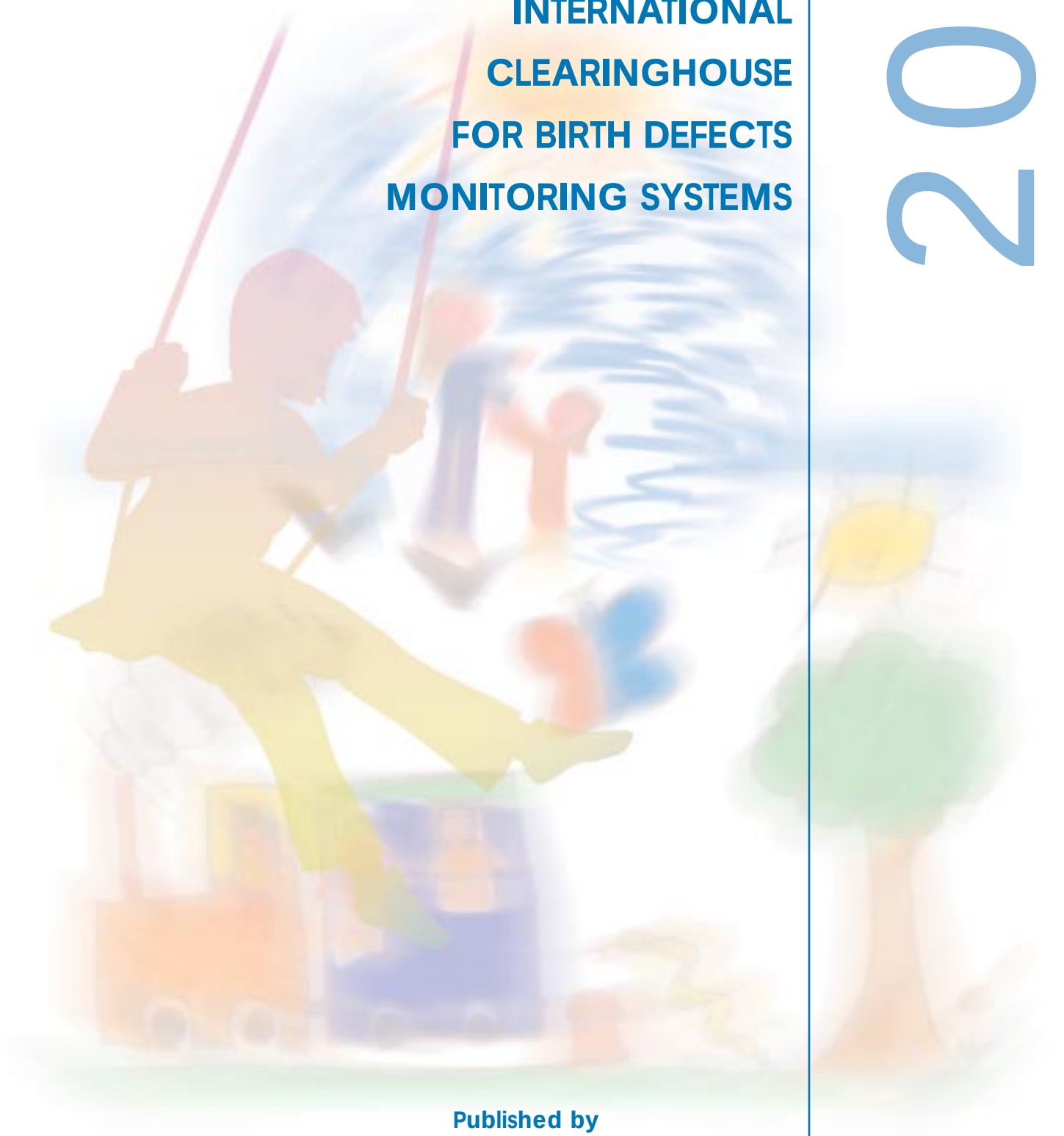
ANNUAL REPORT

with data for 2000

2002

INTERNATIONAL CLEARINGHOUSE FOR BIRTH DEFECTS MONITORING SYSTEMS



Published by
THE INTERNATIONAL CENTRE FOR BIRTH DEFECTS
Via Pilo Albertelli, 9 - 00195 Roma - Italy

THE INTERNATIONAL CLEARINGHOUSE
FOR BIRTH DEFECTS MONITORING SYSTEMS

A non-governmental organisation in official relations
with the World Health Organization

ANNUAL REPORT

2002

with data for 2000

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Dedicated to Richard W (Dick) Smithells

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ISSN 0743-5703

The International Centre for Birth Defects
acknowledges the financial support the Centers for Disease Control and Prevention, Atlanta, USA (CDC Grant no. U50/CCU207141-10); and the Department of Pediatrics, Catholic University, Rome, Italy.

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INTERNATIONAL CLEARINGHOUSE FOR BIRTH DEFECTS MONITORING SYSTEMS ANNUAL REPORT 2002

Elisabeth Robert
Chairperson
International Clearinghouse for Birth Defects Monitoring System (ICBDMS)

This is the 2002 Annual Report from the International Clearinghouse for Birth Defects Monitoring Systems (the Clearinghouse). Regular readers will find in this report the usual sections with update information related to surveillance of birth defects and research projects.
The Clearinghouse was established in 1974 to encourage an international exchange of data and collaborative research in the field of birth defects. It is an independent, non-profit organisation, that was accepted in 1986 as a non-governmental organization in official relations with the World Health Organization. If the reader wants further information related to a specific monitoring system, or on the past Clearinghouse activities, he/she can find it on our website at www.icbd.org. The **International Centre for Birth Defects (ICBD)** located in Rome, Italy, serves as the headquarters of the Clearinghouse, coordinating the monitoring activities and collaborative studies, regularly producing monitoring reports and newsletters, and publishing this Annual Report.

The major activity of the Clearinghouse is to monitor changes in birth defects prevalence and with all programs combined monitors a very large population amounting to almost 3 million births each year. At this time, there are 36 participating programmes representing 34 countries spread across the five continents. One program (South America) includes hospitals in 12 different countries, while several countries (Canada, China, France, Italy, USA) are represented by 2 or more programmes.

Tabulations are presented in this report for each member program and for selected malformations. This Report includes monitoring data for 2000, as well as reports from the various scientific committees, research projects and special monitoring activities like ongoing surveillance of multiple malformations and possible associations between drug exposure during pregnancy and occurrence of malformations.

Our international collaborative research is performed on a very large scale, and the problems faced because of heterogeneity of the various registries are counterbalanced by the beauty of diversity.
The final results are regularly published in international scientific journals. The references are given on page 203.

Entering the 21st century, we are seeing change in the world at an ever-increasing pace; we all have considerable challenges, but many opportunities are available. Because we may feel a bit threatened by changes over which we have little control, I propose to reflect on the motto expressed by the founder of the Porsche company in Germany: it's easy to make changes, but difficult to make improvements. This seems to me a conservative approach and if it worked well for cars, it might work well too for birth defects surveillance and research. It is a time not only for innovation but also for prioritization and improvement.

Pierpaolo Mastroiacovo
Director International Centre for Birth Defects

A word on the structure of the report
Because of collaborative monitoring and research are the most important functions of the ICBDMS, summaries of these activities open this report. Descriptions of the individual programmes and tabulations of their data follow.

Emphasis is on the year 2000 data and their relation to past years. Thus, for each programnme, we present one table with data for 2000 followed by a second table with time trend for for the period 1974-2000.

Interpretation of the tables can be challenging. The reader should be sure to read the introductory chapter describing each programme (pages 41-43) and the notes to interpretation that follow . Although the data layout allows for comparisons between programmes, interpreting variations in rates across programmes must take into account the considerable differences across programs, including diversity in methodologies, definitions (eg, of stillbirths), and laws (eg, relating to pregnancy termination).

This year we have changed the way we present time trends. We use bars to represent the birth prevalence, with light blue bars for livebirth (L) + still birth (S) rates, and black bars for the live (L) +stillbirths (S) + terminations of pregnancy rates (ToP). The blue line represents a three-year moving average of the live and still birth rates: the value shown for each year is the average of that year, the previous year and the following year.

A figure (page 116) summarizes the findings of annual monitoring conducted for year 2000 data. The computations were performed at the ICBD using the same methodology for all programmes. For each program we present the observed/expected (O/E) ratio for each of the congenital anomalies that were included in the collaborative monitoring activities.

ICBD - International Centre for Birth Defects
The International Centre for Birth Defects is the head office of the International Clearinghouse for Birth Defects Monitoring Systems (ICBDMS). It operated out of Bergen (Norway) from 1989 to 1991 and since 1992 out of Rome (Italy).

ICBD staff included Pierpaolo Mastroiacovo (director), Tatjana Dukic (coordinator/webmaster), Alessandra Lisi (statistician), Gian Luca Di Tanna (statistician), Michela Tripaldi (administrative assistant), Monica Rittler (consultant dysmorphologist). Aldo Rosano (coordinator/statistician until March 2002)

The monitoring function is the responsibility of individual programmes. The ICBD provides a mechanism for the exchange of data and publication of quarterly (internal) and annual reports. The ICBD also undertakes the direction, co-ordination and data analysis of other collaborative projects that are extension of the monitoring function, such as the multiple birth defects monitoring and the investigation of drug exposure in the first trimester of pregnancy.

During the last years, ICBD focused on several projects, including the completion of a World Atlas of Birth Defects, 1st and 2nd edition [1], a study on congenital malformation in twins [2], a study on the primary prevention strategies for birth defects [3], an investigation into the potential teratogenicity of antiepileptic drugs [4], a study of infant mortality due to birth defects [5] and an analysis of malformations associated with limb deficiencies [6].

Current activities include collaborative studies on several topics including the following:

- neural tube defects and implementation of policies of primary prevention in Europe granted by the EU commission, a collaborative study of neural tube defects, congenital heart disease, limb reduction defects (LRD) and oral clefts and strategies of primary prevention;
- a survey on the prevalence of 677C-T genotype of the MTHFR gene in a representative sample of populations from different countries;
- a study of the association between clefts and use of corticoids during the first trimester of pregnancy ,in collaboration with France-CE registry; study of the sex ratio of malformations;
- a study of gastroschisis.

We are also planning other studies, including one on the relation between folic acid/folate intake and twinning.

ICBD also maintains a public web site (www.icbd.org) with information about the Clearinghouse and its members, extracts of Annual reports, a list of collaborative publications, and a list of links has been available since March 1999.

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3.1 Classification

Claude Stoll (France Strasbourg)

Members

Claude Stoll (France Strasbourg)
Brian Lowry (Canada Alberta)
Sebastiano Bianca (Italy: ISMAC)
Paul Merlob (Israel: IBDMS)

Many people continue to be confused with classification and coding, others state that any classification should start with ICD-10 or ICD-10/BPA-10. ICD is a useful clinical tool and nothing more. For malformation monitoring we must rely on clinical descriptions. Therefore we must separate coding and classification.

Coding

BPA-10 is now available on diskette but there is no conversion available from BPA-9 to BPA-10 yet. Therefore the Classification Committee has to provide a conversion from ICD-9 to ICD-10. After many years of hard work the conversion from ICD-9 to ICD-10 is now complete and will be available on the ICBDMS web. The next step is to achieve on automated match from ICD-9 to ICD-10. This will be done by ICBD members. Another step will be to improve ICD-10 as perhaps we will never have ICD-11 or not have it for many years. The Committee proposed that all ICBDMS members use ICD-10 starting January 1st, 2002.

Classification

Regarding the classification of congenital anomalies the committee was enlarged by other Clearinghouse members and outside experts. This should help to develop a uniform classification system and unify the data, allowing for easier comparisons. This proposal needs communication with many other experts from different specialties such as embryology, ultrasonography/radiology, pediatrics, cardiology, urology, orthopedics, etc. it needs the support of all the Clearinghouse members who want to be involved.

The Classification Committee proposed to divide the malformations in to 5-10 groups and to start with limb defects. As a first step a meeting was organized with a few experts from inside and outside the Clearinghouse and EUROCAT. This small group of experts agreed on a proposed classification, which was improved by correspondence with other experts. After circulation, final approval of this classification will be obtained and a pilot study will start. This meeting, which was funded by the Clearinghouse, was held in Strasbourg on March 22-23, 1996 and culminated in a proposal for a new classification of limb defects.

The Classification Committee proposed to evaluate this new classification in an epidemiological and genetic way. The participating Programs will cover a large population. Ascertainment of cases will be based on the use of multiple sources of information and will include both live births and stillbirths. Cases which had prenatal diagnosis performed by CVS will be excluded. The exact localization of the limb malformation will be identified according to the new ICBDMS classification. All cases will be classified by one group thus avoiding inconsistency between centers. Analysis will be done to evaluate this new classification. As many programs were unable to send data the evaluation will be limited, however it will show that the classification does work. The classification was published in the American Journal of Medical Genetics, 1998, 77:439-441.

Eduardo Castilla, who is in charge of the classification of the digestive system, collected coding systems, which were in use in different ICBDMS programs in order to assess how the data are collected and how a classification of this field can be developed. He doesn't think a multidisciplinary team is needed. A small number of embryologists and pediatric surgeons could provide proposals to the committee. A problem is whether the classification should be on an etiological basis or on a pathogenic and anatomic basis.
The Classification Committee agreed that the anatomic approach is more relevant. Therefore E. Castilla proposed a classification of the digestive system, which was circulated. Now, this classification needs evaluating by some Registries as it was done for limb defects.

Paul Merlob recently proposed a classification of male and female genital malformations. This will be circulated and must now be evaluated. Jürgen Spranger was approached regarding musculo-skeletal classification. He agreed to participate in such an enterprise and a meeting will be organized in the future.

Two other classifications namely central nervous system anomalies and congenital heart defects will be developed by ICBDMS members.

Proposal for Research

Undertake studies to evaluate the new classification systems proposed by ICBDMS in an epidemiological and genetic way.

The Committee proposed to compare the three classifications available with ICD-10 coding and also to prepare ICD-11. With regard to this last point the chairperson of ICBDMS wrote a letter in October 2001 to the Director General of WHO asking for information regarding the status of ICD-11 and requesting that members of ICBDMS be allowed to participate in the next revision. We are still waiting for an answer.

3.2 Prenatal Diagnosis

Guido Cocchi (Italy: IMER)

Members

Guido Cocchi (Italy: IMER)
Beverley Botting (England and Wales)
Catherine De Vigan (France: Paris)
Hermien De Walle (Northern Netherlands)
Fumiki Hirahara (Japan: IAOG)
Antonin Sipek (Czech Republic)

The progressive increase in the use of prenatal diagnosis screening or procedures followed by elective termination has affected the birth prevalence of congenital defects that can be detected prenatally. The epidemiological impact of this has been evident in all monitoring programmes where prenatal diagnosis is available and elective termination is legal.

In order to evaluate the magnitude of this problem and to collect information on the policies and practices in each country a committee on Prenatal Diagnosis was set up in 1994. This committee asked ICBDMS Program Directors to provide information on elective terminations of Down Syndrome (DS) starting from 1993 data. The information has been collected to determine the number of cases aborted among the total number of cases registered. For each terminated case we requested: 1) maternal age, 2) technique of prenatal diagnosis performed (Chorion Villus Sampling, Amniocentesis, Cordocentesis), 3) Karyotype and 4) gestational age (wks) at the diagnosis and at the termination.

The results for 2000 are on pages 193-197 of this Annual Report, emphasizing the high percentage of terminations and also the variability among countries in the proportion of terminated cases. An analysis was started to determine the temporal trend of specific items showing that the increased use of these procedures leads to a reduction in the birth prevalence.

After 8 years of study the results confirm progressive improvement in the techniques for routine screening, large variability among countries in the techniques used (with a preponderant use of amniocentesis), variability in the access to advice regarding these techniques, and differences in law relating to elective termination. The interest of Programme Directors (17 participants) and the informative results suggest that the work of this Committee should continue for the next year with the support of the Centre in Rome by analysing the impact of prenatal diagnosis on the epidemiology of DS.

The project on the impact of prenatal ultrasound detection of congenital heart defects (CHD) started in 2001. For this study a specific subcommittee, chaired by Catherine De Vigan (France: Paris), was appointed in Cardiff during the XXVII Annual Meeting of the ICBDMS. The results of the first two years (1999-2000) of surveillance will be presented at the Annual Meeting in Atlanta.

In the year 2000, 12 registries, covering a total of 1, 250, 000 births, took part in the survey. The mean prenatal diagnosis rates were 31% for transposition of great arteries (TGV), 39% for Tetralogy of Fallot (ToF), and 21% for coarctation of aorta (CoAo). These rates were lower when only isolated cases were considered (27, 26, and 18% respectively). Large variations between registries were observed, which were at least in part due to differences in maximum age at diagnosis (between 1 week and 1 year) and in ultrasound policies. Because data on survival were incomplete (high percentage of missing data for some registries), the collection of data on survival has stopped. The project continues for prenatal diagnosis of isolated cases of TGV, ToF, and CoAo, and starting in 2002, hypoplastic left heart has been included.

4.1 Prevention strategies based on periconceptional folic acid supplementation – CDC project

Pierpaolo Mastroiacovo (ICBD, Rome), Lorenzo D. Botto (USA: Atlanta)

Goals and scope

The International Center for Birth Defects (ICBD) coordinated 18 programs representing 23 countries in collecting, evaluating, and analyzing data on strategies for the primary prevention of birth defects using folic acid. In particular the study focused on four issues:

1. folic acid policies, their content and their variation;
2. the determinants of such policies, suggested by key players in policy making;
3. the implementation of the policies, estimated by surveys of folic acid use;
4. the impact of such policies, gauged by monitoring of birth defect rates.

In addition, the project group participated in a feasibility study of an international blood folate survey. The study was made supported by cooperative agreement No. U50/CCU207141-0 from the US Centers for Disease Control and Prevention (CDC).

Study participation

In total, 18 programs representing 23 countries participated in the study. These include 16 ICBDMS registries, representing 21 countries, and 2 registries that are not members of the ICBDMS (Malta and Switzerland).

Registry name	Program Director
Canada: National	ID Rusen
England and Wales	Beverly Botting
Finland	Annukka Ritvanen
France: Central East	Elisabeth Robert
France: Paris	Catherine de Vigan
France: Strasbourg	Claude Stoll
Hungary	Csaba Siffel
Ireland: Dublin	Robert Mc Donnel
Israel: IBDMS	Paul Merlob
Italy: BDRCam	Gioacchino Scarano
Italy: Tuscany	Fabrizio Bianchi
Malta	Miriam Gatt
Northern Netherlands	Hermien de Walle
Norway	Lorentz Irgens
S. Africa: SABDSS	David Bourne
S. America: ECLAMC	Eduardo Castilla
Switzerland	Marie-Claude Addor
USA: Atlanta	David Erickson

Summary of main activities

The main activities conducted as part of this study include the following:

Description and international variation of folic acid policies. Partners provided detailed information on national or local folic acid policies. Such information included the type and timing of recommended folic acid use, the target population, and any steps taken towards flour fortification. A report on this aspect is being prepared for publication.

Collection and analysis of interviews administered to policy makers and technical experts. Partners interviewed national and local personalities involved in public health policy-making (13 interviews) as well as public health and clinical professionals (14 interviews).

Assessment of folic acid use through surveys. Publications from the scientific literature were analysed. In several countries, study partners conducted a survey among women on the use of folic acid. The survey instruments were developed with the help and under the supervision of ICBD.

Evaluation of trends of selected birth defects in relation to folic acid policies. ICBD collected and analysed data on over 80,000 cases of birth defects from a birth population in excess of 18 million births from 20 countries.

Assessment of feasibility of international blood folate surveys. Partners participated in a feasibility study on blood folate surveys. The results provide some insights into the challenges and opportunities involved in such surveys, fro, technical to legal issues.

Report writing is in progress for all sections of the study. ICBD is participating in or leading the preparation of papers based on the project activities. These papers will be submitted for publication in the scientific literature.

4.2 MTHFR– The population prevalence of the 677CT allele of the 5,10 methylenetetrahydrofolate reductase (MTHFR) gene among newborns: geographic, ethnic, and gender variations in an international survey

Lorenzo D. Botto, for the MTHFR study group

Since its biochemical characterization in 1991[1] and its genetic identification in 1995[2], the 677CT or thermolabile allele of 5,10 methylenetetrahydrofolate reductase (MTHFR) gene has been the focus of increasing interest by researchers worldwide and the subject of already more than 500 reports in the PubMed database. Such remarkable interest likely reflects the expanding spectrum of common conditions whose risk has been associated, with varying degrees of certainty, with the 677CT allele, including birth defects, pregnancy loss, pregnancy complications, certain cancers, adult cardiovascular disease, and some psychiatric disorders.[3-8]

It has been noted that several of these relations still remain unconfirmed or controversial.[4] Furthermore, their clinical and public health impact, though potentially considerable, are unclear. In assessing both issues—the etiologic role of the allele and its impact in the population—it becomes helpful, if not indispensable, to gather detailed and unbiased information on the distribution of the allele and associated haplotypes across geographic areas and ethnic backgrounds.[9] Such information can provide truly population-based reference groups for association studies, and can help estimate the population impact by providing measures of attributable fraction of the associated haplotypes.[9] In addition, valid population estimates can help population geneticists describe the genetic history of the allele and, together with other data, assess the origins and selective pressures leading to geographic and ethnic variations in the 677CT allele frequency.[10] However, much current information on the distribution of the allele in different populations is based on convenience or undefined samples, and as such approach has limitations in regard to internal and external validity.[3]

Our goal in this study was to generate well-defined and representative samples of newborns and describe the geographic, ethnic, and gender variations in distribution of the 677CT allele. The study will present findings based on more than 7,000 newborns from 15 areas around the world.

The study was conducted under the auspices of the International Clearinghouse for Birth Defect Monitoring Systems (ICBDMS) and was coordinated through its head office, the International Center for Birth Defects. The areas included in the study were a subset of those covered by some of the birth defects monitoring programs that are part of ICBDMS.

Sample selection was a key aspect of the study. Each program, in consultation with the coordinating group, identified a population and a sampling approach. Although a variety of approaches were used to sample efficiently well-defined populations, an explicit attempt was to use probabilistic rather than convenient sampling.

The study was made possible by the collaboration of many distinguished researchers worldwide, some of whom are recognized here:

Europe, Russia, Middle East: G. Scarano (Italy, Campania); S.Bianca (Italy, Sicilia); R. Tenconi, S.Bellato, L. Marcazzo (Italy, Veneto); M.L. Martínez-Frías,. E.Bermejo (Spain); C. Stoll (France, Strasbourg); A. Czeizel (Hungary); H. de Walle, P. van der Vlies, R.Hofstra, M.C. Cornel (Netherlands); A. Ritvanen, M. Renlund (Finland); G. Andria, A. Buoninconti, R. Brancaccio (Naples Laboratory, Italy); P. Mastroiacovo, T. Dukic (ICBD, Italy); L Joutchenko, L.Kavteladze (Russia); P. Merlob, Z. Gelman-Kohan (Israel).

Australia and Asia: B. Wilcken, P. Lancaster (Australia); Li Zhu, Zhu Huiping (China)

Americas: O. Mutchinick, M.A. López, L. Luna (Mexico); B. Lowry, F.Bamforth (Canada); M. Ramachandran, M. Gallagher, J. Rapier, J.D. Erickson, L. Botto (Atlanta, United States)

In addition, we gratefully acknowledge the contribution to sampling and testing of many other colleagues. The study was supported in part by grant U50/CCU207141 from the US Centers for Disease Control and Prevention.

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10. Rosenberg N, Murata M, Ikeda Y, et al. The frequent 5,10-methylenetetrahydrofolate reductase C677T polymorphism is associated with a common haplotype in Whites, Japanese, and Africans. Am J Hum Genet 2002; 70 (3):758-762.

4.3 Environmental and Occupational Risk Assessment (CEORA)

Lorentz M. Irgens (Norway)

Members

Lorentz M. Irgens (Norway)
Beverley Botting (England and Wales)
Hermien de Walle (Northern Netherlands)
Jíri Hóracek (Czech Republic)
Antonin Sipek (Czech Republic)

The work is based on the following concept: There is a general concern that a polluted environment may cause birth defects and other adverse perinatal outcome. However, monitoring systems exist that may provide data to clarify the issue. In 2001, a manuscript was prepared for submission to an international journal accounting for the data at hand in the participating countries and for the results of the analyses performed.

The analyses have followed a stratified strategy comparing rural/urban gradients between countries. This has been partially done since a pooled analyses is not justified (rural England and Wales is not equal to rural Norway), also the strategy probably increases the possibility of detecting a gradient as it covers a wider range of rural/urban variables. Separate data for the black belt in the Czech Republic are provided. The manuscript was (May 2002) circulated to the participants for comments and revision.

Relations with other Organisations

5

World Health Organization

The International Clearinghouse for Birth Defects Monitoring Systems (ICBDMS) is a non-governmental organisation in official relations with the World Health Organization. WHO is represented at Annual Meetings of the ICBDMS by Dr Victor Boulyzhenkov, Director of Human Genetics Program.
WHO supports the Annual Meeting of the ICBDMS. On September 1998 has been published World Atlas of Birth Defects – 1st edition in cooperation with Human Genetics Programme – WHO. The 2nd edition will be published this year. The aim of this second edition is to provide to the users tables and maps to illustrate the actual situation of congenital malformations (CM) on maternal-infant health in the world, using the data collected by the ICBDMS and EUROCAT throughout the period 1993-1998.

EUROCAT

EUROCAT (European Registration Of Congenital Anomalies and Twins) is the only international organisation other than the ICBDMS, which collects and publishes data on birth defects prevalence and undertakes collaborative research.

World Alliance of Organisations for the Prevention of Birth Defect

This organisation was established in 1994 on the initiative of the March of Dimes Birth Defects Foundation. The ICBDMS is a member organisation, and is represented at the Board of Directors.

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Australia

Australian Congenital Malformation Monitoring System

History:
National monitoring of malformations began in 1981, but not all States and Territories were collecting data at that stage. Subsequently, perinatal data systems have been introduced in all States and Territories. The programme became an associate member of the ICBDMS in 1982 and a full member in 1984.

Size and coverage:
All births in Australia are included, now more than 250,000 births annually. Coverage increased from about 50% in 1981 to 100% in 1986. Stillbirths of 20 weeks or more are registered. Data for Tasmania (about 6,000 births) were excluded from this report.

Legislation and funding:
State and Territory health departments, and birth defect registers in New South Wales, Victoria, South Australia and Western Australia, report data to the national monitoring system, which is funded by a grant from the Australian Institute of Health and Welfare, an independent health and welfare statistics agency in the Commonwealth Department of Health and Aged Care.

Sources of ascertainment:
Reports are obtained from birth notifications, death certificates, cytogenetic laboratories, autopsy reports, children's hospitals, and notifications of terminations of pregnancy.

Background information:
Data on births are obtained from State and Territory perinatal data collections and from birth and perinatal death registrations compiled by the Australian Bureau of Statistics.

Exposure information:
Except in South Australia, exposure information is not routinely recorded but has to be obtained ad hoc.

Address for further information:
Elizabeth Sullivan, AIHW National Perinatal Statistics Unit, The University of New South Wales, Sydney Children's Hospital, Randwick, NSW, 2031, Australia.

Phone:
61-2-93821014

Fax:
61-2-93821025

E-mail:
npsu@unsw.edu.au

Canada: Alberta

Alberta Congenital Anomalies Surveillance System

History:
This programme began in 1966 as a general Registry for Handicapped Children. This was disbanded in 1980 and continued as a surveillance programme for live and stillborn infants with congenital anomalies who were born in the Province of Alberta. The programme became an associate member of the ICBDMS in 1996.

Size and coverage:
All live and stillbirths in the province are covered which at present comprises about 40,000 births per year. The definition of stillbirth is 20 weeks or more or 500 grams or more. The vast majority of births occur in hospital (approximately 97%). In 1997 a special fetal congenital anomalies surveillance system was started to include those fetuses with congenital anomalies who were either spontaneously lost prior to 20 weeks or where there was termination as a result of prenatal diagnosis.

Legislation and funding:
Reporting is voluntary. The system is run by members of the Department of Medical Genetics, Alberta Children's Hospital/University of Calgary reporting to Alberta Vital Statistics and Alberta Health. Funding is from Alberta Ministry of Health.

Sources of ascertainment:
Reports are obtained from physician's notice of

birth, live birth and stillbirth registrations, death registrations and a special congenital anomalies reporting form (CARF) from hospitals. This is based on discharge diagnosis, including readmissions for any reason up to one year of age. Additional sources are speciality clinics, such as medical genetics and cytogenetics laboratories.

Exposure information:
None is routinely collected.

Background information:
Linkage studies are possible with other statistical data from Alberta Health.

Address for further information:
R. Brian Lowry, Department of Medical Genetics, Alberta Children's Hospital, 1820 Richmond Road S.W., Calgary, Alberta, T2T 5C7, Canada.

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1-403-9437370

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1-403-2280796

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Canada: British Columbia

British Columbia Health Status Registry (BCHSR)
Congenital Anomalies Surveillance Program

History:
The programme, as a full member of the ICBDMS, was established in 1952 as the Crippled Children's Registry. Until 1959 the programme had an age limit of 21, but this was removed in 1960 and the name was change to the Registry for Handicapped Children and Adults and included all familial conditions and congenital malformations. In 1975, the Registry's name was changed to the Health Surveillance Registry as risk registers for amniocentesis, rubella, hyaline membrane disease, and fetal alcohol syndrome were added. In 1991, the Royal Commission Report on Health Care and Costs contained a recommendation that Vital Statistics should develop and maintain a registry of individuals with disabilities to assist in the development of long-range plans and to monitor the changing needs of the population. Subsequently, in September 1992, amendments to the Health Act established the legislative mandate and responsibilities for the HSR. The Registry's current name, Health Status Registry, was acquired in 1992. In order to refocus the Registry's emphasis on children, the criteria for registration of individuals with long-term physical, mental and/or emotional problems was restricted to persons under the age of 20 years old, however registration of persons with genetic conditions was not age limited. By 2001 there were approximately 215,000 records in the Registry.

Size and coverage:
The registry covers all births in the province approximately 45,000 births annually including stillbirths with at least 20 weeks gestation or birth weight 500 grams or more.

Legislation and funding:
In 1992, amendments to the Health Act established the legislative mandate and responsibilities for the BC HSR.
Funding comes from the British Columbia Vital Statistics Agency.

Sources of ascertainment:
Sources include: Notice of Live and Stillbirth, Death registrations, Hospital Admission/Discharge Abstracts, Children's Hospital, Sunnyhill Hospital, UBC and Victoria General Medical Genetics Clinics, Child Development Centres, Health Regions, the Asante Centre for Fetal Alcohol Syndrome.

Background information:
The registry data are regularly matched to Vital Statistics birth registrations to obtain birth particulars of the registrants and maternal/paternal information, and also matched to death registrations to get the date of death and causes of death if the registered person was deceased.
The registry is also working on the collection of the medically terminated pregnancies due to congenital anomalies.

Exposure information:
Information on complications of pregnancy, labour or delivery is available on Vital Statistics birth registrations and environmental/occupational and drug/alcohol/smoking lifestyle related

information could be obtained from the death registrations for the deceased.

Address for further information:
Soo-Hong Uh, Health Status Registry, BC Vital Statistics Agency, 818 Fort Street, Victoria, BC, Canada, V8W 1H8

Web site:
http://www.vs.gov.bc.ca/stats/hsr/index.html

Phone:
1-250-9522567

Fax:
1-250-9522587

Canada National

History:
The program was started in 1966. The program was a full member until 1987, when it became an associate member. The program was discontinued as an associate member of the ICBDMS in the early 1990s, and reinstated its associate member status in 1996.

Size and coverage:
The system presently monitors about 280,000 births annually, which represents about 70% of all births in Canada. Stillbirths of at least 20 weeks of gestation are included.

Legislation and funding:
Reporting is based on an agreement between the Canadian Institute for Health Information, a no-profit organization, which collects and disseminates data on hospital admission/separation in Canada, and the central registry, which is run and funded by Health Canada. Alberta Congenital Anomalies Surveillance System and Manitoba provincial government also provide the two Canadian provinces' data.

Sources of ascertainment:
Cases are ascertained from hospital admission/separation summary records collected by the Canadian Institute for Health Information, or by Alberta Congenital Anomalies Surveillance System and Manitoba provincial government. Follow-up continues to one year of age.

Exposure information:
No exposure information is routinely collected in the central registry.

Background information:
Background information is based on hospital admission/separation summary records from the Canadian Institute for Health Information, or provided by Alberta Congenital Anomalies Surveillance System and Manitoba provincial government.

Address for further information:
I.D. Rusen, MD, MSc, FRCPC, Community Medicine Specialist, Division of Health Surveillance and Epidemiology, Health Protection Branch Building, Tunney's Pasture, AL 0701D, Ottawa, Ontario, Canada, K1A 0L2.

Phone:
613-946-9742

Fax:
613-941-9927

E-mail:
ID_Rusen@hc-sc.gc.ca

China: Beijing

Birth Defect Surveillance System in Thirty Counties of Four Provinces, People's Republic of China (BDSS - China)

History:
The programme began in 1992. It became a full member of the ICBDMS in 1997.

Size and coverage:
This is a population based monitoring system. Reports were obtained from all hospitals and village health stations, which together cover all geographically defined population. Total number

of population in these areas is around 17 millions and total number of births per year is around 150,000.

Legislation and funding:
Funding is from China Ministry of Health and local health authorities.

Sources of ascertainment:
Reports are obtained from delivery units, paediatric clinics, ultrasound departments, pathology departments and perinatal health care departments of different level hospitals, MCH institutes and village health stations in the participating counties and cites.

Exposure information:
Exposure information is obtained from the perinatal health care surveillance system (PHCSS) in the same areas for all women and their babies from pre-marital examination till six weeks after birth. BDSS data is linked with PHCSS data by using an ID number assigned to each woman.

Background information:
Background information is also obtained from PHCSS data.

Address for further information:
Zhu Li, M.D., M.P.H., China National Centre for Maternal and Infant Health, Peking University, 38 College Road, Beijing 100083, PR China.

Phone:
86-10-62091138

Fax:
86-10-62091141

E-mail:
izh@public.bta.net.cn

China: CBDMN

Chinese Birth Defects Program of Sichuan Province, China (until 1994)
Chinese Birth Defects Monitoring Network

History:
The programme began in 1984. It became an associate member of the ICBDMS in 1985 and a full member in 1987.

Size and coverage:
In 1984, reports were obtained from 100 hospitals but participation has increased. In 1985,205 hospitals participated. At present, the programme covers approximately 260,000 births annually in 31 provinces.

Legislation and funding:
Participation is voluntary. Funding is mainly from local health authorities.

Sources of ascertainment:
Reports are obtained from delivery units, paediatric clinics, and pathology departments of the participating hospitals.

Exposure information:
Exposure information is obtained by interviews of mothers of the reported malformed infants. No information is available on exposures in controls.

Background information:
Total number of births from each participating hospital is known.

Address for further information:
Zhu Jun, National Center for Birth Defects Monitoring, West China University of medical Sciences, No.17 section 3 REN MIN NAN LU , Chengdu-PRC-China.

Phone:
86-28-5501363

Fax:
86-28-5501363

E-mail:
lzh@public.bta.net.cn

Czech Republic

Congenital Malformations Monitoring Programme of the Czech Republic

History:
A registration of congenital malformation began in 1961 and regular monitoring started in 1975. The programme was a founding member of the ICBDMS and is a full member.

Size and coverage:
All births in the Czech Republic (Bohemia, Moravia and Silesia regions) are covered, at present comprising approximately 90,000 annual births. Stillbirths weighting at least 1,000g are included.

Legislation and funding:
Reporting is compulsory. The registration is financed and run by the government in the Institute of Health Information and Statistics of the Czech Republic. Analysis of data is supported by Grant projects (NJ 6214-3, 6224-3 and NJ/5764-3) of Grant Agency Ministry of Health of the Czech Republic in the Institute for Care of Mother and Child.

Sources of ascertainment:
Reports are obtained from delivery units, neonatal, pediatric, child surgery, pathology departments and cytogenetic laboratories. Reporting to the central registry occurs via Regional Department of Institute of Health Information and Statistics.

Exposure information:
Some exposure information is available on malformed infants, at present, none on controls.

Background information:
Information's on all births are available in the Institute of Health Information and Statistics of the Czech Republic.

Address for further information:
Antonin Sipek, Department of Population Teratology, Institute for Care of Mother and Child, Podolske nabrezi 157, 14710, Prague 4, Czech Republic.

Phone:
420-2-612142410

Fax:
420-2-61213851

E-mail:
sipek@yahoo.com

England and Wales

The National Congenital Anomaly System

History:
The monitoring programme was started in 1964. It was a founding member of the Clearinghouse and is a full member.

Size and coverage:
All births in England and Wales are covered, at present approximately 610,000 annually. Stillbirths of 24 weeks or more gestation are registered.

Legislation and funding:
Reporting is voluntary. The system is financed by the governmental Office for National Statistics.

Sources of ascertainment:
Reports are mainly based on notifications of births prepared by attendants at birth, either physicians or midwives, supplemented by other reports from neonatal intensive care units, special care baby units etc. Reporting via the Wales regional congenital anomaly register began in 1998, and in 1999 from the Trent Region. In 2000 reporting started from the Merseyside and Cheshire register and the North Thames West register. These four registers together use several sources for ascertainment and cover 27% of the births in England and Wales

Exposure information:
Parents' occupation is known. No other information on other exposures is available but can be retrieved ad hoc from general practitioners.

Background information:
Information on all births is available from birth certificates.

Address for further information:
Beverley J Botting, Office for National Statistics, B6/08, 1 Drummond Gate, London SW1V 2QQ, UK

Phone:
44-207-5335195

Fax :
44-207-5335635

E-mail :
bev.botting@ons.gov.uk

Finland

The Finnish Register of Congenital Malformations

History:
The registry was established in 1963 and regular monitoring started in 1977. It was a founding member of the ICBDMS and is a full member. In 1998 the registry became an associate member of EUROCAT.

Size and coverage:
The registry is national and population based. All births in Finland are covered, at present approximately 57,000 annually. Stillbirths of 22 weeks / 500 g or more are registered. As a research project selective terminations for fetal reasons and spontaneous abortions with malformations have also been included since 1993.

Legislation and funding:
Reporting is compulsory. The registry is run and financed by STAKES, the governmental National Research and Development Centre for Welfare and Health (under the Ministry of Social Affairs and Health).

Sources and ascertainment:
Reports are obtained from delivery units, neonatal, pediatric and pathology departments, death certificates and cytogenetic laboratories. Case information is also received from the national Medical Birth Register, Abortion Register and Hospital Discharge Register.

Exposure information:
Until 1986, extensive exposure information was obtained from maternity health centers and by personal interview for selected malformations and their controls. In 1987-1992 only parental occupation was reported. Exposure information, like maternal occupation, medication, X-rays and diseases, etc., has been obtained since 1993. Some exposure information on all births is also available in the Medical Birth Register since 1987.

Background information:
Epidemiological background data are available on all births in the Medical Birth Register and in the Statistics Finland.

