4	f.i. (%)
Jan.	919586	1.2	912780	1.1	1058827	4.1	1074676	6.3
Febr.	943483	1.8	928124	1.1	1022727	4.6	1059394	4.4
March	933320	1.4	918363	1.0	901276	2.9	965909	2.9
April	935500	1.4	916745	1.3	938669	2.0	940894	2.5
May	929891	1.1	912524	0.9	919687	0.7	924885	1.7
June	916953	0.9	906056	0.9	895008	0.8	915187	1.0
July	899365	0.7	901499	0.8	883231	1.0	909655	0.6
Aug.	885814	0.5	894498	0.7	866884	0.6	901805	0.8
Sept.	885622	0.4	891117	0.4	878794	0.4	897594	0.8
Oct.	883307	0.3	887657	0.4	879204	0.5	896016	0.8
Nov.								

f.i. = 2/3 forecast interval (%)
(is based on absolute percentage forecast error)

2. Observed values 1981-1995

Year	Year total	Year	Year total	Year	Year total
1981	954436	1986	925426	1991	911245
1982	943832	1987	901291	1992	885443
1983	941032	1988	900627	1993	897270
1984	917299	1989	903441	1994	884661
1985	929649	1990	921445	1995	884588

17. TFR and number of live births in 1996 according to the baseline scenario

Country	TFR	Live births
Iceland	2.11	4290
Luxembourg	1.71	5431
Ireland	1.88	48982
Norway	1.85	59606
Finland	1.84	63251
Denmark	1.78	68936
Austria	1.42	89309
Sweden	1.75	104704
Portugal	1.47	113318
Belgium	1.58	115846
Greece	1.45	112500
The Netherlands	1.60	198582
Italy	1.26	558670
France	1.67	713317
Germany	1.31	803688

18. Now-casts of TFR for 1996

Country	1990-1994 Observed	1995 Observed	1996 Method 1	1996 Method 2	1996 Method 3	1996 Method 4
Iceland	2.21	2.08	2.13	2.13	2.14	2.12
Luxembourg	1.65	1.68	1.72	1.73	1.76	1.73
Ireland	2.00	1.87	1.87	1.88	1.85	1.87
Norway	1.89	1.87	1.88	1.88	1.88	1.87
Finland	1.82	1.81	1.77	1.77	1.77	1.76
Denmark	1.73	1.80	1.73	1.73	1.73	1.73
Austria	1.47	1.39	1.39	1.39	1.40	1.39
Sweden	2.04	1.74	1.59	1.59	1.59	1.59
Portugal	1.53	1.41	1.37	1.38	1.38	1.37
Belgium	1.61	1.54	1.57	1.58	1.58	1.57
Greece	1.37	1.40	1.29	1.29	1.30	1.30
The Netherlands	1.59	1.53	1.52	1.52	1.52	1.51
Italy	1.29	1.17	1.22	1.20	1.19	1.23
France	1.72	1.70	1.72	1.72	1.71	1.74
Germany	1.32	1.24	1.29	1.29	1.30	1.29

TFR observed:
Source: Eurostat.

For 1996 the TFR has been calculated on the base of the most recent nowcast of live births.

TFR calculated on the base of the nowcast of live births based on monthly figures up to and including:

Iceland	November
Luxembourg	August
Ireland	March
Norway	October
Finland	November
Denmark	September
Austria	November
Sweden	November
Portugal	September
Belgium	September
Greece	April
The Netherlands	November
Italy	June
France	June
Germany	October

19. Life expectancy and number of deaths according to the baseline scenario

Country	e0		Deaths
	Males	Females	
Iceland	76.6	82.2	1738
Luxembourg	73.2	79.6	3922
Ireland	73.2	78.7	31949
Norway	74.9	80.7	45356
Finland	72.5	80	51154
Denmark	73.1	78.1	62051
Austria	73.9	80.1	82364
Sweden	76.1	81.5	95959
Portugal	71.2	78.4	107199
Belgium	73.0	80.4	105786
Greece	75.5	80.4	100500
The Netherlands	74.8	80.6	135480
Spain	74.1	81.5	357438
Italy	74.9	81.4	573912
France	74.2	82.1	536531
Germany	73.6	79.9	897190

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20. Now-casts of life expectancy for 1996

Males

	1990-1994	1995	Method 1	Method 2	Method 3	Method 4
Iceland	76.2	76.7	75.9	75.3	74.7	74.1
Luxembourg	72.3	73.0	74.0	74.7	75.6	76.3
Ireland	72.6	73.1	73.6	73.9	74.8	75.6
Norway	74.2	74.9	75.2	75.5	75.8	76.0
Finland	71.8	72.8	73.0	73.4	73.9	74.3
Denmark	72.5	72.7	73.2	73.2	73.4	73.2
Austria	72.8	73.5	74.2	74.5	74.7	75.0
Sweden	75.3	76.1	76.4	76.6	76.9	77.0
Portugal	70.7	71.5	71.6	72.0	72.5	72.7
Belgium	73.0	73.3	73.9	73.8	74.2	74.1
Greece	74.8	75.2	75.1	74.9	74.1	73.5
The Netherlands	74.1	74.5	74.7	74.5	74.4	74.1
Italy	74.1	74.9	75.2	75.6	75.8	76.4
France	73.2	73.8	74.0	73.8	73.7	73.4
Germany	72.5	73.3	73.7	73.9	74.1	74.1

Females

	1990-1994	1995	Method 1	Method 2	Method 3	Method 4
Iceland	80.9	80.7	81.6	81.0	80.5	80.0
Luxembourg	79.0	80.0	80.3	80.9	81.7	82.4
Ireland	78.1	78.7	79.0	79.3	80.2	80.9
Norway	80.2	80.6	81.0	81.2	81.5	81.7
Finland	79.4	80.2	80.4	80.8	81.2	81.5
Denmark	77.9	78.0	78.2	78.3	78.5	78.2
Austria	79.3	80.1	80.4	80.6	80.9	81.0
Sweden	80.8	81.4	81.7	81.9	82.2	82.3
Portugal	77.9	78.6	78.7	79.1	79.4	79.6
Belgium	79.7	80.2	80.5	80.4	80.7	80.6
Greece	79.8	80.2	80.1	79.9	79.2	78.7
The Netherlands	80.3	80.2	80.5	80.3	80.2	80.0
Italy	80.6	81.4	81.7	82.0	82.2	82.6
France	81.4	81.9	81.9	81.8	81.7	81.4
Germany	79.0	79.8	80.1	80.2	80.4	80.4