Address for further information:
Annukka Ritvanen
The Finnish Register of Congenital Malformations
The National Research and Development Centre for Welfare and Health, STAKES
Lintulahdenkuja 4
P.O. Box 220, SF 00531-Helsinki - Finland

Phone:
358-9-39672376

Fax:
358-9-39672459

E-mail:
annukka.ritvanen@stakes.fi

Website:
http://www.stakes.fi

France: Central-East

Central-East France Register of Congenital Malformations.

History:
The registry began in 1973 within the Rhone-Alps area -the Auvergne region was added in 1983, the Jura area in 1985, the Côte d'Or & Nièvre in 1989 and Saône-et-Loire in 1990. The programme was a founding member of the ICBDMS and is a

full member. In 1998 the registry was split up and the Auvergne region, became financially independent, under the responsibility of Christine Francannet. The collaboration between Auvergne and the rest of the FCE-registry is maintained and common results are published.

Size and coverage:
The registry covers all births in the area approximately 100,000 births annually, which represents about 13% of all births in France. Stillbirths of 22 weeks or more gestation are included.

Legislation and funding:
Reporting is voluntary. The system is run by a privately funded research organisation. It is now officially recognised by the French Ministry of Health and partially supported by an annual grant from the National Committee of Registries.

Sources of ascertainment:
Reports are received from delivery units, pediatric and child surgery clinics, pathology departments, and cytogenetic laboratories. Infants up to the age of one are registered, as well as fetuses delivered after medical abortion.

Exposure information:
Information on maternal and paternal occupation, drug use, diseases, etc. is collected by interviews of the mothers of the malformed infants. No controls are interviewed.

Background information:
Some background information is available from the general population statistics.

Address for further information:
Elisabeth Robert, Institute Européen des Génomutations, 86 Rue Edmond Locard, F-69005 Lyon, France.

Phone:
33-478-258210

Fax:
33-478-366182

E-mail:
elisabeth.robert@ieg.asso.fr

E-mail:
Contact for the Auvergne registry:Christine Francannet, CEMC Auvergne,
CEMC-Auvergne@wanadoo.fr

France: Paris

History:
The programme was initiated in 1975, but the registry really started in 1981. It became an associate member of the ICBDMS in 1982. It is also a member of EUROCAT.

Size and coverage:
The registry covers 38.000 annual births (about 5% of all births in France), those are all births (live and still births of 22 weeks or more) and terminations of pregnancy in the population of Greater Paris delivering in Paris maternity units. The estimation of the coverage of the registry is around 95%.

Legislation and funding:
Reporting is voluntary. The registry is part of a research unit of INSERM (National Institute of Health and Medical Research). The registry has been officially recognized by the French National Comity of Registries, and is renewed for four years (2001-2004) and supported by an annual grant from INSERM and Institut de la Veille Sanitaire (Institute for Health Surveillance).

Sources of ascertainment:
Reports are actively collected from delivery units, pediatric departments, cytogenetic laboratories, and pathology departments. Terminations of pregnancy are included. Case information is also received from the health certificates of the first week.

Exposure information:
Information on maternal drug use, maternal and paternal diseases and occupations, outcome of previous pregnancies, is available for the malformed cases.

Prenatal diagnosis information:
Data about techniques of prenatal screening (ultrasound, serum markers) and prenatal diagnosis are systematically collected.

Background information:
Background data on births are available from the National Institute of Statistics (INSEE)

Address for further information:
Catherine De Vigan,
INSERM U149, 16 av P Vaillant-Couturier,
94807 Villejuif Cedex, France

Phone:
33-1-45595009

Fax:
33-1-45595089

E-mail:
devigan@vjf.inserm.fr

France: Strasbourg

Strasbourg Prospective Study of Congenital Malformations.

History:
The registry was started in 1979. The programme became an associate member of the ICBDMS in 1982.

Size and coverage:
All births in an area including and around Strasbourg and the Bas-Rhin are covered -13,000 to 13,500 annually, or 1.8% of all births in France.

Legislation and funding:
The programme is a research program, recognized by the local health authorities and funded by Social Security, Ministry of Health and INSERM.

Sources of ascertainment:
Reports are obtained from pediatricians examining the newborn infants. A control infant is selected for each malformed one: the next infant of the same sex as the proband born at that hospital.

Exposure information:
Detailed information on various exposures is obtained by interview of the mothers of the malformed infants and their controls. The children are followed to the age of one year.

Background information:
General demographic information is obtained from the National Institute of Statistics. Further information is obtained from Social Security Records and Health Sheets.

Address for further information:
Claude Stoll, Service de Génétique Médicale, Hôpital de Hautepierre, Avenue Molière, 67098 Strasbourg Cedex, France.

Phone:
33-3-88128120

Fax:
33-3-88128125

E-mail:
Claude.Stoll@chru-strasbourg.fr

Germany: Saxony-Anhalt

History:
The program started in 1980 and is an associate member of the ICBDMS since 2001.

Size and coverage:
The program covers all births within an area of one Federal State (Saxony-Anhalt) in Germany. The annual number of births in this area is approximately 19,000. Stillbirths and terminations of at least 16 weeks gestations (or a birth weight of at least 500 grams) are included. Terminations are included for diagnosed (selected) defects.

Legislation and funding:
In Germany there is no legislation to register birth defects. From 1980 to 1989 our program had worked based on a voluntary notification of congenital malformations in the former G.D.R.. From 1990 to 1995 the program worked based on financial support of the Ministry of Health in Germany and Saxony-Anhalt. Since 1996 the Malformation Monitoring is working in order of the Ministry of

Labour, Women, Health and Social Security in Saxony-Anhalt.

Sources of ascertainment:
Multiple sources, such as delivery units, pediatric departments, laboratories, prenatal diagnostic centers, departments of pathology and other specialties, are used to ascertained malformed infants born in the defined area within the first week of life.

Exposure information:
Exposure information of mother (including drug intake before and in pregnancy) and father is documented on the standardized documentation sheets.

Background information:
Number of live births and stillbirths and demographic information are obtained from vital statistics.

Address for further information:
Volker Steinbicker, Christine Rösch, Malformation Monitoring Saxony-Anhalt, Faculty of Medicine, Otto-von-Guericke University Magdeburg, Leipziger Straße 44, D-39120 Magdeburg

Phone:
49-391-6714174

Fax:
49-391-6714176

Email:
volker.steinbicker@medizin.uni-magdeburg.de
Christine.roesch@medizin.uni-magdeburg.de

Website:
http://www.med.uni-magdeburg.de/fme/zkh/mz/

Hungary
Hungarian Congenital Abnormality Registry

History:
Centralized registration of congenital abnormalities began in Hungary in 1962, and became under our co-ordination in 1970. Monitoring began in 1973. The programme was a founding member of the International Clearinghouse and is a full member.

Size and coverage:
The registry covers all births in Hungary, approximately 120,000 annually. Criteria to define stillbirth was changed in 1998. At present, stillbirths of at least 24 weeks gestation or 500 grams are registered. Prenatally diagnosed and terminated fetuses are also registered.

Legislation and funding:
Reporting is compulsory. The registry is run and financed by the governmental National Center for Epidemiology (formerly the National Institute of Public Health).

Sources of ascertainment:
Reports are obtained from delivery units, neonatal and pediatric surgery, pathology, and prenatal diagnostic centers. Abnormalities detected before the age of one are reported. Variations in figures (especially in the1990s) compared with data from previous years may reflect incomplete notification. In most instances, decreases can be noticed in the rates of birth defects.

Exposure information:
Exposure information has been available since 1980, when a case-control system was initiated. Mothers of selected malformed infants and controls are interviewed by community nurses to collect information.

Background information:
General background information on all births is available from central statistics.

Address for further information:
Csaba Siffel/Julia Metneki, Department of Human Genetics and Teratology, National Center for Epidemiology, Gyali ut 2-6., H-1966 Budapest, Pf. 64., Hungary.

Phone/fax:
36-1-4761389

E-mail:
siffel@antsz-oth.hu

Ireland: Dublin

Dublin EUROCAT Registry

History:
Register began in September 1979 and joined EUROCAT at the same time. Joined International Clearinghouse in 1997.

Size and coverage:
The Registry is population-based and situated in the East of Ireland covering the counties of Dublin, Wicklow and Kildare. About one third (20,000 births) of all births in Ireland occur in this area.

Legislation and funding:
The Registry is located within the Public Health Department of the Eastern Regional Health Authority. Staffing includes a full time nurse/researcher and a part time secretary plus a part-time public health specialist and a part-time epidemiologist. Funding is provided by the Department of Health through the Eastern Regional Health Authority. There is a Steering Committee comprising specialists from each of Maternity and Paediatric Hospitals in the catchment plus a representative from the Department of Health.

Exposure information:
For each malformed infant reported, limited information is given on certain exposures. No information is available on controls.

Sources of ascertainment:
All live and still births are covered. Abortion is illegal in Ireland.

Address for further information:
Robert Mc Donnell, Department of Public Health, Eastern Regional Health Authority, Dr. Steeven's Hospital, Dublin 8, Ireland.

Phone:
353-1-6352750

Fax:
353-1-6352745

E-mail:
bob.mcdonnell@erha.ie

Israel: IBDMS

Israel Birth Defects Monitoring System

History:
The programme started in one hospital in 1966 and was a founding member of the Clearinghouse. It was a full member until 1986, when it became an associate member.

Size and coverage:
Reports are now obtained from three hospitals located in the central region of the country, with more than 20,000 annual births (more than 15% of all births in Israel). Stillbirths of 20 weeks gestation or more and 500 gm or more are included. The registry of termination of pregnancy began in 1995.

Legislation and funding:
The programme is a research programme supported by research grants without any governmental support.

Sources of ascertainment:
Reporting is voluntary. Reports are obtained from delivery units and neonatal departments in the participating hospitals. The three included hospitals are: Rabin Medical Center, Beilinson Campus' Petah Tikva; Kaplan Hospital, Rehovot (Dr, Kohan Dr, Shinwell) and Lis Medical Center, Tel Aviv (Prof. Mimouni, Dr. Dolberg). These hospitals are affiliated to Sackler School of Medicine, Tel-Aviv University.

Exposure information:
Complete anamneses are obtained by interviews of mothers of all malformed infants. All the other women with normal newborns complete a similar form at discharge.

Background information:
Epidemiological information on all births occurring in the participating hospitals is available.

Address for further information:
Paul Merlob, Department of Neonatology, Rabin Medical Center, Beilinson Campus, 49100 Petah Tikva, Israel:
IBDMS.

Phone:
972-3-9377474/2/3

Fax:
972-3-9220068

E-mail:
merlob@post.tau.ac.il

Italy: BDRCam

Birth Defects Registry of Campania

History:
The registry started in 1991.

Size and coverage:
The programme is based on reporting from hospitals distributed in Campania, a southern Italy region. Naples is main city. Initially 38 hospitals reported and the annual number of births was 38.000. At the present time, 60 hospitals participate, covering approximately 50.000 annual births or approximately 80 of all births. Stillbirths and induced abortions are included.
The programme became a full member of the ICBDMS in 1996.

Legislation and funding:
The programme is a surveillance programme supported by grants from Regional Health Authorities. Participation was voluntary up to 1995. From 1996 participation is mandatory.

Sources of ascertainment:
Reports are obtained from delivery units and pediatric clinics at the participating hospitals. For selected malformations multiple sources are used with follow-up to one year using specific records from pediatric specialties department dealing with malformed infants.

Exposure information:
For each malformed infant reported, information is given on certain exposures, including maternal drug usage and parental occupation. Up to now no information on induced abortions and controls is available.

Background information:
Up to now little background information is given on certain exposures, including maternal drug usage and parental occupation. Up to now no information on controls is available.

Address for further information:
Gioacchino Scarano, Registro Campano Difetti Congeniti, Azienda Ospedaliera "G. Rummo".
Via dell'Angelo 1, 82100 Benevento, Italy.
And Osservatorio Epidemiologico Regionale. Assessorato alla Sanità, Regione Campania, Centro Direzionale isola C3. Naples, Italy
Fax 39-081-7969347

Phone:
39-082-357374

Fax:
39-082-457495

E-mail:
giorecam@tin.it

Italy: IMER

Emilia-Romagna Registry of Congenital of Malformations

History:
The registry started in 1978 in a few hospitals and has increased in size to now include 44 delivery units. The programme joined the ICBDMS in 1985 as an associate member.

Size and coverage:
The programme is population-based (about 95% of all births in the Emilia-Romagna region) and covers approximately 28,000 annual births. Stillbirths of 28 weeks or more gestation are included.

Legislation and funding:
The programme is recognised and financed by the health authorities, the National Research Council, and the Regional Health Council. Hospital participation is voluntary.

Sources of ascertainment:
Reporting is made by neonatologists and pediatricians during the first week of the infant's life. Selected malformations are followed up.

Exposure information:
Detailed exposure information is obtained by interviews of the mothers of malformed infants. For each malformed infant, a control is chosen (the baby born before or after the malformed case in the same hospital) and its mother is interviewed in a similar way.

Background information:
Some general demographic information is known for all births in the area. For each participating hospital, the number of livebirths and stillbirths are known.

Address for further information:
Guido Cocchi, Istituto Clinico di Pediatria Preventiva e Neonatologia, Università di Bologna, Via Massarenti, 11, 40138 Bologna, Italy.

Phone:
39-051-342754 / 6363654

Fax:
39-051-342754

E-mail:
cocchi@med.unibo.it

Italy: North East

North East Italy registry of Congenital Malformations

History:
The Registry was established in 1981 to include the Veneto andFriuli Venezia Giulia regions. The Trentino Alto Adige region was added in 1990. The Registry became a member of Eurocat in1985, and an associate member of the ICBDMS in 1997.

Size and coverage:
Reports are obtained from 73 participating hospitals, with a total of approximately 49,500 annual births; the actual coverage is estimated at 99%.

Legislation and funding:
Reporting is voluntary. The programme is partly run by Regional Health Authorities.

Sources of ascertainment:
Reports are obtained on specific forms from delivery units, induced abortion units, pediatric, cardiology, ophthalmology and pathology departments, regional induced abortion database and cytogenetic laboratories. 32 selected malformations are recorded within 7 days from birth (within 3 years of age for cardiovascular and ophthalmologic anomalies only). In terminated fetuses all anomalies are recorded. From 1st January 2000 we are now registering all congenital anomalies adopting the Eurocat list of exclusions (revised 1985).

Exposure information:
Detailed information on various exposures, including maternal or paternal occupation, diseases and drug use is obtained by interview of the mothers at the birth of the malformed infants and their controls.

Background information:
Some epidemiological background data of all births are available. For each participating hospital the number of livebirths and stillbirths by sex and number of twin pairs are known.

Address for further information:
Romano Tenconi MD, Clinical and Epidemiological Genetic Service, Pediatric Department, via Giustiniani 3,
35128 Padova, Italy.

Phone:
39-049-8213513

Fax:
39-049-8211425

E-mail:
romano.tenconi@unipd.it

Web:
www.genetica.pedi.unipd.it

Italy: ISMAC
Sicilian Registry of Congenital Malformations

History:
The Registry started in 1991 and became an ICBDMS associate member in 1996. Sicilian Registry is also member of EUROCAT and collaborates with other Italian Registries under supervision of Italian National Institute of Health Rome.

Size and coverage:
It is hospital based and actually collaborates with four southeast provinces of the nine Sicilian provinces, (with a covering rate higher than 75%) and with more than 19000 controlled newborns for year.

Legislation and funding:
The programme is on a voluntary basis, supported at local level by A.S.MA.C, Sicilian association for congenital malformations prevention.

Sources of ascertainment:
Reports are obtained from delivery units, pediatric units and other specialistic departments.

Exposure information:
For each malformed reported (livebirth, stillbirth and voluntary abortion), information is given on certain exposures, including maternal drug usage and parental occupation. Up to now no information on controls is available.

Address for further information:
Sebastiano Bianca, Dipartimento di Pediatria, via S. Sofia, 78 – 95123 Catania, Italy

Fax:
39-095-222532

E-mail:
sebastiano.bianca@tiscalinet.it

Italy: Tuscany
Tuscany Registry of Congenital Defects

History:
The registry started in 1979 in the province of Florence and from 1992 in the whole Tuscany region. The programme became a full member of the ICBMDS in 1998.

Size and coverage:
The programme is population based, involves all the regional hospitals and the coverage is around 95% of all births in the Tuscany region (approximately 3.5 millions inhabitants and 25,000 births/year). Stillbirths of 20 weeks or more gestation and induced abortions after prenatal diagnosis of birth defects are systematically included. Malformed babies diagnosed within the first year of life are also registered.

Legislation and funding:
The Registry is a surveillance programme included in the Regional Statistics System; it is formally recognised and supported by the Tuscany Region Health Authority.

Sources and ascertainment:
Multiple sources are used to ascertain malformed infants; records are obtained from all obstetrical and maternity units, pediatric departments, neonatal and pediatric surgery units, prenatal diagnostic centers and pathology services. Mothers are interviewed by using a standardized questionnaire.

Exposure information:
Exposure information on maternal and paternal occupation, life-style, and socio-economical characteristics are obtained by interviews of mothers of malformed infants.

Background information:
Vital statistics and other epidemiological information are obtained by the birth medical records collected by the Regional Bureau of Statistics. Selected information is obtained from the control material collected.

Address for further information:
Fabrizio Bianchi, Sezione di Epidemiologia e Biostatistica, Istituto di Fisiologia Clinica del Consiglio Nazionale delle Ricerche, Area della Ricerca di S. Cataldo, Via Moruzzi, 1, 56127 Pisa, italy.

Phone:
39-050-3152100

Fax:
39-050-3152095

E-mail:
fabrizio.bianchi@ifc.cnr.it

Japan: JAOG

Japan Association of Maternal Welfare (Until 1994)
Japan Association of Obstetricians and Gynecologists

History:
The programme started in 1972 and a full member of the ICBDMS in1988.

Size and coverage:
The programme is based on reports from 330 hospitals throughout Japan. At present, approximately 110,000 births are covered, representing about 10% of all Japanese births. Still births of 22 weeks or more gestation are included.

Legislation and funding:
The programme is a research programme acknowledged by the Ministry of Welfare and Health and supported by JAOG and Ogyaa-Donation.

Sources of ascertainment:
Reports are obtained from delivery units and pediatric clinics of participating hospitals.

Exposure information:
Detailed information on various exposures including maternal or paternal occupation, chronic diseases and drug use, X-ray and viral infections are available.

Background information:
Basic epidemiological information on all births is available from each participating hospitals.

Address for further information:
Yoshio Sumiyoshi, JAOG, Yokohama City University, Urafune Hospital, 4-57, Urafune-cho, Minami-ku, Yokohama, 232-0024, Japan.

Phone:
81-45-2533668

Fax:
81-45-2533668

E-mail:
fuhira@hamakko.or.jp

Malta
Congenital Anomalies Register

History:
The register started in 1985 as a research project of the University of Malta. It started as a hospital based register collecting data regarding congenital anomalies diagnosed in babies born at the main general hospital. It became a member of EUROCAT in 1986. Funding for the research project was stopped in 1995 and in 1997 the Department of Health Information resumed the functions of the registry increasing coverage to all hospitals on the islands making it a population based register. Several new sources of data were included at this stage. The Register was accepted as an associate member of the International Clearinghouse in 2000.

Size and Coverage:
The registry is population based and presently covers about 4500 births per year. Stillbirths of 20 weeks gestation or more are registered. Termination of pregnancy is illegal in Malta.

Legislation and Funding:
Reporting is voluntary. The registry is run and funded by the government Department of Health Information.

Sources of ascertainment:
The registry employs active data collection from multiple sources including: labour, postnatal and nursery wards, cardiac lab records, genetics clinic records, National Mortality Register, National Obstetric Systems database, Hospital Activity Analysis database, National Cancer Register and the hypothyroid screening programme. Voluntary reporting by doctors is also available. These sources cover the whole population of the Maltese Islands.

Exposure information:
Information regarding maternal disease and exposure to medicinal drugs, smoking, alcohol and drug abuse as well as parental occupation are collected for all malformed infants.

Background information:
Epidemiological background data on all births are available from the National Obstetric Information Systems database and the National Statistics Office (NSO).

Address for further information:
Miriam Gatt, Malta Congenital Anomalies Registry, Department of Health Information, 95, Guardamangia Hill, Guardamangia MSD 08, MALTA

Phone:
356-21234915

Fax:
356-21235910

E-mail:
miriam.gatt@magnet.mt

Mexico: RYVEMCE
Mexican Registry and Epidemiological Surveillance of External Congenital Malformations

History:
The programme was started in 1978. The programme became a full member of the ICBDMS in 1980.

Size and coverage:
Reports are obtained from 15 hospitals in 11 cities in Mexico. Participation is voluntary. The annual number of births is approximately 40.000, about 3.5% of all births in Mexico. Stillbirths of 20 weeks or more gestation and/or at least 500g birthweight are included.

Legislation and funding:
The programme is a research programme and is funded by research grants.

Sources of ascertainment:
Reports are obtained from the delivery units and pediatric departments of the participating hospitals.

Exposure information:
The mother of each reported infant and the mother of a control infant-the next non-malformed infant born at that hospital with the same sex as the proband - are interviewed on various exposures, including drug usage and parental occupation.

Background information:
The total number of births in the hospitals is known.

Address for further information:
Osvaldo Mutchinick, Departamento de Genetica, Instituto Nacional de Nutricion, Salvador Zubiran, Vasco de Quiroga 15, Tlalpan, 14000 Mexico, D.F., Mexico.

Phone:
52-5-5731200/ 52-5-5730611, 52-5-5737333 (ext 2426, 2425)

Fax:
52-5-6556138

E-mail:
osvaldo@servidor.unam.mx

New Zealand
New Zealand Birth Defects Monitoring Programme

History:
The programme began in 1975 and became a full member of the ICBDMS in 1979.

Size and coverage:
The programme covers all livebirths (approximately 56,000 per year) delivered or treated in a New Zealand publicly funded hospital. Only these data are included in the quarterly and annual reports to the ICBDMS. Data on stillbirths are retrospectively added to the database together with additional cases derived from the national perinatal and mortality databases. In late 1995 the definition of stillbirth was changed from 28 weeks completed gestation to 20 weeks or more gestation and/or 400g birthweight.

Legislation and funding:
The programme is run and funded by Public Health Intelligence, Ministry of Health. Exposure information: No exposure data are currently available, but attempts are being made to obtain such data.

Background information:
General epidemiological characteristics for all births are available.

Address for further information:
Dr Barry Borman, Public Health Intelligence, Public Health, Directorate, Ministry of Health, PO Box 5013
Wellington, New Zealand.

Phone:
64-4-4954379

Fax:
64-4-4954401

E-mail:
barry_borman@moh,govt.nz

Northern Netherlands
EUROCAT registration Northern Netherlands

History:
The programme started in 1981, and became a ICBDMS member in 1993 as an associate member.

Size and coverage:
In the beginning the programme covered 7,500 births annually. Coverage was gradually increased to 19,000 births annually in the provinces Groningen, Friesland and Drenthe from 1989 onwards. Home deliveries (30% of births) are

included.

Legislation and funding:
The programme is funded by the Dutch Ministry of Public Health, Welfare and Sports. The registry is carried out in the Department of Medical Genetics of the University of Groningen.

Sources of ascertainment:
Obstetricians, paediatricians, clinical geneticists, surgeons, general practitioners, midwives, well-baby clinics, pathologists and the national obstetric registry send information to the registry on a voluntary basis. Informed consent of the parents is needed. Registry personnel are actively involved in data collection. No age limits are applied.

Exposure information:
Since 1997 parents are asked to fill out a questionnaire including questions on occupational activities and drug use. Besides, data from community pharmacies are used to collect maternal drug exposure data.

Background information:
General statistics are available from the Dutch Central Bureau of Statistics (CBS).

Address for further information:
Hermien de Walle, Department of Medical Genetics, Ant. Deusinglaan 4, 9713 AW Groningen, The Netherlands.

Phone:
31-50- 3633193/3632952

Fax:
31-50-3187268

E-mail:
H.E.K.de.Walle@medgen.azg.nl

Norway
Medical Birth Registry of Norway

History:
The programme was started in 1967. The programme was a founding member of the ICBDMS and is a full member.

Size and coverage:
The programme covers all births in Norway, approximately 60,000 annual births. Stillbirths of 16 weeks or more gestation are included (12 weeks or more from 2002 onwards).

Legislation and funding:
The programme is run and funded by the Norwegian Institute of Public Health. Reporting is compulsory.

Sources of ascertainment:
The registry is based on the notification of births from the delivery units and since 1999 also from the neonatal units.

Exposure information:
Some basic information, such as maternal disease and since 1999:smoking and occupation, is collected on all infants, malformed or not.

Background information:
All information available for reported malformed infants is also available for the total population of births. Comment. From 2002 the Birth Registry is part of the Norwegian Institute of Public Health, which was established 2002. The old organization was National Institute of Public Health.
Otherwise, no changes.

Address for further information:
Lorentz M. Irgens, Medical Birth Registry of Norway, Armauer Hansen Bldg, Haukeland Hospital, N-5021 Bergen, Norway.

Phone:
47-5-5974667

Fax:
47-55-974998

E-mail:
lorentz.irgens@mfr.uib.no

Russia: Moscow

History:
The program started in 1999 and was a founding member of ICBDMS in 2001. The registry of congenital malformation of the area of the Moscow region monitors about 45000 births per year in a region with 6 530 000 inhabitants.

Size and coverage:
The program covers all births in Moscow region. The Moscow Region is the second in size region of Russia with the area of 47 000 sq. km. and includes 80 administrative subjects. The registry of congenital malformation of the area of the Moscow region monitors about 45 000 births per year from 54 maternity hospitals in a region with 6 530 000 inhabitants. Stillbirths and terminations of 22 weeks gestation are included.

Legislation and funding:
Monitoring of the birth of fetuses and babies with congenital malformations is legally defined by the Order of the Ministry of Health Care of Russian Federation in 1999.

Sources of ascertainment:
Reporting is made by neonatologist during the first week of the infants life in maternity hospitals and by pediatricians during the first month – in pediatric departments. Reports are collected form cytogenetic laboratories, pathology departments. Prenatally diagnosed and terminated fetuses are also registered.

Exposure information:
No exposure information is routinely collected in the registry.

Background information:
Background information on all births is available from statistics department.

Address for further information:
Ludmila Joutchenko, Moniiag, Pokrovka st 22a, Moscow, Russia.

Phone/Fax:
95-921-5398

E-mail:
mrrcm@mail.ru

South Africa: SABDSS
South African Birth Defects Surveillance Systems

History:
The programme started in 1988 and became a full member of the ICBDMS in 1992.

Size and coverage:
The programme is hospital based covering 9 sentinel sites over the country with approximately 30,000 annual or 3% of all births in South Africa.

Legislation and Funding:
Participation in the programme is voluntary and is funded by the Department of National Health.

Sources of ascertainment:
Notifications are obtained from delivery units and paediatric units of the participating hospitals.

Exposure information:
No exposure information is routinely available.

Background information:
Total births for some participating hospitals are not accurately known.

Address for further information:
South Africa: SABDSS, David Bourne-Rauf Sayed, Programme Director, School of Public Health and Primary Health Care,
University of Cape Town-Medical School, Observatoy 7925, Cape Town, South Africa

Phone:
27-21-4066482

Fax:
27-21-4066163

E-mail:
db@cormack.uct.ac.za
rauf@cormack.uct.ac.za

South America: ECLAMC

Latin American Collaborative Study of Congenital Malformations

History:
The programme started in 1967 and has grown in size and coverage. The programme became a full member of the International Clearinghouse in 1977.

Size and coverage:
The number of participating hospitals has grown from 20 in 1977 to 70 at the present time, distributed over most South Americans countries. The annual number of births covered is at present approximately 150,000, less than 1% of all births. Stillbirths of at least 500g birthweight have been included since 1978.

Legislation and funding:
The programme is a research programme with voluntary participation of hospitals and funded by research grants provided from several sources, mainly the national research councils of Argentina and Brazil.

Sources of ascertainment:
Reporting is made by collaborating pediatricians at the delivery units of participating hospitals.

Exposure information:
The mother of each reported infant and the mother of a control infant - the next non-malformed infant born at that hospital with the same sex as the proband - are interviewed on various exposures, including drug usage and parental occupation.

Background information:
Background information is obtained partly from summarising tables of births in each participating hospitals, partly from the matched control newborns. Further information may be obtained from its website: eclamcnet.net

Address for further information:
Eduardo Castilla, ECLAMC/Dept. Genetica/FIOCRUZ, C.P. 926, 20010-970 Rio de Janeiro, Brazil.

Phone:
55-21-25984358

Fax:
55-21-22604282

E-mail:
castilla@centroin.com.br

Spain: ECEMC

Spanish Collaborative Study of Congenital Malformations

History:
The programme was created in 1976 by Prof. Dr. María Luisa Martínez-Frías, as a hospital-based case-control study and surveillance system. It became a full member of the ICBDMS in 1979. In January 2002 the ECEMC Programme became integrated into the CIAC (Research Center on Congenital Anomalies), also directed by Prof. Martínez-Frías.

Size and coverage:
Reports are obtained from hospitals (87 at present) distributed all over Spain. The annual number of births surpasses 100,000, representing 27.58% of all Spanish births. Stillbirths of at least 24 weeks or 500 g. have been included since 1980.

Legislation and funding:
It is a research programme with voluntary participation of hospitals, and is financed mainly by the Spanish Administration and, partially, by non-governmental organisations.

Sources of ascertainment:
The detection period is the first 3 days of life, including major and/or minor/mild defects. Reports come from delivery units and paediatric departments of the participating hospitals. Mothers are interviewed directly to fill in the ECEMC standard protocols, which include more than 300 data for each child (family history, demographic and obstetrical data, prenatal

exposures, etc), whether case or control. Controls are defined as the next non-malformed infant born at the same hospital that the case with the same sex as the malformed infant. In many instances, photographs, imaging studies, high-resolution bands karyotypes and molecular analysis when needed (which are performed at the central group of the ECEMC), and other complementary studies are available.

Exposure information:
The mother of each reported infant (case or control) is interviewed on various exposures (parental occupation, maternal acute or chronic diseases, drug usage, exposure to other chemical or physical factors) within the first three days after delivery.

Background information:
Total number of births by sex and number of twin pairs in each participating hospital are gathered. Other background information is obtained from the control material.

Address for further information:
Prof. María-Luisa Martínez-Frías, ECEMC, Centro de Investigación sobre Anomalías Congénitas (CIAC), Instituto de Salud Carlos III, C/Sinesio Delgado nº 6, Pabellón 6. 28029-Madrid (Spain).

Phone:
34-91-3877538

Fax:
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mlmartinez.frias@isciii.es

Sweden

The Swedish Registry of Congenital Malformations and the Medical Birth Registry.

History:
The Registry of Congenital Malformations started in 1964, the Medical Birth Registry in 1973. The programme was a founding member of the ICBDMS and contributed with data until 1994. The registry has a new regime from 1999 and is since then again a full member of the ICBDMS.

Size and coverage:
All births in Sweden are included, approximately 100,000-120,000 annual births. The definition of stillbirth in Sweden is more than 28 weeks. Since 1999 all fetal deaths with congenital malformations more than 22 weeks are reported to the Swedish Registry of Congenital Malformations. In 1999 a special fetal congenital anomalies surveillance system was started to include those fetuses with congenital malformations who were terminated as a result of prenatal diagnosis.

Legislation and funding:
Reporting is compulsory for children with malformations, but not for terminated pregnancies with fetuses with congenital malformations.

Sources of ascertainment:
Reports are received from delivery units, paediatric clinics, pathology departments, child cardiology clinics, and cytogenetic laboratories.

Exposure information:
Some exposure information for all births is available in the Medical Birth Registry; maternal occupation, socio-economic factors, maternal smoking, drug use during pregnancy, contraceptive usage, maternal diseases.

Background information:
Epidemiological background data are available on all birth in the Medical Birth Registry.

Address for further information:
Birgitta Ollars, Department of Epidemiology, National Board of Health and Social Welfare, S-106 30 Stockholm, Sweden.

Phone:
46-8-55553123

Fax:
46-8-55553327

E-mail:
birgitta.ollars@sos.se

Göran Annerén, Department of Clinical Genetics Uppsala University Children's Hospital, S-751 85 Uppsala, Sweden

Phone:
46-18-6115942

E-mail:
goran.anneren@genpat.uu.se

Fax:
46-554025

Ukraine: UABDP

Ukrainian-American Birth Defects Program

History:
The program was established in 1998. Birth Defects surveillance begun in 2000. It became an associate member in 2001.

Size and coverage:
The program monitors nearly 27,000 births in two provinces (Rivne and Volyn).

Legislation and funding:
Participation is an integral part of the State Health System. Funding is in part provided by the United States Agency for International Development, by the Ukrainian Ministry of Health, by the Oblasts (Province) Health Administration and private sources.

Sources of ascertainment:
Reports are obtained from delivery, neonatology and pediatric units. Hospital admission/discharge summaries are reviewed. Cytogenetic, pathology and other sources of data are also explored.

Exposure information:
Routine information collection is minimal except when ad hoc circumstances are noted. Plans for systematic collection of exposure data are being drawn.

Prenatal diagnosis information:
Birth defects data collection teams include specialists in prenatal diagnosis. However, rural areas are under served.

Address for further information:
Medical Director: Dr. Lyubov Yevtushok, UABDP, 36, 16 Lypnya St., Rivne Diagnostic Center, Rivne, Ukraine 33000
Director: Dr. Wladimir Wertelecki, Department of Medical Genetics, University of South Alabama, 307 University Blvd., CCCB, 274, Mobile, AL, USA 36688

Phone/fax:
Medical Director: 38-036-2623447
Director: 251-460-7505

E-mail:
Medical Director: bdrivne@rcmdc.utel.net.ua
Director: wwertele@usouthal.edu

United Arab Emirates

Programme: Congenital abnormality study group

History:
Although started 1992, the program started continuous monitoring only in 1994. It is now an Associate Member of the ICBDMS.

Size and coverage:
The program covers about 8000 births a year occurring in three major hospitals of the Al Ain Medical District, situated in the eastern part of the Abu Dhabi Emirate. It has a population of about 270,000. Still births with a weight of only more than 500 gm are included.

Legislation and funding:
The program is funded by the Faculty of Medicine and Health Sciences of the UAE University.

Sources of ascertainment:
In each hospital, there is a neonatologist who examines, identifies abnormalities and records at birth in a form provided. The diagnosis is further assisted by a clinical geneticist/dysmorphologist and pediatricians.

Exposure information:
Some basic information on exposure such as maternal disease is collected in all cases.

Background information:
General epidemiological data for all births are available.

Address for further information:
Lihadh Al Gazali, Program Director, Congenital Abnormality Study Group, Department of Pediatrics, Faculty of Medicine, UAE University, Al Ain, PO Box 17666, Al Ain, United Arab Emirates.

Phone:
971-3-672000

Fax:
971-3-672022

E-mail:
(1) padamanabhanr@uaeu.ac.ae
(2) algazali@hotmail.com

USA: Atlanta

Metropolitan Atlanta Congenital Defects Programme.

History:
The program started in 1967 and was a founding member of the ICBDMS. The program is a full member of the ICBDMS.

Size and coverage:
The program covers all births within a five county area in metropolitan Atlanta, Georgia. The annual number of births in this area is approximately 50,000. Stillbirths and terminations of at least 20 weeks gestations (or a birth weight of at least 500 grams) are included. Terminations less than 20 weeks are included for selected defects.

Legislation and funding:
In 1994 the Georgia Department of Human Resources (GDHR) added birth defects to the list of legally reportable conditions in Georgia. In 1997 the GDHR authorized the Birth Defects Branch at the Centers for Disease Control and Prevention (CDC) to act with and on its behalf to collect health information on children with birth defects. The program is funded by the Centers for Disease Control and Prevention.

Sources of ascertainment:
Multiple sources, such as delivery units, pediatric departments, laboratories, prenatal diagnostic centers and other specialties, are used to ascertained malformed infants born in the defined area with a follow-up to age six years.

Exposure information:
Exposure information is obtained by interview for mothers of reported malformed infants who participate in various research projects.

Background information:
Number of live births and demographic information on the five counties are obtained from vital statistics.

Address for further information:
Dave Erickson, National Center on Birth Defects and Developmental Disabilities, Centers for Disease Control and Prevention, 4770 Buford Highway, N.E., Mailstop F-45, Atlanta, GA 30341-3724, USA

Phone:
1-770-4887160

Fax:
1-770-4887197

E-mail:
DErickson@cdc.gov

USA: California

California Birth Defects Monitoring Program

History:
The California Birth Defects Monitoring Program was established in 1983 to monitor rates and trends and conduct epidemiological investigations to find causes of birth defects. The Program is funded through the California Department of Health Services and jointly operated with the March of Dimes Birth Defects Foundation. In 1997 the Centers for Disease Control designated the Program one of eight Centers of Excellence in Birth Defects Research. The Program is an associate member of the Clearinghouse.

Size and coverage:
The Program operates a population-based registry among 56,000 births. The registry includes 8 counties whose birth defects rates and trends are representative of California and who reflect the state's racial/ethnic diversity.

Legislation and funding:
The Program operates under statutory authority: Health and Safety Code, Division 102, Part 2, Chapter 1, Sections 103825-103855. State funding is appropriated each year through the state budget. The Program also receives research grants from the National Institutes of Health and the Centers for Disease Control.

Sources of ascertainment:
Staff actively ascertains data at hospitals and genetic centers by reviewing logs and identifying children with structural birth defects (BPA 740-759) diagnosed prenatally through age 1. All diagnostic information is abstracted directly from medical records; registry files are cross-linked with vital statistics data to verify demographic information.

Exposure information:
Bilingual interviewers collect environmental exposure information through large, case-control interview studies. Exposures under investigation include nutrition, health status and family history, medications, lifestyle, and chemical exposures through hobbies and occupation. Study participants also submit biological samples for analysis of genetic factors that might be contributing. The Program has published more than 200 articles reporting research and registry findings in medical and scientific journals.

Background information:
Registry data, research findings, publications, and a description of Program activities are available on their website www.cbdmp.org.

Address for further information:
Jackie Wynne, MOD/CBDMP, 3031 F Street, Suite 200, Sacramento, CA 95816-3844.