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APPENDIX 3

Graphs

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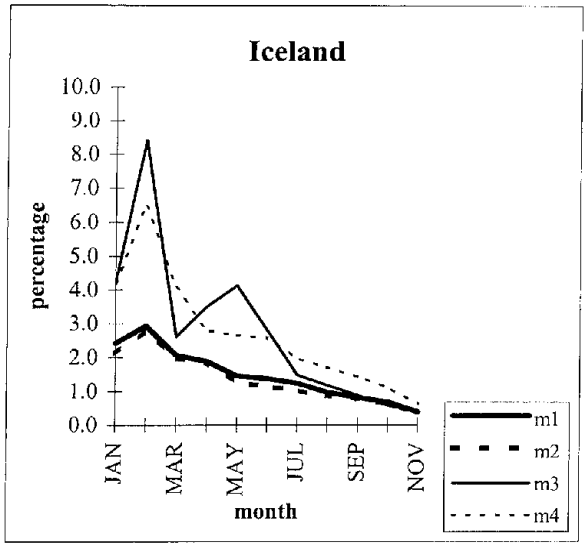
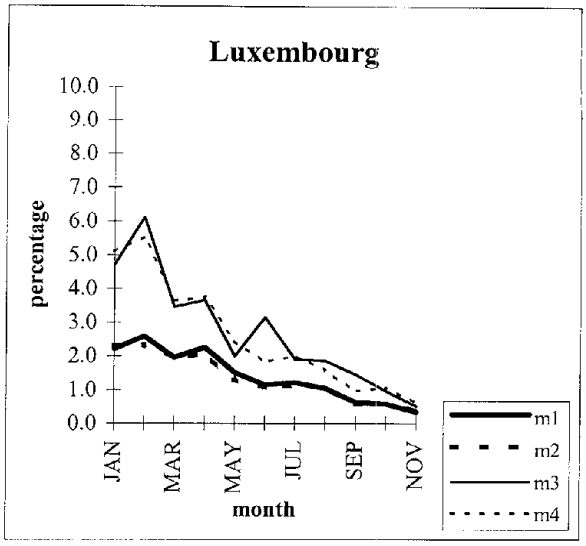
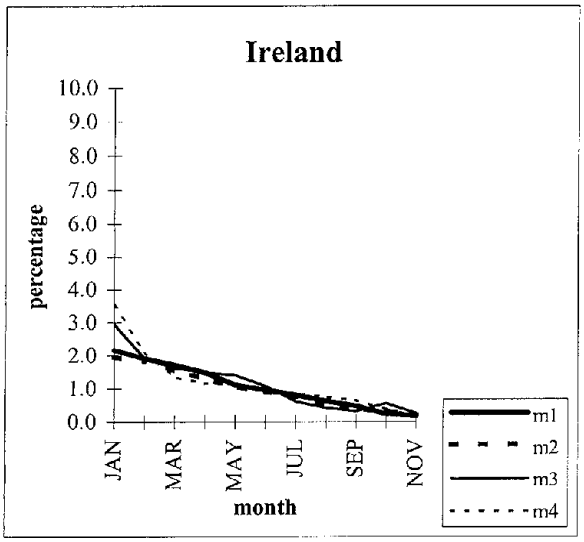
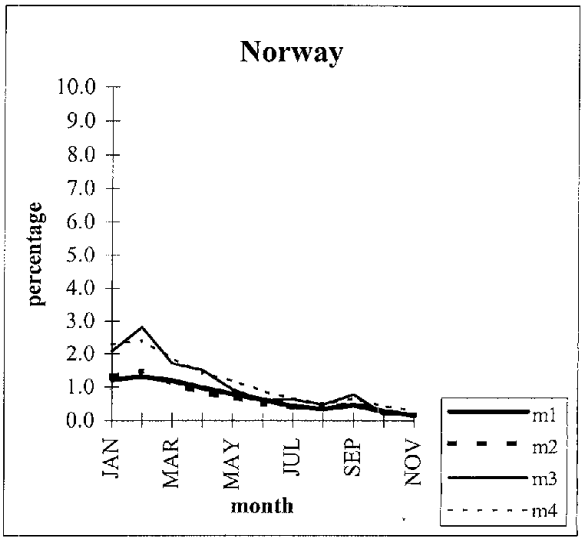
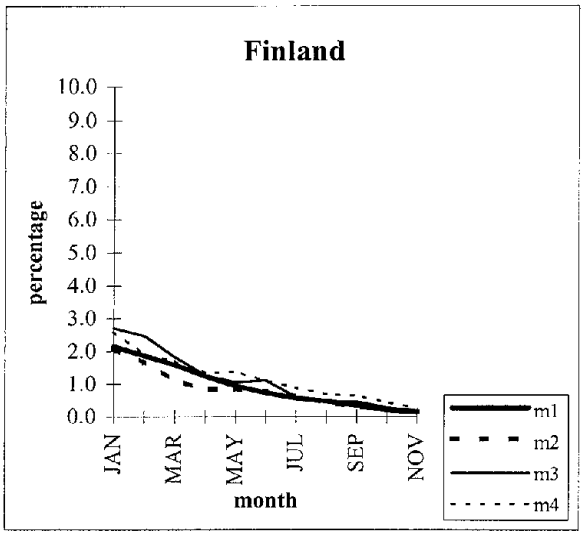
1. Mean absolute percentage forecast error, 1981-1995
Live births

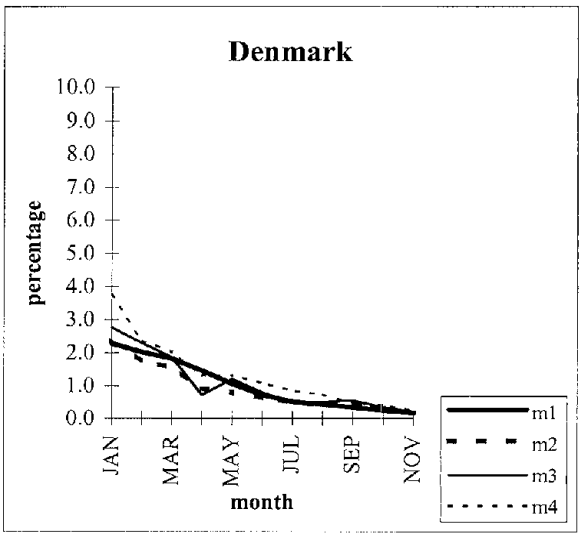












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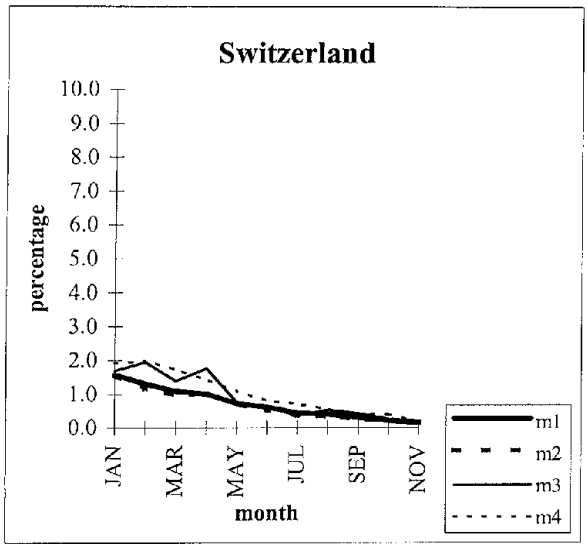
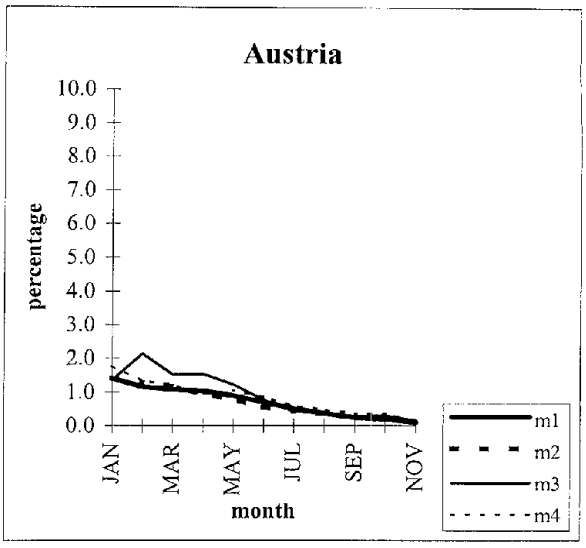
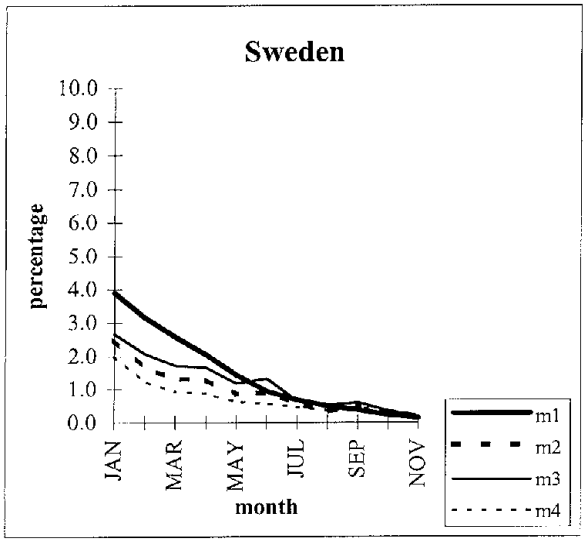
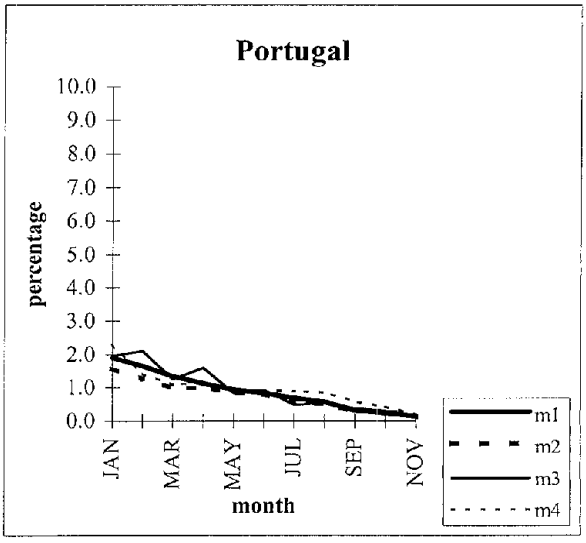
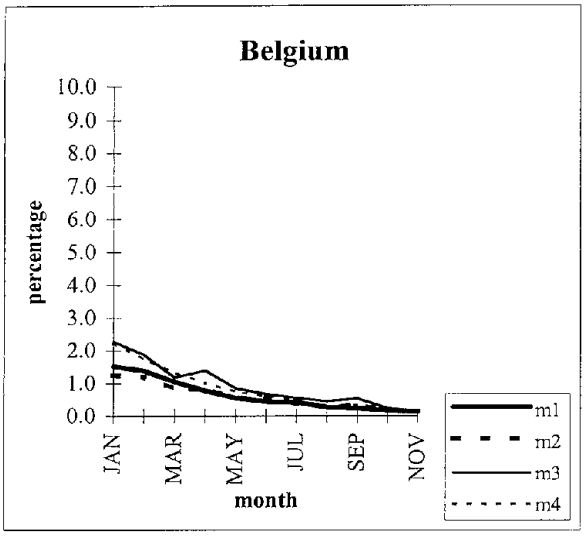
1. Mean absolute percentage forecast error, 1981-1995
Live births