E-mail:
jwy@cbdmp.org

Phone:
1-888-8982229

Fax:
1-916-4436657

Monitoring Program	Coverage	Year Joined ICBDMS	Maximum age at diagnosis	Criteria defining stillbirths
Australia	Population - based National	1982	Hospital discharge (28 days for neonatal deaths)	20 weeks or 400grams
Canada: Alberta	Population-based Provincial	1996	1 year	20 weeks or 500 grams
Canada British Columbia	Population-based Provincial	2001	No limit	At least 20 weeks or 500 grams
Canada:National	Population-based National	1974	1 year	20 weeks
China: Beijing	Population-based Four Provinces	1997	6 weeks	20 weeks
China: CBDMN	Hospital - based	1985	7 days	28 weeks
Czech Republic	Population-based Bohemia & Moravia	1974	Up to 15 years	500 grams
England and Wales	Population-based National	1974	1995 onwords no limit	24 weeks
Finland	Population-based National	1974	1 year	22 weeks or 500 grams
France: Central-East	Population-based Regional	1974	1 year	22 weeks
France: Paris	Population-based Regional	1982	Hospital discharge	22 weeks
France: Strasbourg	Population-based Regional	1982	1 year	26 weeks
Germany Saxony Anhalt	Population - based (Federal State)	2001	Hospital discharge (first week of live)	500 grams
Hungary	Population-based National	1974	1 year	28 weeks
Ireland: Dublin	Population-based Regional	1997	10 year	24 weeks or 500 grams
Israel: IBDMS	Population-based Regional	1974	Hospital discharge 3-5 days	28 weeks
Italy: BDRCam	Population-based Regional	1996	7 days	180 days 25 weeks + 5 days
Italy: IMER	Population-based Regional	1985	7 days	180 days (25 weeks + 5 days)
Italy: ISMAC	Hospital-based Regional	1991	1 year	180 days (25 weeks + 5 days)
Italy: North East	Population-based Regional	1997	7 days	180 days (25 weeks + 5 days)
Italy: Tuscany	Population-based Regional	1998	7 days	180 days (25 weeks + 5 days)
Japan: JAOG	Population-based National	1988	7 days	22 weeks
Malta	Population-based National	2000	1 year	20 weeks
Mexico: RYVEMCE	Population-based National	1980	72 hours	20 weeks or 500 grams
New Zealand	Population-based National	1979	1 year	20 weeks or 400 grams
Northern Netherlands	Population-based Regional	1993	No limit	24 weeks
Norway	Population-based National	1974	Hospital discharge Lifelong for mortality	16 weeks
Russia Moscow	Population - based Regional	2001	1 year	28 weeks
South Africa: SABDSS	Hospital-based	1992	Hospital discharge (usually 4 days)	stillbirths not recorded
South America: ECLAMC	Hospital-based Multinational	1977	3 days	500 grams
Spain: ECEMC	Hospital-based National	1979	3 days	24 weeks or 500 grams
Sweden	Population-based National	1974	28 days	22 weeks
Ukraine	Population-based National	2001	7 days	20 weeks or 250 grams
United Arab Emirates	Hospital-based Regional	1995	7 days	23 weeks
USA: Atlanta	Population-based Regional	1974	6 years	20 weeks or 500 grams
USA: California	Population-based Regional	1992	1 year	20 weeks

(Classification Committee, February 1998)

The following definitions have been adopted by all monitoring systems except when indicated in the Table 8.1

1. Anencephaly: a congenital malformation characterized by the total or partial absence of the cranial vault, the covering skin, and the brain missing or reduced to small mass(e). Include craniorachischisis. Include infants with iniencephaly and other neural tube defects as encephalocele or open spina bifida, when associated with anencephaly.
Exclude acephaly, that is, absence of head observed in amorphous acardiac twins.

2. Spina bifida: a family of congenital malformation defects in the closure of the spinal column characterized by herniation or exposure of the spinal cord and/or meninges through an incompletely closed spine. Include meningocele, meningomyelocele, myelocele, myelomeningocele, rachischisis.
Spina bifida is not counted when present with anencephaly. Exclude: spina bifida occulta, sacrococcygeal teratoma without dysraphism .

3. Encephalocele: a congenital malformation characterized by herniation of the brain and/or meninges through a defect in the skull.Encephalocele is not counted when present with spina bifida.

4. Microcephaly: a congenitally small cranium, defined by an occipito-frontal circumference (OFC) 3 standard deviation below the age- and sex-appropriate distribution curves. [If using a different definition or cut-off point (e.g., 2 standard deviations), report but specify criteria].
Exclude microcephaly associated with anencephaly or encephalocele.

5. Arhinencephaly/holoprosencephaly: a congenital malformation of the brain, characterized by various degrees of incomplete lobation of the brain hemispheres. Olfactory nerve tract may be absent. Holoprosencephaly includes cyclopia, ethmocephaly, cebocephaly, and premaxillary agenesis.

6. Hydrocephaly: a congenital malformation characterized by dilatation of the cerebral ventricles, not associated with a primary brain atrophy, with or without enlargement of the head, and diagnosed at birth. Not counted when present with encephalocele or spina bifida.
Exclude: macrocephaly without dilatation of ventricular system, skull of macerated fetus, hydranencephaly, holoprosencephaly, and postnatally acquired hydrocephalus.

7. Anophthalmos/microphthalmos: apparently absent or small eyes. Some normal adnexal elements and eyelids are usually present. In microphthalmia, the corneal diameter is usually less than 10 mm. and the antero-psterior diameter of the globe is less than 20 mm.

8. Anotia/microtia: a congenital malformation characterized by absent parts of the pinna (with or without atresia of the ear canal) commonly expressed in grades (I-IV) of which the extreme form (grade IV) is anotia, absence of pinna.
Exclude small, normally shaped ears, imperforate auditory meatus with a normal pinna, dysplastic and low set ears.

9. Transposition of great vessels: a cardiac defect where the aorta exits from the right ventricle and the pulmonary artery from the left ventricle, with or without other cardiac defects.
Include double outlet ventricle so-called corrected transposition.

10. Tetralogy of Fallot: a condition characterized by ventricular septal defect, overriding aorta, infundibular pulmonary stenosis, and often right ventricular hypertrophy.

11. Hypoplastic left heart syndrome: a cardiac defect with a hypoplastic left ventricle, associated with aortic and/or mitral valve atresia, with or without other cardiac defect.

12. Coarctation of the aorta: an obstruction in the descending aorta, almost invariably at the insertion of the ductus arteriosus

13. Choanal atresia, bilateral: congenital obstruction (membraneous or osseous) of the posterior choana or choanae.
Exclude: choanal stenosis and congestion of nasal mucosa.

14. Cleft palate without cleft lip: a congenital malformation characterized by a closure defect of the hard and/or soft palate behind the foramen incisivum without cleft lip.
Include submucous cleft palate. Exclude cleft palate with cleft lip, cleft uvula, functional short palate, and high narrow palate.

15. Cleft lip with or without cleft palate: a congenital malformation characterized by partial or complete clefting of the upper lip, with or without clefting of the alveolar ridge or the hard palate.
Exclude midline cleft of upper or lower lip and oblique facial fissure (going towards the eye).

16. Oesophageal atresia/stenosis: a congenital malformation characterized by absence of continuity or narrowing of the esophagus, with or without tracheal fistula.

Include tracheoesophageal fistula with or without mention of atresia or stenosis of oesophagus.

17. Small intestine atresia/stenosis: complete or partial occlusion of the lumen of a segment of the small intestine. It can involve a single area or multiples areas of the jejunum or ileum.
Exclude duodenal atresia.

18. Anorectal atresia/stenosis: a congenital malformation characterized by absence of continuity of the anorectal canal or of communication between rectum and anus, or narrowing of anal canal, with or without fistula to neighboring organs. Exclude mild stenosis which does not need correction, and ectopic anus.

19. Undescended testis: please give your definition if this defect is monitored ICBDMS

20. Hypospadias: a congenital malformation characterized by the opening of the urethra on the ventral side of the penis, distally to the sulcus. Includes penile, scrotal, and perineal hypospadias. Exclude glandular or first-degree hypospadias and ambiguous genitalia (intersex or pseudohermaphroditism).

21. Epispadias: a congenital malformation characterized by the opening of the urethra on the dorsal surface of the penis. Not counted when part of exstrophy of the bladder.

22. Indeterminate sex: genital ambiguity at birth that does not readily allow for phenotypic sex determination. Include male or female true or pseudohermaphroditism.

23. Renal agenesis: a congenital malformation characterized by complete absence of kidneys bilaterally or severely dysplastic kidneys.

24. Cystic kidney: a congenital malformation characterized by multiple cysts in the kidney Include infantile polycystic kidney, multicystic kidney, other forms of cystic kidney and unspecified cystic kidney. Exclude single kidney cyst.

25. Bladder exstrophy: complex malformation characterized by a defect in the closure of the lower abdominal wall and bladder. Bladder opens in the ventral wall of the abdomen between the umbilicus and the symphysis pubis. It is often associated with epispadias and structural anomalies of the pubic bones.

26. Polydactyly, preaxial: extra digit(s) on the radial side of the upper limb or the tibial side of the lower limb. It can affect the hand, the foot, or both.

27. Limb reduction defects: a congenital malformation characterized by total or partial absence or severe hypoplasia of skeletal structures of the limbs. Include femoral hypoplasia.
Exclude mild hypoplasia with normal shape of skeletal parts, brachydactyly, finger or toe reduction directly associated with syndactyly, general skeletal dysplasia and sirenomelia.

28. Diaphragmatic hernia: a congenital malformation characterized by herniation into thehorax of abdominal contents through a defect of the diaphragm. Include total absence of the diaphragm. Exclude hiatus hernia, eventration and phrenic palsy.

29. Abdominal wall defects: cases specified as omphalocele and/or gastroschisis plus unspecified cases.

30. Omphalocele: a congenital malformation characterized by herniation of abdominal contents through the umbilical insertion and covered by a membrane which may or may not be intact. Exclude gastroschisis (para-umbilical hernia), a- or hypoplasia of abdominal muscles, skin-covered umbilical hernia.

31. Gastroschisis: a congenital malformation characterized by visceral herniation Through an abdominal wall defect lateral to an intact umbilical cord and not covered by a membrane.
Exclude a- or hypoplasia of abdominal muscles, skin-covered umbilical hernia, omphalocele.

32. Prune belly sequence: a complex congenital malformation characterized by deficient abdominal muscle and urinary obstruction/distension. It can be caused by urethral obstruction secondary to posterior urethral valves or urethral atresia. In the affected fetus the deficiency of the abdominal muscle may not be evident. It can be associated with undescended testes, clubfoot, and limb deficiencies.

33. Trisomy 13: a congenital chromosomal malformation syndrome associated with extra chromosome 13 material. Include translocation and mosaic trisomy 13.

34. Trisomy 18: a congenital chromosomal malformation syndrome associated with extra chromosome 18. Include translocation and mosaic trisomy 18

35. Down syndrome: a congenital chromosomal malformation syndrome characterized by a well known pattern of minor and major anomalies and associated with excess chromosomal 21 material. Include trisomy msaicism and translocations of chromosome 21.

8.1 Deviation from the ICBDMS Definitions by Registry

Malformation	Encephalocele	Microcephaly	Arhinencephaly/Holoprosencephaly	Hydrocephaly	A-Microphthalmos	Anotia	Tetralogy of Fallot	Trasposition of great vessels	Choanal atresia,bilateral	Cleft palate without cleft lip	Cleft lip with or without cleft palate	Oesophageal atresia/stenosis	Small intestine atresia/stenosis	Anorectal atresia/stenosis	Undescended testis	Hypospadias	Epispadias	Indeterminate sex	Renal agenesis	Cystic kidney	Polydactyly preaxial	Limb reduction defects	Diaphagmatic hernia	Trisomy 13	Trisomy 18	Down syndrome
USA: Atlanta									I		II															
United Arab Emirates																										
Ukraine		C-B		E	F	NN		G			II							W						JJ	JJ	JJ
Sweden		C			F				J							T			Y	OO						JJ
Spain: ECEMC		B			F		PP						N				U	W		Z	BB	GG				JJ
South Africa: SABDSS	A	C			F				I							S		W		Q	CC	HH		JJ	JJ	JJ
S.America: ECLAMC																T										
Russia: Moscow		C						G		K	L		N			T				MM	AA	BB				JJ
Norway			LL													T								JJ	JJ	
Northern Netherland																T					DD					
New Zealand		C			F										KK		V							JJ	JJ	JJ
Mexico: RYVEMCE	A	B			F				I - J				N					W	Y	Q	DD	GG		JJ	JJ	JJ
Malta		C			F													W			DD			JJ	JJ	JJ
Japan: JAOG		C			F															AA						
Italy: Tuscany								H																		
Italy: North East			D		F					K	L	M	N - P	R					X		DD					JJ
Italy: ISMAC																T										
Italy: IMER																T					DD					
Italy: BDR																								JJ	JJ	JJ
Israel: IBDMS								H																		
Ireland: Dublin		C			F				J				N-O			T	V			Z	DD			JJ	JJ	JJ
Hungary	A	C			F			G								T	V				DD	EE-FF		JJ	JJ	JJ
Germany Saxony A.		B		E	F	NN	PP	HG	J				N-O			T	U	W	X-Y	OO	DD	GG				JJ
France: Strasbourg					F			G					N-O			T			X-Y	Z-Q						
France: Paris																T										
France: Central East																										JJ
Finland	A	C			F			H	J									W		OO		GG		JJ	JJ	JJ
England and Wales																T										
Czech Republic																T					DD					
China: CBDMN																										
China: Beijing																					DD					
Canada: Br.Col.	A	C	LL	E	F	NN	PP	H	I - J	K	L		NO			T	TV	W	Y	Q	DD	GG		JJ	JJ	JJ
Canada National																T	V				DD					
Canada Alberta		C		E	F	NN		H	I - J				N			T				Q	DD					JJ

A = when present with spina bifida counted
B = OCF below 3rd percentile
C = clinical diagnosis
D = only cyclopia included
E = hydranencephaly included
F = clinical diagnosis included
G = all kind of transposition included
H = double outlet right ventricle excluded
I = stenosis included
J = unilateral cases included
K = submucous cleft palate excluded
L = midline and oblique facial clefts included
M = stenosis excluded
N = doudenal atresia included
O = doudnel stenosis included
P = intestinal stenosis excluded
R = stenosis excluded
S = hypospadias on the sulcus included
T = all types included
U = epispadias included also when part of bladder exstrophy
V = epispadias counted with hypospadias
W = genital ambiguity and absent genitalia included
X = severely dysplastic kidneys excluded
Y = unilateral defects included
Z = AR polycystic kidney excluded
Q = single cyst included
AA = all kind of cystic kidney included
BB = polysyndactyly preaxial excluded
CC = if more than six digits excluded
DD = any type of polydactyly included
EE = any hypoplasia of skeletal structures included
FF = sirenomalia included
GG = any hypoplasia of skeletal limb structures included except brachydactyly and hypoplasia as part of skeletal dysplasia
HH = finger or toe reduction directly associated with syndactyly included
II = clefts of the alveolar ridge without cleft lip included
JJ = clinical diagnosis included
KK = registred when it is combined with other defects
LL = there may be other defects with the same code
MM = some autosomal recessive polycystyc kidneys are not excluded
NN = absence of auricle
OO = all cystic kidneys are included except for single renal cysts
PP = Trilogy of Fallot included

9.1 Instructions and Recommendations to the Reader

The main aim of the following tables is to show the time variation in the rates of some specific defects in each programme. Figures are presented in two tables: one shows data for 2000, the other shows data for the period from 1974 through 2000.

Each programme monitors "all" birth defects. However, the tables present data for selected defects. The selection is quite arbitrary and may change year by year.

It is unwise to compare rates of a birth defect among programmes, as there are important differences in the methodology of registration, in defining live births, stillbirths and abortions, including birth defects observed in pregnancy terminations, and last but not least, in definig every single birth defect. Some of the differences are highlighted in Programme Descriptions (see chapter 6, pages 21-43) and in the tables at page 54 and 116.

This year, by a graphical point of view, the trends are represented in a new style: bars represent real patterns of birth prevalences. Green bars stand for live+still births rates, and black bars live+still births + terminations of pregnancy rates. The green line is based on the three-year moving average of live and still birth rates: the value shown for each year corresponds to the average of that year, the previous and the following year.

Make sure that you read this page
before looking at the following tables

Birth defect rates were computed by including all cases for each defect, which not only occurs when the defect is isolated but also when it was associated with other defects. In some instances, therefore, the same baby may be counted more than once in the tables (i.e., a baby with cleft lip and a limb deficiency is counted in both tables). In the data from Hungary, however, only isolated malformations are reported.

Pregnancy terminations are reported by some of the programmes only. As far as concern the others, data are not available in the registry or pregnancy termination is not legal in the country. The inclusion of pregnancy terminations is noted in the tables.

For a better understanding of the statistical underpinning of the analyses, it may be helpful to read the notes on the statistical analyses.

9.2 Notes on Statistical Analysis

Rates
When computing rates among live born infants and stillbirths, the denominator used is total births. When computing rates that include terminations, the total number of terminations for birth defects is added to the denominator. The denominator used for age-specific rates for Down syndrome consists of the total number of live born infants, stillbirths and, if appropriate, terminations for Down syndrome, whose mothers are in that age group.

Observed / expected ratio
An iterative procedure is applied to calculate the expected rates: baseline series is tested, using the Chi squared trend test, in order to find a stable sub sample of observations-years. At the start of the procedure the whole series is tested; then, step by step, years are dropped until the test identifies a stable period. The observations-years kept in the sample are used as baseline to calculate the expected number of cases. Hence the observed / expected ratio is tested using an approximated procedure of the Poisson test at 95% significance level. In the column “YB“ the number of observations-years in the baseline is found; the “Remark” column shows the significant values.

Time trend analysis and graphs
As terminations were not recorded in the past, the time trend analyses are based on live and stillbirths with the exception of New Zealand and South Africa (live births only). The generalised apparent fall in rates is likely to be, at least in part, the consequence of prenatal diagnosis and pregnancy termination for those Registries whose

countries allow terminations. Time trends are computed using annual rates even though data in the trend tables is presented by five years intervals so as to make the tables more readable.
We have studied the Chi-Squared for trend in order to test the time tendency. The arrows in the column "trend" show the significant increase or decrease: upward arrows locate the significant increasing trends, downward arrows the significant decreasing trends. It is important to underline that this kind of test is counts-sensitive: statistical significance is easier to reach when the number of cases per year is high.

The birth prevalence rates graphs concern those Registries which have figures for 8 years at least.
Hypospadias graphs should be considered critically for Canada National, Hungary and New Zealand: these Registers report hypospadias and epispadias together.

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9.3 List of Tables

9.4 Tables and Time Trends

TABLE 1

Canada: Alberta, 2000

Live births (L)	36,632
Stillbirths (S)	237
Total births	36,869
Number of terminations of pregnancy (ToP) for birth defects	51

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	5	3	4	2.17	3.25	1.30	10	
Spina bifida	5	2	2	1.90	2.44	0.38	20	▼
Encephalocele	2	2	0	1.08	1.08	1.03	20	
Microcephaly	13	1	1	3.80	4.06	1.28	17	
Arhinencephaly / Holoprosencephaly	2	1	1	0.81	1.08	0.83	18	
Hydrocephaly	19	7	3	7.05	7.85	1.45	16	
Total Anophthalmos / Microphthalmos (include unspecified)	9	1	1	2.71	2.98	2.04	20	
Anophthalmos	2	0	0	0.54	0.54	1.87	20	
Microphthalmos	7	1	1	2.17	2.44	2.11	20	
Total Anotia / Microtia (include unspecified)	7	0	0	1.90	1.90	1.53	15	
Anotia	3	0	0	0.81	0.81	3.75	20	
Microtia	4	0	0	1.08	1.08	1.12	15	
Transposition of great vessels	5	0	0	1.36	1.35	0.45	20	
Tetralogy of Fallot	12	1	2	3.53	4.06	1.46	20	
Hypoplastic left heart syndrome	14	1	0	4.07	4.06	1.96	20	
Coarctation of aorta	15	0	0	4.07	4.06	0.88	18	
Choanal atresia, bilateral	1	0	0	0.27	0.27	0.19	20	
Cleft palate without cleft lip	29	0	0	7.87	7.85	1.03	17	
Cleft lip with or without cleft palate	37	3	3	10.85	11.65	0.97	20	
Oesophageal atresia / stenosis with or without fistula	5	0	0	1.36	1.35	0.51	20	
Small intestine atresia / stenosis	15	0	0	4.07	4.06	1.48	14	
Anorectal atresia / stenosis	16	2	4	4.88	5.96	1.16	20	
Undescended testis (36 weeks of gestation or later)	83	1	0	22.78	22.75	0.95	8	
Hypospadias	81	0	1	21.97	22.21	1.06	20	
Epispadias	3	0	0	0.81	0.81	2.17	20	
Indeterminate sex	5	0	0	1.36	1.35	1.81	19	
Renal agenesis	14	1	2	4.07	4.60	0.98	20	
Cystic kidney	21	2	2	6.24	6.77	1.35	14	
Bladder exstrophy	0	1	0	0.27	0.27	0.80	20	
Polydactyly, preaxial	62	2	0	17.36	17.33	1.31	17	
Total Limb reduction defects (include unspecified)	25	7	5	8.68	10.02	0.98	17	
Transverse	nr	nr	nr	N.A.	N.A.	N.A.		
Preaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Postaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Intercalary	nr	nr	nr	N.A.	N.A.	N.A.		
Mixed	nr	nr	nr	N.A.	N.A.	N.A.		
Diaphragmatic hernia	14	1	1	4.07	4.33	1.50	20	
Total Abdominal wall defects (include unspecified)	15	6	4	5.70	6.77	1.40	20	
Omphalocele	4	2	2	1.63	2.17	0.87	20	
Gastroschisis	8	0	0	2.17	2.17	1.20	20	
Prune belly sequence	1	1	0	0.54	0.54	1.67	20	
Trisomy 13	3	0	4	0.81	1.90	0.86	20	
Trisomy 18	6	7	4	3.53	4.60	1.36	11	
Down syndrome, all ages (include age unknown)	50	4	10	14.65	17.33	1.35	15	
<20	1	0	0	4.07	4.07	0.27	2	
20-24	4	0	0	5.32	5.32	1.39	2	
25-29	15	0	0	13.21	13.21	1.41	2	
30-34	15	3	2	17.82	19.80	1.77	2	
35-39	11	0	4	23.70	32.29	0.86	2	
40-44	4	1	4	65.83	117.87	0.71	2	
45+	0	0	0	0.00	0.00	0.00	2	

Includes Omphalocele, Gastroschisis and Prune belly sequence

Canada: Alberta, time trend analysis 1980-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births		216,350	214,267	207,426	189,174	36,869	
Anencephaly		3.70	2.94	1.93	1.37	2.17	▼
Spina bifida		4.85	5.97	4.53	4.49	1.90	▼
Encephalocele		1.25	0.89	1.21	0.85	1.08	
Microcephaly		3.19	3.73	2.94	2.33	3.80	
Arhinencephaly / Holoprosencephaly		0.42	1.07	1.21	1.00	0.81	▲
Hydrocephaly		6.24	4.81	5.35	4.18	7.05	▼
Total Anophthalmos / Microphthalmos (include unspecified)		1.29	1.21	1.59	1.22	2.71	
Anophthalmos		0.37	0.19	0.53	0.05	0.54	
Microphthalmos		0.92	1.03	1.06	1.11	2.17	
Total Anotia / Microtia (include unspecified)		0.23	0.98	1.35	1.43	1.90	▲
Anotia		0.05	0.23	0.24	0.37	0.81	▲
Microtia		0.18	0.75	1.11	1.06	1.08	▲
Transposition of great vessels		2.77	3.13	3.13	3.12	1.36	
Tetralogy of Fallot		1.71	2.85	2.60	2.54	3.53	▲
Hypoplastic left heart syndrome		2.13	2.24	1.93	2.01	4.07	
Coarctation of aorta		3.47	4.53	5.40	4.49	4.07	
Choanal atresia, bilateral		0.92	1.82	1.78	1.16	0.27	
Cleft palate without cleft lip		6.42	7.05	8.05	8.35	7.87	▲
Cleft lip with or without cleft palate		10.21	11.90	11.43	11.31	10.85	
Oesophageal atresia / stenosis with or without fistula		2.77	3.17	2.17	2.48	1.36	
Small intestine atresia / stenosis		1.99	2.38	2.46	3.28	4.07	▲
Anorectal atresia / stenosis		3.10	5.09	4.72	3.86	4.88	
Undescended testis (36 weeks of gestation or later)		26.67	32.72	28.49	22.31	22.78	▼
Hypospadias		17.15	23.94	24.20	17.50	21.97	
Epispadias		0.55	0.14	0.53	0.26	0.81	
Indeterminate sex		0.37	0.65	1.30	0.58	1.36	▲
Renal agenesis		3.05	4.62	5.21	3.75	4.07	
Cystic kidney		2.26	3.73	4.77	5.13	6.24	▲
Bladder exstrophy		0.46	0.23	0.53	0.11	0.27	
Polydactyly, preaxial		9.71	13.81	16.34	11.37	17.36	▲
Total Limb reduction defects (include unspecified)		6.29	8.59	10.27	8.40	8.68	▲
Diaphragmatic hernia		3.00	3.13	2.41	2.22	4.07	
Total Abdominal wall defects (include unspecified)		3.65	4.29	3.81	4.55	5.70	
Omphalocele		1.57	2.29	1.83	1.74	1.63	
Gastroschisis		1.48	1.68	1.78	2.38	2.17	
Prune belly sequence		0.51	0.23	0.19	0.37	0.54	
Trisomy 13		0.83	0.65	1.21	1.11	0.81	
Trisomy 18		1.62	1.68	2.12	3.17	3.53	▲
Down syndrome, all ages (include age unknown)		8.87	9.75	11.23	11.68	14.65	▲
<20					15.20*	4.07	N.A.
20-24					3.83*	5.32	N.A.
25-29					9.34*	13.21	N.A.
30-34					10.05*	17.82	N.A.
35-39					27.71*	23.70	N.A.
40-44					92.86*	65.83	N.A.
45+					344.83*	0.00	N.A.

* = data include less than five years
N.A. = not available (lack of historical data)

TABLE 2

Canada: British Columbia, 2000

Live Births (L)	40,494
Stillbirths (S)	281
Total Births	40,775
Number of terminations of pregnancy (Top) for birth defects	nr

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencepaly	1	5	nr	1.47	N.A.	0.78	11	
Spina Bifida	9	1	nr	2.45	N.A.	0.46	9	▼
Encephalocele	1	1	nr	0.49	N.A.	0.62	7	
Microcephaly	4	0	nr	0.98	N.A.	0.24	15	▼
Arhinencephaly/Holoprosencephaly	14	9	nr	5.64	N.A.	1.90	15	▲
Hydrocephaly	11	5	nr	3.92	N.A.	0.79	15	
Total Anophthalmos/Microphthalmos (include unspecified)	1	0	nr	0.25	N.A.	0.25	13	
Anophthalmos	0	0	nr	0.00	N.A.	0.00	15	
Microphthalmos	1	0	nr	0.25	N.A.	0.29	15	
Total Anotia/Microtia (include unspecified)	81	4	nr	20.85	N.A.	1.21	5	
Anotia	6	0	nr	1.47	N.A.	1.31	15	
Microtia	30	0	nr	7.36	N.A.	1.48	15	
Transposition of great vessels	21	0	nr	5.15	N.A.	1.16	15	
Tetralogy of Fallot	18	0	nr	4.41	N.A.	1.00	15	
Hypoplastic left heart syndrome	6	2	nr	1.96	N.A.	0.74	10	
Coarctation of aorta	17	0	nr	4.17	N.A.	0.84	15	
Choanal atresia, bilateral	9	0	nr	2.21	N.A.	1.08	4	
Cleft palate without cleft lip	32	1	nr	8.09	N.A.	0.93	15	
Cleft lip with o without cleft palate	79	6	nr	20.85	N.A.	1.06	15	
Oesophageal atresia/stenosis with or without fistula	9	0	nr	2.21	N.A.	0.77	15	
Small intestine atresia/stenosis	18	0	nr	4.41	N.A.	1.49	15	
Anorectal atresia/stenosis	18	0	nr	4.41	N.A.	1.08	15	
Undescended testis (36 weeks of gestation or later)	131	0	nr	32.13	N.A.	1.35	4	▲
Hypospadias/Epispadias	97	0	nr	23.79	N.A.	1.06	11	
Indeterminate sex	0	0	nr	0.00	N.A.	0.00	15	
Renal agenesis	16	2	nr	4.41	N.A.	0.84	15	
Cystic kidney	22	1	nr	5.64	N.A.	1.10	14	
Bladder exstrophy	2	1	nr	0.74	N.A.	1.82	15	
Polydactyly, preaxial	74	0	nr	18.15	N.A.	1.22	15	
Total Limb reduction defects (include unspecified)	18	1	nr	4.66	N.A.	0.88	15	
Transverse	nr	nr	nr	N.A.	N.A.	N.A.		
Preaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Postaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Intercalary	nr	nr	nr	N.A.	N.A.	N.A.		
Mixed	nr	nr	nr	N.A.	N.A.	N.A.		
Diaphragmatic hernia	3	2	nr	1.23	N.A.	0.38	15	
Total Abdominal wall defects *	24	0	nr	5.89	N.A.	0.61	5	▼
Omphalocele	nr	nr	nr	N.A.	N.A.	N.A.		
Gastroschisis	nr	nr	nr	N.A.	N.A.	N.A.		
Prune belly sequence	nr	nr	nr	N.A.	N.A.	N.A.		
Trisomy 13	2	1	nr	0.74	N.A.	0.67	15	
Trisomy 18	3	9	nr	2.94	N.A.	0.88	6	
Down syndrome, all ages (include age unknown)	52	17	nr	16.92	N.A.	1.18	10	
<20	1	0	nr	5.48	N.A.	0.72	15	
20-24	7	1	nr	12.32	N.A.	1.79	15	
25-29	7	5	nr	10.02	N.A.	1.15	7	
30-34	16	5	nr	16.71	N.A.	1.24	15	
35-39	10	5	nr	22.69	N.A.	1.05	15	
40-44	4	1	nr	40.00	N.A.	0.63	15	
45+	0	0	nr	0.00	N.A.	0.00	15	

* Includes Omphalocele, Gastroschisis and Prune belly sequence

Canada: British Columbia, time trend analysis 1985-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births			213,323	230,766	223,212	40,775	
Anencephaly			3.28	1.91	1.66	1.47	▼
Spina bifida			7.13	6.02	4.70	2.45	▼
Encephalocele			1.45	1.26	0.72	0.49	▼
Microcephaly			3.75	3.60	5.06	0.98	
Arhinencephaly / Holoprosencephaly			3.56	2.08	3.32	5.64	
Hydrocephaly			5.02	4.90	4.93	3.92	
Total Anophthalmos / Microphthalmos (include unspecified)			1.50	0.87	0.94	0.25	▼
Anophthalmos			0.33	0.35	0.27	0.00	
Microphthalmos			1.22	0.56	0.81	0.25	▼
Total Anotia / Microtia (include unspecified)			14.11	10.36	17.20	20.85	▲
Anotia			1.17	0.91	1.30	1.47	
Microtia			5.53	3.68	5.78	7.36	
Transposition of great vessels			4.50	3.25	5.56	5.15	
Tetralogy of Fallot			5.20	3.86	4.26	4.41	
Hypoplastic left heart syndrome			1.73	2.17	3.18	1.96	▲
Coarctation of aorta			4.88	4.46	5.64	4.17	
Choanal atresia, bilateral			1.22	0.65	1.79	2.21	▲
Cleft palate without cleft lip			8.86	8.97	8.20	8.09	
Cleft lip with or without cleft palate			20.34	19.85	18.91	20.85	
Oesophageal atresia / stenosis with or without fistula			2.58	2.99	3.05	2.21	
Small intestine atresia / stenosis			3.23	2.25	3.45	4.41	
Anorectal atresia / stenosis			3.98	4.03	4.21	4.41	
Undescended testis (36 weeks of gestation or later)			18.38	15.38	22.62	32.13	▲
Hypospadias\Epispadias			20.53	22.10	23.30	23.79	▲
Indeterminate sex			0.70	1.04	1.16	0.00	
Renal agenesis			5.06	5.46	5.20	4.41	
Cystic kidney			4.55	4.68	6.00	5.64	▲
Bladder exstrophy			0.52	0.35	0.36	0.74	
Polydactyly, preaxial			15.33	13.74	15.77	18.15	
Total Limb reduction defects (include unspecified)			6.19	4.33	5.47	4.66	
Diaphragmatic hernia			2.81	2.82	3.99	1.23	
Total Abdominal wall defects (include unspecified)			7.41	5.68	9.68	5.89	▲
Trisomy 13			1.08	0.91	1.30	0.74	
Trisomy 18			2.02	1.78	3.49	2.94	▲
Down syndrome, all ages (include age unknown)			11.67	13.00	15.81	16.92	▲
<20			6.83	6.24	9.90	5.48	
20-24			6.71	6.62	7.41	12.32	
25-29			6.26	5.90	9.92	10.02	▲
30-34			13.80	13.19	13.64	16.71	
35-39			16.03	20.62	25.27	22.69	
40-44			77.28	54.63	64.62	40.00	
45+			0.00	186.92	370.37	0.00	

* = data include less than five years
N.A. = not available (lack of historical data)

TABLE 3

Canada: National*, 1999

Live births (L)	254,503
Stillbirths (S)	1,755
Total births	256,258
Number of terminations of pregnancy (ToP) for birth defects	nr

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	14	14	nr	1.09	N.A.	0.84	4	
Spina bifida	104	9	nr	4.41	N.A.	0.88	4	
Encephalocele	17	3	nr	0.78	N.A.	0.97	4	
Microcephaly	114	8	nr	4.76	N.A.	0.99	11	
Arhinencephaly / Holoprosencephaly	nr	nr	nr	N.A.	N.A.	N.A.		
Hydrocephaly	171	17	nr	7.34	N.A.	1.03	11	
Total Anophthalmos / Microphthalmos (include unspecified)	47	1	nr	1.87	N.A.	1.84	8	▲
Anophthalmos	7	1	nr	0.31	N.A.	1.00	11	
Microphthalmos	40	0	nr	1.56	N.A.	1.83	11	▲
Total Anotia / Microtia (include unspecified)	nr	nr	nr	N.A.	N.A.	N.A.		
Anotia	nr	nr	nr	N.A.	N.A.	N.A.		
Microtia	nr	nr	nr	N.A.	N.A.	N.A.		
Transposition of great vessels	130	2	nr	5.15	N.A.	1.01	7	
Tetralogy of Fallot	107	2	nr	4.25	N.A.	0.91	11	
Hypoplastic left heart syndrome	57	7	nr	2.50	N.A.	0.92	9	
Coarctation of aorta	138	1	nr	5.42	N.A.	0.98	11	
Choanal atresia, bilateral	62	0	nr	2.42	N.A.	0.90	3	
Cleft palate without cleft lip	193	2	nr	7.61	N.A.	1.07	11	
Cleft lip with or without cleft palate	79	0	nr	3.08	N.A.	0.80	11	
Oesophageal atresia / stenosis with or without fistula	92	1	nr	3.63	N.A.	1.10	11	
Small intestine atresia / stenosis	108	1	nr	4.25	N.A.	1.21	11	
Anorectal atresia / stenosis	147	2	nr	5.81	N.A.	1.22	9	
Undescended testis (36 weeks of gestation or later)	568	1	nr	22.20	N.A.	0.84	10	▼
Hypospadias\ Epispadias	543	1	nr	21.23	N.A.	0.87	11	▼
Indeterminate sex	16	2	nr	0.70	N.A.	1.10	11	
Renal agenesis	100	12	nr	4.37	N.A.	1.00	9	
Cystic kidney	168	12	nr	7.02	N.A.	1.28	8	▲
Bladder exstrophy	7	1	nr	0.31	N.A.	0.76	11	
Polydactyly, preaxial	290	3	nr	11.43	N.A.	1.04	9	
Total Limb reduction defects (include unspecified)	83	1	nr	3.28	N.A.	0.80	7	▼
Transverse	nr	nr	nr	N.A.	N.A.	N.A.		
Preaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Postaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Intercalary	nr	nr	nr	N.A.	N.A.	N.A.		
Mixed	nr	nr	nr	N.A.	N.A.	N.A.		
Diaphragmatic hernia	88	10	nr	3.82	N.A.	1.05	11	
Total Abdominal wall defects (include unspecified)	125	14	nr	5.42	N.A.	0.96	10	
Omphalocele	nr	nr	nr	N.A.	N.A.	N.A.		
Gastroschisis	nr	nr	nr	N.A.	N.A.	N.A.		
Prune belly sequence	125	14	nr	5.42	N.A.	0.96	10	
Trisomy 13	24	12	nr	1.40	N.A.	1.21	11	
Trisomy 18	40	31	nr	2.77	N.A.	1.23	11	
Down syndrome, all ages (include age unknown)	319	53	nr	14.52	N.A.	1.10	11	
<20	nr	nr	nr	N.A.	N.A.	N.A.		
20-24	nr	nr	nr	N.A.	N.A.	N.A.		
25-29	nr	nr	nr	N.A.	N.A.	N.A.		
30-34	nr	nr	nr	N.A.	N.A.	N.A.		
35-39	nr	nr	nr	N.A.	N.A.	N.A.		
40-44	nr	nr	nr	N.A.	N.A.	N.A.		
45+	nr	nr	nr	N.A.	N.A.	N.A.		