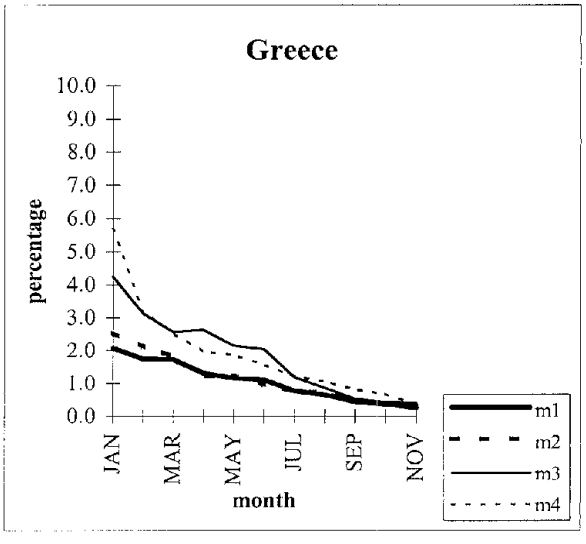












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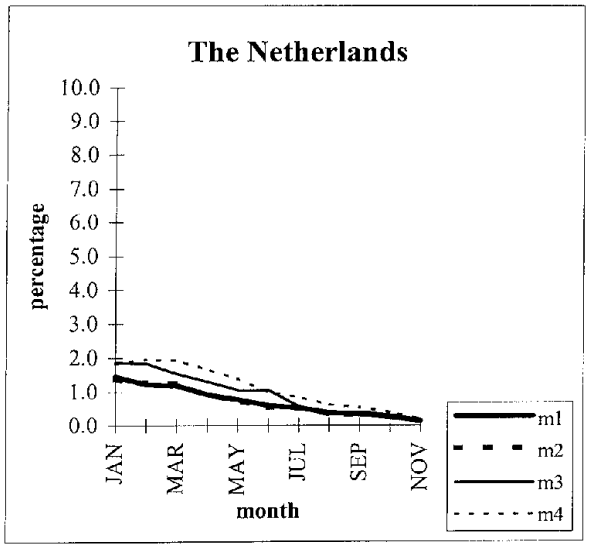
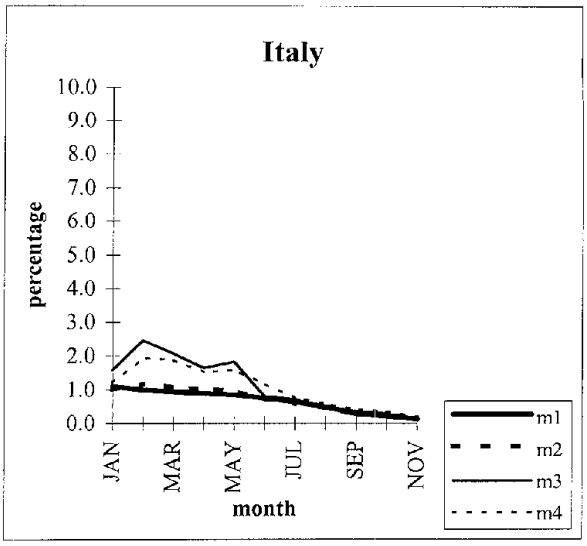
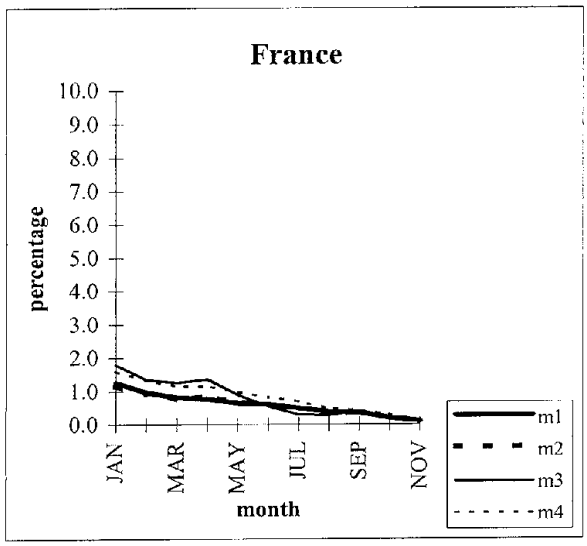
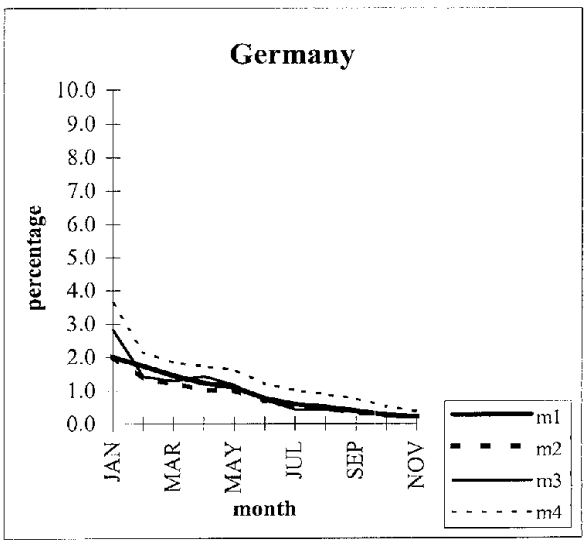
1. Mean absolute percentage forecast error, 1981-1995
Live births

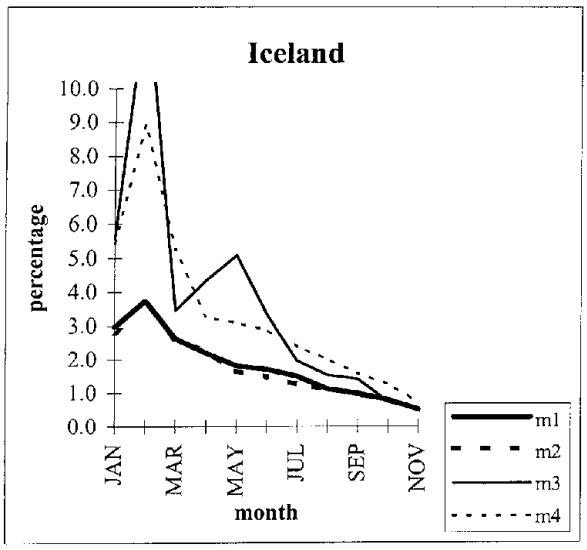


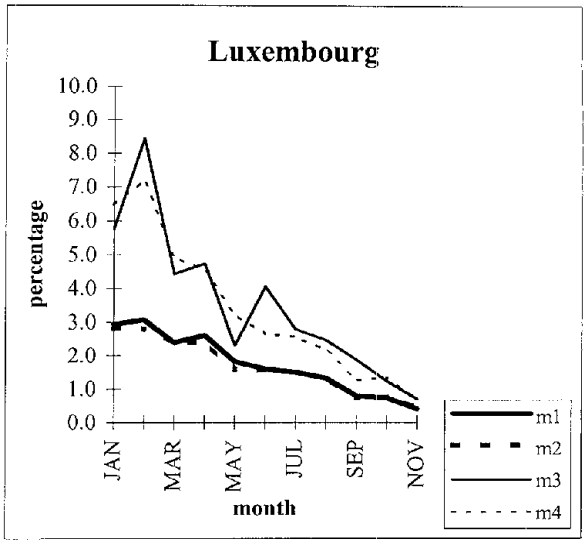


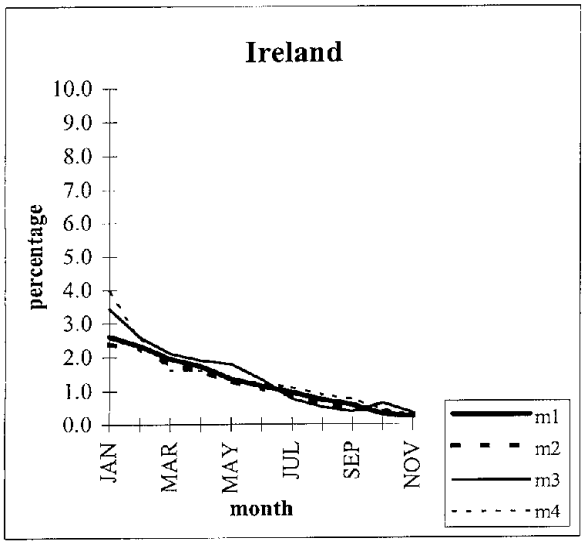


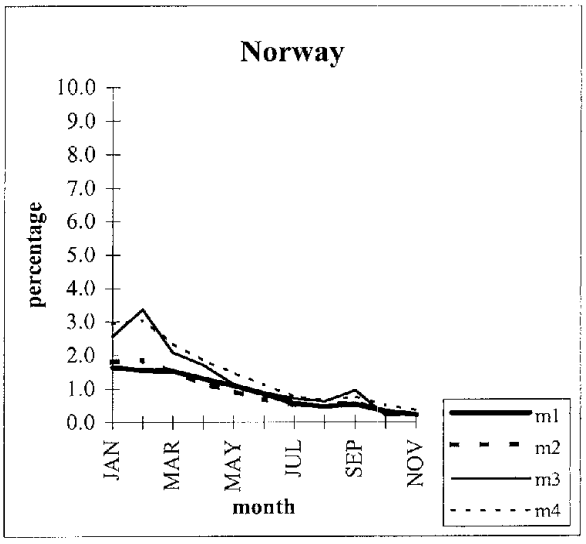


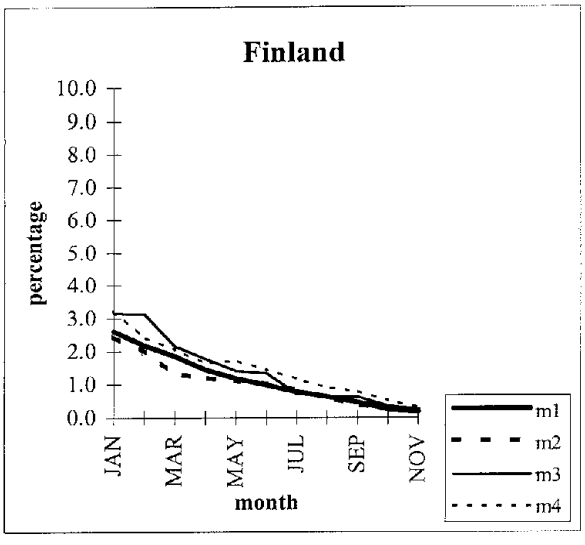
2. Root mean square percentage error, 1981-1995
Live births

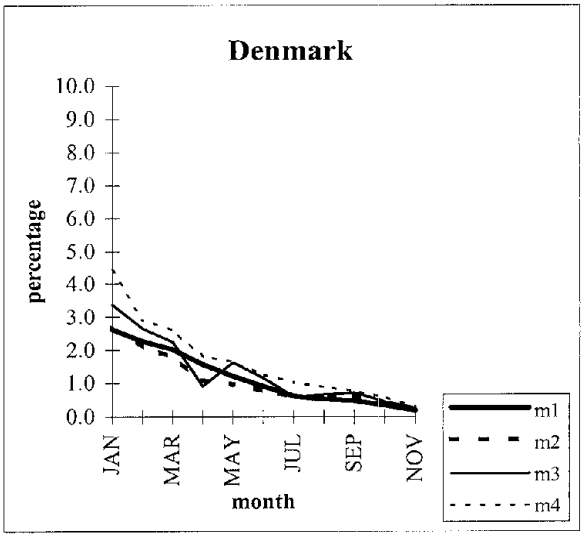












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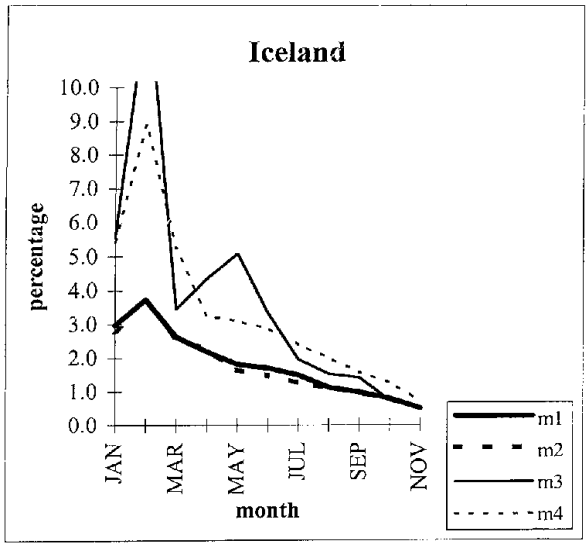
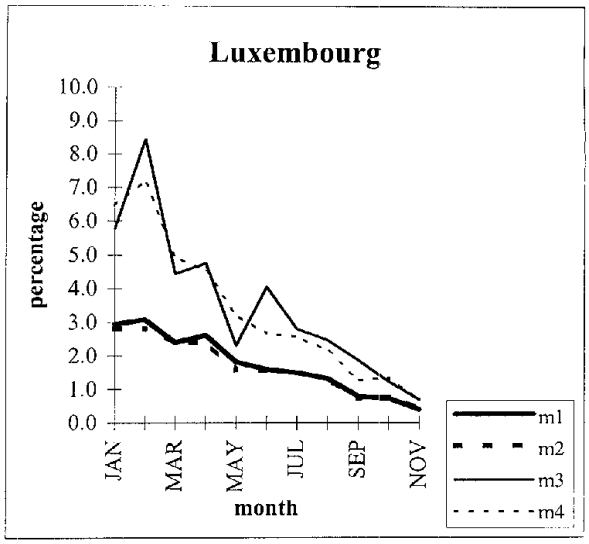
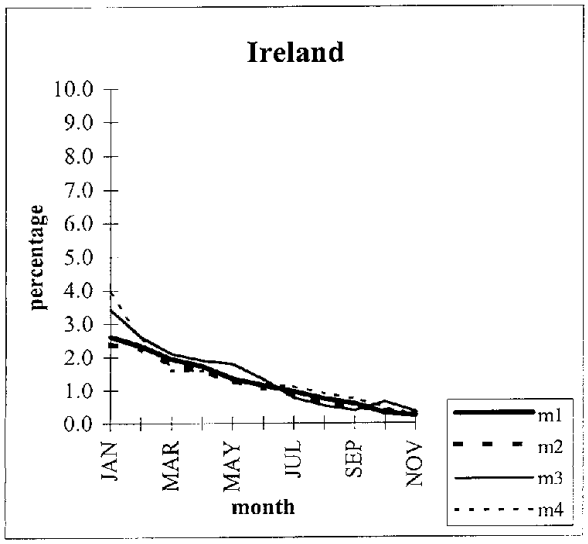
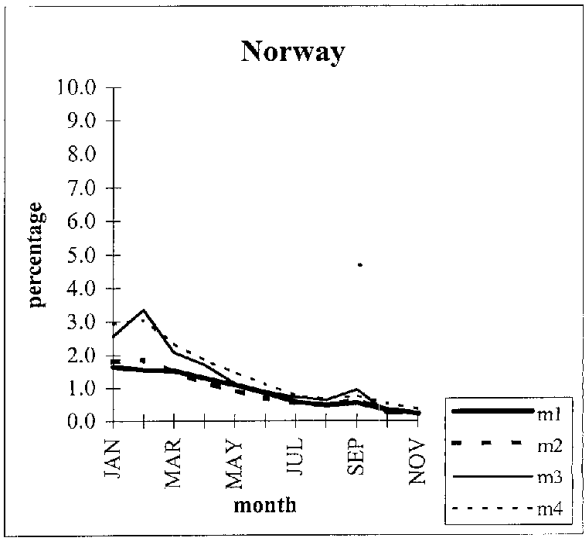
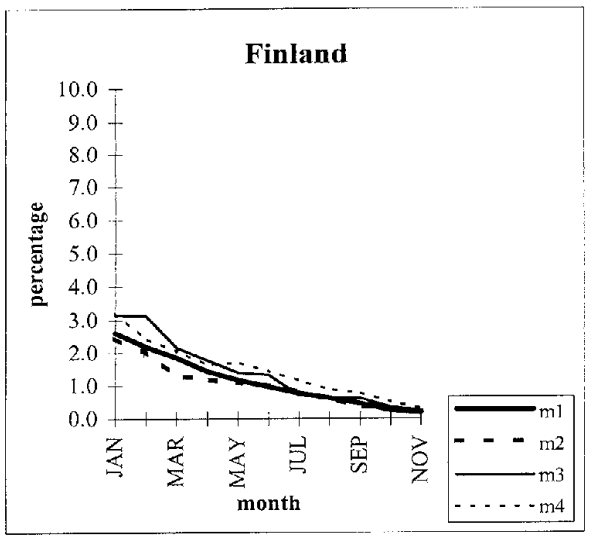
2. Root mean square percentage error, 1981-1995
Live births