N.A.= not available
nr = not reported
* All provinces & territories except Quebec and Nova Scotia

Canada: National, time trend analysis 1989-1999

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89*	1990-94	1995-99	2000	Trend
Births			284,590	1,449,293	1,077,410	256,258	
Anencephaly			2.42	2.23	1.53	1.09	▼
Spina bifida			8.12	7.21	5.49	4.41	▼
Encephalocele			1.62	1.44	0.94	0.78	▼
Microcephaly			4.74	4.95	4.64	4.76	
Hydrocephaly			7.24	7.18	6.93	7.34	
Total Anophthalmos / Microphthalmos (include unspecified)			0.95	1.33	0.93	1.87	
Anophthalmos			0.25	0.39	0.21	0.31	
Microphthalmos			0.70	0.95	0.75	1.56	
Transposition of great vessels			3.76	4.38	5.52	5.15	▲
Tetralogy of Fallot			4.85	4.53	4.85	4.25	
Hypoplastic left heart syndrome			2.92	2.92	2.69	2.50	▼
Coarctation of aorta			5.62	5.35	5.69	5.42	
Choanal atresia, bilateral			2.49	1.57	2.06	2.42	▲
Cleft palate without cleft lip			6.43	7.29	6.98	7.61	
Cleft lip with or without cleft palate			3.69	3.96	3.71	3.08	▼
Oesophageal atresia / stenosis with or without fistula			3.44	3.49	2.99	3.63	
Small intestine atresia / stenosis			3.83	3.59	3.34	4.25	
Anorectal atresia / stenosis			5.83	5.13	4.48	5.81	
Undescended testis (36 weeks of gestation or later)			28.71	26.54	25.95	22.20	▼
Hypospadias\Epispadias			25.05	24.16	24.35	21.23	
Indeterminate sex			0.63	0.65	0.61	0.70	
Renal agenesis			5.24	4.75	4.10	4.37	▼
Cystic kidney			4.15	4.97	5.66	7.02	▲
Bladder exstrophy			0.25	0.46	0.36	0.31	
Polydactyly, preaxial			12.02	11.70	10.57	11.43	▼
Total Limb reduction defects (include unspecified)			4.64	4.59	3.97	3.28	▼
Diaphragmatic hernia			3.83	3.66	3.57	3.82	
Total Abdominal wall defects (include unspecified)			3.55	5.71	5.61	5.42	▲
Prune belly sequence			3.55	5.71	5.61	5.42	▲
Trisomy 13			1.19	1.20	1.09	1.40	
Trisomy 18			1.76	2.26	2.38	2.77	▲
Down syndrome, all ages (include age unknown)			12.33	13.46	13.08	14.52	

* = data include less than five years

TABLE 4

China: Beijing, 2000

Live births (L)	135,623
Stillbirths (S)	596
Total births	136,219
Number of terminations of pregnancy (ToP) for birth defects	nr

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	2	39	nr	3.01	N.A.	0.88	3	
Spina bifida	17	13	nr	2.20	N.A.	0.67	3	▼
Encephalocele	9	16	nr	1.84	N.A.	1.57	3	
Microcephaly	2	2	nr	0.29	N.A.	0.82	3	
Arhinencephaly / Holoprosencephaly	2	4	nr	0.44	N.A.	0.96	3	
Hydrocephaly	10	53	nr	4.62	N.A.	0.80	3	
Total Anophthalmos / Microphthalmos (include unspecified)	4	0	nr	0.29	N.A.	1.28	3	
Anophthalmos	2	0	nr	0.15	N.A.	1.16	3	
Microphthalmos	2	0	nr	0.15	N.A.	1.44	3	
Total Anotia / Microtia (include unspecified)	35	2	nr	2.72	N.A.	0.95	3	
Anotia	4	1	nr	0.37	N.A.	4.81	3	▲
Microtia	31	1	nr	2.35	N.A.	0.85	3	
Transposition of great vessels	nr	nr	nr	N.A.	N.A.	N.A.		
Tetralogy of Fallot	nr	nr	nr	N.A.	N.A.	N.A.		
Hypoplastic left heart syndrome	nr	nr	nr	N.A.	N.A.	N.A.		
Coarctation of aorta	nr	nr	nr	N.A.	N.A.	N.A.		
Choanal atresia, bilateral	nr	nr	nr	N.A.	N.A.	N.A.		
Cleft palate without cleft lip	39	2	nr	3.01	N.A.	1.56	2	▲
Cleft lip with or without cleft palate	130	10	nr	10.28	N.A.	1.15	2	
Oesophageal atresia / stenosis with or without fistula	nr	nr	nr	N.A.	N.A.	N.A.		
Small intestine atresia / stenosis	nr	nr	nr	N.A.	N.A.	N.A.		
Anorectal atresia / stenosis	13	2	nr	1.10	N.A.	0.66	3	
Undescended testis (36 weeks of gestation or later)	2	0	nr	0.15	N.A.	0.64	3	
Hypospadias	17	1	nr	1.32	N.A.	1.40	2	
Epispadias	0	0	nr	0.00	N.A.	N.A.		
Indeterminate sex	10	5	nr	1.10	N.A.	0.94	3	
Renal agenesis	nr	nr	nr	N.A.	N.A.	N.A.		
Cystic kidney	nr	nr	nr	N.A.	N.A.	N.A.		
Bladder exstrophy	0	0	nr	0.00	N.A.	0.00	3	
Polydactyly, preaxial	80	0	nr	5.87	N.A.	0.82	3	
Total Limb reduction defects (include unspecified)	38	6	nr	3.23	N.A.	1.35	3	
Transverse	28	1	nr	2.13	N.A.	1.03	1	
Preaxial	3	5	nr	0.59	N.A.	1.86	2	
Postaxial	0	0	nr	0.00	N.A.	N.A.		
Intercalary	0	0	nr	0.00	N.A.	0.00	2	
Mixed	2	0	nr	0.15	N.A.	N.A.		
Diaphragmatic hernia	nr	nr	nr	N.A.	N.A.	N.A.		
Total Abdominal wall defects (include unspecified)	14	12	nr	1.91	N.A.	0.65	3	▼
Omphalocele	2	3	nr	0.37	N.A.	0.29	3	▼
Gastroschisis	12	9	nr	1.54	N.A.	0.92	3	
Prune belly sequence	1	15	nr	1.17	N.A.	0.85	2	
Trisomy 13	nr	nr	nr	N.A.	N.A.	N.A.		
Trisomy 18	nr	nr	nr	N.A.	N.A.	N.A.		
Down syndrome, all ages (include age unknown)	nr	nr	nr	N.A.	N.A.	N.A.		
<20	nr	nr	nr	N.A.	N.A.	N.A.		
20-24	nr	nr	nr	N.A.	N.A.	N.A.		
25-29	nr	nr	nr	N.A.	N.A.	N.A.		
30-34	nr	nr	nr	N.A.	N.A.	N.A.		
35-39	nr	nr	nr	N.A.	N.A.	N.A.		
40-44	nr	nr	nr	N.A.	N.A.	N.A.		
45+	nr	nr	nr	N.A.	N.A.	N.A.		

N.A. = not available
nr = not reported

TABLE 5

China: CBDMN, 2000

Live births (L)	336,758
Stillbirths (S)	3,154
Total births	339,912
Number of terminations of pregnancy (ToP) for birth defects	nr

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	17	129	nr	4.30	N.A.	0.77	4	▼
Spina bifida	128	118	nr	7.24	N.A.	0.95	4	
Encephalocele	25	27	nr	1.53	N.A.	0.79	4	
Microcephaly	5	2	nr	0.21	N.A.	0.77	3	
Arhinencephaly / Holoprosencephaly	nr	nr	nr	N.A.	N.A.	N.A.		
Hydrocephaly	53	182	nr	6.91	N.A.	1.04	4	
Total Anophthalmos / Microphthalmos (include unspecified)	9	4	nr	0.38	N.A.	0.95	4	
Anophthalmos	nr	nr	nr	N.A.	N.A.	N.A.		
Microphthalmos	nr	nr	nr	N.A.	N.A.	N.A.		
Total Anotia / Microtia (include unspecified)	96	4	nr	2.94	N.A.	0.99	4	
Anotia	nr	nr	nr	N.A.	N.A.	N.A.		
Microtia	nr	nr	nr	N.A.	N.A.	N.A.		
Transposition of great vessels	nr	nr	nr	N.A.	N.A.	N.A.		
Tetralogy of Fallot	nr	nr	nr	N.A.	N.A.	N.A.		
Hypoplastic left heart syndrome	nr	nr	nr	N.A.	N.A.	N.A.		
Coarctation of aorta	nr	nr	nr	N.A.	N.A.	N.A.		
Choanal atresia, bilateral	nr	nr	nr	N.A.	N.A.	N.A.		
Cleft palate without cleft lip	80	3	nr	2.44	N.A.	1.06	4	
Cleft lip with or without cleft palate	438	50	nr	14.36	N.A.	1.03	4	
Oesophageal atresia / stenosis with or without fistula	21	6	nr	0.79	N.A.	1.16	4	
Small intestine atresia / stenosis	nr	nr	nr	N.A.	N.A.	N.A.		
Anorectal atresia / stenosis	108	22	nr	3.82	N.A.	1.48	4	▲
Undescended testis (36 weeks of gestation or later)	20	3	nr	0.68	N.A.	0.99	3	
Hypospadias	132	3	nr	3.97	N.A.	0.94	1	
Epispadias	nr	nr	nr	N.A.	N.A.	N.A.		
Indeterminate sex	21	12	nr	0.97	N.A.	0.87	4	
Renal agenesis	nr	nr	nr	N.A.	N.A.	N.A.		
Cystic kidney	14	23	nr	1.09	N.A.	1.47	4	
Bladder exstrophy	3	1	nr	0.12	N.A.	1.41	4	
Polydactyly, preaxial	nr	nr	nr	N.A.	N.A.	N.A.	0	
Total Limb reduction defects (include unspecified)	138	49	nr	5.50	N.A.	1.05	4	
Transverse	nr	nr	nr	N.A.	N.A.	N.A.		
Preaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Postaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Intercalary	nr	nr	nr	N.A.	N.A.	N.A.		
Mixed	nr	nr	nr	N.A.	N.A.	N.A.		
Diaphragmatic hernia	19	2	nr	0.62	N.A.	1.18	4	
Total Abdominal wall defects (include unspecified)	81	67	nr	4.35	N.A.	1.05	4	
Omphalocele	33	25	nr	1.71	N.A.	1.03	2	
Gastroschisis	48	42	nr	2.65	N.A.	0.96	4	
Prune belly sequence	nr	nr	nr	N.A.	N.A.	N.A.		
Trisomy 13	nr	nr	nr	N.A.	N.A.	N.A.		
Trisomy 18	nr	nr	nr	N.A.	N.A.	N.A.		
Down syndrome, all ages (include age unknown)	69	1	nr	2.06	N.A.	1.15	4	
<20	0	0	nr	0.00	N.A.	N.A.		
20-24	7	1	nr	1.05	N.A.	0.96	4	
25-29	33	0	nr	1.67	N.A.	1.20	4	
30-34	13	0	nr	2.46	N.A.	1.00	4	
35+	16	0	nr	12.19	N.A.	1.20	4	

N.A. = not available
nr = not reported

TABLE 6

Czech Republic, 2000

Live births (L)	90,910
Stillbirths (S)	259
Total births	91,169
Number of terminations of pregnancy (ToP) for birth defects	425

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	0	0	33	0.00	3.60	0.00	11	
Spina bifida	17	0	20	1.86	4.04	0.94	10	
Encephalocele	0	0	9	0.00	0.98	0.00	26	
Microcephaly	7	0	2	0.77	0.98	1.01	17	
Arhinencephaly / Holoprosencephaly	2	0	2	0.22	0.44	2.02	5	
Hydrocephaly	20	1	11	2.30	3.49	0.84	25	
Total Anophthalmos / Microphthalmos (include unspecified)	2	0	0	0.22	0.22	0.41	7	
Anophthalmos	0	0	0	0.00	0.00	0.00	2	
Microphthalmos	2	0	0	0.22	0.22	1.32	2	
Total Anotia / Microtia (include unspecified)	99	0	0	10.86	10.81	1.04	1	
Anotia	nr	nr	nr	N.A.	N.A.	N.A.		
Microtia	nr	nr	nr	N.A.	N.A.	N.A.		
Transposition of great vessels	40	0	0	4.39	4.37	1.93	23	▲
Tetralogy of Fallot	29	0	0	3.18	3.17	1.11	5	
Hypoplastic left heart syndrome	8	0	0	0.88	0.87	0.50	6	
Coarctation of aorta	29	0	0	3.18	3.17	0.92	6	
Choanal atresia, bilateral	1	0	0	0.11	0.11	0.34	6	
Cleft palate without cleft lip	51	0	0	5.59	5.57	0.93	26	
Cleft lip with or without cleft palate	85	0	5	9.32	9.83	0.93	26	
Oesophageal atresia / stenosis with or without fistula	24	0	0	2.63	2.62	1.27	8	
Small intestine atresia / stenosis	17	0	0	1.86	1.86	0.90	6	
Anorectal atresia / stenosis	23	0	0	2.52	2.51	0.99	8	
Undescended testis (36 weeks of gestation or later)	161	0	0	17.66	17.58	1.12	1	
Hypospadias	246	0	0	26.98	26.86	1.04	5	
Epispadias	4	0	0	0.44	0.44	0.95	6	
Indeterminate sex	3	1	0	0.44	0.44	1.03	6	
Renal agenesis	21	0	10	2.30	3.38	1.56	26	
Cystic kidney	42	0	10	4.61	5.68	1.98	26	▲
Bladder exstrophy	1	0	0	0.11	0.11	0.90	23	
Polydactyly, preaxial	112	0	0	12.28	12.23	0.97	12	
Total Limb reduction defects (include unspecified)	64	0	0	7.02	6.99	1.44	24	▲
Transverse	nr	nr	nr	N.A.	N.A.	N.A.		
Preaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Postaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Intercalary	nr	nr	nr	N.A.	N.A.	N.A.		
Mixed	nr	nr	nr	N.A.	N.A.	N.A.		
Diaphragmatic hernia	10	0	0	1.10	1.09	0.56	15	
Total Abdominal wall defects (include unspecified)	14	0	0	1.54	1.53	0.77	9	
Omphalocele	9	0	12	0.99	2.29	0.80	6	
Gastroschisis	5	0	18	0.55	2.51	0.69	10	
Prune belly sequence	nr	nr	nr	N.A.	N.A.	N.A.		
Trisomy 13	4	0	9	0.44	1.42	1.38	6	
Trisomy 18	5	0	26	0.55	3.38	0.72	6	
Down syndrome, all ages (include age unknown)	49	0	87	5.37	14.85	0.78	17	
<20	3	0	1	6.69	8.92	1.51	26	
20-24	11	0	14	3.80	8.63	0.87	24	
25-29	12	0	20	3.19	8.51	0.51	19	
30-34	11	0	26	7.56	25.38	0.85	24	
35-39	6	0	15	12.38	43.18	1.03	6	
40-44	4	0	8	54.87	162.82	1.05	17	
45+	0	0	3	0.00	1000.00	0.00	26	

N.A. = not available
nr = not reported

Czech Republic, time trend analysis 1974-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births	1,112,785	718,080	664,018	610,039	458,693	91,169	
Anencephaly	2.99	3.61	1.20	0.13	0.13	0.00	▼
Spina bifida	3.91	4.02	3.42	2.07	1.90	1.86	▼
Encephalocele	0.45	0.82	0.42	0.49	0.35	0.00	
Microcephaly	1.04	1.02	0.95	0.57	0.70	0.77	▼
Arhinencephaly / Holoprosencephaly					0.11	0.22	
Hydrocephaly	2.31	2.73	2.79	3.20	2.44	2.30	
Total Anophthalmos / Microphthalmos (include unspecified)				0.89	0.57	0.22	▼
Anophthalmos					0.06*	0.00	N.A.
Microphthalmos					0.17*	0.22	N.A.
Total Anotia / Microtia (include unspecified)	0.10	0.10	0.11*	0.37*	2.46	10.86	▲
Transposition of great vessels	2.75	2.10	1.63	1.60*	2.70	4.39	
Tetralogy of Fallot				1.40*	2.86	3.18	▲
Hypoplastic left heart syndrome	0.56	0.70	0.71	1.26*	1.66	0.88	▲
Coarctation of aorta				3.84*	3.36	3.18	
Choanal atresia, bilateral				0.19*	0.35	0.11	
Cleft palate without cleft lip	5.70	6.71	5.81	5.48	6.47	5.59	
Cleft lip with or without cleft palate	9.66	10.29	11.05	10.06	9.05	9.32	
Oesophageal atresia / stenosis with or without fistula	1.15	1.24	1.22	1.31	2.31	2.63	▲
Small intestine atresia / stenosis				1.78*	2.14	1.86	
Anorectal atresia / stenosis	1.35	1.31	0.63	1.69	2.77	2.52	▲
Undescended testis (36 weeks of gestation or later)				2.81*	10.03	17.66	▲
Hypospadias	18.30	19.89	22.73	23.44	25.94	26.98	▲
Epispadias				0.28*	0.50	0.44	
Indeterminate sex				0.37*	0.44	0.44	
Renal agenesis	1.62	1.50	1.07	1.28	1.92	2.30	
Cystic kidney	2.57	2.41	2.21	1.79	2.53	4.61	
Bladder exstrophy	0.16	0.11	0.03	0.13*	0.17	0.11	
Polydactyly, preaxial			13.09*	12.21	13.06	12.28	
Total Limb reduction defects (include unspecified)	4.34	5.07	4.48*	5.66	4.45	7.02	▲
Diaphragmatic hernia	2.62	2.52	2.27	1.57	1.98	1.10	▼
Total Abdominal wall defects (include unspecified)	3.33	3.52	3.73	2.31	1.96	1.54	▼
Omphalocele	2.32	2.14	2.56	2.03	1.29	0.99	▼
Gastroschisis	1.02	1.38	1.17	0.71*	0.65	0.55	▼
Trisomy 13				0.28	0.33	0.44	
Trisomy 18				0.56*	0.81	0.55	
Down syndrome, all ages (include age unknown)	8.35	8.15	6.87	7.20	6.24	5.37	▼
<20	4.84	4.49	4.68	3.71	4.30	6.69	
20-24	5.46	4.83	3.85	3.62	4.65	3.80	▼
25-29	8.38	7.50	6.95	6.02	5.52	3.19	▼
30-34	11.81	9.67	7.91	9.56	7.68	7.56	▼
35-39	32.61	31.38	27.37	20.76	10.76	12.38	▼
40-44	123.51	99.30	68.99	55.02	32.12	54.87	▼
45+	207.47	360.36	404.04	173.91	227.27	0.00	

* = data include less than five years
N.A. = not available (lack of historical data)

TABLE 7

England and Wales, 2000

Live births (L)	604,130
Stillbirths (S)	3,174
Total births	607,304
Number of terminations of pregnancy (ToP) for birth defects	1,833

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	11	16	165	0.44	3.15	1.08	13	
Spina bifida	64	19	126	1.37	3.43	1.40	8	▲
Encephalocele	13	2	20	0.25	0.57	1.56	8	
Microcephaly	26	6	3	0.53	0.57	1.24	11	
Arhinencephaly / Holoprosencephaly	5	4	26	0.15	0.57	1.36	20	
Hydrocephaly	74	25	40	1.63	2.28	1.43	10	▲
Total Anophthalmos / Microphthalmos (include unspecified)	16	0	0	0.26	0.26	0.86	15	
Anophthalmos	1	0	0	0.02	0.02	0.13	12	▼
Microphthalmos	15	0	0	0.25	0.25	1.47	21	
Total Anotia / Microtia (include unspecified)	11	0	0	0.18	0.18	1.32	5	
Anotia	8	0	0	0.13	0.13	0.48	1	
Microtia	3	0	0	0.05	0.05	2.11	4	
Transposition of great vessels	67	2	2	1.14	1.17	2.25	24	▲
Tetralogy of Fallot	73	4	7	1.27	1.38	1.98	2	▲
Hypoplastic left heart syndrome	38	9	19	0.77	1.08	1.84	6	▲
Coarctation of aorta	52	2	2	0.89	0.92	1.54	2	▲
Choanal atresia, bilateral	13	1	0	0.23	0.23	1.82	11	
Cleft palate without cleft lip	195	2	0	3.24	3.23	1.04	10	
Cleft lip with or without cleft palate	383	8	9	6.44	6.57	1.02	7	
Oesophageal atresia / stenosis with or without fistula	72	1	0	1.20	1.20	1.37	12	
Small intestine atresia / stenosis	63	1	2	1.05	1.08	1.70	20	▲
Anorectal atresia / stenosis	109	4	0	1.86	1.86	1.37	7	▲
Undescended testis (36 weeks of gestation or later)	19	0	0	0.31	0.31	1.34	10	
Hypospadias	583	1	0	9.62	9.59	1.14	2	▲
Epispadias	20	0	0	0.33	0.33	1.11	6	
Indeterminate sex	45	9	0	0.89	0.89	1.27	21	
Renal agenesis	86	11	29	1.60	2.07	1.84	26	▲
Cystic kidney	142	2	24	2.37	2.76	1.14	1	
Bladder exstrophy	9	0	0	0.15	0.15	0.86	17	
Polydactyly, preaxial	45	0	nr	0.74	N.A.	1.16	5	
Total Limb reduction defects (include unspecified)	196	9	13	3.38	3.58	1.13	11	
Transverse	120	5	nr	2.06	N.A.	1.24	10	
Preaxial	9	2	nr	0.18	N.A.	0.89	10	
Postaxial	8	0	nr	0.13	N.A.	1.00	10	
Intercalary	32	1	nr	0.54	N.A.	1.03	10	
Mixed	17	1	nr	0.30	N.A.	1.75	10	
Diaphragmatic hernia	73	8	13	1.33	1.54	1.45	8	▲
Total Abdominal wall defects (include unspecified)	200	11	16	3.47	3.73	1.35	10	▲
Omphalocele	60	8	10	1.12	1.28	1.59	5	▲
Gastroschisis	116	2	5	1.94	2.02	1.08	2	
Prune belly sequence	3	0	1	0.05	0.07	1.44	5	
Trisomy 13	10	6	43	0.26	0.97	1.35	21	
Trisomy 18	25	13	111	0.63	2.45	1.17	21	
Down syndrome, all ages (include age unknown)	380	21	358	6.60	12.46	1.10	14	
<20	21	1	6	4.77	6.07	1.36	13	
20-24	35	3	13	3.51	4.71	0.98	13	
25-29	68	4	31	4.20	6.01	1.12	10	
30-34	97	5	79	5.64	10.00	0.97	10	
35-39	92	5	146	11.36	28.40	0.88	10	
40-44	52	3	78	37.93	91.23	1.08	13	
45+	6	0	5	89.82	163.45	1.32	13	

N.A. = not available
nr = not reported

England and Wales, time trend analysis 1974-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births	3,662,869	3,200,513	3,395,640	3,448,621	3,213,870	607,304	
Anencephaly	10.42	3.01	0.64	0.35	0.42	0.44	▼
Spina bifida	15.67	8.55	3.32	1.25	0.96	1.37	▼
Encephalocele	2.16	0.99	0.47	0.25	0.13	0.25	▼
Microcephaly	1.14*	1.12	0.76	0.41	0.43	0.53	▼
Arhinencephaly / Holoprosencephaly	0.08*	0.05	0.15	0.13	0.11	0.15	▲
Hydrocephaly	9.32	5.83	2.51	1.18	1.09	1.63	▼
Total Anophthalmos / Microphthalmos (include unspecified)	0.34*	0.45	0.35	0.26	0.30	0.26	▼
Anophthalmos	0.23*	0.27	0.19	0.13	0.10	0.02	▼
Microphthalmos	0.11*	0.19	0.16	0.13	0.21	0.25	
Total Anotia / Microtia (include unspecified)					0.14	0.18	
Anotia					0.10	0.13	▲
Microtia					0.04	0.05	
Transposition of great vessels	0.38	0.51	0.57	0.46	0.56	1.14	▲
Tetralogy of Fallot			0.32*	0.28	0.52	1.27	▲
Hypoplastic left heart syndrome	0.09*	0.22	0.28	0.21	0.42	0.77	▲
Coarctation of aorta			0.25*	0.30	0.46	0.89	▲
Choanal atresia, bilateral	0.23*	0.19	0.25	0.13	0.11	0.23	▼
Cleft palate without cleft lip	10.48	10.08	5.99	3.23	2.97	3.24	▼
Cleft lip with or without cleft palate	9.79	9.20	8.33	7.31	6.18	6.44	▼
Oesophageal atresia / stenosis with or without fistula	1.65	1.65	1.36	0.84	0.84	1.20	▼
Small intestine atresia / stenosis	0.48*	0.57	0.67	0.57	0.67	1.05	▲
Anorectal atresia / stenosis	2.90	2.63	2.22	1.64	1.33	1.86	▼
Undescended testis (36 weeks of gestation or later)	4.54*	7.70	8.46	0.25	0.21	0.31	▼
Hypospadias				7.09*	7.91	9.62	▲
Epispadias			0.00*	0.30*	0.30	0.33	▲
Indeterminate sex	0.81*	0.78	0.76	0.50	0.75	0.89	
Renal agenesis	0.62	1.22	1.05	0.72	0.77	1.60	
Cystic kidney	0.39*	0.47	0.81	0.96	1.50	2.37	▲
Bladder exstrophy	0.20*	0.23	0.19	0.15	0.16	0.15	▼
Polydactyly, preaxial					0.64	0.74	
Total Limb reduction defects (include unspecified)	5.27	4.96	4.44	3.01	2.90	3.38	▼
Transverse				1.67	1.66	2.06	
Preaxial				0.24	0.17	0.18	
Postaxial				0.14	0.12	0.13	
Intercalary				0.55	0.50	0.54	
Mixed				0.17	0.17	0.30	
Diaphragmatic hernia	1.17*	1.52	1.39	1.12	0.87	1.33	▼
Total Abdominal wall defects (include unspecified)	6.88	7.44	5.65	2.54	2.61	3.47	▼
Omphalocele			1.93*	2.20	0.71	1.12	▼
Gastroschisis				1.27*	1.57	1.94	▲
Prune belly sequence					0.03	0.05	
Trisomy 13	0.14*	0.16	0.23	0.22	0.17	0.26	
Trisomy 18	0.42*	0.56	0.66	0.45	0.49	0.63	
Down syndrome, all ages (include age unknown)	7.01	7.76	6.66	5.44	6.13	6.60	▼
<20			4.23*	2.91	3.59	4.77	
20-24			3.95*	3.41	3.52	3.51	
25-29			4.59*	3.97	3.51	4.20	▼
30-34			8.45*	5.78	5.81	5.64	▼
35-39			18.54*	13.13	12.66	11.36	▼
40-44			35.05*	31.08	38.54	37.93	
45+			51.38*	58.16	84.80	89.82	

* = data include less than five years

TABLE 8

Finland, 2000

Live births (L)	56,742
Stillbirths (S)	227
Total births	56,969
Number of terminations of pregnancy (ToP) for birth defects	236

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	1	1	11	0.35	2.27	0.65	10	
Spina bifida	15	0	5	2.63	3.50	0.88	14	
Encephalocele	2	0	9	0.35	1.92	0.68	17	
Microcephaly	5	0	0	0.88	0.87	0.43	7	
Arhinencephaly / Holoprosencephaly	1	0	6	0.18	1.22	0.22	7	
Hydrocephaly	20	2	15	3.86	6.47	0.94	9	
Total Anophthalmos / Microphthalmos (include unspecified)	9	0	4	1.58	2.27	0.92	7	
Anophthalmos	3	0	1	0.53	0.70	1.51	7	
Microphthalmos	6	0	3	1.05	1.57	0.77	7	
Total Anotia / Microtia (include unspecified)	22	0	1	3.86	4.02	0.89	9	
Anotia	nr	nr	nr	N.A.	N.A.	N.A.		
Microtia	nr	nr	nr	N.A.	N.A.	N.A.		
Transposition of great vessels	21	0	0	3.69	3.67	1.02	9	
Tetralogy of Fallot	26	0	1	4.56	4.72	1.51	7	
Hypoplastic left heart syndrome	23	1	2	4.21	4.55	1.33	7	
Coarctation of aorta	68	1	0	12.11	12.06	1.41	7	▲
Choanal atresia, bilateral	5	0	0	0.88	0.87	0.92	7	
Cleft palate without cleft lip	66	0	4	11.59	12.24	0.92	16	
Cleft lip with or without cleft palate	58	2	9	10.53	12.06	1.16	18	
Oesophageal atresia / stenosis with or without fistula	26	1	0	4.74	4.72	1.44	8	
Small intestine atresia / stenosis	7	0	0	1.23	1.22	1.12	7	
Anorectal atresia / stenosis	30	4	2	5.97	6.29	1.38	9	
Undescended testis (36 weeks of gestation or later)	nr	nr	nr	N.A.	N.A.	N.A.		
Hypospadias severe	12	0	0	2.11	2.10	0.70	6	
Epispadias	2	0	0	0.35	0.35	1.37	7	
Indeterminate sex	8	4	2	2.11	2.45	3.48	7	▲
Renal agenesis	4	1	3	0.88	1.40	0.70	16	
Cystic kidney	27	0	13	4.74	6.99	1.04	7	
Bladder exstrophy	2	1	1	0.53	0.70	1.13	7	
Polydactyly, preaxial	23	0	1	4.04	4.20	0.98	7	
Total Limb reduction defects (include unspecified)	22	1	12	4.04	6.12	0.70	10	
Transverse	11	0	6	1.93	2.97	N.A.		
Preaxial	5	0	2	0.88	1.22	N.A.		
Postaxial	2	0	0	0.35	0.35	N.A.		
Intercalary	0	1	0	0.18	0.17	N.A.		
Mixed	1	0	1	0.18	0.35	N.A.		
Diaphragmatic hernia	6	3	2	1.58	1.92	0.76	10	
Total Abdominal wall defects (include unspecified)	11	3	23	2.46	6.47	0.72	10	
Omphalocele	8	2	11	1.76	3.67	0.96	11	
Gastroschisis	3	1	11	0.70	2.62	0.51	10	
Prune belly sequence	1	0	0	0.18	0.17	0.94	7	
Trisomy 13	6	0	5	1.05	1.92	0.79	7	
Trisomy 18	12	9	22	3.69	7.52	1.35	7	
Down syndrome, all ages (include age unknown)	67	0	75	11.76	24.82	1.06	14	
<20	0	0	0	0.00	0.00	0.00	9	
20-24	7	0	0	7.20	7.20	1.09	9	
25-29	12	0	6	6.94	10.41	0.89	9	
30-34	18	0	11	10.11	16.28	0.89	7	
35-39	17	0	28	19.60	51.71	1.01	8	
40-44	9	0	29	51.08	212.17	0.89	8	
45+	4	0	1	408.16	505.05	2.31	8	

N.A. = not available
nr = not reported

TABLE 8a

Finland, time trend analysis 1974-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births	390,243	325,924	311,331	329,157	299,028	56,969	
Anencephaly	2.56	1.87	1.09	0.64	0.43	0.35	▼
Spina bifida	2.00	2.24	2.22	3.19	3.21	2.63	▲
Encephalocele		0.38*	0.74	0.52	0.33	0.35	
Microcephaly				2.30*	1.91	0.88	
Arhinencephaly / Holoprosencephaly				0.69*	0.84	0.18	
Hydrocephaly	1.79	2.58	1.83	3.25	4.25	3.86	▲
Total Anophthalmos / Microphthalmos (include unspecified)				1.84*	1.67	1.58	
Anophthalmos				0.38*	0.33	0.53	
Microphthalmos				1.46*	1.34	1.05	
Total Anotia / Microtia (include unspecified)		0.91*	0.87	3.43	4.48	3.86	▲
Transposition of great vessels			1.05*	2.73	3.95	3.69	▲
Tetralogy of Fallot				1.99*	3.48	4.56	▲
Hypoplastic left heart syndrome			1.85*	2.31	3.28	4.21	▲
Coarctation of aorta				7.51*	9.03	12.11	▲
Choanal atresia, bilateral				0.77*	1.04	0.88	
Cleft palate without cleft lip	8.02	10.83	11.85	12.94	12.94	11.59	▲
Cleft lip with or without cleft palate	7.76	8.07	8.38	9.21	9.93	10.53	▲
Oesophageal atresia / stenosis with or without fistula	1.08	1.66	1.83	2.22	3.54	4.74	▲
Small intestine atresia / stenosis				1.23*	1.04	1.23	
Anorectal atresia / stenosis	1.28	0.89	2.15	3.68	4.38	5.97	▲
Hypospadias				3.37*	2.82*	2.11	
Epispadias				0.23*	0.27	0.35	
Indeterminate sex				0.54*	0.64	2.11	▲
Renal agenesis		1.84*	1.19	1.52	0.90	0.88	▼
Cystic kidney				4.75*	4.48	4.74	
Bladder exstrophy				0.54*	0.43	0.53	
Polydactyly, preaxial				4.44*	3.98	4.04	
Total Limb reduction defects (include unspecified)	4.36	4.08	3.92	5.50	6.05	4.04	▲
Transverse				0.00*	0.00	1.93	▲
Preaxial				0.00*	0.00	0.88	▲
Postaxial				0.00*	0.00	0.35	▲
Intercalary				0.00*	0.00	0.18	
Mixed				0.00*	0.00	0.18	
Diaphragmatic hernia		1.06*	0.42	1.88	2.27	1.58	▲
Total Abdominal wall defects (include unspecified)		2.14*	1.90	3.16	3.68	2.46	▲
Omphalocele	1.02	1.17	1.25	1.88	1.97	1.76	▲
Gastroschisis		0.92*	0.42	1.15	1.61	0.70	▲
Prune belly sequence				0.31*	0.13	0.18	
Trisomy 13				1.30*	1.34	1.05	
Trisomy 18				2.53*	2.81	3.69	
Down syndrome, all ages (include age unknown)	5.89	8.93	8.61	13.28	10.97	11.76	▲
<20				11.54*	5.22	0.00	
20-24				7.25*	6.00	7.20	
25-29				8.61*	7.07	6.94	
30-34				15.30*	10.44	10.11	▼
35-39				24.75*	17.48	19.60	
40-44				74.26*	56.55	51.08	▼
45+				369.23*	147.37	408.16	

* = data include less than five years

TABLE 9

France: Central East, 2000

Live births (L)	107,615
Stillbirths (S)	442
Total births	108,057
Number of terminations of pregnancy (ToP) for birth defects	475

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	0	0	15	0.00	1.38	0.00	10	
Spina bifida	3	0	25	0.28	2.58	0.22	5	▼
Encephalocele	2	0	9	0.19	1.01	0.56	16	
Microcephaly	11	1	8	1.11	1.84	1.03	6	
Arhinencephaly / Holoprosencephaly	2	2	10	0.37	1.29	0.59	22	
Hydrocephaly	21	1	33	2.04	5.07	0.80	22	
Total Anophthalmos / Microphthalmos (include unspecified)	9	0	3	0.83	1.11	0.73	22	
Anophthalmos	0	0	0	0.00	0.00	0.00	22	
Microphthalmos	9	0	3	0.83	1.11	0.85	22	
Total Anotia / Microtia (include unspecified)	5	0	7	0.46	1.11	0.69	22	
Anotia	3	0	4	0.28	0.64	0.75	22	
Microtia	2	0	3	0.19	0.46	0.62	22	
Transposition of great vessels	20	1	3	1.94	2.21	0.62	22	▼
Tetralogy of Fallot	20	0	6	1.85	2.40	0.88	22	
Hypoplastic left heart syndrome	13	1	18	1.30	2.95	0.70	22	
Coarctation of aorta	17	0	3	1.57	1.84	0.62	22	
Choanal atresia, bilateral	12	0	1	1.11	1.20	1.55	22	
Cleft palate without cleft lip	42	0	3	3.89	4.15	0.67	12	▼
Cleft lip with or without cleft palate	53	0	10	4.90	5.80	0.72	22	▼
Oesophageal atresia / stenosis with or without fistula	23	1	1	2.22	2.30	0.74	22	
Small intestine atresia / stenosis	24	0	4	2.22	2.58	1.07	15	
Anorectal atresia / stenosis	23	0	11	2.13	3.13	0.68	19	
Undescended testis (36 weeks of gestation or later)	nr	nr	nr	N.A.	N.A.	N.A.		
Hypospadias	129	1	2	12.03	12.16	0.97	4	
Epispadias	0	0	4	0.00	0.37	0.00	22	
Indeterminate sex	4	0	2	0.37	0.55	0.76	10	
Renal agenesis	2	1	15	0.28	1.66	0.77	12	
Cystic kidney	34	1	9	3.24	4.05	1.12	13	
Bladder exstrophy	1	0	0	0.09	0.09	0.32	22	
Polydactyly, preaxial	17	0	2	1.57	1.75	0.82	12	
Total Limb reduction defects (include unspecified)	34	4	11	3.52	4.51	0.84	22	
Transverse	18	2	2	1.85	2.03	0.80	22	
Preaxial	6	1	4	0.65	1.01	1.01	22	
Postaxial	6	1	0	0.65	0.64	1.94	22	
Intercalary	2	0	2	0.19	0.37	0.41	22	
Mixed	2	0	3	0.19	0.46	0.56	18	
Diaphragmatic hernia	14	0	3	1.30	1.57	0.52	22	▼
Total Abdominal wall defects (include unspecified)	21	3	18	2.22	3.87	1.05	21	
Omphalocele	14	2	16	1.48	2.95	1.30	22	
Gastroschisis	7	1	2	0.74	0.92	0.73	19	
Prune belly sequence	0	0	1	0.00	0.09	0.00	22	
Trisomy 13	4	0	16	0.37	1.84	0.55	22	
Trisomy 18	5	0	49	0.46	4.98	0.33	22	▼
Down syndrome, all ages (include age unknown)	62	1	160	5.83	20.55	1.00	2	
<20	2	0	0	11.88	11.88	1.87	22	
20-24	2	0	11	1.48	9.60	0.25	22	
25-29	8	0	28	2.04	9.19	0.45	10	
30-34	14	1	35	4.21	14.03	1.22	2	
35-39	11	0	51	7.30	41.02	0.55	5	
40-44	9	0	28	30.87	125.72	1.00	8	
45+	1	0	4	82.64	400.00	0.78	22	

N.A. = not available
nr = not reported

France: Central East, time trend analysis 1976-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79*	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births	140,274	400,702	464,127	517,380	513,148	108,057	
Anencephaly	0.78	1.00	0.50	0.14	0.06	0.00	▼
Spina bifida	4.56	3.54	2.48	2.26	1.27	0.28	▼
Encephalocele	0.57	0.72	0.39	0.44	0.18	0.19	▼
Microcephaly	1.35	2.00	2.48	1.78	1.01	1.11	▼
Arhinencephaly / Holoprosencephaly	0.50	0.30	0.71	1.16	0.29	0.37	
Hydrocephaly	1.64	2.45	3.34	2.63	2.12	2.04	
Total Anophthalmos / Microphthalmos (include unspecified)	1.35	0.97	1.49	1.14	0.92	0.83	
Anophthalmos	0.21	0.17	0.17	0.17	0.12	0.00	
Microphthalmos	1.14	0.80	1.31	0.97	0.80	0.83	
Total Anotia / Microtia (include unspecified)	0.36	0.52	0.75	0.68	0.78	0.46	
Anotia	0.14	0.32	0.45	0.39	0.37	0.28	
Microtia	0.21	0.20	0.30	0.29	0.41	0.19	
Transposition of great vessels	3.14	3.09	3.47	3.19	2.86	1.94	
Tetralogy of Fallot	1.57	2.35	2.39	2.16	1.77	1.85	
Hypoplastic left heart syndrome	0.93	2.05	2.35	1.72	1.60	1.30	
Coarctation of aorta	1.92	2.55	2.87	2.53	2.36	1.57	
Choanal atresia, bilateral	0.71	0.65	0.86	0.62	0.74	1.11	
Cleft palate without cleft lip	4.35	4.77	4.80	5.62	6.04	3.89	▲
Cleft lip with or without cleft palate	7.06	6.86	5.69	7.21	7.31	4.90	
Oesophageal atresia / stenosis with or without fistula	2.50	3.99	2.50	2.88	2.88	2.22	
Small intestine atresia / stenosis	1.78	1.17	2.09	1.82	2.30	2.22	▲
Anorectal atresia / stenosis	2.42	2.57	3.21	3.09	3.35	2.13	
Hypospadias	5.87	6.11	9.22	9.55	11.89	12.03	▲
Epispadias	0.29	0.12	0.26	0.21	0.21	0.00	
Indeterminate sex	0.71	0.67	0.80	0.58	0.39	0.37	▼
Renal agenesis	0.43	0.70	0.67	0.62	0.14	0.28	▼
Cystic kidney	0.29	1.22	2.28	2.86	3.02	3.24	▲
Bladder exstrophy	0.29	0.07	0.45	0.31	0.27	0.09	
Polydactyly, preaxial	0.78	0.85	1.29	1.70	2.24	1.57	▲
Total Limb reduction defects (include unspecified)	3.78	4.64	4.27	3.98	4.03	3.52	
Transverse	2.21	2.15	2.48	2.30	2.36	1.85	
Preaxial	0.43	0.77	0.71	0.52	0.66	0.65	
Postaxial	0.36	0.30	0.37	0.39	0.27	0.65	
Intercalary	0.29	0.65	0.32	0.52	0.37	0.19	
Mixed	0.36	0.65	0.37	0.25	0.29	0.19	▼
Diaphragmatic hernia	1.92	2.75	2.54	2.42	2.53	1.30	
Total Abdominal wall defects (include unspecified)	1.28	1.97	2.05	2.22	2.30	2.22	▲
Omphalocele	0.93	1.20	1.16	1.06	1.21	1.48	
Gastroschisis	0.36	0.77	0.88	1.16	1.09	0.74	▲
Prune belly sequence	0.29	0.15	0.28	0.39	0.25	0.00	
Trisomy 13	0.29	0.57	0.88	1.04	0.29	0.37	
Trisomy 18	0.86	0.97	1.96	2.11	0.68	0.46	
Down syndrome, all ages (include age unknown)	11.26	11.40	11.16	10.42	7.81	5.83	▼
<20	7.76	4.72	5.68	6.10	9.61	11.88	
20-24	6.52	7.48	4.93	6.07	4.50	1.48	▼
25-29	4.78	5.27	7.47	5.02	4.14	2.04	▼
30-34	11.61	11.08	9.49	7.83	6.14	4.21	▼
35-39	23.14	31.35	24.18	19.25	13.35	7.30	▼
40-44	131.11	67.64	55.20	41.11	28.00	30.87	▼
45+	119.05	94.34	158.37	121.95	62.02	82.64	