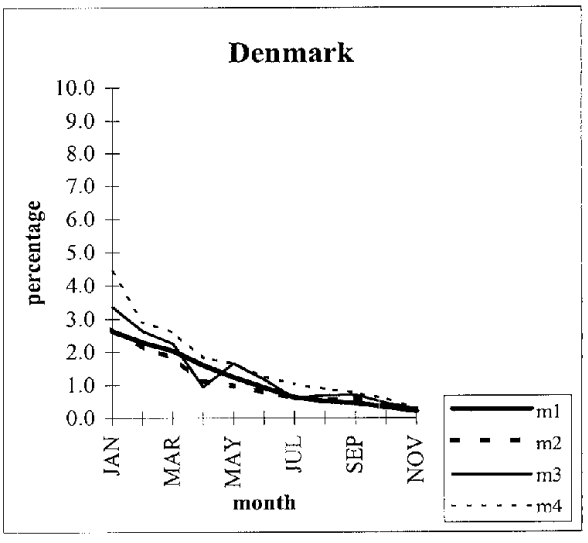












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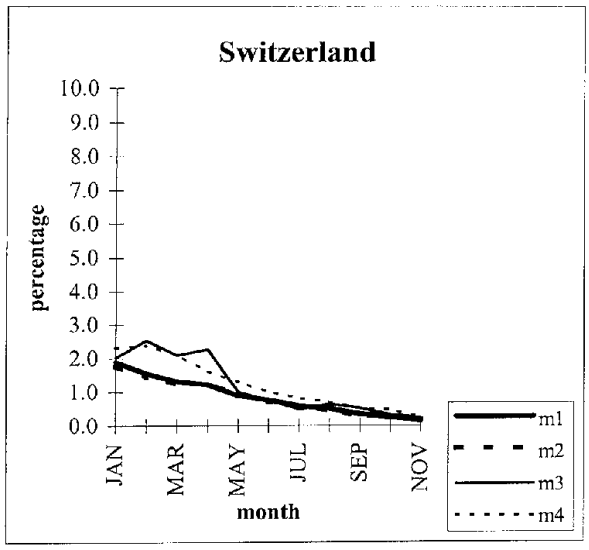

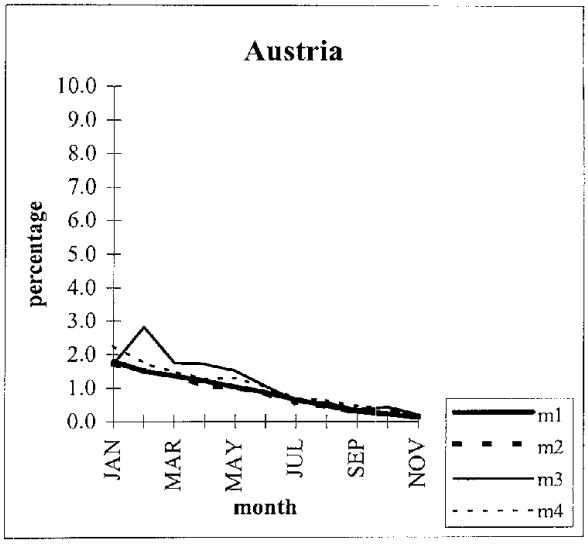

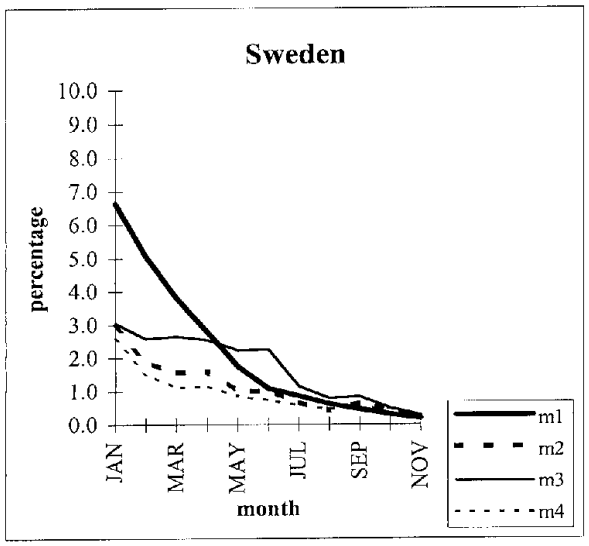

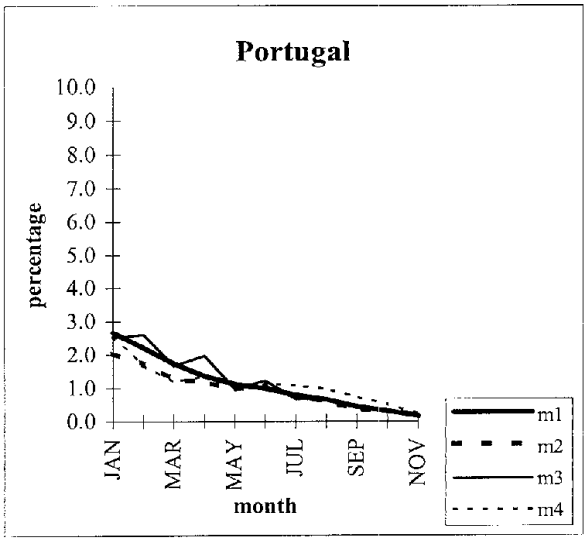

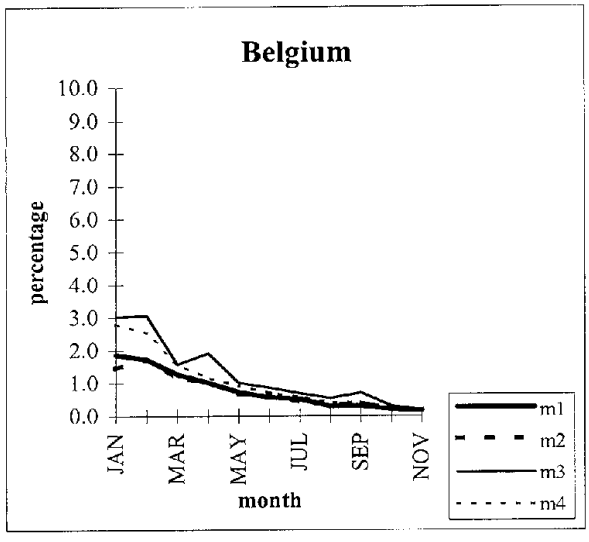

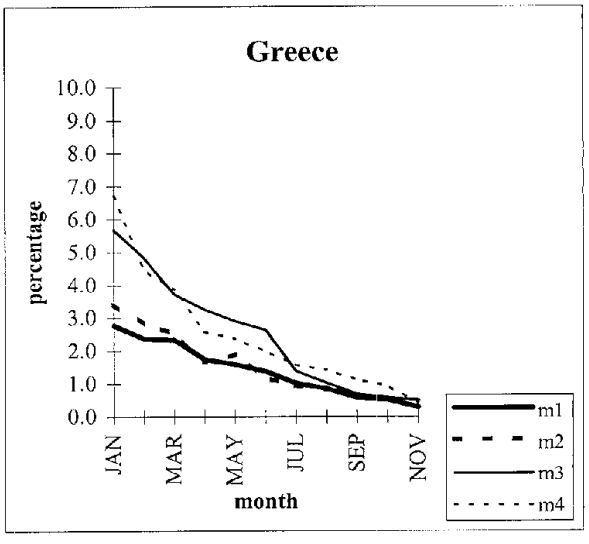

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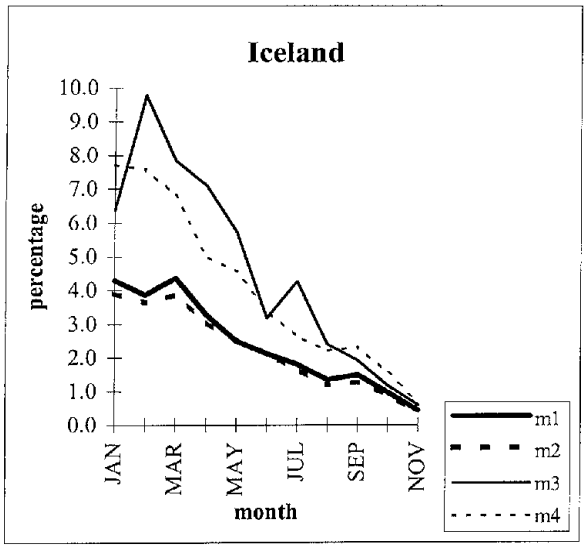