* = data include less than six years

TABLE 10

France: Paris, 2000

Live births (L)	39,200 *
Stillbirths (S)	200 *
Total births	39,400*
Number of terminations of pregnancy (ToP) for birth defects	431

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	0	1	21	0.25	5.52	0.87	12	
Spina bifida	3	1	23	1.02	6.78	1.06	13	
Encephalocele	2	0	9	0.51	2.76	0.81	19	
Microcephaly	3	0	7	0.76	2.51	0.41	17	
Arhinencephaly / Holoprosencephaly	2	1	11	0.76	3.51	2.42	19	
Hydrocephaly	18	2	18	5.08	9.54	1.32	19	
Total Anophthalmos / Microphthalmos (include unspecified)	6	0	3	1.52	2.26	1.46	19	
Anophthalmos	2	0	1	0.51	0.75	2.35	19	
Microphthalmos	4	0	2	1.02	1.51	1.18	19	
Total Anotia / Microtia (include unspecified)	3	0	0	0.76	0.75	0.86	19	
Anotia	3	0	0	0.76	0.75	1.78	19	
Microtia	0	0	0	0.00	0.00	0.00	19	
Transposition of great vessels	16	0	5	4.06	5.27	1.01	8	
Tetralogy of Fallot	10	0	2	2.54	3.01	0.91	10	
Hypoplastic left heart syndrome	4	0	15	1.02	4.77	0.92	16	
Coarctation of aorta	15	0	0	3.81	3.77	1.36	13	
Choanal atresia, bilateral	1	0	0	0.25	0.25	0.47	19	
Cleft palate without cleft lip	27	0	9	6.85	9.04	1.69	19	
Cleft lip with or without cleft palate	28	0	14	7.11	10.54	1.09	19	
Oesophageal atresia / stenosis with or without fistula	12	2	6	3.55	5.02	1.27	19	
Small intestine atresia / stenosis	5	0	1	1.27	1.51	0.84	14	
Anorectal atresia / stenosis	6	0	6	1.52	3.01	0.60	19	
Undescended testis (36 weeks of gestation or later)	33	0	0	8.38	8.29	1.54	4	
Hypospadias	38	0	1	9.64	9.79	0.82	19	
Epispadias	1	0	0	0.25	0.25	0.61	19	
Indeterminate sex	2	0	2	0.51	1.00	0.43	19	
Renal agenesis	0	0	3	0.00	0.75	0.00	13	
Cystic kidney	28	0	14	7.11	10.54	1.44	9	
Bladder exstrophy	0	0	1	0.00	0.25	0.00	19	
Polydactyly, preaxial	5	0	2	1.27	1.76	0.63	10	
Total Limb reduction defects (include unspecified)	12	2	18	3.55	8.03	1.06	5	
Transverse	6	1	8	1.78	3.77	0.79	5	
Preaxial	3	0	3	0.76	1.51	1.79	5	
Postaxial	1	0	3	0.25	1.00	0.95	5	
Intercalary	1	1	1	0.51	0.75	1.59	5	
Mixed	1	0	3	0.25	1.00	2.38	5	
Diaphragmatic hernia	14	0	5	3.55	4.77	1.10	17	
Total Abdominal wall defects (include unspecified)	26	1	21	6.85	12.05	1.78	16	▲
Omphalocele	8	0	15	2.03	5.77	1.09	19	
Gastroschisis	18	0	1	4.57	4.77	2.42	12	▲
Prune belly sequence	0	0	0	0.00	0.00	0.00	19	
Trisomy 13	0	0	14	0.00	3.51	0.00	19	
Trisomy 18	1	3	34	1.02	9.54	0.97	19	
Down syndrome, all ages (include age unknown)	28	3	109	7.87	35.15	0.91	8	
<20	1	0	0	30.30	30.30	3.03	19	
20-24	1	0	2	3.76	11.27	0.54	19	
25-29	4	1	12	4.29	14.56	0.71	19	
30-34	5	0	26	3.44	21.28	0.50	7	
35-39	10	0	34	12.55	54.97	1.00	10	
40-44	5	2	33	32.94	185.36	1.13	19	
45+	2	0	1	181.82	270.27	1.31	19	

* = estimated

France: Paris, time trend analysis 1981-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84*	1985-89	1990-94	1995-99	2000	Trend
Births		145,343	182,538	183,049	187,753	39,400	
Anencephaly		1.44	0.66	0.33	0.16	0.25	▼
Spina bifida		3.44	1.86	0.87	0.80	1.02	▼
Encephalocele		0.55	0.77	0.66	0.53	0.51	
Microcephaly		2.48	2.03	2.02	1.33	0.76	▼
Arhinencephaly / Holoprosencephaly		0.07	0.44	0.33	0.37	0.76	
Hydrocephaly		3.78	3.23	3.39	4.95	5.08	▲
Total Anophthalmos / Microphthalmos (include unspecified)		1.17	0.82	1.58	0.64	1.52	
Anophthalmos		0.34	0.00	0.49	0.05	0.51	
Microphthalmos		0.83	0.82	1.20	0.59	1.02	
Total Anotia / Microtia (include unspecified)		0.28	1.10	1.20	0.85	0.76	
Anotia		0.07	0.49	0.66	0.43	0.76	
Microtia		0.21	0.60	0.55	0.43	0.00	
Transposition of great vessels		2.48	2.19	3.06	4.31	4.06	▲
Tetralogy of Fallot		0.89	1.31	2.19	3.36	2.54	▲
Hypoplastic left heart syndrome		1.65	1.53	0.98	0.91	1.02	▼
Coarctation of aorta		1.31	1.92	2.57	3.25	3.81	▲
Choanal atresia, bilateral		0.62	0.55	0.49	0.53	0.25	
Cleft palate without cleft lip		3.85	3.29	4.92	4.15	6.85	▲
Cleft lip with or without cleft palate		6.26	5.75	7.21	6.76	7.11	
Oesophageal atresia / stenosis with or without fistula		2.27	2.79	3.06	2.98	3.55	
Small intestine atresia / stenosis		0.41	0.99	1.48	1.76	1.27	▲
Anorectal atresia / stenosis		3.51	1.75	3.06	2.08	1.52	▼
Undescended testis (36 weeks of gestation or later)		8.53	13.37	11.09	6.39	8.38	▼
Hypospadias		10.46	10.52	15.46	10.23	9.64	
Epispadias		0.07	0.60	0.55	0.37	0.25	
Indeterminate sex		1.58	1.15	1.37	0.75	0.51	▼
Renal agenesis		1.03	1.04	0.38	0.43	0.00	▼
Cystic kidney		1.58	3.07	4.43	5.01	7.11	▲
Bladder exstrophy		0.21	0.33	0.38	0.37	0.00	
Polydactyly, preaxial		0.62	0.82	1.64	2.40	1.27	▲
Total Limb reduction defects (include unspecified)					3.36	3.55	
Transverse					2.24	1.78	
Preaxial					0.43	0.76	
Postaxial					0.27	0.25	
Intercalary					0.32	0.51	
Mixed					0.11	0.25	
Diaphragmatic hernia		2.00	3.18	2.84	3.89	3.55	▲
Total Abdominal wall defects (include unspecified)		2.34	3.12	3.77	4.69	6.85	▲
Omphalocele		1.58	1.81	1.75	2.24	2.03	
Gastroschisis		0.48	0.82	1.86	2.29	4.57	▲
Prune belly sequence		0.07	0.16	0.00	0.05	0.00	
Trisomy 13		0.41	0.55	0.55	0.43	0.00	
Trisomy 18		1.65	0.93	0.87	0.85	1.02	
Down syndrome, all ages (include age unknown)		11.49	12.65	10.27	8.04	7.87	▼
<20		10.09	15.83	4.51	5.95	30.30	
20-24		6.80	5.79	9.29	6.35	3.76	
25-29		6.79	6.36	6.27	4.61	4.29	
30-34		11.19	12.99	10.01	6.65	3.44	▼
35-39		24.04	30.13	14.00	11.28	12.55	▼
40-44		57.41	25.54	27.75	24.63	32.94	
45+		220.99	158.10	107.82	119.62	181.82	

* = data include less than five years

TABLE 11

France: Strasbourg, 2000

Live births (L)	14,171
Stillbirths (S)	67
Total births	14,238
Number of terminations of pregnancy (ToP) for birth defects	81

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	0	0	10	0.00	6.98	0.00	6	
Spina bifida	2	0	8	1.40	6.98	0.63	13	
Encephalocele	0	0	1	0.00	0.70	0.00	17	
Microcephaly	1	0	0	0.70	0.70	0.59	5	
Arhinencephaly / Holoprosencephaly	0	0	3	0.00	2.10	0.00	5	
Hydrocephaly	3	0	2	2.11	3.49	0.78	11	
Total Anophthalmos / Microphthalmos (include unspecified)	4	0	0	2.81	2.79	1.18	17	
Anophthalmos	0	0	0	0.00	0.00	0.00	17	
Microphthalmos	4	0	0	2.81	2.79	1.38	17	
Total Anotia / Microtia (include unspecified)	4	0	1	2.81	3.49	1.77	17	
Anotia	0	0	0	0.00	0.00	0.00	17	
Microtia	4	0	1	2.81	3.49	2.12	17	
Transposition of great vessels	4	0	2	2.81	4.19	0.64	17	
Tetralogy of Fallot	4	1	4	3.51	6.29	1.06	17	
Hypoplastic left heart syndrome	3	0	1	2.11	2.79	0.85	17	
Coarctation of aorta	4	0	1	2.81	3.49	0.59	17	
Choanal atresia, bilateral	0	0	0	0.00	0.00	0.00	5	
Cleft palate without cleft lip	6	0	1	4.21	4.89	0.54	15	
Cleft lip with or without cleft palate	15	0	4	10.54	13.27	1.00	17	
Oesophageal atresia / stenosis with or without fistula	5	0	0	3.51	3.49	1.40	17	
Small intestine atresia / stenosis	4	1	0	3.51	3.49	2.15	5	
Anorectal atresia / stenosis	11	0	1	7.73	8.38	1.67	17	
Undescended testis (36 weeks of gestation or later)	nr	nr	nr	N.A.	N.A.	N.A.		
Hypospadias	28	0	0	19.67	19.55	0.86	17	
Epispadias	0	0	0	0.00	0.00	0.00	4	
Indeterminate sex	1	0	0	0.70	0.70	N.A.		
Renal agenesis	10	0	5	7.02	10.48	1.21	1	
Cystic kidney	11	0	0	7.73	7.68	1.24	5	
Bladder exstrophy	0	0	0	0.00	0.00	0.00	5	
Polydactyly, preaxial	8	0	1	5.62	6.29	1.72	5	
Total Limb reduction defects (include unspecified)	5	0	3	3.51	5.59	0.49	17	
Transverse	3	0	1	2.11	2.79	0.48	17	
Preaxial	0	0	1	0.00	0.70	0.00	17	
Postaxial	0	0	0	0.00	0.00	0.00	17	
Intercalary	1	0	0	0.70	0.70	1.56	15	
Mixed	1	0	0	0.70	0.70	1.59	17	
Diaphragmatic hernia	8	1	2	6.32	7.68	1.57	17	
Total Abdominal wall defects (include unspecified)	2	0	3	1.40	3.49	0.26	17	
Omphalocele	2	0	1	1.40	2.10	0.46	17	
Gastroschisis	0	0	0	0.00	0.00	0.00	17	
Prune belly sequence	0	0	0	0.00	0.00	N.A.		
Trisomy 13	0	0	3	0.00	2.10	0.00	5	
Trisomy 18	2	1	5	2.11	5.59	7.14	5	
Down syndrome, all ages (include age unknown)	8	0	16	5.62	16.76	0.36	17	▼
<20	0	0	0	0.00	0.00	0.00	17	
20-24	0	0	1	0.00	4.51	0.00	17	
25-29	3	0	2	5.64	9.40	0.72	17	
30-34	5	0	2	11.96	16.74	0.85	17	
35-39	0	0	9	0.00	50.62	0.00	17	
40-44	0	0	2	0.00	61.92	0.00	17	
45+	0	0	0	0.00	0.00	0.00	17	

N.A. = not available
nr = not reported

France: Strasbourg, time trend analysis 1983-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84*	1985-89	1990-94	1995-99	2000	Trend
Births		25,449	66,504	67,271	67,218	14,238	
Anencephaly		4.72	3.46	4.46	0.15	0.00	▼
Spina bifida		5.11	4.21	2.97	1.19	1.40	▼
Encephalocele		1.96	1.05	0.74	0.45	0.00	▼
Microcephaly					1.19	0.70	
Arhinencephaly / Holoprosencephaly					0.30	0.00	
Hydrocephaly		7.86	4.21	4.01	1.79	2.11	▼
Total Anophthalmos / Microphthalmos (include unspecified)		3.93	2.26	1.64	2.68	2.81	
Anophthalmos		0.79	0.15	0.15	0.60	0.00	
Microphthalmos		3.14	2.11	1.49	2.08	2.81	
Total Anotia / Microtia (include unspecified)		0.39	1.95	1.64	1.64	2.81	
Anotia		0.39	0.15	0.30	0.30	0.00	
Microtia		0.00	1.80	1.34	1.34	2.81	
Transposition of great vessels		3.93	5.86	4.01	3.42	2.81	
Tetralogy of Fallot		2.75	3.31	3.86	2.98	3.51	
Hypoplastic left heart syndrome		2.36	3.61	2.53	1.34	2.11	
Coarctation of aorta		7.47	4.51	3.72	5.06	2.81	
Choanal atresia, bilateral					0.15	0.00	
Cleft palate without cleft lip		10.22	8.87	8.77	5.95	4.21	▼
Cleft lip with or without cleft palate		9.43	8.72	12.64	10.56	10.54	
Oesophageal atresia / stenosis with or without fistula		1.96	2.56	2.82	2.38	3.51	
Small intestine atresia / stenosis					1.64	3.51	
Anorectal atresia / stenosis		4.72	4.81	5.05	4.02	7.73	
Hypospadias		13.36	24.06	26.46	21.87	19.67	
Epispadias					0.37*	0.00	
Indeterminate sex					0.00	0.70	
Renal agenesis				0.78*	1.64	7.02	▲
Cystic kidney					6.25	7.73	
Bladder exstrophy					0.45	0.00	
Polydactyly, preaxial					3.27	5.62	
Total Limb reduction defects (include unspecified)		6.29	6.77	6.54	8.63	3.51	
Transverse		4.32	4.36	3.86	5.06	2.11	
Preaxial		1.96	1.50	1.49	1.64	0.00	
Postaxial		0.00	0.45	0.45	0.30	0.00	
Intercalary		0.00	0.00	0.45	0.89	0.70	▲
Mixed		0.00	0.45	0.30	0.74	0.70	
Diaphragmatic hernia		3.14	4.06	4.91	3.42	6.32	
Total Abdominal wall defects (include unspecified)		3.54	5.86	6.09	4.61	1.40	
Omphalocele		2.75	3.16	3.57	2.53	1.40	
Gastroschisis		0.79	2.41	1.93	1.93	0.00	
Prune belly sequence					0.00	0.00	
Trisomy 13					0.15	0.00	
Trisomy 18					0.30	2.11	
Down syndrome, all ages (include age unknown)		9.43	15.79	18.14	15.03	5.62	
<20		0.00	18.21	15.49	5.19	0.00	
20-24		7.31	8.37	10.79	5.18	0.00	
25-29		4.16	7.64	10.61	6.54	5.64	
30-34		10.57	16.78	12.09	14.62	11.96	
35-39		53.07	47.42	61.66	44.67	0.00	▼
40-44		109.89	269.46	163.62	133.54	0.00	▼
45+		0.00	232.56	243.90	0.00	0.00	

* = data include less than five years

TABLE 12

Germany: Saxony-Anhalt, 2000

Live births (L)	18,723
Stillbirths (S)	76
Total births	18,799
Number of terminations of pregnancy (ToP) for birth defects	62

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	1	0	2	0.53	1.59	0.49	20	
Spina bifida	4	0	11	2.13	7.95	0.43	20	
Encephalocele	0	0	0	0.00	0.00	0.00	20	
Microcephaly	12	0	0	6.38	6.36	0.73	4	
Arhinencephaly / Holoprosencephaly	0	0	0	0.00	0.00	0.00	12	
Hydrocephaly	8	0	4	4.26	6.36	0.93	13	
Total Anophthalmos / Microphthalmos (include unspecified)	0	0	0	0.00	0.00	0.00	13	
Anophthalmos	0	0	0	0.00	0.00	0.00	13	
Microphthalmos	0	0	0	0.00	0.00	0.00	13	
Total Anotia / Microtia (include unspecified)	2	0	0	1.06	1.06	5.13	13	
Anotia	0	0	0	0.00	0.00	0.00	13	
Microtia	2	0	0	1.06	1.06	6.67	12	
Transposition of great vessels	11	0	0	5.85	5.83	1.14	9	
Tetralogy of Fallot	3	0	0	1.60	1.59	0.59	8	
Hypoplastic left heart syndrome	7	0	4	3.72	5.83	1.03	13	
Coarctation of aorta	6	1	0	3.72	3.71	2.06	13	
Choanal atresia, bilateral	3	0	0	1.60	1.59	1.53	13	
Cleft palate without cleft lip	14	0	3	7.45	9.01	1.23	13	
Cleft lip with or without cleft palate	29	0	1	15.43	15.91	1.10	13	
Oesophageal atresia / stenosis with or without fistula	2	1	1	1.60	2.12	0.76	13	
Small intestine atresia / stenosis	6	0	0	3.19	3.18	1.91	13	
Anorectal atresia / stenosis	4	0	1	2.13	2.65	0.76	13	
Undescended testis (36 weeks of gestation or later)	18	0	0	9.57	9.54	0.67	13	
Hypospadias	21	0	0	11.17	11.13	0.68	13	
Epispadias	1	0	0	0.53	0.53	1.27	13	
Indeterminate sex	2	0	1	1.06	1.59	2.53	13	
Renal agenesis	2	0	1	1.06	1.59	1.27	13	
Cystic kidney	3	0	0	1.60	1.59	0.56	10	
Bladder exstrophy	0	0	0	0.00	0.00	0.00	13	
Polydactyly, preaxial	4	0	0	2.13	2.12	0.56	8	
Total Limb reduction defects (include unspecified)	12	2	1	7.45	7.95	1.26	13	
Transverse	7	2	0	4.79	4.77	N.A.		
Preaxial	0	0	0	0.00	0.00	N.A.		
Postaxial	0	0	0	0.00	0.00	N.A.		
Intercalary	2	0	1	1.06	1.59	N.A.		
Mixed	3	0	0	1.60	1.59	N.A.		
Diaphragmatic hernia	3	1	0	2.13	2.12	1.61	13	
Total Abdominal wall defects (include unspecified)	4	3	3	3.72	5.30	N.A.		
Omphalocele	2	1	3	1.60	3.18	1.08	10	
Gastroschisis	2	1	0	1.60	1.59	0.96	13	
Prune belly sequence	0	0	1	0.00	0.53	0.00	13	
Trisomy 13	0	0	1	0.00	0.53	0.00	19	
Trisomy 18	0	1	2	0.53	1.59	0.83	20	
Down syndrome, all ages (include age unknown)	12	0	18	6.38	15.91	0.78	20	
<20	0	0	0	0.00	0.00	N.A.		
20-24	2	0	1	4.37	6.55	N.A.		
25-29	3	0	3	4.73	9.46	N.A.		
30-34	5	0	2	10.67	14.93	N.A.		
35-39	0	0	11	0.00	70.69	N.A.		
40-44	2	0	1	80.32	120.00	N.A.		
45+	0	0	0	0.00	0.00	N.A.		

N.A. =not available

Germany: Saxony Anhalt, time trend analysis 1980-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births		88,477	83,005	46,338	48,331	18,799	
Anencephaly		1.47	1.20	0.43	0.83	0.53	
Spina bifida		3.84	7.95	4.32	2.28	2.13	▼
Encephalocele		0.57	0.36	0.86	0.41	0.00	
Microcephaly			1.84*	3.24	7.86	6.38	▲
Arhinencephaly / Holoprosencephaly			1.84*	0.22	0.41	0.00	▼
Hydrocephaly			3.67*	4.75	5.38	4.26	
Total Anophthalmos / Microphthalmos (include unspecified)			0.82*	2.37	0.41	0.00	
Anophthalmos			0.00*	0.86	0.00	0.00	
Microphthalmos			0.82*	1.51	0.41	0.00	
Total Anotia / Microtia (include unspecified)			0.00*	0.43	0.21	1.06	
Anotia			0.00*	0.22	0.00	0.00	
Microtia			0.00*	0.22	0.21	1.06	
Transposition of great vessels			2.86*	3.24	5.38	5.85	▲
Tetralogy of Fallot			1.02*	0.86	3.10	1.60	▲
Hypoplastic left heart syndrome			4.49*	2.59	3.72	3.72	
Coarctation of aorta			1.02*	1.73	2.69	3.72	
Choanal atresia, bilateral			1.02*	1.29	0.83	1.60	
Cleft palate without cleft lip			5.72*	4.53	7.86	7.45	
Cleft lip with or without cleft palate			13.47*	13.16	15.52	15.43	
Oesophageal atresia / stenosis with or without fistula			1.84*	1.94	2.48	1.60	
Small intestine atresia / stenosis			0.61*	3.24	1.24	3.19	
Anorectal atresia / stenosis			3.27*	2.59	2.48	2.13	
Undescended testis (36 weeks of gestation or later)			11.84*	18.78	12.21	9.57	
Hypospadias			14.49*	16.83	17.79	11.17	
Epispadias			0.20*	0.43	0.62	0.53	
Indeterminate sex			0.61*	0.00	0.62	1.06	
Renal agenesis			0.61*	0.65	1.24	1.06	
Cystic kidney			1.02*	3.02	2.69	1.60	
Bladder exstrophy			0.61*	0.00	0.41	0.00	
Polydactyly, preaxial			0.00*	1.94	4.35	2.13	▲
Total Limb reduction defects (include unspecified)			4.08*	6.91	6.83	7.45	
Transverse						4.79	N.A.
Preaxial						0.00	N.A.
Postaxial						0.00	N.A.
Intercalary						1.06	N.A.
Mixed						1.60	N.A.
Diaphragmatic hernia			1.43*	1.51	1.03	2.13	
Total Abdominal wall defects (include unspecified)						3.72	N.A.
Omphalocele			4.29*	1.94	1.03	1.60	▼
Gastroschisis			1.02*	1.73	2.28	1.60	
Prune belly sequence			0.00*	0.86	0.62	0.00	
Trisomy 13		0.23	0.36	0.65	1.03	0.00	
Trisomy 18		0.57	0.72	0.86	0.41	0.53	
Down syndrome, all ages (include age unknown)		8.48	7.11	8.85	8.69	6.38	
<20						0.00	N.A.
20-24						4.37	N.A.
25-29						4.73	N.A.
30-34						10.67	N.A.
35-39						0.00	N.A.
40-44						80.32	N.A.
45+						0.00	N.A.

* = data include less than five years
N.A. = not available (lack of historical data)

TABLE 13

Hungary, 2000

Live births (L)	97,597
Stillbirths (S)	538
Total births	98,135
Number of terminations of pregnancy (ToP) for birth defects	102

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	1	0	6	0.10	0.71	0.32	8	
Spina bifida	16	0	13	1.63	2.95	0.94	9	
Encephalocele	2	0	2	0.20	0.41	0.72	7	
Microcephaly	5	0	0	0.51	0.51	0.73	14	
Arhinencephaly / Holoprosencephaly	4	1	1	0.51	0.61	2.44	20	
Hydrocephaly	4	3	6	0.71	1.32	0.45	10	
Total Anophthalmos / Microphthalmos (include unspecified)	0	0	0	0.00	0.00	0.00	20	
Anophthalmos	0	0	0	0.00	0.00	0.00	26	
Microphthalmos	0	0	0	0.00	0.00	0.00	26	
Total Anotia / Microtia (include unspecified)	9	0	0	0.92	0.92	3.78	18	▲
Anotia	8	0	0	0.82	0.81	3.49	17	▲
Microtia	1	0	0	0.10	0.10	3.57	26	
Transposition of great vessels	13	0	1	1.32	1.43	0.99	22	
Tetralogy of Fallot	12	0	0	1.22	1.22	1.02	26	
Hypoplastic left heart syndrome	3	0	1	0.31	0.41	0.51	21	
Coarctation of aorta	13	0	0	1.32	1.32	0.72	24	
Choanal atresia, bilateral	1	0	0	0.10	0.10	0.83	20	
Cleft palate without cleft lip	26	0	0	2.65	2.65	0.82	13	
Cleft lip with or without cleft palate	83	2	0	8.66	8.65	1.35	6	▲
Oesophageal atresia / stenosis with or without fistula	6	0	0	0.61	0.61	0.56	9	
Small intestine atresia / stenosis	10	0	0	1.02	1.02	1.73	7	
Anorectal atresia / stenosis	7	0	0	0.71	0.71	0.67	8	
Undescended testis (36 weeks of gestation or later)	83	0	0	8.46	8.45	0.87	4	
Hypospadias\Epispadias	196	0	0	19.97	19.95	0.96	20	
Indeterminate sex	0	0	0	0.00	0.00	0.00	20	
Renal agenesis	0	0	0	0.00	0.00	0.00	7	
Cystic kidney	12	0	2	1.22	1.43	0.84	4	
Bladder exstrophy	1	0	0	0.10	0.10	1.59	11	
Polydactyly, preaxial	81	0	0	8.25	8.25	1.09	3	
Total Limb reduction defects (include unspecified)	39	0	1	3.97	4.07	1.37	11	
Transverse	nr	nr	nr	N.A.	N.A.	N.A.		
Preaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Postaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Intercalary	nr	nr	nr	N.A.	N.A.	N.A.		
Mixed	nr	nr	nr	N.A.	N.A.	N.A.		
Diaphragmatic hernia	3	0	0	0.31	0.31	0.41	7	
Total Abdominal wall defects (include unspecified)	4	1	4	0.51	0.92	0.52	8	
Omphalocele	3	1	3	0.41	0.71	0.57	12	
Gastroschisis	1	0	1	0.10	0.20	0.21	18	
Prune belly sequence	0	0	0	0.00	0.00	N.A.		
Trisomy 13	0	0	5	0.00	0.51	0.00	18	
Trisomy 18	10	0	4	1.02	1.43	4.13	18	▲
Down syndrome, all ages (include age unknown)	87	0	59	8.87	14.86	1.45	8	▲
<20	6	0	1	7.65	8.92	4.32	18	▲
20-24	12	0	4	4.21	5.62	1.73	18	
25-29	25	0	11	6.97	10.04	2.18	17	▲
30-34	14	0	10	7.51	12.87	1.55	18	
35-39	13	0	13	21.75	43.41	1.59	18	
40+	5	0	16	37.34	154.98	0.75	18	

N.A. = not available
nr = not reported

Hungary, time trend analysis 1974-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births	1,081,065	682,778	635,779	609,855	512,023	98,135	
Anencephaly	7.08	6.12	2.08	0.61	0.33	0.10	▼
Spina bifida	10.63	8.38	6.23	2.43	1.52	1.63	▼
Encephalocele	1.15*	1.80	1.37	0.61	0.18	0.20	▼
Microcephaly		1.39	0.91	0.72	0.53	0.51	▼
Arhinencephaly / Holoprosencephaly		0.21	0.27	0.08	0.29	0.51	
Hydrocephaly	6.86	4.66	3.21	1.72	1.43	0.71	▼
Total Anophthalmos / Microphthalmos (include unspecified)	0.34	0.26	0.08	0.16	0.14	0.00	▼
Anophthalmos	0.13	0.06	0.06	0.05	0.06	0.00	
Microphthalmos	0.21	0.21	0.02	0.11	0.08	0.00	▼
Total Anotia / Microtia (include unspecified)	0.14	0.12	0.25	0.23	0.35	0.92	▲
Anotia	0.09	0.09	0.24	0.21	0.33	0.82	▲
Microtia	0.05	0.03	0.02	0.02	0.02	0.10	
Transposition of great vessels	0.54*	1.57	1.71	1.39	1.04	1.32	
Tetralogy of Fallot	1.22	1.42	1.04	0.82	1.48	1.22	
Hypoplastic left heart syndrome	0.33*	0.47	0.74	0.62	0.59	0.31	
Coarctation of aorta	1.23	1.89	2.71	1.59	1.66	1.32	▲
Choanal atresia, bilateral		0.15	0.14	0.16	0.02	0.10	
Cleft palate without cleft lip	3.83	4.54	3.92	3.26	2.87	2.65	▼
Cleft lip with or without cleft palate	10.84	11.50	9.39	9.02	6.27	8.66	▼
Oesophageal atresia / stenosis with or without fistula	2.07*	1.74	1.71	1.41	0.92	0.61	▼
Small intestine atresia / stenosis		1.51	1.18	1.07	0.51	1.02	▼
Anorectal atresia / stenosis	2.20*	2.28	1.84	1.57	0.88	0.71	▼
Undescended testis (36 weeks of gestation or later)		17.81	16.28	15.05	10.66	8.46	▼
Hypospadias \ Epispadias	15.60	20.93	21.17	21.37	19.41	19.97	▲
Indeterminate sex		0.29	0.36	0.18	0.16	0.00	▼
Renal agenesis	1.27*	1.04	1.04	0.89	0.16	0.00	▼
Cystic kidney		0.00	0.19	0.49	1.17	1.22	▲
Bladder exstrophy		0.34	0.44	0.07	0.06	0.10	▼
Polydactyly, preaxial		0.94	1.90	1.31	4.98	8.25	▲
Total Limb reduction defects (include unspecified)		4.01*	4.29	2.75	2.93	3.97	▼
Diaphragmatic hernia	1.81	2.62	2.00	1.75	0.74	0.31	▼
Total Abdominal wall defects (include unspecified)		2.62*	1.78	1.39	0.86	0.51	▼
Omphalocele		2.13*	1.27	0.84	0.53	0.41	▼
Gastroschisis		0.49*	0.50	0.56	0.33	0.10	▼
Prune belly sequence				0.00*	0.00	0.00	
Trisomy 13		0.15*	0.25	0.20	0.10	0.00	
Trisomy 18		0.23*	0.30	0.25	0.20	1.02	
Down syndrome, all ages (include age unknown)	8.93	8.17	8.26	7.61	5.62	8.87	▼
<20		1.85*	1.91	1.45	1.92	7.65	
20-24		1.50*	3.03	2.27	2.66	4.21	
25-29		3.15*	4.50	2.83	2.40	6.97	
30-34		4.53*	5.41	4.26	4.93	7.51	
35-39		9.72*	14.43	17.43	10.09	21.75	
40-44		74.36*	48.29	43.45	47.48	37.34	

* = data include less than six (or five) years

TABLE 14

Ireland: Dublin, 2000

Live births (L)	19,069*
Stillbirths (S)	130*
Total births	19,199*
Number of terminations of pregnancy (ToP) for birth defects	not permitted

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	5	1		3.13		0.78	9	
Spina bifida	9	0		4.69		0.79	11	
Encephalocele	3	0		1.56		0.74	20	
Microcephaly	5	0		2.60		0.68	20	
Arhinencephaly / Holoprosencephaly	4	2		3.13		5.77	19	▲
Hydrocephaly	4	0		2.08		0.97	4	
Total Anophthalmos / Microphthalmos (include unspecified)	4	0		2.08		0.72	8	
Anophthalmos	0	0		0.00		0.00	8	
Microphthalmos	4	0		2.08		0.74	5	
Total Anotia / Microtia (include unspecified)	0	0		0.00		0.00	20	
Anotia	0	0		0.00		N.A.		
Microtia	0	0		0.00		N.A.		
Transposition of great vessels	9	0		4.69		0.84	4	
Tetralogy of Fallot	4	0		2.08		0.68	20	
Hypoplastic left heart syndrome	3	0		1.56		0.74	20	
Coarctation of aorta	6	0		3.13		0.54	20	
Choanal atresia, bilateral	4	0		2.08		1.57	11	
Cleft palate without cleft lip	10	0		5.21		0.71	20	
Cleft lip with or without cleft palate	6	1		3.65		0.41	20	
Oesophageal atresia / stenosis with or without fistula	6	0		3.13		0.88	20	
Small intestine atresia / stenosis	5	0		2.60		1.06	20	
Anorectal atresia / stenosis	3	0		1.56		0.48	20	
Undescended testis (36 weeks of gestation or later)	nr	nr		N.A.		N.A.		
Hypospadias\Epispadias	14	0		7.29		0.54	20	
Indeterminate sex	0	0		0.00		0.00	20	
Renal agenesis	5	2		3.65		0.81	20	
Cystic kidney	5	0		2.60		0.78	20	
Bladder exstrophy	nr	nr		N.A.		N.A.		
Polydactyly, preaxial	18	1		9.90		1.63	19	
Total Limb reduction defects (include unspecified)	6	0		3.13		0.75	20	
Transverse	nr	nr		N.A.		N.A.		
Preaxial	nr	nr		N.A.		N.A.		
Postaxial	nr	nr		N.A.		N.A.		
Intercalary	nr	nr		N.A.		N.A.		
Mixed	nr	nr		N.A.		N.A.		
Diaphragmatic hernia	11	1		6.25		1.59	20	
Total Abdominal wall defects (include unspecified)	18	0		9.38		2.18	2	▲
Omphalocele	8	0		4.17		1.73	20	
Gastroschisis	10	0		5.21		3.21	9	▲
Prune belly sequence	nr	nr		N.A.		N.A.		
Trisomy 13	12	1		6.77		4.08	11	▲
Trisomy 18	4	2		3.13		0.90	11	
Down syndrome, all ages (include age unknown)	53	1		28.13		1.42	20	
<20	0	0		0.00		0.00	8	
20-24	1	0		3.63		0.42	8	
25-29	8	0		16.88		1.83	8	
30-34	11	0		17.20		0.93	8	
35-39	22	1		65.85		1.45	8	
40-44	9	0		187.50		1.22	8	
45+	2	0		909.09		1.20	7	

* = estimated
N.A. = not available
nr = not reported

TABLE 14a

Ireland: Dublin, time trend analysis 1980-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births		121,428	102,584	94,474	97,247	19,199	
Anencephaly		14.99	8.48	5.61	3.19	3.13	▼
Spina bifida		14.08	11.41	6.35	5.35	4.69	▼
Encephalocele		2.72	1.46	2.43	1.75	1.56	
Microcephaly		3.79	3.51	3.49	4.52	2.60	
Arhinencephaly / Holoprosencephaly		0.33	0.39	0.42	0.93	3.13	▲
Hydrocephaly					2.16*	2.08	
Total Anophthalmos / Microphthalmos (include unspecified)		0.82	1.56	1.38	3.50	2.08	▲
Anophthalmos		0.25	0.10	0.32	0.91*	0.00	
Microphthalmos		0.58	1.46	1.06	2.99*	2.08	▲
Total Anotia / Microtia (include unspecified)		0.16	0.00	0.32	0.31	0.00	
Anotia		0.00*			0.00*	0.00	N.A.
Microtia		0.00*			0.00*	0.00	N.A.
Transposition of great vessels					5.58*	4.69	
Tetralogy of Fallot		2.72	2.73	3.07	3.80	2.08	
Hypoplastic left heart syndrome		2.31	1.66	2.65	1.85	1.56	
Coarctation of aorta		4.45	6.63	5.29	7.10	3.13	
Choanal atresia, bilateral		0.41	0.58	0.74	1.95	2.08	▲
Cleft palate without cleft lip		7.16	6.82	7.94	7.30	5.21	
Cleft lip with or without cleft palate		10.29	7.31	8.79	8.95	3.65	
Oesophageal atresia / stenosis with or without fistula		3.71	4.00	2.96	3.39	3.13	
Small intestine atresia / stenosis		2.55	3.02	2.12	2.06	2.60	
Anorectal atresia / stenosis		3.46	3.80	3.07	2.47	1.56	
Hypospadias\Epispadias		15.24	10.04	12.70	15.42	7.29	
Indeterminate sex		0.16	0.19	0.21	0.41	0.00	
Renal agenesis		4.86	4.58	4.34	4.11	3.65	
Cystic kidney		3.71	1.85	4.23	3.60	2.60	
Polydactyly, preaxial		6.75	5.26	6.03	6.10*	9.90	
Total Limb reduction defects (include unspecified)		4.28	3.41	4.45	4.52	3.13	
Diaphragmatic hernia		2.96	4.09	5.08	3.80	6.25	
Total Abdominal wall defects (include unspecified)					4.31*	9.38	N.A.
Omphalocele		2.72	2.63	1.69	2.47	4.17	
Gastroschisis		0.16	0.58	0.85	2.06	5.21	▲
Prune belly sequence		0.08	0.39	0.32	0.78*		▲
Trisomy 13		1.07	1.27	0.42	2.57	6.77	▲
Trisomy 18		2.39	1.56	3.39	3.91	3.13	▲
Down syndrome, all ages (include age unknown)		18.20	19.11	20.75	21.80	28.13	▲
<20				17.58*	9.90	0.00	
20-24				10.39*	7.59	3.63	
25-29				10.23*	8.59	16.88	
30-34				15.75*	19.85	17.20	
35-39				44.06*	45.98	65.85	
40-44				192.74*	131.96	187.50	
45+				1153.85*	500.00*	909.09	

* = data include less than five years
N.A. = not available (lack of historical data)

TABLE 15

Israel: IBDMS, 2000

Live births (L)	23,037
Stillbirths (S)	187
Total births	23,224
Number of terminations of pregnancy (ToP) for birth defects	33