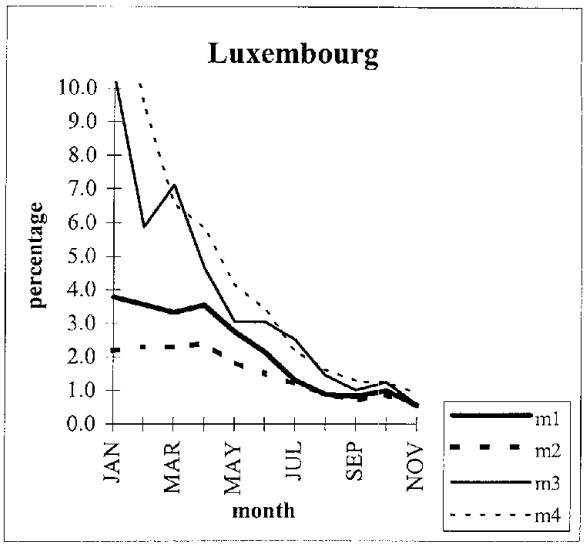

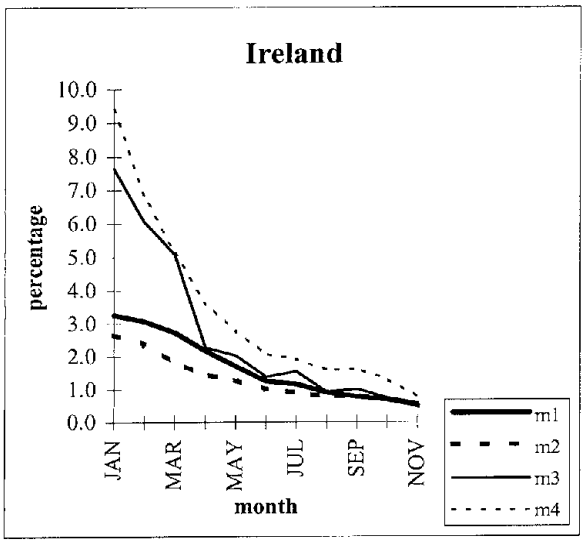

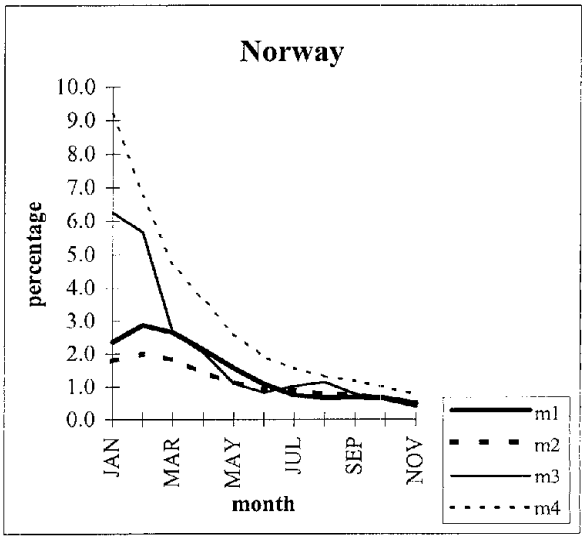

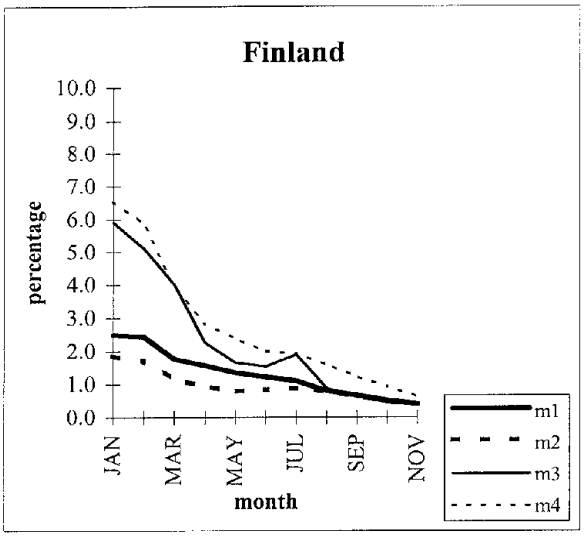

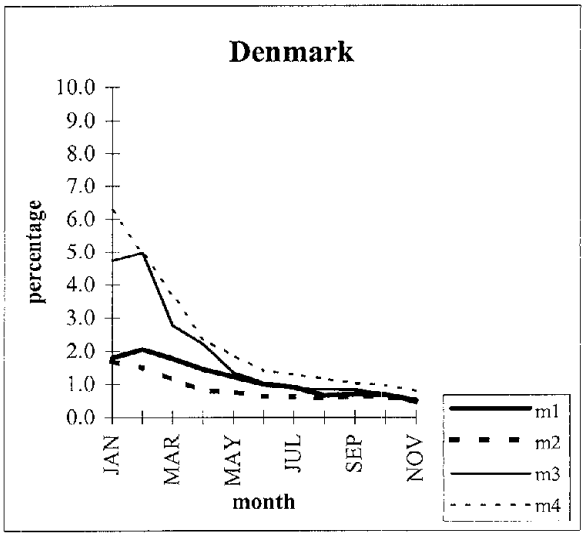

3. Mean absolute percentage forecast error, 1981-1995
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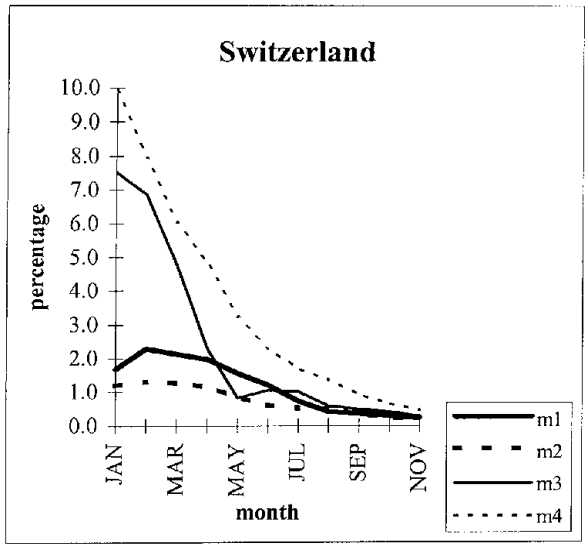