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	2	0	1	0.86	1.29	1.18	11	
Spina bifida	10	0	2	4.31	5.16	2.15	12	
Encephalocele	1	0	0	0.43	0.43	0.86	26	
Microcephaly	2	0	0	0.86	0.86	1.87	1	
Arhinencephaly / Holoprosencephaly	0	0	0	0.00	0.00	0.00	16	
Hydrocephaly	11	0	2	4.74	5.59	1.31	26	
Total Anophthalmos / Microphthalmos (include unspecified)	3	0	0	1.29	1.29	2.17	26	
Anophthalmos	0	0	0	0.00	0.00	N.A.		
Microphthalmos	3	0	0	1.29	1.29	2.17	26	
Total Anotia / Microtia (include unspecified)	2	0	0	0.86	0.86	0.58	23	
Anotia	0	0	0	0.00	0.00	0.00	26	
Microtia	2	0	0	0.86	0.86	0.59	23	
Transposition of great vessels	9	0	2	3.88	4.73	1.10	14	
Tetralogy of Fallot	4	0	0	1.72	1.72	0.63	16	
Hypoplastic left heart syndrome	1	1	2	0.86	1.72	0.40	14	
Coarctation of aorta	9	0	0	3.88	3.87	1.75	14	
Choanal atresia, bilateral	0	0	0	0.00	0.00	0.00	16	
Cleft palate without cleft lip	13	0	0	5.60	5.59	1.19	26	
Cleft lip with or without cleft palate	12	0	1	5.17	5.59	1.04	26	
Oesophageal atresia / stenosis with or without fistula	1	0	1	0.43	0.86	0.16	20	
Small intestine atresia / stenosis	0	0	0	0.00	0.00	0.00	16	
Anorectal atresia / stenosis	3	0	0	1.29	1.29	0.43	26	
Undescended testis (36 weeks of gestation or later)	nr	nr	nr	N.A.	N.A.	N.A.		
Hypospadias	103	0	0	44.35	44.29	1.23	15	
Epispadias	1	0	0	0.43	0.43	3.57	26	
Indeterminate sex	0	0	0	0.00	0.00	N.A.		
Renal agenesis	0	0	0	0.00	0.00	0.00	14	
Cystic kidney	7	0	0	3.01	3.01	2.95	26	
Bladder exstrophy	1	0	0	0.43	0.43	1.20	26	
Polydactyly, preaxial	2	0	0	0.86	0.86	1.45	26	
Total Limb reduction defects (include unspecified)	0	1	0	0.43	0.43	0.16	26	
Transverse	0	0	0	0.00	0.00	0.00	18	
Preaxial	0	0	0	0.00	0.00	0.00	18	
Postaxial	0	0	0	0.00	0.00	0.00	18	
Intercalary	0	1	0	0.43	0.43	1.69	18	
Mixed	0	0	0	0.00	0.00	0.00	18	
Diaphragmatic hernia	3	0	1	1.29	1.72	0.61	22	
Total Abdominal wall defects (include unspecified)	3	0	0	1.29	1.29	1.50	14	
Omphalocele	2	0	0	0.86	0.86	1.19	15	
Gastroschisis	1	0	0	0.43	0.43	1.69	22	
Prune belly sequence	0	0	0	0.00	0.00	0.00	23	
Trisomy 13	0	0	2	0.00	0.86	0.00	16	
Trisomy 18	2	1	3	1.29	2.58	2.01	16	
Down syndrome, all ages (include age unknown)	10	1	16	4.74	11.61	0.78	9	
<20	0	0	0	0.00	0.00	N.A.		
20-24	1	0	0	2.46	2.46	1.85	9	
25-29	2	1	2	3.49	5.82	1.08	9	
30-34	3	0	5	4.68	12.47	0.98	9	
35-39	4	0	6	13.28	33.13	1.25	8	
40-44	0	0	3	0.00	44.95	0.00	9	
45+	0	0	0	0.00	0.00	0.00	9	

N.A. = not available
nr = not reported

Israel: IBDMS, time trend analysis 1974-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births	68,298	91,287	87,639	80,496	93,848	23,224	
Anencephaly	5.27	4.71	2.40	0.75	0.53	0.86	▼
Spina bifida	2.78	5.59	4.79	2.36	1.70	4.31	▼
Encephalocele	0.44	0.33	0.57	0.87	0.32	0.43	
Microcephaly					0.46*	0.86	N.A.
Arhinencephaly / Holoprosencephaly		0.00*	0.23	0.50	0.00	0.00	
Hydrocephaly	3.66	3.61	2.74	3.73	4.26	4.74	
Total Anophthalmos / Microphthalmos (include unspecified)	0.88	0.11	0.57	0.50	0.96	1.29	
Anophthalmos	0.00	0.00	0.00	0.00	0.00	0.00	
Microphthalmos	0.88	0.11	0.57	0.50	0.96	1.29	
Total Anotia / Microtia (include unspecified)	0.59	1.10	0.91	2.48	1.81	0.86	▲
Anotia	0.00	0.00	0.00	0.12	0.00	0.00	
Microtia	0.59	1.10	0.91	2.36	1.81	0.86	▲
Transposition of great vessels			3.01*	3.60	3.84	3.88	
Tetralogy of Fallot		0.77	2.40	3.35	2.98	1.72	▲
Hypoplastic left heart syndrome			2.01*	2.36	2.02	0.86	
Coarctation of aorta		0.33	1.03	2.86	2.45	3.88	▲
Choanal atresia, bilateral		0.00*	0.34	0.25	0.11	0.00	
Cleft palate without cleft lip	3.66	4.49	5.36	5.59	4.26	5.60	
Cleft lip with or without cleft palate	5.12	4.38	6.05	4.97	4.48	5.17	
Oesophageal atresia / stenosis with or without fistula	1.46	1.53	2.74	3.73	3.09	0.43	
Small intestine atresia / stenosis		0.55*	1.14	1.61	0.53	0.00	
Anorectal atresia / stenosis	1.61	3.40	3.31	3.60	2.98	1.29	
Hypospadias	29.14	26.73	30.24	43.85	34.52	44.35	▲
Epispadias	0.15	0.00	0.11	0.25	0.11	0.43	
Renal agenesis			0.72*	0.99	0.53	0.00	
Cystic kidney	0.59	0.55	1.48	0.99	1.39	3.01	▲
Bladder exstrophy	0.15	0.22	0.68	0.37	0.32	0.43	
Polydactyly, preaxial	0.29	0.66	0.46	0.37	1.07	0.86	
Total Limb reduction defects (include unspecified)	3.51	2.85	2.51	3.60	1.60	0.43	▼
Transverse		0.55*	1.03	1.99	0.43	0.00	
Preaxial		0.55*	0.68	0.12	0.75	0.00	
Postaxial		0.55*	0.11	0.37	0.32	0.00	
Intercalary		0.37*	0.34	0.25	0.11	0.43	
Mixed		0.73*	0.34	0.87	0.00	0.00	
Diaphragmatic hernia	2.15*	2.52	1.83	2.98	1.28	1.29	
Total Abdominal wall defects (include unspecified)	1.90	2.96	1.37	0.99	0.53	1.29	▼
Omphalocele	1.90	2.52	0.80	0.99	0.43	0.86	▼
Gastroschisis	0.00*	0.44	0.57	0.00	0.11	0.43	
Prune belly sequence	0.44	0.22	0.00	0.12	0.00	0.00	▼
Trisomy 13		1.10*	0.34	0.50	0.21	0.00	
Trisomy 18		0.55*	0.68	0.50	0.75	1.29	
Down syndrome, all ages (include age unknown)	11.27	9.64	12.32	7.45	5.86	4.74	▼
<20				0.00*	0.00	0.00	
20-24				0.00*	2.37	2.46	
25-29				2.74*	3.57	3.49	
30-34				6.88*	3.48	4.68	
35-39				15.27*	9.67	13.28	
40-44				39.76*	44.21	0.00	
45+				57.80*	99.26	0.00	

* = data include less than six (or five) years
N.A. = not available (lack of historical data)

TABLE 16

Italy: BDRCAM

Live births (L)	50,042
Stillbirths (S)	129
Total births	50,171
Number of terminations of pregnancy (ToP) for birth defects	177

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	2	0	16	0.40	3.58	0.53	9	
Spina bifida	14	0	7	2.79	4.17	1.29	9	
Encephalocele	0	0	3	0.00	0.60	0.00	9	
Microcephaly	4	0	0	0.80	0.79	0.96	9	
Arhinencephaly / Holoprosencephaly	4	0	2	0.80	1.19	2.12	9	
Hydrocephaly	15	0	14	2.99	5.76	1.08	9	
Total Anophthalmos / Microphthalmos (include unspecified)	1	0	1	0.20	0.40	0.29	9	
Anophthalmos	0	0	1	0.00	0.20	0.00	9	
Microphthalmos	1	0	0	0.20	0.20	0.88	9	
Total Anotia / Microtia (include unspecified)	11	0	0	2.19	2.18	2.03	9	
Anotia	4	0	0	0.80	0.79	1.72	7	
Microtia	7	0	0	1.40	1.39	2.65	9	
Transposition of great vessels	6	0	2	1.20	1.59	0.63	9	
Tetralogy of Fallot	10	0	1	1.99	2.18	0.79	9	
Hypoplastic left heart syndrome	3	0	4	0.60	1.39	0.53	9	
Coarctation of aorta	12	0	0	2.39	2.38	1.49	9	
Choanal atresia, bilateral	1	0	0	0.20	0.20	1.14	9	
Cleft palate without cleft lip	29	0	1	5.78	5.96	1.31	9	
Cleft lip with or without cleft palate	33	0	4	6.58	7.35	1.01	9	
Oesophageal atresia / stenosis with or without fistula	4	0	1	0.80	0.99	0.36	9	
Small intestine atresia / stenosis	11	0	1	2.19	2.38	1.15	9	
Anorectal atresia / stenosis	18	0	0	3.59	3.58	1.35	9	
Undescended testis (36 weeks of gestation or later)	nr	nr	nr	N.A.	N.A.	N.A.		
Hypospadias	33	0	0	6.58	6.55	2.10	9	▲
Epispadias	1	0	0	0.20	0.20	0.88	9	
Indeterminate sex	3	0	2	0.60	0.99	1.19	9	
Renal agenesis	15	0	8	2.99	4.57	1.89	9	
Cystic kidney	6	0	3	1.20	1.79	0.64	8	
Bladder exstrophy	0	0	0	0.00	0.00	0.00	9	
Polydactyly, preaxial	12	0	0	2.39	2.38	1.38	9	
Total Limb reduction defects (include unspecified)	28	0	5	5.58	6.55	1.24	9	
Transverse	20	0	1	3.99	4.17	1.50	7	
Preaxial	5	0	1	1.00	1.19	1.47	9	
Postaxial	0	0	0	0.00	0.00	0.00	9	
Intercalary	3	0	1	0.60	0.79	1.59	9	
Mixed	0	0	0	0.00	0.00	0.00	9	
Diaphragmatic hernia	15	0	2	2.99	3.38	1.73	9	
Total Abdominal wall defects (include unspecified)	5	0	5	1.00	1.99	0.78	9	
Omphalocele	4	0	4	0.80	1.59	0.79	9	
Gastroschisis	1	0	1	0.20	0.40	0.72	9	
Prune belly sequence	nr	nr	nr	N.A.	N.A.	N.A.		
Trisomy 13	0	0	2	0.00	0.40	0.00	7	
Trisomy 18	3	0	11	0.60	2.78	1.19	9	
Down syndrome, all ages (include age unknown)	15	0	41	2.99	11.12	0.37	6	▼
<20	0	0	0	0.00	0.00	0.00	9	
20-24	1	0	1	1.11	2.23	0.22	9	
25-29	2	0	5	1.12	3.93	0.28	6	
30-34	3	0	4	2.02	4.71	0.27	6	
35-39	2	0	7	3.44	15.45	0.21	6	▼
40-44	2	0	10	18.99	112.89	0.38	9	
45+	0	0	1	0.00	196.08	0.00	9	

N.A. = not available
nr = not reported

TABLE 16a

Italy: BDRCam, time trend analysis 1991-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94*	1995-99	2000	Trend
Births				158,531	240,032	50,171	
Anencephaly				0.69	0.79	0.40	
Spina bifida				2.90	1.67	2.79	
Encephalocele				0.57	0.46	0.00	
Microcephaly				1.07	0.67	0.80	
Arhinencephaly / Holoprosencephaly				0.19	0.50	0.80	
Hydrocephaly				3.34	2.37	2.99	
Total Anophthalmos / Microphthalmos (include unspecified)				0.95	0.50	0.20	
Anophthalmos				0.69	0.29	0.00	▼
Microphthalmos				0.25	0.21	0.20	
Total Anotia / Microtia (include unspecified)				1.14	1.04	2.19	
Anotia				0.69	0.46	0.80	
Microtia				0.44	0.58	1.40	▲
Transposition of great vessels				1.58	2.12	1.20	
Tetralogy of Fallot				2.46	2.54	1.99	
Hypoplastic left heart syndrome				0.88	1.29	0.60	
Coarctation of aorta				1.20	1.87	2.39	
Choanal atresia, bilateral				0.13	0.21	0.20	
Cleft palate without cleft lip				4.73	4.21	5.78	
Cleft lip with or without cleft palate				6.56	6.46	6.58	
Oesophageal atresia / stenosis with or without fistula				2.33	2.17	0.80	
Small intestine atresia / stenosis				1.83	1.96	2.19	
Anorectal atresia / stenosis				2.84	2.54	3.59	
Hypospadias				3.66	2.79	6.58	
Epispadias				0.25	0.21	0.20	
Indeterminate sex				0.25	0.67	0.60	
Renal agenesis				1.20	1.83	2.99	▲
Cystic kidney				1.32	2.00	1.20	
Bladder exstrophy				0.19	0.33	0.00	
Polydactyly, preaxial				1.70	1.75	2.39	
Total Limb reduction defects (include unspecified)				5.17	4.08	5.58	
Transverse				3.78	2.37	3.99	
Preaxial				0.63	0.71	1.00	
Postaxial				0.25	0.50	0.00	
Intercalary				0.32	0.42	0.60	
Mixed				0.19	0.08	0.00	
Diaphragmatic hernia				1.64	1.79	2.99	
Total Abdominal wall defects (include unspecified)				1.51	1.12	1.00	
Omphalocele				1.26	0.83	0.80	
Gastroschisis				0.25	0.29	0.20	
Trisomy 13				0.69	0.21	0.00	▼
Trisomy 18				0.44	0.54	0.60	
Down syndrome, all ages (include age unknown)				9.97	8.17	2.99	▼
<20				4.80	3.52	0.00	
20-24				6.22	4.07	1.11	▼
25-29				6.57	4.32	1.12	▼
30-34				11.50	7.07	2.02	▼
35-39				29.75	15.72	3.44	▼
40-44				40.42	54.80	18.99	
45+				92.59	0.00	0.00	

* = data include less than five years

TABLE 17

Italy: IMER, 2000

Live births (L)	24,649
Stillbirths (S)	63
Total births	24,712
Number of terminations of pregnancy (ToP) for birth defects	135

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	0	1	5	0.40	2.41	0.62	18	
Spina bifida	2	0	9	0.81	4.43	0.34	8	
Encephalocele	0	0	1	0.00	0.40	0.00	22	
Microcephaly	0	0	0	0.00	0.00	0.00	10	
Arhinencephaly / Holoprosencephaly	4	0	0	1.62	1.61	3.57	19	
Hydrocephaly	4	0	11	1.62	6.04	0.68	8	
Total Anophthalmos / Microphthalmos (include unspecified)	0	0	0	0.00	0.00	0.00	22	
Anophthalmos	0	0	0	0.00	0.00	0.00	22	
Microphthalmos	0	0	0	0.00	0.00	0.00	22	
Total Anotia / Microtia (include unspecified)	3	0	0	1.21	1.21	0.86	22	
Anotia	3	0	0	1.21	1.21	3.80	5	
Microtia	0	0	0	0.00	0.00	0.00	6	
Transposition of great vessels	15	0	0	6.07	6.04	2.08	22	
Tetralogy of Fallot	13	0	2	5.26	6.04	3.19	20	▲
Hypoplastic left heart syndrome	0	0	8	0.00	3.22	0.00	22	
Coarctation of aorta	9	0	1	3.64	4.02	1.59	20	
Choanal atresia, bilateral	2	0	0	0.81	0.80	3.77	22	
Cleft palate without cleft lip	10	0	0	4.05	4.02	0.77	22	
Cleft lip with or without cleft palate	10	0	0	4.05	4.02	0.61	22	
Oesophageal atresia / stenosis with or without fistula	14	0	0	5.67	5.63	1.57	22	
Small intestine atresia / stenosis	5	0	0	2.02	2.01	0.66	22	
Anorectal atresia / stenosis	8	0	3	3.24	4.43	1.17	22	
Undescended testis (36 weeks of gestation or later)	nr	nr	nr	N.A.	N.A.	N.A.		
Hypospadias	46	0	0	18.61	18.51	1.02	16	
Epispadias	0	0	0	0.00	0.00	N.A.		
Indeterminate sex	1	0	0	0.40	0.40	2.56	5	
Renal agenesis	6	0	4	2.43	4.02	1.54	22	
Cystic kidney	2	0	3	0.81	2.01	0.23	4	
Bladder exstrophy	1	0	0	0.40	0.40	1.33	18	
Polydactyly, preaxial	10	0	0	4.05	4.02	1.08	7	
Total Limb reduction defects (include unspecified)	9	0	3	3.64	4.83	0.74	15	
Transverse	2	0	3	0.81	2.01	0.32	14	
Preaxial	4	0	0	1.62	1.61	2.11	15	
Postaxial	1	0	0	0.40	0.40	0.78	15	
Intercalary	2	0	0	0.81	0.80	1.41	15	
Mixed	0	0	0	0.00	0.00	0.00	15	
Diaphragmatic hernia	10	0	1	4.05	4.43	1.69	20	
Total Abdominal wall defects (include unspecified)	8	0	2	3.24	4.02	1.96	7	
Omphalocele	4	0	2	1.62	2.41	1.01	22	
Gastroschisis	4	0	0	1.62	1.61	2.11	22	
Prune belly sequence	0	0	1	0.00	0.40	0.00	22	
Trisomy 13	0	0	2	0.00	0.80	0.00	13	
Trisomy 18	4	0	6	1.62	4.02	2.00	22	
Down syndrome, all ages (include age unknown)	16	0	34	6.47	20.12	0.67	11	
<20	0	0	0	0.00	0.00	0.00	14	
20-24	2	0	1	7.10	10.65	1.25	15	
25-29	4	0	3	4.72	8.26	0.80	10	
30-34	4	0	6	4.48	11.20	0.49	9	
35-39	3	0	16	8.37	52.79	0.58	11	
40-44	2	0	7	33.73	150.00	0.68	15	
45+	0	0	1	0.00	400.00	0.00	15	

N.A. = not available
nr = not reported

Italy: IMER, time trend analysis 1978-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79*	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births	13,407	90,077	115,805	124,129	125,188	24,712	
Anencephaly	1.49	1.55	0.60	0.32	0.56	0.40	▼
Spina bifida	2.98	4.44	3.45	4.11	1.76	0.81	▼
Encephalocele	1.49	0.11	0.86	0.56	0.40	0.00	
Microcephaly	1.49	2.11	2.42	1.37	0.88	0.00	▼
Arhinencephaly / Holoprosencephaly	0.00	0.11	0.26	0.56	0.72	1.62	▲
Hydrocephaly	3.73	4.88	3.97	4.03	1.92	1.62	▼
Total Anophthalmos / Microphthalmos (include unspecified)	0.75	1.33	0.35	1.13	0.96	0.00	
Anophthalmos	0.75	0.33	0.00	0.16	0.32	0.00	
Microphthalmos	0.00	1.00	0.35	0.97	0.64	0.00	
Total Anotia / Microtia (include unspecified)	0.00	1.22	1.64	1.93	0.96	1.21	
Anotia				1.55*	0.32	1.21	
Microtia				1.16*	0.64	0.00	
Transposition of great vessels	0.75	3.00	2.42	2.82	3.67	6.07	▲
Tetralogy of Fallot		0.78	2.42	1.45	1.76	5.26	▲
Hypoplastic left heart syndrome	0.00	1.33	1.73	1.85	2.00	0.00	
Coarctation of aorta		2.55	2.16	2.18	2.32	3.64	
Choanal atresia, bilateral	0.00	0.22	0.26	0.32	0.08	0.81	
Cleft palate without cleft lip	3.73	4.66	6.56	5.40	4.47	4.05	
Cleft lip with or without cleft palate	5.97	7.66	6.82	7.01	5.35	4.05	▼
Oesophageal atresia / stenosis with or without fistula	3.73	3.77	3.97	3.63	3.12	5.67	
Small intestine atresia / stenosis	1.49	2.22	3.28	3.79	2.88	2.02	
Anorectal atresia / stenosis	0.75	3.55	2.68	3.14	2.16	3.24	
Hypospadias	12.68	20.20	20.38	18.12*	16.09*	18.61	
Epispadias					0.00	0.00	
Indeterminate sex					0.16	0.40	
Renal agenesis	4.48	1.00	1.64	1.37	1.84	2.43	
Cystic kidney	0.75	0.33	1.04	0.24	2.88	0.81	▲
Bladder exstrophy	0.75	0.33	0.78	0.08	0.16	0.40	▼
Polydactyly, preaxial	8.95	8.66	8.29	7.41	3.35	4.05	▼
Total Limb reduction defects (include unspecified)			5.53	5.48	3.83	3.64	▼
Transverse			3.28	2.82	1.92	0.81	▼
Preaxial			0.52	0.97	0.80	1.62	
Postaxial			0.69	0.48	0.40	0.40	
Intercalary			0.52	0.73	0.48	0.81	
Mixed			0.26	0.48	0.08	0.00	
Diaphragmatic hernia	0.00	1.67	1.81	3.38	2.48	4.05	▲
Total Abdominal wall defects (include unspecified)	2.24	2.66	3.89	3.54	1.20	3.24	
Omphalocele	2.24	1.33	2.25	2.01	0.72	1.62	
Gastroschisis	0.00	1.00	0.69	1.05	0.48	1.62	
Prune belly sequence	0.00	0.33	0.43	0.24	0.16	0.00	
Trisomy 13	0.75	1.55	0.78	0.64	0.16	0.00	▼
Trisomy 18	0.75	1.55	0.78	0.64	0.48	1.62	
Down syndrome, all ages (include age unknown)	21.63	13.32	13.30	9.83	8.79	6.47	▼
<20			1.40	8.59	12.63	0.00	
20-24			4.89	5.54	7.61	7.10	
25-29			10.97	6.83	4.90	4.72	▼
30-34			15.77	12.02	7.98	4.48	▼
35-39			35.62	14.86	12.73	8.37	▼
40-44			71.70	37.50	44.44	33.73	
45+			52.36	158.73	67.57	0.00	

* = data include less than six (or five) years

TABLE 18

Italy: ISMAC, 2000

Live births (L)	nr
Stillbirths (S)	nr
Total births	15,304
Number of terminations of pregnancy (ToP) for birth defects	80

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	1	nr	5	0.65	3.90	1.00	9	
Spina bifida	5	nr	4	3.27	5.85	0.98	9	
Encephalocele	0	nr	1	0.00	0.65	0.00	9	
Microcephaly	4	nr	0	2.61	2.60	1.90	9	
Arhinencephaly / Holoprosencephaly	2	nr	0	1.31	1.30	5.56	9	
Hydrocephaly	6	nr	10	3.92	10.40	1.97	6	
Total Anophthalmos / Microphthalmos (include unspecified)	0	nr	0	0.00	0.00	0.00	9	
Anophthalmos	0	nr	0	0.00	0.00	0.00	9	
Microphthalmos	0	nr	0	0.00	0.00	0.00	9	
Total Anotia / Microtia (include unspecified)	2	nr	0	1.31	1.30	3.92	8	
Anotia	1	nr	0	0.65	0.65	2.22	2	
Microtia	1	nr	0	0.65	0.65	N.A.		
Transposition of great vessels	4	nr	0	2.61	2.60	0.78	9	
Tetralogy of Fallot	1	nr	0	0.65	0.65	0.37	2	
Hypoplastic left heart syndrome	1	nr	4	0.65	3.25	0.65	7	
Coarctation of aorta	1	nr	0	0.65	0.65	0.75	2	
Choanal atresia, bilateral	2	nr	0	1.31	1.30	9.52	8	
Cleft palate without cleft lip	8	nr	0	5.23	5.20	1.10	9	
Cleft lip with or without cleft palate	8	nr	0	5.23	5.20	0.76	9	
Oesophageal atresia / stenosis with or without fistula	3	nr	0	1.96	1.95	0.65	9	
Small intestine atresia / stenosis	5	nr	0	3.27	3.25	2.13	5	
Anorectal atresia / stenosis	5	nr	0	3.27	3.25	1.19	9	
Undescended testis (36 weeks of gestation or later)	40	nr	0	26.14	26.00	3.75	9	▲
Hypospadias	40	nr	0	26.14	26.00	1.63	4	▲
Epispadias	1	nr	0	0.65	0.65	3.03	5	
Indeterminate sex	1	nr	0	0.65	0.65	2.17	9	
Renal agenesis	1	nr	0	0.65	0.65	0.48	9	
Cystic kidney	1	nr	0	0.65	0.65	0.61	9	
Bladder exstrophy	1	nr	0	0.65	0.65	2.44	8	
Polydactyly, preaxial	6	nr	0	3.92	3.90	1.89	3	
Total Limb reduction defects (include unspecified)	5	nr	3	3.27	5.20	1.10	9	
Transverse	5	nr	2	3.27	4.55	2.23	2	
Preaxial	0	nr	0	0.00	0.00	N.A.		
Postaxial	0	nr	0	0.00	0.00	0.00	2	
Intercalary	0	nr	0	0.00	0.00	N.A.		
Mixed	0	nr	0	0.00	0.00	N.A.		
Diaphragmatic hernia	4	nr	0	2.61	2.60	1.57	9	
Total Abdominal wall defects (include unspecified)	3	nr	4	1.96	4.55	0.87	9	
Omphalocele	3	nr	2	1.96	3.25	1.68	7	
Gastroschisis	0	nr	2	0.00	1.30	0.00	9	
Prune belly sequence	0	nr	0	0.00	0.00	0.00	8	
Trisomy 13	4	nr	2	2.61	3.90	9.76	8	▲
Trisomy 18	2	nr	2	1.31	2.60	2.44	9	
Down syndrome, all ages (include age unknown)	13	nr	11	8.49	15.60	0.67	9	
<20	0	nr	0	N.A.	N.A.	N.A.		
20-24	1	nr	0	N.A.	N.A.	N.A.		
25-29	3	nr	1	N.A.	N.A.	N.A.		
30-34	2	nr	3	N.A.	N.A.	N.A.		
35-39	6	nr	4	N.A.	N.A.	N.A.		
40-44	1	nr	2	N.A.	N.A.	N.A.		
45+	0	nr	1	N.A.	N.A.	N.A.		

N.A.=not available
nr = not reported

TABLE 18a

Italy: ISMAC, time trend analysis 1991-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94*	1995-99	2000	Trend
Births				76,898	91,033	15,304	
Anencephaly				1.04	0.33	0.65	
Spina bifida				4.68	2.20	3.27	
Encephalocele				0.26	0.33	0.00	
Microcephaly				1.17	1.54	2.61	
Arhinencephaly / Holoprosencephaly				0.26	0.22	1.31	
Hydrocephaly				4.55	1.43	3.92	
Total Anophthalmos / Microphthalmos (include unspecified)				0.13	0.55	0.00	
Anophthalmos				0.00	0.22	0.00	
Microphthalmos				0.39	0.33	0.00	
Total Anotia / Microtia (include unspecified)				0.26	0.41*	1.31	
Anotia					0.29*	0.65	N.A.
Microtia					0.00*	0.65	N.A.
Transposition of great vessels				2.99	3.63	2.61	
Tetralogy of Fallot					1.75*	0.65	N.A.
Hypoplastic left heart syndrome				0.13	1.32	0.65	▲
Coarctation of aorta					0.88*	0.65	N.A.
Choanal atresia, bilateral				0.13	0.14*	1.31	
Cleft palate without cleft lip				5.46	4.17	5.23	
Cleft lip with or without cleft palate				6.50	7.14	5.23	
Oesophageal atresia / stenosis with or without fistula				3.12	2.97	1.96	
Small intestine atresia / stenosis				8.71	1.54	3.27	▼
Anorectal atresia / stenosis				3.77	1.87	3.27	
Undescended testis (36 weeks of gestation or later)				6.24	7.58	26.14	▲
Hypospadias					16.04*	26.14	▲
Epispadias				0.00	0.28*	0.65	▲
Indeterminate sex				0.52	0.11	0.65	
Renal agenesis				0.39	2.20	0.65	
Cystic kidney				0.78	1.32	0.65	
Bladder exstrophy				0.13	0.41*	0.65	
Polydactyly, preaxial				0.26	1.52*	3.92	▲
Total Limb reduction defects (include unspecified)				3.25	2.75	3.27	
Transverse					1.46*	3.27	N.A.
Preaxial					0.00*	0.00	N.A.
Postaxial					0.58*	0.00	N.A.
Intercalary					0.00*	0.00	N.A.
Mixed					0.00*	0.00	N.A.
Diaphragmatic hernia				1.69	1.65	2.61	
Total Abdominal wall defects (include unspecified)				2.99	1.65	1.96	
Omphalocele				2.08	0.88	1.96	
Gastroschisis				0.91	0.77	0.00	
Prune belly sequence				0.00	0.14*	0.00	
Trisomy 13				0.13	0.41*	2.61	▲
Trisomy 18				0.52	0.55	1.31	
Down syndrome, all ages (include age unknown)				13.78	11.64	8.49	

* = data include less than five years
N.A. = not available (lack of historical data)

TABLE 19

Italy: North East, 2000

Live births (L)	54,909
Stillbirths (S)	143
Total births	55,052
Number of terminations of pregnancy (ToP) for birth defects	145

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	3	0	9	0.54	2.17	1.56	11	
Spina bifida	9	0	12	1.63	3.80	1.12	9	
Encephalocele	0	0	6	0.00	1.09	0.00	15	
Microcephaly	3	0	1	0.54	0.72	N.A.		
Arhinencephaly / Holoprosencephaly	0	0	0	0.00	0.00	0.00	19	
Hydrocephaly	1	0	1	0.18	0.36	0.15	19	
Total Anophthalmos / Microphthalmos (include unspecified)	3	0	0	0.54	0.54	0.73	17	
Anophthalmos	1	0	0	0.18	0.18	0.93	12	
Microphthalmos	2	0	0	0.36	0.36	0.54	10	
Total Anotia / Microtia (include unspecified)	9	0	0	1.63	1.63	0.85	19	
Anotia	1	0	0	0.18	0.18	1.16	19	
Microtia	8	0	0	1.45	1.45	0.82	19	
Transposition of great vessels	4	0	0	0.73	0.72	0.73	8	
Tetralogy of Fallot	9	0	0	1.63	1.63	0.84	8	
Hypoplastic left heart syndrome	3	0	2	0.54	0.91	1.24	5	
Coarctation of aorta	7	0	0	1.27	1.27	4.17	3	▲
Choanal atresia, bilateral	1	0	0	0.18	0.18	N.A.		
Cleft palate without cleft lip	14	1	1	2.72	2.90	0.60	19	
Cleft lip with or without cleft palate	24	0	3	4.36	4.89	0.67	11	
Oesophageal atresia / stenosis with or without fistula	6	0	0	1.09	1.09	0.48	19	
Small intestine atresia / stenosis	2	0	1	0.36	0.54	0.47	19	
Anorectal atresia / stenosis	11	0	1	2.00	2.17	0.84	19	
Undescended testis (36 weeks of gestation or later)	nr	nr	nr	N.A.	N.A.	N.A.		
Hypospadias	9	0	1	1.63	1.81	0.46	4	
Epispadias	0	0	0	0.00	0.00	0.00	19	
Indeterminate sex	nr	nr	nr	N.A.	N.A.	N.A.		
Renal agenesis	0	0	3	0.00	0.54	0.00	15	
Cystic kidney	3	0	2	0.54	0.91	N.A.		
Bladder exstrophy	0	0	0	0.00	0.00	0.00	19	
Polydactyly, preaxial	5	0	0	0.91	0.91	0.43	19	
Total Limb reduction defects (include unspecified)	11	0	5	2.00	2.90	0.44	10	▼
Transverse	8	0	1	1.45	1.63	0.50	19	
Preaxial	0	0	0	0.00	0.00	0.00	13	
Postaxial	0	0	0	0.00	0.00	0.00	19	
Intercalary	2	0	3	0.36	0.91	0.69	19	
Mixed	1	0	1	0.18	0.36	0.25	9	
Diaphragmatic hernia	1	0	2	0.18	0.54	N.A.		
Total Abdominal wall defects (include unspecified)	1	0	3	0.18	0.72	0.27	9	
Omphalocele	0	0	2	0.00	0.36	0.00	10	
Gastroschisis	1	0	1	0.18	0.36	1.02	12	
Prune belly sequence	0	0	0	0.00	0.00	N.A.		
Trisomy 13	2	0	6	0.36	1.45	N.A.		
Trisomy 18	2	0	15	0.36	3.08	N.A.		
Down syndrome, all ages (include age unknown)	38	0	34	6.90	13.04	0.90	4	
<20	0	0	0	0.00	0.00	0.00	19	
20-24	1	0	0	1.91	1.91	0.40	12	
25-29	4	0	1	2.89	3.61	0.44	19	
30-34	10	0	7	5.51	9.36	0.73	9	
35-39	6	0	18	5.17	20.64	0.55	4	
40-44	8	0	7	35.60	66.55	3.96	2	▲
45+	0	0	0	N.A.	N.A.	N.A.		

N.A. =not available (lack of historical data)
nr = not reported

Italy: North East, time trend analysis 1981-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84*	1985-89	1990-94	1995-99	2000	Trend
Births		148,426	219,536	252,816	272,548	55,052	
Anencephaly		1.95	1.18	0.28	0.33	0.54	▼
Spina bifida		4.18	2.78	1.98	1.28	1.63	▼
Encephalocele		1.15	0.55	0.20	0.26	0.00	▼
Microcephaly						0.54	N.A.
Arhinencephaly / Holoprosencephaly		0.34	0.32	0.08	0.18	0.00	▼
Hydrocephaly		1.08	1.55	0.99	1.32	0.18	
Total Anophthalmos / Microphthalmos (include unspecified)		0.27	0.77	0.63	0.92	0.54	▲
Anophthalmos		0.27	0.77	0.04	0.18	0.18	▼
Microphthalmos			0.00*	0.59	0.73	0.36	▲
Total Anotia / Microtia (include unspecified)		2.56	2.10	1.42	1.91	1.63	
Anotia		0.13	0.14	0.24	0.11	0.18	
Microtia		2.43	1.96	1.19	1.80	1.45	
Transposition of great vessels				1.34*	0.81	0.73	
Tetralogy of Fallot				2.07*	1.87	1.63	
Hypoplastic left heart syndrome				1.14*	0.44	0.54	▼
Coarctation of aorta				1.74	0.59	1.27	▼
Choanal atresia, bilateral						0.18	N.A.
Cleft palate without cleft lip		3.50	6.19	4.39	3.93	2.72	
Cleft lip with or without cleft palate		8.83	8.79	6.45	6.20	4.36	▼
Oesophageal atresia / stenosis with or without fistula		2.29	2.23	2.69	1.94	1.09	
Small intestine atresia / stenosis		0.40	0.59	1.23	0.70	0.36	
Anorectal atresia / stenosis		2.49	3.19	2.10	1.91	2.00	▼
Hypospadias		6.87	6.65	5.77	4.22	1.63	▼
Epispadias		0.07	0.14	0.12	0.26	0.00	
Renal agenesis		0.74	0.64	0.32	0.33	0.00	▼
Cystic kidney						0.54	N.A.
Bladder exstrophy		0.34	0.14	0.44	0.11	0.00	
Polydactyly, preaxial		1.62	2.32	2.45	1.94	0.91	
Total Limb reduction defects (include unspecified)		5.79	5.69	4.90	4.11	2.00	▼
Transverse		3.44	3.05	2.65	2.72	1.45	▼
Preaxial		0.07	0.05	0.28	0.40	0.00	▲
Postaxial		0.00	0.14	0.08	0.18	0.00	
Intercalary		0.54	0.68	0.63	0.29	0.36	
Mixed		1.82	1.78	1.27	0.51	0.18	▼
Diaphragmatic hernia						0.18	N.A.
Total Abdominal wall defects (include unspecified)		2.09	2.28	1.03	0.55	0.18	▼
Omphalocele		1.35	1.50	0.75	0.48	0.00	▼
Gastroschisis		0.74	0.77	0.28	0.07	0.18	▼
Prune belly sequence						0.00	N.A.
Trisomy 13						0.36	N.A.
Trisomy 18						0.36	N.A.
Down syndrome, all ages (include age unknown)		13.88	15.08	11.95	8.40	6.90	▼
<20		3.97	5.26	10.36	6.72	0.00	
20-24		7.10	8.74	4.27	4.27	1.91	▼
25-29		6.63	6.73	7.31	5.53	2.89	
30-34		13.63	10.84	9.78	6.70	5.51	▼
35-39		35.32	46.23	22.52	10.92	5.17	▼
40-44		89.66	90.05	58.09	24.55	35.60	▼
45+		135.14	74.63*	32.05*	100.50*		

* =data include less than five years
N.A. = not available (lack of historical data)

TABLE 20

Italy: Tuscany, 2000

Live births (L)	26,455
Stillbirths (S)	93
Total births	26,548
Number of terminations of pregnancy (ToP) for birth defects	90

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	1	1	6	0.75	3.00	2.50	8	
Spina bifida	3	1	7	1.51	4.13	1.43	8	
Encephalocele	0	1	1	0.38	0.75	0.63	8	
Microcephaly	1	0	0	0.38	0.38	0.36	8	
Arhinencephaly / Holoprosencephaly	1	0	2	0.38	1.13	1.52	8	
Hydrocephaly	1	2	7	1.13	3.75	0.87	8	
Total Anophthalmos / Microphthalmos (include unspecified)	1	1	0	0.75	0.75	1.67	8	
Anophthalmos	1	1	0	0.75	0.75	15.38	8	
Microphthalmos	0	0	0	0.00	0.00	0.00	8	
Total Anotia / Microtia (include unspecified)	1	0	0	0.38	0.38	0.40	8	
Anotia	1	0	0	0.38	0.38	1.08	8	
Microtia	0	0	0	0.00	0.00	0.00	8	
Transposition of great vessels	12	0	0	4.52	4.50	2.15	8	
Tetralogy of Fallot	8	0	0	3.01	3.00	1.25	8	
Hypoplastic left heart syndrome	4	0	5	1.51	3.38	1.25	7	
Coarctation of aorta	8	0	1	3.01	3.38	1.18	8	
Choanal atresia, bilateral	2	0	0	0.75	0.75	5.00	8	
Cleft palate without cleft lip	8	0	0	3.01	3.00	0.85	8	
Cleft lip with or without cleft palate	24	3	2	10.17	10.89	1.91	7	▲
Oesophageal atresia / stenosis with or without fistula	9	0	0	3.39	3.38	1.47	8	
Small intestine atresia / stenosis	1	0	0	0.38	0.38	0.66	7	
Anorectal atresia / stenosis	9	0	0	3.39	3.38	2.05	8	
Undescended testis (36 weeks of gestation or later)	28	0	0	10.55	10.51	0.97	2	
Hypospadias	10	0	1	3.77	4.13	1.08	6	
Epispadias	0	0	0	0.00	0.00	0.00	8	
Indeterminate sex	1	1	0	0.75	0.75	1.26	8	
Renal agenesis	0	1	1	0.38	0.75	0.40	8	
Cystic kidney	10	0	1	3.77	4.13	1.48	8	
Bladder exstrophy	1	0	1	0.38	0.75	1.52	8	
Polydactyly, preaxial	6	0	1	2.26	2.63	2.82	8	
Total Limb reduction defects (include unspecified)	13	0	6	4.90	7.13	1.19	8	
Transverse	11	0	2	4.14	4.88	1.33	8	
Preaxial	1	0	1	0.38	0.75	1.52	8	
Postaxial	1	0	1	0.38	0.75	1.52	8	
Intercalary	1	0	1	0.38	0.75	0.83	8	
Mixed	2	0	1	0.75	1.13	1.89	8	
Diaphragmatic hernia	2	1	1	1.13	1.50	0.84	8	
Total Abdominal wall defects (include unspecified)	5	1	4	2.26	3.75	2.46	7	
Omphalocele	4	1	2	1.88	2.63	2.98	7	
Gastroschisis	1	0	1	0.38	0.75	2.50	8	
Prune belly sequence	0	0	0	0.00	0.00	0.00	8	
Trisomy 13	0	0	4	0.00	1.50	0.00	8	
Trisomy 18	1	1	7	0.75	3.38	1.26	8	
Down syndrome, all ages (include age unknown)	12	1	21	4.90	12.76	0.74	4	
<20	0	0	0	0.00	0.00	0.00	8	
20-24	0	0	0	0.00	0.00	0.00	8	
25-29	4	0	0	5.62	5.62	1.04	8	
30-34	4	0	4	3.94	7.87	0.47	8	
35-39	3	0	9	5.88	23.46	0.93	5	
40-44	1	1	8	24.94	123.46	0.75	8	
45+	0	0	0	0.00	0.00	0.00	8	