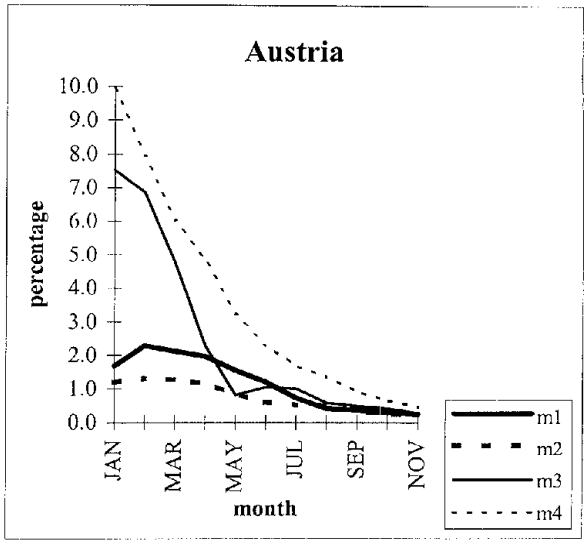

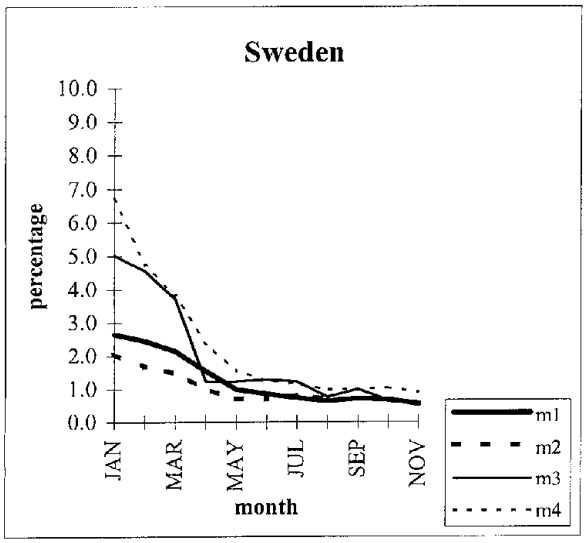

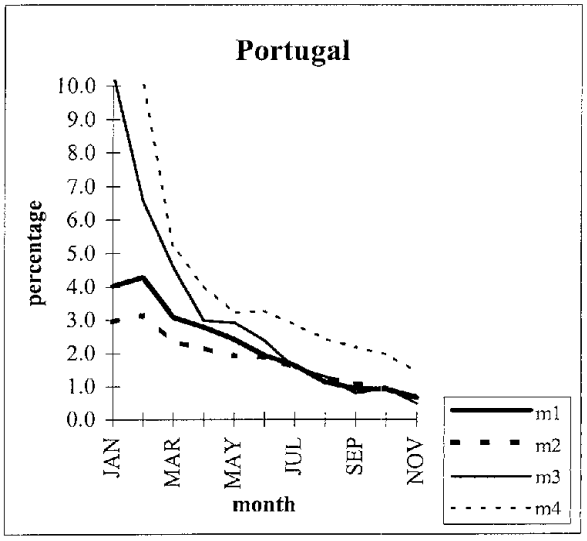

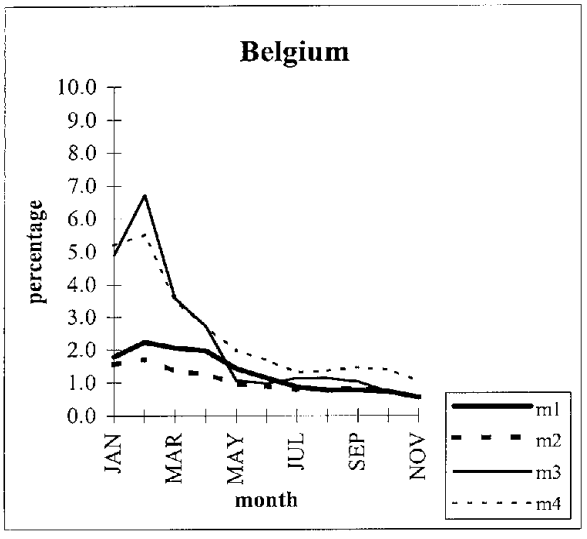

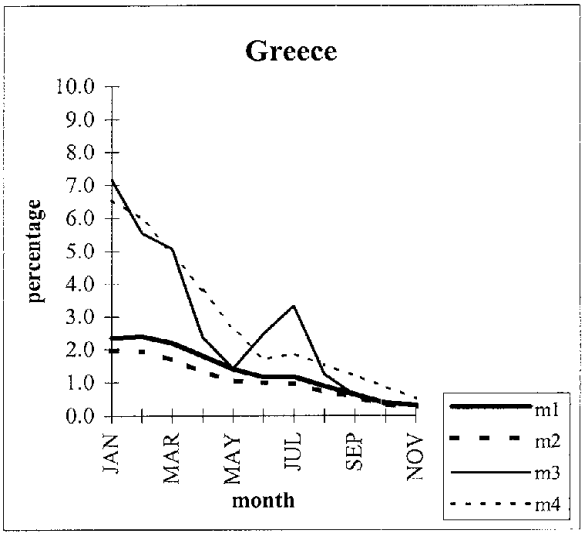

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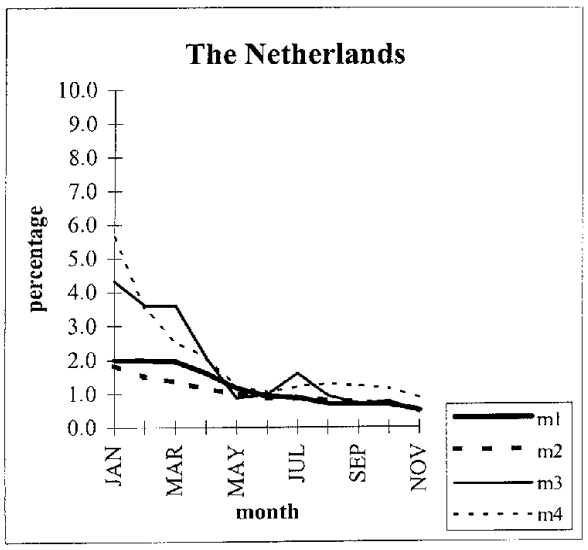

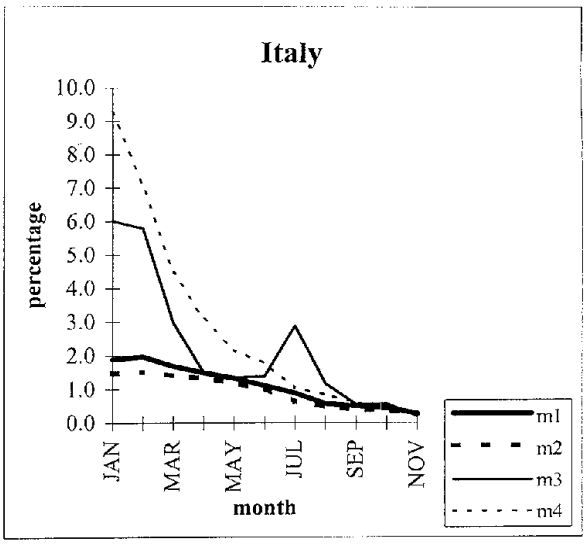

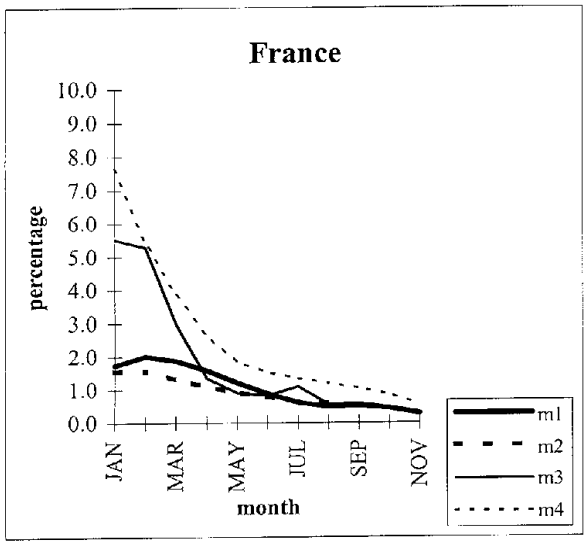

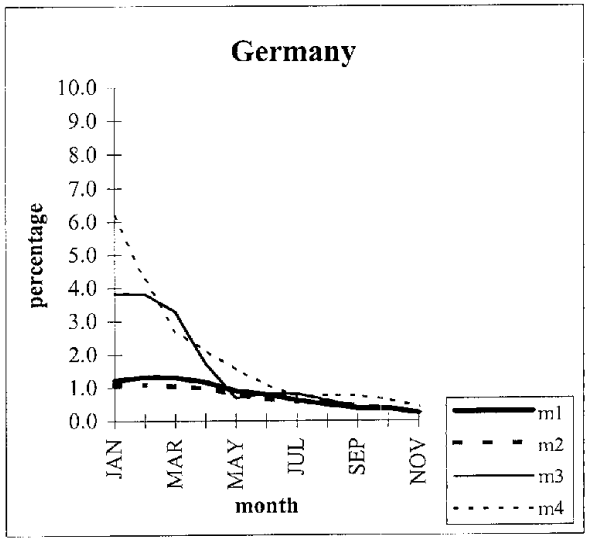

4. Root mean square percentage error, 1981-1995
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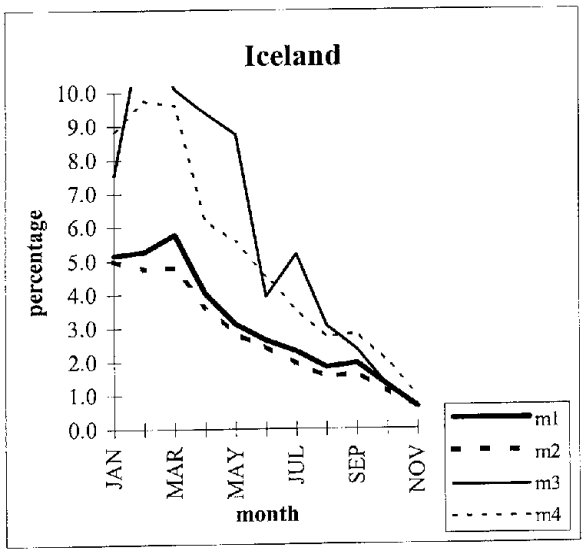