TABLE 20a

Italy: Tuscany, time trend analysis 1992-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94*	1995-99	2000	Trend
Births				74,661	125,188	26,548	
Anencephaly				0.40	0.24	0.75	
Spina bifida				0.94	1.12	1.51	
Encephalocele				0.80	0.48	0.38	
Microcephaly				1.47	0.80	0.38	▼
Arhinencephaly / Holoprosencephaly				0.40	0.16	0.38	
Hydrocephaly				1.34	1.28	1.13	
Total Anophthalmos / Microphthalmos (include unspecified)				0.67	0.32	0.75	
Anophthalmos				0.00	0.08	0.75	▲
Microphthalmos				0.67	0.24	0.00	
Total Anotia / Microtia (include unspecified)				0.80	1.04	0.38	
Anotia				0.40	0.32	0.38	
Microtia				0.40	0.72	0.00	
Transposition of great vessels				2.54	1.84	4.52	
Tetralogy of Fallot				1.88	2.72	3.01	
Hypoplastic left heart syndrome				2.14	0.88	1.51	▼
Coarctation of aorta				2.41	2.64	3.01	
Choanal atresia, bilateral				0.13	0.16	0.75	
Cleft palate without cleft lip				3.62	3.51	3.01	
Cleft lip with or without cleft palate				8.17	4.79	10.17	
Oesophageal atresia / stenosis with or without fistula				2.14	2.40	3.39	
Small intestine atresia / stenosis				1.07	0.48	0.38	▼
Anorectal atresia / stenosis				1.47	1.76	3.39	
Undescended testis (36 weeks of gestation or later)				3.48	6.15	10.55	▲
Hypospadias				5.76	3.20	3.77	▼
Epispadias				0.27	0.24	0.00	
Indeterminate sex				0.94	0.40	0.75	
Renal agenesis				1.21	0.80	0.38	▼
Cystic kidney				3.08	2.24	3.77	
Bladder exstrophy				0.40	0.16	0.38	
Polydactyly, preaxial				0.80	0.80	2.26	
Total Limb reduction defects (include unspecified)				4.82	3.67	4.90	
Transverse				4.02	2.56	4.14	
Preaxial				0.13	0.32	0.38	
Postaxial				0.13	0.32	0.38	
Intercalary				0.27	0.56	0.38	
Mixed				0.27	0.48	0.75	
Diaphragmatic hernia				1.47	1.28	1.13	
Total Abdominal wall defects (include unspecified)				1.88	0.64	2.26	
Omphalocele				1.34	0.40	1.88	
Gastroschisis				0.27	0.08	0.38	
Prune belly sequence				0.13	0.08	0.00	
Trisomy 13				0.00	0.32	0.00	
Trisomy 18				0.67	0.56	0.75	
Down syndrome, all ages (include age unknown)				9.78	7.59	4.90	▼
<20				8.02	0.00	0.00	
20-24				3.01	4.49	0.00	
25-29				6.44	4.66	5.62	
30-34				6.09	9.48	3.94	
35-39				24.93	6.29	5.88	▼
40-44				25.59	36.90	24.94	
45+				128.21	0.00	0.00	

* = data include less than five years

TABLE 21

Japan: JAOG, 2000

Live births (L)	90,749
Stillbirths (S)	605
Total births	91,354
Number of terminations of pregnancy (ToP) for birth defects	nr

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	2	9	nr	1.20	N.A.	0.58	5	
Spina bifida	42	2	nr	4.82	N.A.	1.39	15	
Encephalocele	1	0	nr	0.11	N.A.	0.10	26	▼
Microcephaly	5	3	nr	0.88	N.A.	0.67	21	
Arhinencephaly / Holoprosencephaly	6	8	nr	1.53	N.A.	1.61	5	
Hydrocephaly	53	9	nr	6.79	N.A.	0.99	12	
Total Anophthalmos / Microphthalmos (include unspecified)	2	0	nr	0.22	N.A.	0.28	9	
Anophthalmos	0	0	nr	0.00	N.A.	0.00	8	
Microphthalmos	2	0	nr	0.22	N.A.	0.39	26	
Total Anotia / Microtia (include unspecified)	nr	nr	nr	N.A.	N.A.	N.A.		
Anotia	nr	nr	nr	N.A.	N.A.	N.A.		
Microtia	9	0	nr	0.99	N.A.	0.87	26	
Transposition of great vessels	26	2	nr	3.06	N.A.	1.58	3	
Tetralogy of Fallot	35	2	nr	4.05	N.A.	1.88	3	▲
Hypoplastic left heart syndrome	7	1	nr	0.88	N.A.	0.58	3	
Coarctation of aorta	16	0	nr	1.75	N.A.	0.90	2	
Choanal atresia, bilateral	nr	nr	nr	N.A.	N.A.	N.A.	0	
Cleft palate without cleft lip	43	2	nr	4.93	N.A.	0.97	17	
Cleft lip with or without cleft palate	114	6	nr	13.14	N.A.	0.82	10	▼
Oesophageal atresia / stenosis with or without fistula	19	6	nr	2.74	N.A.	1.02	8	
Small intestine atresia / stenosis	37	3	nr	4.38	N.A.	0.84	2	
Anorectal atresia / stenosis	39	7	nr	5.04	N.A.	1.24	26	
Undescended testis (36 weeks of gestation or later)	nr	nr	nr	N.A.	N.A.	N.A.	0	
Hypospadias	25	2	nr	2.96	N.A.	1.07	15	
Epispadias	nr	nr	nr	N.A.	N.A.	N.A.	0	
Indeterminate sex	nr	nr	nr	N.A.	N.A.	N.A.	0	
Renal agenesis	10	8	nr	1.97	N.A.	1.34	11	
Cystic kidney	21	4	nr	2.74	N.A.	0.84	2	
Bladder exstrophy	2	0	nr	0.22	N.A.	1.45	24	
Polydactyly, preaxial	51	9	nr	6.57	N.A.	1.05	11	
Total Limb reduction defects (include unspecified)	22	3	nr	2.74	N.A.	0.83	7	
Transverse	0	1	nr	0.11	N.A.	0.30	7	
Preaxial	6	1	nr	0.77	N.A.	1.46	7	
Postaxial	3	0	nr	0.33	N.A.	1.16	7	
Intercalary	7	0	nr	0.77	N.A.	0.69	6	
Mixed	5	0	nr	0.55	N.A.	0.97	7	
Diaphragmatic hernia	52	6	nr	6.35	N.A.	1.41	3	
Total Abdominal wall defects (include unspecified)	45	14	nr	6.46	N.A.	1.27	12	
Omphalocele	25	9	nr	3.72	N.A.	1.23	15	
Gastroschisis	16	5	nr	2.30	N.A.	1.35	11	
Prune belly sequence	0	0	nr	0.00	N.A.	0.00	5	
Trisomy 13	9	4	nr	1.42	N.A.	2.02	6	
Trisomy 18	31	18	nr	5.36	N.A.	1.60	5	▲
Down syndrome, all ages (include age unknown)	70	2	nr	7.88	N.A.	0.95	5	
<20	1	0	nr	N.A.	N.A.	0.00	7	▼
20-24	1	0	nr	N.A.	N.A.	0.00	7	▼
25-29	12	2	nr	N.A.	N.A.	0.03	5	▼
30-34	17	0	nr	N.A.	N.A.	0.02	5	▼
35-39	29	0	nr	N.A.	N.A.	0.02	7	▼
40-44	10	0	nr	N.A.	N.A.	0.00	7	▼
45+	0	0	nr	N.A.	N.A.	N.A.		

N.A. = not available
nr = not reported

TABLE 21a

Japan: JAOG, time trend analysis 1974-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births	629,508	668,362	685,695	551,995	484,401	91,354	
Anencephaly	9.02	9.32	7.03	4.06	2.09	1.20	▼
Spina bifida	1.91	2.35	3.19	3.55	3.74	4.82	▲
Encephalocele	1.03	1.03	1.34	0.94	1.05	0.11	
Microcephaly	0.84	1.24	1.15	1.63	1.36	0.88	▲
Arhinencephaly / Holoprosencephaly					0.95	1.53	▲
Hydrocephaly	2.78	3.65	5.44	7.25	6.92	6.79	▲
Total Anophthalmos / Microphthalmos (include unspecified)	1.33	1.48	1.14	1.07	0.66	0.22	▼
Anophthalmos	0.76	0.84	0.61	0.54	0.14	0.00	▼
Microphthalmos	0.57	0.64	0.53	0.53	0.52	0.22	
Microtia	1.06	1.14	1.09	1.07	1.34	0.99	
Transposition of great vessels					1.94*	3.07	N.A.
Tetralogy of Fallot					2.15*	4.05	N.A.
Hypoplastic left heart syndrome					1.52*	0.88	N.A.
Coarctation of aorta					1.48*	1.75	N.A.
Cleft palate without cleft lip	12.76	8.71	5.18	5.53	4.38	4.93	▼
Cleft lip with or without cleft palate	14.65	12.79	14.25	15.47	16.78	13.14	▲
Oesophageal atresia / stenosis with or without fistula	1.19*	1.03	1.60	2.25	2.81	2.74	▲
Small intestine atresia / stenosis					4.44*	4.38	N.A.
Anorectal atresia / stenosis	4.05	3.55	4.24	4.17	4.38	5.04	
Hypospadias	1.75	2.21	2.36	3.10	2.93	2.96	▲
Renal agenesis			0.95*	1.58	1.49	1.97	▲
Cystic kidney					2.79*	2.74	N.A.
Bladder exstrophy	0.17*	0.13	0.16	0.13	0.17	0.22	
Polydactyly, preaxial			5.28*	6.54	6.19	6.57	
Total Limb reduction defects (include unspecified)				3.23*	3.32	2.74	
Transverse				0.36*	0.37	0.11	
Preaxial				0.58*	0.50	0.77	
Postaxial				0.18*	0.33	0.33	
Intercalary				1.39*	1.09	0.77	▼
Mixed				0.40*	0.64	0.55	
Diaphragmatic hernia			2.25*	2.92	3.67	6.35	▲
Total Abdominal wall defects (include unspecified)	2.05	2.21	3.84	5.33	5.31	6.46	▲
Omphalocele	0.97	1.38	2.63	3.32	3.24	3.72	▲
Gastroschisis	1.08	0.84	1.18	1.59	1.88	2.30	▲
Prune belly sequence					0.04	0.00	▼
Trisomy 13				0.36*	0.78	1.42	
Trisomy 18				2.33*	3.34	5.36	▲
Down syndrome, all ages (include age unknown)	3.37*	4.94	5.94	6.05	8.26	7.88	▲
<20				8.33*	0.00		
20-24				2.07*	3.18		
25-29				4.08*	5.24		▲
30-34				4.96*	8.38		▲
35-39				16.65*	17.37		
40+				67.33*	50.31		

* = data include less than five years
N.A. = not available (lack of historical data)

TABLE 22

Malta, 2000

Live births (L)	4,255
Stillbirths (S)	17
Total births	4,272
Number of terminations of pregnancy (ToP) for birth defects	not permitted

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	0	0		0.00		0.00	7	
Spina bifida	2	0		4.68		0.65	7	
Encephalocele	2	0		4.68		2.60	7	
Microcephaly	1	0		2.34		0.60	7	
Arhinencephaly / Holoprosencephaly	0	0		0.00		0.00	7	
Hydrocephaly	2	1		7.02		1.12	7	
Total Anophthalmos / Microphthalmos (include unspecified)	1	0		2.34		1.96	7	
Anophthalmos	0	0		0.00		0.00	7	
Microphthalmos	1	0		2.34		3.85	7	
Total Anotia / Microtia (include unspecified)	0	0		0.00		N.A.		
Anotia	0	0		0.00		N.A.		
Microtia	0	0		0.00		N.A.		
Transposition of great vessels	4	0		9.36		1.95	7	
Tetralogy of Fallot	3	0		7.02		1.95	7	
Hypoplastic left heart syndrome	0	0		0.00		0.00	7	
Coarctation of aorta	2	0		4.68		0.87	7	
Choanal atresia, bilateral	0	0		0.00		0.00	7	
Cleft palate without cleft lip	5	0		11.70		0.75	7	
Cleft lip with or without cleft palate	7	0		16.39		1.82	7	
Oesophageal atresia / stenosis with or without fistula	2	0		4.68		2.22	7	
Small intestine atresia / stenosis	0	0		0.00		0.00	7	
Anorectal atresia / stenosis	0	0		0.00		0.00	7	
Undescended testis (36 weeks of gestation or later)	nr	nr		N.A.		N.A.		
Hypospadias	7	0		16.39		0.64	3	
Epispadias	4	0		9.36		6.25	7	▲
Indeterminate sex	1	0		2.34		1.56	7	
Renal agenesis	1	0		2.34		0.87	7	
Cystic kidney	3	0		7.02		1.56	7	
Bladder exstrophy	0	0		0.00		N.A.		
Polydactyly, preaxial	1	0		2.34		1.56	7	
Total Limb reduction defects (include unspecified)	4	1		11.70		2.79	7	
Transverse	nr	nr		N.A.		N.A.		
Preaxial	nr	nr		N.A.		N.A.		
Postaxial	nr	nr		N.A.		N.A.		
Intercalary	nr	nr		N.A.		N.A.		
Mixed	nr	nr		N.A.		N.A.		
Diaphragmatic hernia	2	1		7.02		1.17	7	
Total Abdominal wall defects (include unspecified)	1	0		2.34		0.65	7	
Omphalocele	0	0		0.00		0.00	7	
Gastroschisis	1	0		2.34		2.63	7	
Prune belly sequence	0	0		0.00		0.00	7	
Trisomy 13	1	0		2.34		N.A.		
Trisomy 18	1	0		2.34		0.78	7	
Down syndrome, all ages (include age unknown)	4	0		9.36		0.53	7	
<20	1	0		41.67		0.98	1	
20-24	0	0		0.00		N.A.		
25-29	1	0		6.45		0.51	1	
30-34	0	0		0.00		0.00	1	
35-39	1	0		23.31		0.55	1	
40-44	1	0		90.09		0.38	1	
45+	0	0		0.00		N.A.		

N.A. = not available
nr = not reported

TABLE 22a

Malta, time trend analysis 1993-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94*	1995-99	2000	Trend
Births				10,035	23,325	4,272	
Anencephaly				3.99	4.72	0.00	
Spina bifida				6.98	7.29	4.68	
Encephalocele				1.99	1.71	4.68	
Microcephaly				5.98	3.00	2.34	
Arhinencephaly / Holoprosencephaly				1.00	1.29	0.00	
Hydrocephaly				6.98	6.00	7.02	
Total Anophthalmos / Microphthalmos (include unspecified)				1.00	1.29	2.34	
Anophthalmos				1.00	0.43	0.00	
Microphthalmos				0.00	0.86	2.34	
Total Anotia / Microtia (include unspecified)				0.00	0.00	0.00	
Anotia				0.00	0.00	0.00	
Microtia				0.00	0.00	0.00	
Transposition of great vessels				3.99	5.14	9.36	
Tetralogy of Fallot				1.99	4.29	7.02	
Hypoplastic left heart syndrome				1.00	1.29	0.00	
Coarctation of aorta				7.97	4.29	4.68	
Choanal atresia, bilateral				1.00	0.00	0.00	
Cleft palate without cleft lip				14.95	15.86	11.70	
Cleft lip with or without cleft palate				9.97	8.57	16.39	
Oesophageal atresia / stenosis with or without fistula				3.99	1.29	4.68	
Small intestine atresia / stenosis				0.00	0.86	0.00	
Anorectal atresia / stenosis				1.99	5.14	0.00	
Hypospadias				11.96	18.86	16.39	▲
Epispadias				1.99	1.29	9.36	
Indeterminate sex				2.99	0.86	2.34	
Renal agenesis				2.99	2.57	2.34	
Cystic kidney				4.98	4.29	7.02	
Bladder exstrophy				0.00	0.00	0.00	
Polydactyly, preaxial				1.00	1.71	2.34	
Total Limb reduction defects (include unspecified)				4.98	3.86	11.70	
Diaphragmatic hernia				4.98	6.43	7.02	
Total Abdominal wall defects (include unspecified)				4.98	3.00	2.34	
Omphalocele				2.99	2.57	0.00	
Gastroschisis				1.99	0.43	2.34	
Prune belly sequence				1.00	0.43	0.00	
Trisomy 13				0.00	0.00	2.34	
Trisomy 18				1.00	3.86	2.34	
Down syndrome, all ages (include age unknown)				21.92	15.86	9.36	
<20					42.55*	41.67	N.A.
20-24					0.00*	0.00	N.A.
25-29					12.58*	6.45	N.A.
30-34					29.91*	0.00	N.A.
35-39					42.55*	23.31	N.A.
40-44					236.22*	90.09	N.A.
45+					0.00*	0.00	N.A.

* = data include less than five years
N.A. = not available (lack of historical data)

TABLE 23

Mexico: RYVEMCE, 2000

Live births (L)	23,297
Stillbirths (S)	309
Total births	23,606
Number of terminations of pregnancy (ToP) for birth defects	not permitted

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	7	12		8.05		0.52	9	▼
Spina bifida	18	3		8.90		0.55	20	▼
Encephalocele	4	1		2.12		0.80	19	
Microcephaly	3	1		1.69		0.77	20	
Arhinencephaly / Holoprosencephaly	0	1		0.42		0.57	2	
Hydrocephaly	13	4		7.20		1.27	20	
Total Anophthalmos / Microphthalmos (include unspecified)	6	0		2.54		1.68	14	
Anophthalmos	nr	nr		N.A.		N.A.		
Microphthalmos	nr	nr		N.A.		N.A.		
Total Anotia / Microtia (include unspecified)	14	2		6.78		1.03	20	
Anotia	nr	nr		N.A.		N.A.		
Microtia	nr	nr		N.A.		N.A.		
Transposition of great vessels	2	0		0.85		4.35	5	
Tetralogy of Fallot	nr	nr		N.A.		N.A.		
Hypoplastic left heart syndrome	0	0		0.00		N.A.		
Coarctation of aorta	nr	nr		N.A.		N.A.		
Choanal atresia, bilateral	1	0		0.42		1.20	20	
Cleft palate without cleft lip	5	0		2.12		0.62	20	
Cleft lip with or without cleft palate	25	1		11.01		0.88	20	
Oesophageal atresia / stenosis with or without fistula	4	0		1.69		0.85	18	
Small intestine atresia / stenosis	5	0		2.12		1.92	17	
Anorectal atresia / stenosis	8	3		4.66		1.02	20	
Undescended testis (36 weeks of gestation or later)	nr	nr		N.A.		N.A.		
Hypospadias	7	0		2.97		0.68	20	
Epispadias	nr	nr		N.A.		N.A.		
Indeterminate sex	4	1		2.12		0.99	20	
Renal agenesis	2	1		1.27		2.46	6	
Cystic kidney	1	1		0.85		1.05	14	
Bladder exstrophy	2	0		0.85		1.90	20	
Polydactyly	23	0		9.74		0.77	19	
Total Limb reduction defects (include unspecified)	10	1		4.66		0.78	20	
Transverse	4	0		1.69		0.51	17	
Preaxial	2	0		0.85		1.46	7	
Postaxial	2	0		0.85		2.86	17	
Intercalary	0	1		0.42		1.37	17	
Mixed	2	0		0.85		1.19	17	
Diaphragmatic hernia	2	0		0.85		0.98	20	
Total Abdominal wall defects (include unspecified)	15	1		6.78		1.54	20	
Omphalocele	2	1		1.27		0.79	20	
Gastroschisis	11	0		4.66		1.91	10	
Prune belly sequence	2	1		1.27		1.25	20	
Trisomy 13	1	0		0.42		1.89	20	
Trisomy 18	0	0		0.00		0.00	18	
Down syndrome, all ages (include age unknown)	24	0		10.17		0.77	20	
<20	2	0		3.90		0.46	20	
20-24	5	0		6.41		0.98	20	
25-29	5	0		9.54		1.08	20	
30-34	2	0		6.74		0.46	20	
35-39	7	0		45.99		1.08	20	
40-44	1	0		29.15		0.20	20	
45+	2	0		392.16		2.22	18	

N.A.= not available
nr = not reported

Mexico, time trend analysis 1980-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births		182,602	176,079	290,075	205,529	23,606	
Anencephaly		18.24	19.99	16.51	14.79	8.05	▼
Spina bifida		14.79	18.57	17.00	13.72	8.90	
Encephalocele		3.29	3.18	2.28	2.53	2.12	▼
Microcephaly		2.35	3.18	1.69	1.95	1.69	
Arhinencephaly / Holoprosencephaly				0.15*	0.29	0.42	▲
Hydrocephaly		5.91	4.49	6.21	5.64	7.20	
Total Anophthalmos / Microphthalmos (include unspecified)		2.57	1.59	1.93	0.97	2.54	▼
Total Anotia / Microtia (include unspecified)		6.79	6.42	6.55	6.47	6.78	
Transposition of great vessels					0.19	0.85	
Hypoplastic left heart syndrome					0.00	0.00	
Choanal atresia, bilateral		0.27	0.34	0.52	0.19	0.42	
Cleft palate without cleft lip		3.29	3.52	4.00	2.53	2.12	
Cleft lip with or without cleft palate		13.25	12.21	12.41	12.55	11.01	
Oesophageal atresia / stenosis with or without fistula		1.26	1.76	2.41	1.99	1.69	▲
Small intestine atresia / stenosis		0.66	0.85	1.34	1.22	2.12	▲
Anorectal atresia / stenosis		3.94	4.43	5.27	4.28	4.66	
Hypospadias		4.22	3.75	5.17	3.89	2.97	
Indeterminate sex		1.81	1.70	2.69	2.04	2.12	
Renal agenesis				0.91*	0.39	1.27	
Cystic kidney		0.33	0.57	0.90	0.78	0.85	▲
Bladder exstrophy		0.49	0.40	0.45	0.44	0.85	
Polydactyly, preaxial		11.83	13.86	12.67*	12.60	9.74	
Total Limb reduction defects (include unspecified)		6.02	6.82	6.03	5.16	4.66	
Transverse		2.65*	3.58	3.17	3.60	1.69	
Preaxial		0.70*	1.36	1.31	0.39	0.85	▼
Postaxial		0.00*	0.34	0.45	0.15	0.85	
Intercalary		0.28*	0.34	0.28	0.34	0.42	
Mixed		1.25*	0.91	0.52	0.63	0.85	
Diaphragmatic hernia		0.55	0.80	1.07	0.92	0.85	
Total Abdominal wall defects (include unspecified)		4.16	4.03	4.93	4.23	6.78	
Omphalocele		1.59	1.65	1.69	1.46	1.27	
Gastroschisis		1.37	1.31	2.24	2.72	4.66	▲
Prune belly sequence		1.20	1.08	1.07	0.73	1.27	
Trisomy 13		0.33	0.34	0.14	0.15	0.42	
Trisomy 18		0.66	0.57	0.38	0.15	0.00	▼
Down syndrome, all ages (include age unknown)		12.92	12.95	14.38	12.21	10.17	
<20		10.46	8.00	9.09	6.41	3.90	
20-24		5.89	5.94	7.00	6.97	6.41	
25-29		6.57	9.08	9.19	9.94	9.54	
30-34		10.31	15.60	16.23	14.89	6.74	
35-39		42.74	38.24	51.70	33.50	45.99	
40-44		156.02	154.14	151.98	122.15	29.15	
45+		352.64	181.82	126.38	155.90	392.16	

* = data include less than five years

TABLE 24

New Zealand, 2000

Live births (L)	56,602
Stillbirths (S)	349
Total births	56,951
Number of terminations of pregnancy (ToP) for birth defects	nr

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	4	nr	nr	0.70	N.A.	1.17	10	
Spina bifida	18	nr	nr	3.16	N.A.	0.84	12	
Encephalocele	1	nr	nr	0.18	N.A.	0.33	11	
Microcephaly	12	nr	nr	2.11	N.A.	0.57	3	
Arhinencephaly / Holoprosencephaly	nr	nr	nr	N.A.	N.A.	N.A.		
Hydrocephaly	23	nr	nr	4.04	N.A.	1.24	19	
Total Anophthalmos / Microphthalmos (include unspecified)	3	nr	nr	0.53	N.A.	0.75	4	
Anophthalmos	0	nr	nr	0.00	N.A.	N.A.		
Microphthalmos	3	nr	nr	0.53	N.A.	0.75	4	
Total Anotia / Microtia (include unspecified)	nr	nr	nr	N.A.	N.A.	N.A.		
Anotia	nr	nr	nr	N.A.	N.A.	N.A.		
Microtia	nr	nr	nr	N.A.	N.A.	N.A.		
Transposition of great vessels	30	nr	nr	5.27	N.A.	1.04	4	
Tetralogy of Fallot	25	nr	nr	4.39	N.A.	0.92	2	
Hypoplastic left heart syndrome	8	nr	nr	1.40	N.A.	1.07	7	
Coarctation of aorta	14	nr	nr	2.46	N.A.	1.39	2	
Choanal atresia, bilateral	9	nr	nr	1.58	N.A.	1.80	4	
Cleft palate without cleft lip	60	nr	nr	10.54	N.A.	1.59	20	▲
Cleft lip with or without cleft palate	18	nr	nr	3.16	N.A.	0.58	13	
Oesophageal atresia / stenosis with or without fistula	10	nr	nr	1.76	N.A.	0.86	20	
Small intestine atresia / stenosis	14	nr	nr	2.46	N.A.	1.52	4	
Anorectal atresia / stenosis	11	nr	nr	1.93	N.A.	0.77	20	
Undescended testis (36 weeks of gestation or later)	464	nr	nr	81.47	N.A.	1.17	2	▲
Hypospadias\ Epispadias	164	nr	nr	28.80	N.A.	1.11	2	
Indeterminate sex	3	nr	nr	0.53	N.A.	1.12	3	
Renal agenesis	20	nr	nr	3.51	N.A.	1.00	3	
Cystic kidney	38	nr	nr	6.67	N.A.	1.19	4	
Bladder exstrophy	3	nr	nr	0.53	N.A.	1.52	3	
Polydactyly, preaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Total Limb reduction defects (include unspecified)	16	nr	nr	2.81	N.A.	1.07	16	
Transverse	nr	nr	nr	N.A.	N.A.	N.A.		
Preaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Postaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Intercalary	nr	nr	nr	N.A.	N.A.	N.A.		
Mixed	nr	nr	nr	N.A.	N.A.	N.A.		
Diaphragmatic hernia	16	nr	nr	2.81	N.A.	1.66	8	
Total Abdominal wall defects (include unspecified)	18	nr	nr	3.16	N.A.	1.12	17	
Omphalocele	nr	nr	nr	N.A.	N.A.	N.A.		
Gastroschisis	nr	nr	nr	N.A.	N.A.	N.A.		
Prune belly sequence	nr	nr	nr	N.A.	N.A.	N.A.		
Trisomy 13	2	nr	nr	0.35	N.A.	0.80	4	
Trisomy 18	7	nr	nr	1.23	N.A.	1.40	4	
Down syndrome, all ages (include age unknown)	66	nr	nr	11.59	N.A.	1.17	16	
<20	nr	nr	nr	N.A.	N.A.	N.A.		
20-24	nr	nr	nr	N.A.	N.A.	N.A.		
25-29	nr	nr	nr	N.A.	N.A.	N.A.		
30-34	nr	nr	nr	N.A.	N.A.	N.A.		
35-39	nr	nr	nr	N.A.	N.A.	N.A.		
40-44	nr	nr	nr	N.A.	N.A.	N.A.		
45+	nr	nr	nr	N.A.	N.A.	N.A.		

N.A. = not available
nr = not reported

TABLE 24a

New Zealand, time trend analysis 1980-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births		244,840	271,170	295,872	285,789	56,951	
Anencephaly		5.23	2.77	0.74	0.45	0.70	▼
Spina bifida		11.15	6.64	4.02	3.04	3.16	▼
Encephalocele		0.60*	0.75*		0.35	0.18	▼
Microcephaly					2.94*	2.11	
Hydrocephaly		4.33	3.65	2.50	3.43	4.04	
Total Anophthalmos / Microphthalmos (include unspecified)					0.70*	0.53	
Anophthalmos					0.00*	0.00	N.A.
Microphthalmos					0.70*	0.53	
Total Anotia / Microtia (include unspecified)		1.19*	0.28*		0.26*		▼
Transposition of great vessels			0.55*		5.09*	5.27	▲
Tetralogy of Fallot					4.79*	4.39	N.A.
Hypoplastic left heart syndrome			0.82*		1.50	1.40	
Coarctation of aorta					1.77*	2.46	N.A.
Choanal atresia, bilateral					0.88*	1.58	▲
Cleft palate without cleft lip		6.37	7.38	5.27	7.52	10.54	▲
Cleft lip with or without cleft palate		8.99	8.41	4.06	5.42	3.16	▼
Oesophageal atresia / stenosis with or without fistula		1.67	1.81	2.57	2.06	1.76	
Small intestine atresia / stenosis					1.62*	2.46	
Anorectal atresia / stenosis		2.33	2.47	2.87	2.34	1.93	
Undescended testis (36 weeks of gestation or later)					62.32*	81.47	N.A.
Hypospadias\ Epispadias		13.15	13.39	11.66*	20.97*	28.80	▲
Indeterminate sex					0.47*	0.53	N.A.
Renal agenesis		0.40*	0.33*		3.52*	3.51	▲
Cystic kidney					5.61*	6.67	
Bladder exstrophy					0.35*	0.53	N.A.
Total Limb reduction defects (include unspecified)		3.72	3.10	2.43	2.41	2.81	▼
Diaphragmatic hernia		1.39*	1.55*		2.22*	2.81	▲
Total Abdominal wall defects (include unspecified)		2.90	2.47	2.35*	3.51*	3.16	
Omphalocele		2.72*	1.59	2.20			
Gastroschisis		0.05*	0.75*				▲
Trisomy 13					0.44*	0.35	
Trisomy 18					0.88*	1.23	
Down syndrome, all ages (include age unknown)		8.82	9.62	9.69*	10.22	11.59	▲

* = data include less than five years
N.A. = not available (lack of historical data)

TABLE 25

Northern Netherlands, 2000

Live births (L)	20,341
Stillbirths (S)	120
Total births	20,461
Number of terminations of pregnancy (ToP) for birth defects	20

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	1	3	3	1.95	3.42	1.85	16	
Spina bifida	9	0	0	4.40	4.39	0.83	19	
Encephalocele	0	1	0	0.49	0.49	0.59	19	
Microcephaly	1	2	0	1.47	1.46	0.40	19	
Arhinencephaly / Holoprosencephaly	0	0	0	0.00	0.00	0.00	19	
Hydrocephaly	3	1	1	1.95	2.44	0.64	19	
Total Anophthalmos / Microphthalmos (include unspecified)	1	0	0	0.49	0.49	0.27	19	
Anophthalmos	1	0	0	0.49	0.49	2.78	19	
Microphthalmos	0	0	0	0.00	0.00	0.00	19	
Total Anotia / Microtia (include unspecified)	0	0	0	0.00	0.00	0.00	19	
Anotia	0	0	0	0.00	0.00	0.00	19	
Microtia	0	0	0	0.00	0.00	0.00	19	
Transposition of great vessels	4	0	0	1.95	1.95	0.45	19	
Tetralogy of Fallot	5	0	0	2.44	2.44	0.73	19	
Hypoplastic left heart syndrome	3	0	1	1.47	1.95	0.63	19	
Coarctation of aorta	6	0	0	2.93	2.93	0.62	16	
Choanal atresia, bilateral	1	0	0	0.49	0.49	1.01	19	
Cleft palate without cleft lip	7	2	1	4.40	4.88	0.65	19	
Cleft lip with or without cleft palate	18	1	0	9.29	9.28	0.63	19	
Oesophageal atresia / stenosis with or without fistula	5	0	0	2.44	2.44	0.82	19	
Small intestine atresia / stenosis	3	1	0	1.95	1.95	0.83	19	
Anorectal atresia / stenosis	6	0	0	2.93	2.93	0.96	19	
Undescended testis (36 weeks of gestation or later)	2	0	1	0.98	1.46	0.91	10	
Hypospadias	18	0	0	8.80	8.79	0.84	18	
Epispadias	2	0	0	0.98	0.98	2.02	19	
Indeterminate sex	0	0	0	0.00	0.00	0.00	19	
Renal agenesis	7	0	1	3.42	3.91	0.98	19	
Cystic kidney	3	0	0	1.47	1.46	0.39	19	
Bladder exstrophy	0	0	0	0.00	0.00	0.00	19	
Polydactyly, preaxial	3	0	0	1.47	1.46	0.91	14	
Total Limb reduction defects (include unspecified)	7	1	1	3.91	4.39	0.65	19	
Transverse	4	1	1	2.44	2.93	0.68	19	
Preaxial	1	0	0	0.49	0.49	0.56	19	
Postaxial	1	0	0	0.49	0.49	0.47	19	
Intercalary	0	0	0	0.00	0.00	0.00	19	
Mixed	1	0	0	0.49	0.49	1.75	19	
Diaphragmatic hernia	3	0	0	1.47	1.46	0.57	19	
Total Abdominal wall defects (include unspecified)	1	0	0	0.49	0.49	0.18	19	
Omphalocele	0	0	0	0.00	0.00	0.00	19	
Gastroschisis	1	0	0	0.49	0.49	0.78	19	
Prune belly sequence	0	0	1	0.00	0.49	0.00	19	
Trisomy 13	1	0	0	0.49	0.49	0.54	19	
Trisomy 18	0	1	3	0.49	1.95	0.31	19	
Down syndrome, all ages (include age unknown)	13	0	6	6.35	9.28	0.60	19	
<20	0	0	0	0.00	0.00	N.A		
20-24	3	0	0	16.02	16.02	2.24	19	
25-29	0	0	1	0.00	1.44	0.00	19	
30-34	5	0	0	6.16	6.16	0.52	19	
35-39	5	0	2	18.12	25.35	0.80	19	
40-44	0	0	3	0.00	93.46	0.00	19	
45+	0	0	0	0.00	0.00	N.A		

N.A. = not available

Northern Netherlands, time trend analysis 1981-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84*	1985-89	1990-94	1995-99	2000	Trend
Births		30,709	62,263	97,298	97,834	20,461	
Anencephaly		4.56	0.96	0.51	1.23	1.95	▼
Spina bifida		4.56	5.94	6.17	4.29	4.40	
Encephalocele		1.63	0.64	1.23	0.31	0.49	
Microcephaly		4.23	3.69	4.01	3.17	1.47	
Arhinencephaly / Holoprosencephaly		1.30	1.28	0.51	0.92	0.00	
Hydrocephaly		2.93	2.73	2.88	3.48	1.95	
Total Anophthalmos / Microphthalmos (include unspecified)		2.61	1.45	2.16	1.53	0.49	
Anophthalmos		0.00	0.16	0.41	0.00	0.49	
Microphthalmos		2.61	1.28	1.75	1.53	0.00	
Total Anotia / Microtia (include unspecified)		2.61	1.61	1.34	1.33	0.00	
Anotia		2.61	0.96	0.82	0.92	0.00	▼
Microtia		0.98	0.96	0.82	0.92	0.00	
Transposition of great vessels		2.61	5.14	4.42	4.40	1.95	
Tetralogy of Fallot		4.23	3.69	3.70	2.56	2.44	
Hypoplastic left heart syndrome		2.61	2.89	2.26	1.94	1.47	
Coarctation of aorta		6.19	5.62	5.04	3.88	2.93	▼
Choanal atresia, bilateral		0.98	0.16	0.51	0.51	0.49	
Cleft palate without cleft lip		8.14	6.75	7.71	5.52	4.40	
Cleft lip with or without cleft palate		16.28	14.78	14.39	14.41	9.29	
Oesophageal atresia / stenosis with or without fistula		1.63	3.21	2.47	3.78	2.44	
Small intestine atresia / stenosis		2.61	2.57	2.26	2.25	1.95	
Anorectal atresia / stenosis		1.95	3.69	2.57	3.48	2.93	
Undescended testis (36 weeks of gestation or later)		1.95	1.93	1.34	0.82	0.98	▼
Hypospadias		17.58	9.32	9.56	10.43	8.80	▼
Epispadias		0.33	0.64	0.41	0.51	0.98	
Indeterminate sex		0.00	0.32	0.21	0.41	0.00	
Renal agenesis		2.93	4.18	3.08	3.68	3.42	
Cystic kidney		1.30	4.34	4.42	3.48	1.47	
Bladder exstrophy		0.33	0.16	0.21	0.10	0.00	
Polydactyly, preaxial		0.98	0.64	1.75	1.94	1.47	▲
Total Limb reduction defects (include unspecified)		8.79	4.66	6.89	5.01	3.91	
Transverse		5.86	2.41	4.01	3.17	2.44	
Preaxial		1.30	0.80	1.03	0.61	0.49	
Postaxial		0.65	0.48	1.64	0.92	0.49	
Intercalary		0.00	0.00	0.21	0.10	0.00	
Mixed		0.00	0.16	0.62	0.10	0.49	
Diaphragmatic hernia		2.28	2.73	1.95	3.17	1.47	
Total Abdominal wall defects (include unspecified)		2.93	1.93	2.88	3.07	0.49	
Omphalocele		1.95	1.12	2.67	2.45	0.00	
Gastroschisis		0.98	0.80	0.21	0.82	0.49	
Prune belly sequence		0.33	0.16	0.41	0.10	0.00	
Trisomy 13		0.33	1.45	1.03	0.61	0.49	
Trisomy 18		2.28	1.45	0.82	2.25	0.49	
Down syndrome, all ages (include age unknown)		9.77	12.85	9.58	10.66	6.35	
<20		0.00	0.00	0.00	0.00	0.00	
20-24		13.09	4.28	7.57	5.25	16.02	
25-29		3.78	13.76	5.64	5.84	0.00	▼
30-34		13.11	9.31	12.85	11.91	6.16	
35-39		28.74	34.17	18.09	21.28	18.12	
40-44		0.00	96.15	19.47	48.71	0.00	
45+		0.00	0.00	0.00	0.00	0.00	