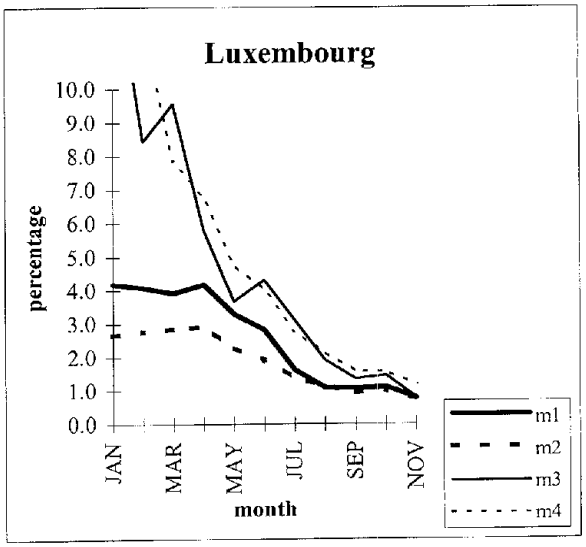

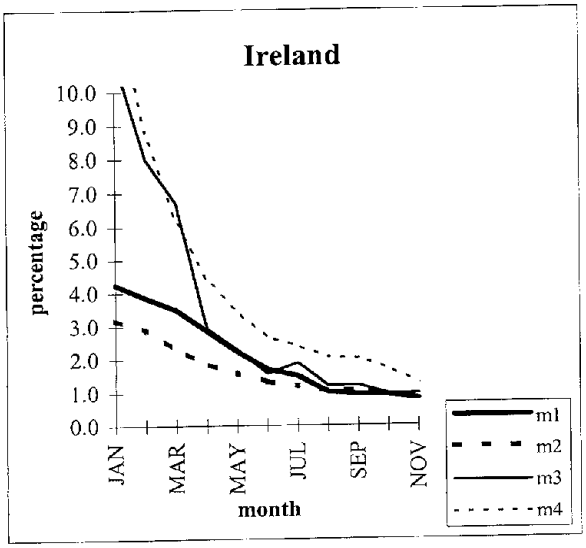

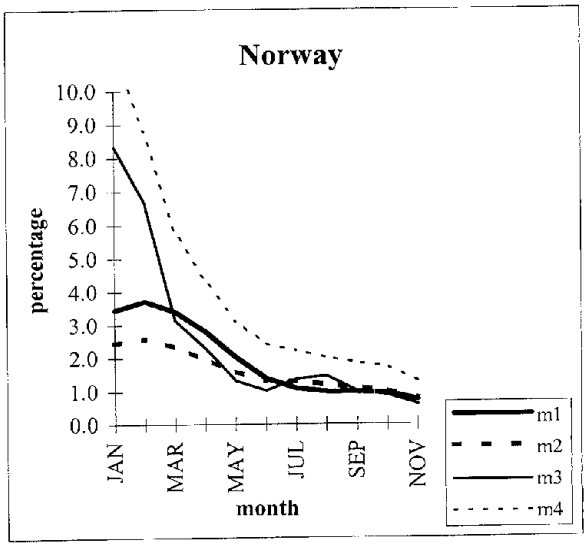

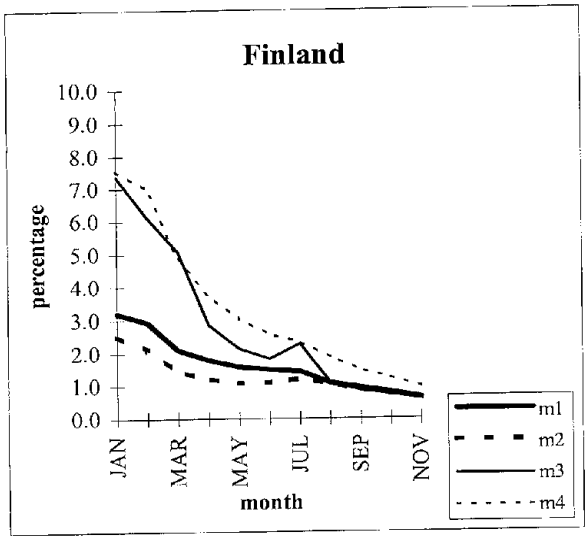

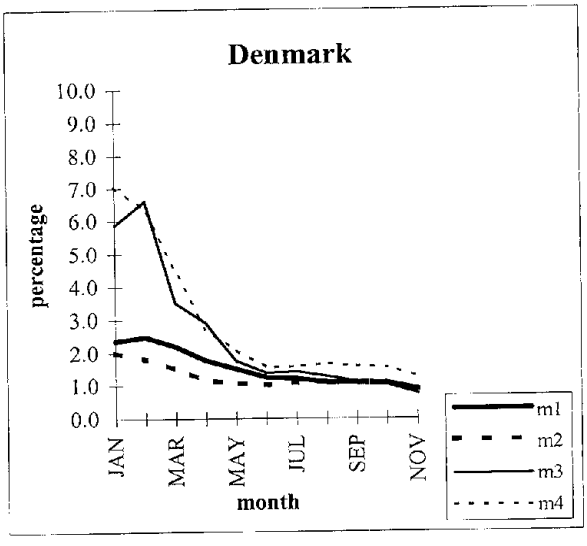

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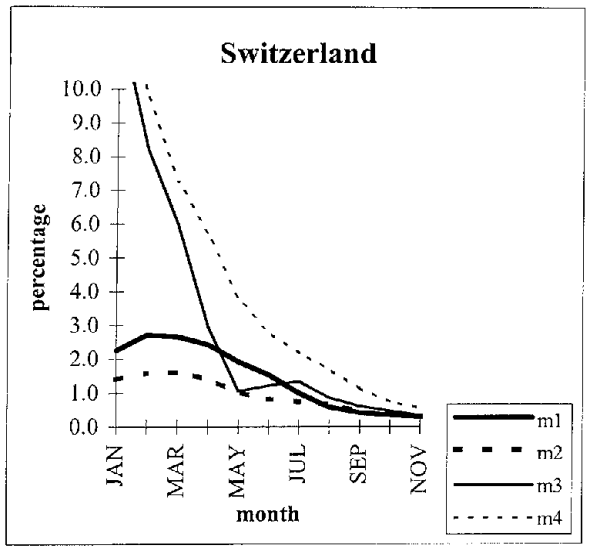

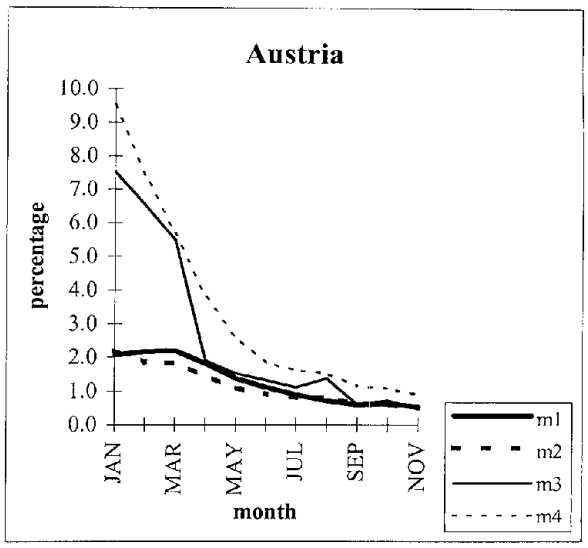

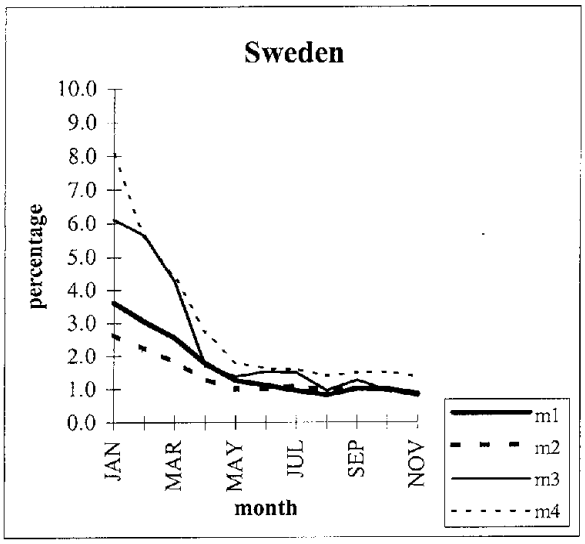

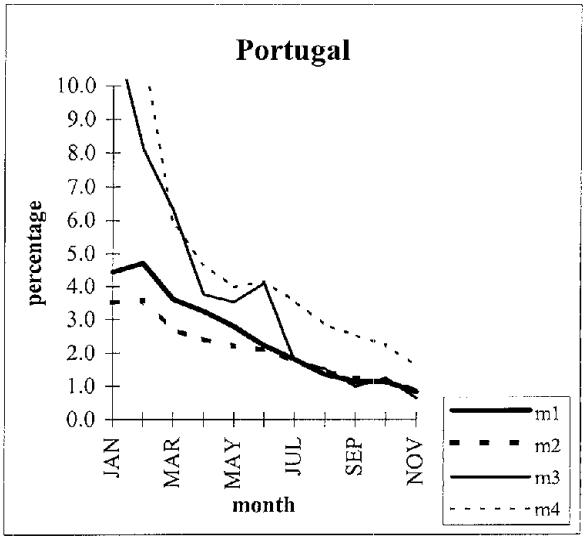

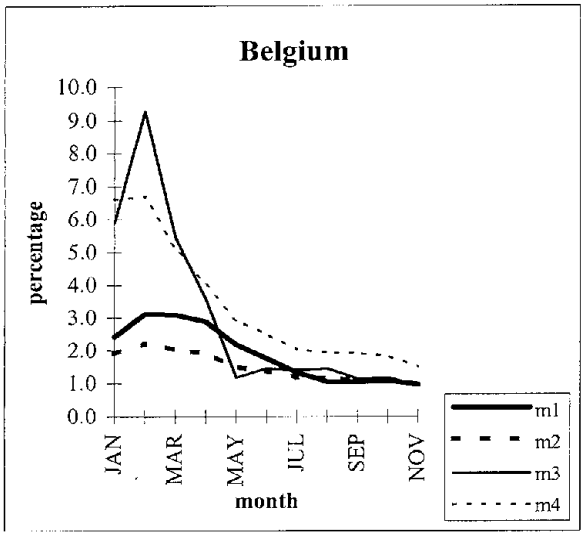

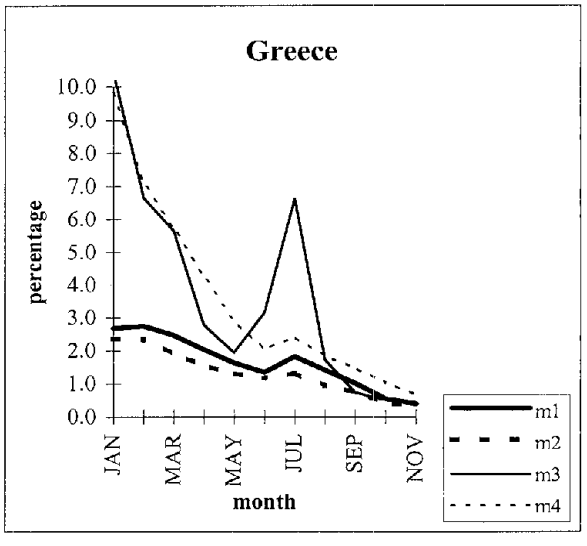

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