* = data include less than five years

TABLE 26

Norway, 2000

Live births (L)	59,057
Stillbirths (S)	565
Total births	59,622
Number of terminations of pregnancy (ToP) for birth defects	116

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	4	4	16	1.34	4.02	0.84	14	
Spina bifida	20	3	18	3.86	6.86	0.91	17	
Encephalocele	1	0	5	0.17	1.00	0.34	26	
Microcephaly	1	0	1	0.17	0.33	0.26	26	
Arhinencephaly / Holoprosencephaly	0	0	3	0.00	0.50	0.00	20	
Hydrocephaly	15	1	11	2.68	4.52	0.85	20	
Total Anophthalmos / Microphthalmos (include unspecified)	1	0	0	0.17	0.17	0.50	26	
Anophthalmos	1	0	0	0.17	0.17	1.75	26	
Microphthalmos	0	0	0	0.00	0.00	0.00	26	
Total Anotia / Microtia (include unspecified)	3	0	0	0.50	0.50	0.78	10	
Anotia	0	0	0	0.00	0.00	0.00	26	
Microtia	3	0	0	0.50	0.50	1.05	10	
Transposition of great vessels	10	0	0	1.68	1.67	0.89	14	
Tetralogy of Fallot	9	1	0	1.68	1.67	1.28	10	
Hypoplastic left heart syndrome	10	0	2	1.68	2.01	1.01	11	
Coarctation of aorta	7	0	0	1.17	1.17	1.50	19	
Choanal atresia, bilateral	6	0	0	1.01	1.00	2.41	26	
Cleft palate without cleft lip	37	0	0	6.21	6.19	1.18	26	
Cleft lip with or without cleft palate	74	1	1	12.58	12.72	0.94	24	
Oesophageal atresia / stenosis with or without fistula	13	0	0	2.18	2.18	1.07	26	
Small intestine atresia / stenosis	4	0	0	0.67	0.67	0.52	23	
Anorectal atresia / stenosis	16	1	0	2.85	2.85	1.43	26	
Undescended testis (36 weeks of gestation or later)	148	0	0	24.82	24.77	1.51	26	▲
Hypospadias	88	0	0	14.76	14.73	0.99	24	
Epispadias	3	0	0	0.50	0.50	1.60	26	
Indeterminate sex	2	2	0	0.67	0.67	0.14	15	▼
Renal agenesis	2	1	6	0.50	1.51	0.44	20	
Cystic kidney	16	0	7	2.68	3.85	1.13	12	
Bladder exstrophy	1	0	0	0.17	0.17	0.52	26	
Polydactyly, preaxial	42	1	2	7.21	7.53	0.96	1	
Total Limb reduction defects (include unspecified)	17	1	3	3.02	3.52	0.46	20	▼
Transverse	8	0	0	1.34	1.34	0.42	11	▼
Preaxial	4	0	0	0.67	0.67	1.90	8	
Postaxial	0	0	0	0.00	0.00	0.00	11	
Intercalary	0	0	0	0.00	0.00	0.00	11	
Mixed	6	1	0	1.17	1.17	0.66	2	
Diaphragmatic hernia	7	0	2	1.17	1.51	0.49	25	
Total Abdominal wall defects (include unspecified)	2	1	0	0.50	0.50	0.13	26	▼
Omphalocele	7	5	2	2.01	2.34	0.99	26	
Gastroschisis	7	4	0	1.84	1.84	0.78	13	
Prune belly sequence	3	0	0	0.50	0.50	0.50	1	
Trisomy 13	4	0	7	0.67	1.84	2.00	1	
Trisomy 18	5	0	9	0.84	2.34	0.63	1	
Down syndrome, all ages (include age unknown)	57	1	21	9.73	13.22	0.94	26	
<20	0	0	0	0.00	0.00	0.00	25	
20-24	2	0	1	2.16	3.24	0.65	7	
25-29	15	0	0	7.09	7.09	1.05	25	
30-34	18	0	3	9.44	11.01	0.80	25	
35-39	15	2	8	22.89	33.63	0.74	25	
40-44	6	0	9	52.59	130.43	0.64	24	
45+	1	0	0	232.56	232.56	1.10	25	

Norway, time trend analysis 1974-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births	327,455	255,156	276,486	304,423	300,001	59,622	
Anencephaly	4.12	3.29	2.21	1.51	1.47	1.34	▼
Spina bifida	4.83	5.72	4.77	3.65	4.10	3.86	▼
Encephalocele	0.40	0.82	0.54	0.43	0.37	0.17	
Microcephaly	0.70	0.55	0.61	0.56	0.77	0.17	
Arhinencephaly / Holoprosencephaly	0.03	0.27	0.43	0.56	0.60	0.00	▲
Hydrocephaly	4.24	3.49	3.36	3.12	2.77	2.68	▼
Total Anophthalmos / Microphthalmos (include unspecified)	0.12	0.43	0.47	0.39	0.30	0.17	
Anophthalmos	0.00	0.16	0.18	0.10	0.07	0.17	
Microphthalmos	0.12	0.27	0.29	0.30	0.23	0.00	
Total Anotia / Microtia (include unspecified)			1.51*	0.72	0.57	0.50	▼
Anotia	0.12	0.27	0.14	0.20	0.13	0.00	
Microtia			1.47*	0.53	0.43	0.50	▼
Transposition of great vessels	0.40	0.74	1.56	1.81	2.07	1.68	▲
Tetralogy of Fallot	0.12	0.27	0.51	1.08	1.53	1.68	▲
Hypoplastic left heart syndrome			0.70*	1.54	1.90	1.68	▲
Coarctation of aorta	0.38*	0.47	0.69	0.92	0.90	1.17	▲
Choanal atresia, bilateral	0.21	0.43	0.65	0.43	0.40	1.01	
Cleft palate without cleft lip	4.61	5.09	5.71	5.12	5.77	6.21	▲
Cleft lip with or without cleft palate	14.08	14.03	14.76	13.14	12.23	12.58	▼
Oesophageal atresia / stenosis with or without fistula	2.05	1.72	2.17	2.43	1.77	2.18	
Small intestine atresia / stenosis	0.86	1.25	1.05	1.45	1.57	0.67	▲
Anorectal atresia / stenosis	1.50	2.08	2.28	2.56	1.63	2.85	
Undescended testis (36 weeks of gestation or later)	18.14	14.85	15.08	18.07	15.73	24.82	
Hypospadias	12.73	13.76	16.17	15.96	14.27	14.76	▲
Epispadias	0.27	0.35	0.47	0.16	0.33	0.50	
Indeterminate sex	2.23	3.96	3.98	4.89	5.73	0.67	▲
Renal agenesis	0.12	0.78	1.34	1.28	1.17	0.50	▲
Cystic kidney	0.46	0.82	1.70	2.37	2.60	2.68	▲
Bladder exstrophy	0.24	0.55	0.29	0.20	0.37	0.17	
Polydactyly, preaxial					7.53*	7.21	N.A.
Total Limb reduction defects (include unspecified)	8.83	6.47	7.34	6.44	6.10	3.02	▼
Transverse			2.68*	3.61	2.83	1.34	▼
Preaxial			0.84*	0.66	0.30	0.67	▼
Postaxial			1.00*	0.56	0.40	0.00	▼
Intercalary			0.17*	0.33	0.47	0.00	
Mixed				0.62	1.27	1.17	▲
Diaphragmatic hernia	1.92	2.39	2.53	2.33	2.70	1.17	
Total Abdominal wall defects (include unspecified)	3.63	3.72	3.76	4.11	3.77	0.50	
Omphalocele	2.38	2.04	2.03	2.00	1.73	2.01	
Gastroschisis	1.25	1.69	1.74	2.10	2.77	1.84	▲
Prune belly sequence					1.00*	0.50	N.A.
Trisomy 13					0.33*	0.67	N.A.
Trisomy 18					1.34*	0.84	N.A.
Down syndrome, all ages (include age unknown)	9.80	9.76	11.32	9.85	11.27	9.73	
<20	1.90	4.00	5.46	0.86	4.39*	0.00	
20-24	6.21	6.16	8.00	5.24	2.71*	2.16	▼
25-29	8.09	6.70	6.12	6.72	5.93*	7.09	
30-34	10.48	13.20	13.81	11.78	10.26*	9.44	
35-39	37.32	31.18	39.10	20.63	31.79*	22.89	▼
40-44	134.91	76.30	62.69	81.52	77.97*	52.59	▼
45+	161.29	185.19	315.79	322.58	86.21*	232.56	

* =data include less than five years
N.A. = not available (lack of historical data)

TABLE 27

Russia: Moscow, 2000

Live births (L)	44,716
Stillbirths (S)	376
Total births	45,092
Number of terminations of pregnancy (ToP) for birth defects	100

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	0	2	16	0.44	3.98			
Spina bifida	17	5	10	4.88	7.08			
Encephalocele	1	1	0	0.44	0.44			
Microcephaly	0	0	2	0.00	0.44			
Arhinencephaly / Holoprosencephaly	0	0	1	0.00	0.22			
Hydrocephaly	9	5	13	3.10	5.97			
Total Anophthalmos / Microphthalmos (include unspecified)	0	0	0	0.00	0.00			
Anophthalmos	0	0	0	0.00	0.00			
Microphthalmos	0	0	0	0.00	0.00			
Total Anotia / Microtia (include unspecified)	4	0	0	0.89	0.89			
Anotia	0	0	0	0.00	0.00			
Microtia	0	0	0	0.00	0.00			
Transposition of great vessels	6	4	0	2.22	2.21			
Tetralogy of Fallot	5	0	0	1.11	1.11			
Hypoplastic left heart syndrome	2	0	0	0.44	0.44			
Coarctation of aorta	0	0	0	0.00	0.00			
Choanal atresia, bilateral	5	0	0	1.11	1.11			
Cleft palate without cleft lip	14	0	0	3.10	3.10			
Cleft lip with or without cleft palate	36	0	0	7.98	7.97			
Oesophageal atresia / stenosis with or without fistula	14	0	0	3.10	3.10			
Small intestine atresia / stenosis	8	0	0	1.77	1.77			
Anorectal atresia / stenosis	6	0	0	1.33	1.33			
Undescended testis (36 weeks of gestation or later)	106	0	0	23.51	23.46			
Hypospadias	92	0	0	20.40	20.36			
Epispadias	2	0	0	0.44	0.44			
Indeterminate sex	1	0	0	0.22	0.22			
Renal agenesis	3	0	4	0.67	1.55			
Cystic kidney	12	2	0	3.10	3.10			
Bladder exstrophy	0	0	0	0.00	0.00			
Polydactyly, preaxial	52	0	0	11.53	11.51			
Total Limb reduction defects (include unspecified)	26	0	0	5.77	5.75			
Transverse	7	0	0	1.55	1.55			
Preaxial	1	0	0	0.22	0.22			
Postaxial	0	0	0	0.00	0.00			
Intercalary	2	0	0	0.44	0.44			
Mixed	1	0	0	0.22	0.22			
Diaphragmatic hernia	1	1	0	0.44	0.44			
Total Abdominal wall defects (include unspecified)	31	1	4	7.10	7.97			
Omphalocele	18	0	0	3.99	3.98			
Gastroschisis	12	1	4	2.88	3.76			
Prune belly sequence	0	0	0	0.00	0.00			
Trisomy 13	0	0	1	0.00	0.22			
Trisomy 18	0	0	3	0.00	0.66			
Down syndrome, all ages (include age unknown)	58	0	0	12.86	12.83			
<20	5	0	0	N.A	N.A			
20-24	15	0	0	N.A	N.A			
25-29	10	0	0	N.A	N.A			
30-34	8	0	0	N.A	N.A			
35-39	9	0	0	N.A	N.A			
40-44	9	0	0	N.A	N.A			
45+	1	0	0	N.A	N.A			

N.A. = not available

South Africa: SABDSS, 2000

Live births (L)	21,776
Stillbirths (S)	nr
Total births	nr
Number of terminations of pregnancy (ToP) for birth defects	nr

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	15	nr	nr	6.89	N.A.	2.40	2	▲
Spina bifida	23	nr	nr	10.56	N.A.	2.20	8	▲
Encephalocele	3	nr	nr	1.38	N.A.	1.95	8	
Microcephaly	3	nr	nr	1.38	N.A.	0.93	4	
Arhinencephaly / Holoprosencephaly	1	nr	nr	0.46	N.A.	1.03	4	
Hydrocephaly	7	nr	nr	3.21	N.A.	1.08	8	
Total Anophthalmos / Microphthalmos (include unspecified)	1	nr	nr	0.46	N.A.	0.24	4	
Anophthalmos	nr	nr	nr	N.A.	N.A.	N.A.		
Microphthalmos	1	nr	nr	0.46	N.A.	0.27	4	
Total Anotia / Microtia (include unspecified)	nr	nr	nr	N.A.	N.A.	N.A.		
Anotia	nr	nr	nr	N.A.	N.A.	N.A.		
Microtia	nr	nr	nr	N.A.	N.A.	N.A.		
Transposition of great vessels	1	nr	nr	0.46	N.A.	0.72	8	
Tetralogy of Fallot	nr	nr	nr	N.A.	N.A.	N.A.	0	
Hypoplastic left heart syndrome	1	nr	nr	0.46	N.A.	0.98	8	
Coarctation of aorta	nr	nr	nr	N.A.	N.A.	N.A.		
Choanal atresia, bilateral	7	nr	nr	3.21	N.A.	2.67	3	
Cleft palate without cleft lip	2	nr	nr	0.92	N.A.	0.47	8	
Cleft lip with or without cleft palate	7	nr	nr	3.21	N.A.	0.96	8	
Oesophageal atresia / stenosis with or without fistula	7	nr	nr	3.21	N.A.	1.63	8	
Small intestine atresia / stenosis	8	nr	nr	3.67	N.A.	1.73	4	
Anorectal atresia / stenosis	5	nr	nr	2.30	N.A.	1.08	8	
Undescended testis (36 weeks of gestation or later)	6	nr	nr	2.76	N.A.	0.49	4	
Hypospadias	6	nr	nr	2.76	N.A.	0.58	6	
Epispadias	1	nr	nr	0.46	N.A.	1.04	2	
Indeterminate sex	nr	nr	nr	N.A.	N.A.	N.A.		
Renal agenesis	4	nr	nr	1.84	N.A.	2.37	8	
Cystic kidney	nr	nr	nr	N.A.	N.A.	N.A.		
Bladder exstrophy	2	nr	nr	0.92	N.A.	1.03	1	
Polydactyly, preaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Total Limb reduction defects (include unspecified)	6	nr	nr	2.76	N.A.	1.21	8	
Transverse	nr	nr	nr	N.A.	N.A.	N.A.		
Preaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Postaxial	nr	nr	nr	N.A.	N.A.	N.A.		
Intercalary	nr	nr	nr	N.A.	N.A.	N.A.		
Mixed	nr	nr	nr	N.A.	N.A.	N.A.		
Diaphragmatic hernia	4	nr	nr	1.84	N.A.	2.19	6	
Total Abdominal wall defects (include unspecified)	17	nr	nr	7.81	N.A.	2.53	8	▲
Omphalocele	12	nr	nr	5.51	N.A.	2.55	8	▲
Gastroschisis	5	nr	nr	2.30	N.A.	3.05	8	
Prune belly sequence	nr	nr	nr	N.A.	N.A.	N.A.		
Trisomy 13	5	nr	nr	2.30	N.A.	2.17	6	
Trisomy 18	nr	nr	nr	N.A.	N.A.	N.A.		
Down syndrome, all ages (include age unknown)	17	nr	nr	7.81	N.A.	0.96	8	
<20	1	nr	nr	2.78	N.A.	1.43	8	
20-24	3	nr	nr	4.75	N.A.	1.35	8	
25-29	3	nr	nr	5.30	N.A.	1.23	8	
30-34	1	nr	nr	2.87	N.A.	0.27	8	
35-39	4	nr	nr	22.96	N.A.	0.91	8	
40-44	3	nr	nr	68.97	N.A.	1.11	6	
45+	nr	nr	nr	N.A.	N.A.	N.A.		

N.A. = not available
nr = not reported

TABLE 28a

South Africa: SABDSS, time trend analysis 1992-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94*	1995-99	2000	Trend
Births				153,554	271,439	21,776	
Anencephaly				0.72	0.96	6.89	▲
Spina bifida				4.56	4.94	10.56	▲
Encephalocele				0.72	0.70	1.38	
Microcephaly					1.48*	1.38	
Arhinencephaly / Holoprosencephaly					0.44*	0.46	
Hydrocephaly				3.39	2.73	3.21	
Total Anophthalmos / Microphthalmos (include unspecified)					1.93*	0.46	
Microphthalmos					1.73*	0.46	
Microtia				0.10	0.05*		
Transposition of great vessels				0.65	0.63	0.46	
Hypoplastic left heart syndrome				0.65	0.37	0.46	
Choanal atresia, bilateral					1.78*	3.21	
Cleft palate without cleft lip				2.08	1.88	0.92	
Cleft lip with or without cleft palate				3.58	3.21	3.21	
Oesophageal atresia / stenosis with or without fistula				1.82	2.06	3.21	▲
Small intestine atresia / stenosis					2.12*	3.67	
Anorectal atresia / stenosis				2.28	2.03	2.30	
Undescended testis (36 weeks of gestation or later)					5.63*	2.76	
Hypospadias				6.01	4.10*	2.76	▼
Epispadias					0.44*	0.46	N.A.
Renal agenesis				0.98	0.66	1.84	
Bladder exstrophy					0.89*	0.92	N.A.
Total Limb reduction defects (include unspecified)				2.02	2.43	2.76	
Diaphragmatic hernia				1.82	0.63	1.84	
Total Abdominal wall defects (include unspecified)				4.17	2.47	7.81	
Omphalocele				3.06	1.66	5.51	
Gastroschisis				0.65	0.81	2.30	▲
Prune belly sequence				0.79	0.41		
Trisomy 13				1.39	0.99	2.30	
Trisomy 18				1.59	1.31*		N.A.
Down syndrome, all ages (include age unknown)				7.62	8.40	7.81	
<20				1.12	2.46	2.78	
20-24				3.22	3.68	4.75	
25-29				3.48	4.74	5.30	
30-34				11.80	9.67	2.87	
35-39				21.16	27.63	22.96	
40-44				59.52	62.64	68.97	
45+				118.58	36.85		

* = data include less than five years
N.A.= not available (lack of historical data)

South America: ECLAMC, 2000

Live births (L)	185,280
Stillbirths (S)	2,447
Total births	187,727
Number of terminations of pregnancy (ToP) for birth defects	not permitted

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	64	50		6.07		0.83	11	
Spina bifida	182	13		10.39		1.02	5	
Encephalocele	52	7		3.14		1.32	8	
Microcephaly	59	6		3.46		1.23	24	
Arhinencephaly / Holoprosencephaly	27	5		1.70		1.22	2	
Hydrocephaly	184	15		10.60		0.91	6	
Total Anophthalmos / Microphthalmos (include unspecified)	28	4		1.70		0.85	9	
Anophthalmos	8	1		0.48		1.36	26	
Microphthalmos	20	3		1.23		0.71	8	
Total Anotia / Microtia (include unspecified)	62	7		3.68		0.86	26	
Anotia	5	1		0.32		1.15	3	
Microtia	55	3		3.09		0.78	3	
Transposition of great vessels	33	0		1.76		1.70	6	▲
Tetralogy of Fallot	24	0		1.28		0.90	9	
Hypoplastic left heart syndrome	23	2		1.33		1.35	4	
Coarctation of aorta	20	0		1.07		1.19	7	
Choanal atresia, bilateral	3	0		0.16		0.99	26	
Cleft palate without cleft lip	78	9		4.63		1.29	23	
Cleft lip with or without cleft palate	212	12		11.93		0.95	6	
Oesophageal atresia / stenosis with or without fistula	56	4		3.20		0.88	4	
Small intestine atresia / stenosis	61	0		3.25		1.71	10	▲
Anorectal atresia / stenosis	94	17		5.91		1.30	12	▲
Undescended testis (36 weeks of gestation or later)	119	1		6.39		1.28	10	▲
Hypospadias	117	2		6.34		1.41	20	▲
Epispadias	5	1		0.32		1.19	26	
Indeterminate sex	31	6		1.97		1.08	26	
Renal agenesis	34	15		2.61		1.19	7	
Cystic kidney	66	10		4.05		1.01	4	
Bladder exstrophy	10	1		0.59		2.32	26	
Polydactyly, preaxial	57	1		3.09		1.16	26	
Total Limb reduction defects (include unspecified)	105	19		6.61		1.09	8	
Transverse	59	7		3.52		1.29	24	
Preaxial	20	8		1.49		0.95	7	
Postaxial	7	2		0.48		1.25	26	
Intercalary	9	0		0.48		1.00	26	
Mixed	7	1		0.43		0.81	26	
Diaphragmatic hernia	78	1		4.21		1.25	6	
Total Abdominal wall defects (include unspecified)	124	29		8.15		1.19	5	
Omphalocele	42	12		2.88		0.90	6	
Gastroschisis	59	4		3.36		1.26	5	
Prune belly sequence	19	4		1.23		1.14	7	
Trisomy 13	6	0		0.32		0.43	8	
Trisomy 18	33	10		2.29		1.33	6	
Down syndrome, all ages (include age unknown)	366	10		20.03		1.12	6	
<20	20	0		5.31		0.73	26	
20-24	68	0		12.83		1.72	26	▲
25-29	44	5		11.73		1.44	26	
30-34	53	1		18.55		1.19	26	
35-39	91	2		55.13		1.16	26	
40-44	83	2		183.27		1.17	26	
45+	7	0		244.76		0.87	26	

TABLE 29a

South America: ECLAMC, time trend analysis 1974-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births	438,055	579,119	968,001	1,012,539	726,909	187,727	
Anencephaly	3.47	6.73	6.28	7.18	7.54	6.07	▲
Spina bifida	5.82	6.54	6.97	7.62	10.21	10.39	▲
Encephalocele	1.26	2.28	1.53	2.16	2.49	3.14	▲
Microcephaly	2.53	2.54	2.67	2.57	3.43	3.46	▲
Arhinencephaly / Holoprosencephaly	0.39	0.50	0.30	0.59	0.85	1.70	▲
Hydrocephaly	2.88	4.30	5.50	7.68	12.01	10.60	▲
Total Anophthalmos / Microphthalmos (include unspecified)	1.48	1.42	1.53	1.83	2.12	1.70	▲
Anophthalmos	0.25	0.38	0.38	0.40	0.29	0.48	
Microphthalmos	1.23	1.04	1.15	1.43	1.83	1.23	▲
Total Anotia / Microtia (include unspecified)	5.30	2.97	4.30	4.57	4.29	3.68	
Anotia					0.28*	0.32	N.A.
Microtia					3.95*	3.09	N.A.
Transposition of great vessels	0.11	0.41	0.66	0.72	1.04*	1.76	▲
Tetralogy of Fallot	0.05	0.41	0.62	1.19	1.57	1.28	▲
Hypoplastic left heart syndrome	0.00	0.02	0.07	0.36	0.81	1.33	▲
Coarctation of aorta	0.11	0.05	0.43	0.64	0.96	1.07	▲
Choanal atresia, bilateral	0.00	0.12	0.19	0.30	0.07	0.16	
Cleft palate without cleft lip	3.20	3.35	3.31	3.87	3.76	4.63	▲
Cleft lip with or without cleft palate	11.07	10.53	10.83	10.46	12.67	11.93	▲
Oesophageal atresia / stenosis with or without fistula	2.01	2.68	2.58	2.83	3.43	3.20	▲
Small intestine atresia / stenosis	0.48	1.64	1.44	1.82	2.02	3.25	▲
Anorectal atresia / stenosis	2.76	3.82	3.64	4.46	4.88	5.91	▲
Undescended testis (36 weeks of gestation or later)	1.58	3.35	4.58	4.80	5.24	6.39	▲
Hypospadias	3.47	4.71	4.00	4.36	5.13	6.34	▲
Epispadias	0.14	0.38	0.28	0.36	0.12	0.32	
Indeterminate sex	1.00	2.33	1.90	1.88	1.73	1.97	
Renal agenesis	0.43	0.66	0.85	1.61	2.26	2.61	▲
Cystic kidney	0.55	1.11	1.47	2.06	3.73	4.05	▲
Bladder exstrophy	0.14	0.21	0.28	0.25	0.33	0.59	▲
Polydactyly, preaxial	2.97	2.28	2.52	2.64	2.97	3.09	
Total Limb reduction defects (include unspecified)	4.09	5.49	4.83	5.52	6.18	6.61	▲
Transverse	2.15	2.61	2.70	2.73	2.97	3.52	▲
Preaxial	0.62	1.11	0.99	1.11	1.58	1.49	▲
Postaxial	0.27	0.50	0.26	0.47	0.40	0.48	
Intercalary	0.48	0.59	0.34	0.49	0.56	0.48	
Mixed	0.48	0.60	0.42	0.58	0.55	0.43	
Diaphragmatic hernia	0.73	1.31	1.73	2.13	3.45	4.21	▲
Total Abdominal wall defects (include unspecified)	1.55	2.69	3.38	4.16	6.86	8.15	▲
Omphalocele	1.10	1.93	2.32	2.51	3.19	2.88	▲
Gastroschisis	0.09	0.40	0.65	1.18	2.66	3.36	▲
Prune belly sequence	0.02	0.54	0.74	0.74	1.18	1.23	▲
Trisomy 13	0.18	0.50	0.43	0.55	0.85	0.32	▲
Trisomy 18	0.23	0.71	0.99	0.98	1.79	2.29	▲
Down syndrome, all ages (include age unknown)	14.63	14.78	14.94	15.84	18.12	20.03	▲
<20	7.68	7.10	6.76	6.83	8.38	5.31	
20-24	7.09	7.33	6.30	7.97	8.69	12.83	▲
25-29	7.60	8.30	6.89	8.72	9.40	11.73	▲
30-34	13.66	15.81	15.47	15.48	16.88	18.55	
35-39	56.45	44.24	44.49	47.05	50.43	55.13	
40-44	161.18	141.15	152.52	148.49	179.47	183.27	
45+	269.28	283.57	270.52	244.78	361.65	244.76	

* = data include less than five years
N.A. = not available (lack of historical data)

Spain: ECEMC, 2000

Live births (L)	105,354
Stillbirths (S)	479
Total births	105,833
Number of terminations of pregnancy (ToP) for birth defects	nr

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	0	0	nr	0.00	N.A.	0.00	8	
Spina bifida	18	0	nr	1.70	N.A.	0.73	6	
Encephalocele	0	0	nr	0.00	N.A.	0.00	6	
Microcephaly	12	0	nr	1.13	N.A.	0.56	20	
Arhinencephaly / Holoprosencephaly	4	0	nr	0.38	N.A.	0.74	20	
Hydrocephaly	19	1	nr	1.89	N.A.	0.72	20	
Total Anophthalmos / Microphthalmos (include unspecified)	9	0	nr	0.85	N.A.	0.46	15	
Anophthalmos	0	0	nr	0.00	N.A.	0.00	16	
Microphthalmos	9	0	nr	0.85	N.A.	0.54	15	
Total Anotia / Microtia (include unspecified)	15	1	nr	1.51	N.A.	0.88	19	
Anotia	0	1	nr	0.09	N.A.	0.85	17	
Microtia	15	0	nr	1.42	N.A.	0.87	19	
Transposition of great vessels	14	1	nr	1.42	N.A.	1.07	14	
Tetralogy of Fallot	11	0	nr	1.04	N.A.	0.83	12	
Hypoplastic left heart syndrome	2	0	nr	0.19	N.A.	0.24	19	
Coarctation of aorta	8	0	nr	0.76	N.A.	0.94	13	
Choanal atresia, bilateral	3	0	nr	0.28	N.A.	1.20	20	
Cleft palate without cleft lip	38	0	nr	3.59	N.A.	0.78	20	
Cleft lip with or without cleft palate	36	1	nr	3.50	N.A.	0.74	7	
Oesophageal atresia / stenosis with or without fistula	16	0	nr	1.51	N.A.	0.77	20	
Small intestine atresia / stenosis	8	0	nr	0.76	N.A.	0.64	20	
Anorectal atresia / stenosis	16	1	nr	1.61	N.A.	0.71	20	
Undescended testis (36 weeks of gestation or later)	26	0	nr	2.46	N.A.	0.94	18	
Hypospadias	22	0	nr	2.08	N.A.	1.07	15	
Epispadias	2	0	nr	0.19	N.A.	0.70	20	
Indeterminate sex	6	1	nr	0.66	N.A.	0.88	14	
Renal agenesis	0	1	nr	0.09	N.A.	0.15	20	
Cystic kidney	17	1	nr	1.70	N.A.	1.04	16	
Bladder exstrophy	2	0	nr	0.19	N.A.	0.70	20	
Polydactyly, preaxial	13	0	nr	1.23	N.A.	0.63	20	
Total Limb reduction defects (include unspecified)	50	2	nr	4.91	N.A.	0.76	17	
Transverse	26	0	nr	2.46	N.A.	0.95	17	
Preaxial	6	0	nr	0.57	N.A.	0.64	16	
Postaxial	2	0	nr	0.19	N.A.	0.99	20	
Intercalary	4	0	nr	0.38	N.A.	0.96	20	
Mixed	7	2	nr	0.85	N.A.	0.76	20	
Diaphragmatic hernia	5	0	nr	0.47	N.A.	0.25	14	▼
Total Abdominal wall defects (include unspecified)	11	0	nr	1.04	N.A.	0.68	12	
Omphalocele	6	0	nr	0.57	N.A.	0.57	12	
Gastroschisis	5	0	nr	0.47	N.A.	1.07	20	
Prune belly sequence	1	0	nr	0.09	N.A.	0.20	20	
Trisomy 13	2	0	nr	0.19	N.A.	0.41	20	
Trisomy 18	5	2	nr	0.66	N.A.	0.74	20	
Down syndrome, all ages (include age unknown)	92	1	nr	8.79	N.A.	0.79	7	▼
<20	0	0	nr	0.00	N.A.	0.00	20	
20-24	3	0	nr	2.57	N.A.	0.46	19	
25-29	23	0	nr	7.47	N.A.	1.08	20	
30-34	22	1	nr	5.60	N.A.	0.45	20	▼
35-39	26	0	nr	16.21	N.A.	0.79	3	
40-44	17	0	nr	67.38	N.A.	1.16	10	
45+	1	0	nr	3333.33	N.A.	14.29	20	

N.A. = not available
nr = not reported

TABLE 30a

Spain: ECEMC, time trend analysis 1980-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births		315,768	287,745	433,859	481,186	105,833	
Anencephaly		4.43	3.16	1.04	0.64	0.00	▼
Spina bifida		4.43	4.66	3.62	2.24	1.70	▼
Encephalocele		1.14	0.63	0.97	0.29	0.00	▼
Microcephaly		2.15	1.91	2.35	1.72	1.13	
Arhinencephaly / Holoprosencephaly		0.54	0.49	0.53	0.48	0.38	
Hydrocephaly		2.47	2.81	2.84	2.47	1.89	
Total Anophthalmos / Microphthalmos (include unspecified)		2.69	2.09	2.01	1.54	0.85	▼
Anophthalmos		0.79	0.38	0.25	0.21	0.00	▼
Microphthalmos		2.03	1.74	1.75	1.35	0.85	▼
Total Anotia / Microtia (include unspecified)		2.15	1.88	1.61	1.58	1.51	▼
Anotia		0.00	0.03	0.16	0.15	0.09	▲
Microtia		2.15	1.84	1.48	1.45	1.42	▼
Transposition of great vessels		0.70	0.90	1.36	1.43	1.42	▲
Tetralogy of Fallot		0.25	0.49	1.24	1.35	1.04	▲
Hypoplastic left heart syndrome		0.41	0.59	1.06	0.83	0.19	
Coarctation of aorta		0.38	0.31	0.78	1.00	0.76	▲
Choanal atresia, bilateral		0.13	0.35	0.28	0.21	0.28	
Cleft palate without cleft lip		5.13	3.93	5.32	3.99	3.59	▼
Cleft lip with or without cleft palate		5.86	5.21	5.90	4.49	3.50	▼
Oesophageal atresia / stenosis with or without fistula		2.31	1.60	2.35	1.60	1.51	
Small intestine atresia / stenosis		1.20	0.83	1.54	1.02	0.76	
Anorectal atresia / stenosis		2.50	2.36	2.10	2.18	1.61	
Undescended testis (36 weeks of gestation or later)		1.81	2.50	2.67	2.83	2.46	▲
Hypospadias		2.79	2.19	2.07	1.66	2.08	▼
Epispadias		0.32	0.31	0.35	0.15	0.19	
Indeterminate sex		1.01	0.94	0.88	0.60	0.66	▼
Renal agenesis		0.60	0.94	0.65	0.50	0.09	▼
Cystic kidney		1.17	1.46	1.73	1.79	1.70	▲
Bladder exstrophy		0.22	0.42	0.21	0.27	0.19	
Polydactyly, preaxial		1.77	1.74	2.28	1.85	1.23	
Total Limb reduction defects (include unspecified)		7.41	6.33	7.08	5.84	4.91	▼
Transverse		3.14	2.81	2.49	2.39	2.46	▼
Preaxial		1.17	1.04	0.92	0.75	0.57	▼
Postaxial		0.13	0.17	0.18	0.25	0.19	
Intercalary		0.57	0.24	0.65	0.15	0.38	
Mixed		1.20	0.87	1.24	1.10	0.85	
Diaphragmatic hernia		2.76	2.12	2.24	1.54	0.47	▼
Total Abdominal wall defects (include unspecified)		2.72	2.09	1.66	1.43	1.04	▼
Omphalocele		1.81	1.32	1.11	0.91	0.57	▼
Gastroschisis		0.60	0.38	0.35	0.46	0.47	
Prune belly sequence		0.57	0.52	0.51	0.31	0.09	▼
Trisomy 13		0.38	0.45	0.46	0.52	0.19	
Trisomy 18		0.89	0.97	1.08	0.69	0.66	
Down syndrome, all ages (include age unknown)		14.41	15.22	12.70	10.85	8.79	▼
<20		7.34	8.08	8.56	1.81	0.00	▼
20-24		6.98	6.37	4.50	5.09	2.57	▼
25-29		6.11	8.17	7.69	5.77	7.47	
30-34		9.76	15.09	14.27	10.86	5.60	▼
35-39		46.67	41.59	35.91	23.80	16.21	▼
40-44		147.22	186.13	64.94	51.95	67.38	▼
45+		232.27	141.70	248.45	531.91*	3333.33	▲

* = data include less than five years

Sweden, 2000

Live births (L)	90,441
Stillbirths (S)	355
Total births	90,796
Number of terminations of pregnancy (ToP) for birth defects	336

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	1	0	24	0.11	2.74			
Spina bifida	15	1	34	1.76	5.49			
Encephalocele	3	0	6	0.33	0.99			
Microcephaly	5	1	1	0.66	0.77			
Arhinencephaly / Holoprosencephaly	1	0	8	0.11	0.99			
Hydrocephaly	10	0	17	1.10	2.96			
Total Anophthalmos / Microphthalmos (include unspecified)	5	0	0	0.55	0.55			
Anophthalmos	1	0	0	0.11	0.11			
Microphthalmos	4	0	0	0.44	0.44			
Total Anotia / Microtia (include unspecified)	6	0	0	0.66	0.66			
Anotia	5	0	0	0.55	0.55			
Microtia	1	0	0	0.11	0.11			
Transposition of great vessels	24	0	3	2.64	2.96			
Tetralogy of Fallot	23	0	0	2.53	2.52			
Hypoplastic left heart syndrome	21	0	2	2.31	2.52			
Coarctation of aorta	35	0	0	3.85	3.84			
Choanal atresia, bilateral	2	0	0	0.22	0.22			
Cleft palate without cleft lip	52	0	1	5.73	5.82			
Cleft lip with or without cleft palate	61	1	6	6.83	7.46			
Oesophageal atresia / stenosis with or without fistula	17	0	1	1.87	1.98			
Small intestine atresia / stenosis	15	1	0	1.76	1.76			
Anorectal atresia / stenosis	16	1	3	1.87	2.19			
Undescended testis (36 weeks of gestation or later)	nr	nr	nr	N.A.	N.A.			
Hypospadias	163	1	1	18.06	18.11			
Epispadias	0	0	0	0.00	0.00			
Indeterminate sex	3	1	0	0.44	0.44			
Renal agenesis	10	1	11	1.21	2.41			
Cystic kidney	12	0	7	1.32	2.08			
Bladder exstrophy	1	0	0	0.11	0.11			
Polydactyly, preaxial	31	0	0	3.41	3.40			
Total Limb reduction defects (include unspecified)	32	1	4	3.63	4.06			
Transverse	16	1	3	1.87	2.19			
Preaxial	3	0	1	0.33	0.44			
Postaxial	3	0	0	0.33	0.33			
Intercalary	1	0	0	0.11	0.11			
Mixed	9	0	0	0.99	0.99			
Diaphragmatic hernia	18	0	5	1.98	2.52			
Total Abdominal wall defects (include unspecified)	20	2	13	2.42	3.84			
Omphalocele	10	2	8	1.32	2.19			
Gastroschisis	10	0	5	1.10	1.65			
Prune belly sequence	0	0	0	0.00	0.00			
Trisomy 13	5	0	13	0.55	1.98			
Trisomy 18	13	0	33	1.43	5.05			
Down syndrome, all ages (include age unknown)	99	1	92	11.01	21.07			
<20	2	0	0	11.43	11.43			
20-24	9	0	5	7.45	11.59			
25-29	18	0	2	5.77	6.41			
30-34	26	1	15	8.91	13.86			
35-39	22	0	36	16.73	44.00			
40-44	10	0	30	44.98	177.54			
45+	2	0	4	198.02	571.43			

N.A. = not available
nr = not reported

TABLE 32

Ukraine, 2000

Live births (L)	25,882
Stillbirths (S)	143
Total births	26,025
Number of terminations of pregnancy (ToP) for birth defects	nr

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	0	4	19	1.54	N.A.			
Spina bifida	11	3	11	5.38	N.A.			
Encephalocele	0	1	2	0.38	N.A.			
Microcephaly	7	0	nr	2.69	N.A.			
Arhinencephaly / Holoprosencephaly	0	0	nr	0.00	N.A.			
Hydrocephaly	16	4	nr	7.68	N.A.			
Total Anophthalmos / Microphthalmos (include unspecified)	5	0	nr	1.92	N.A.			
Anophthalmos	1	0	nr	0.38	N.A.			
Microphthalmos	4	0	nr	1.54	N.A.			
Total Anotia / Microtia (include unspecified)	3	0	nr	1.15	N.A.			
Anotia	1	0	nr	0.38	N.A.			
Microtia	2	0	nr	0.77	N.A.			
Transposition of great vessels	12	1	nr	5.00	N.A.			
Tetralogy of Fallot	4	0	nr	1.54	N.A.			
Hypoplastic left heart syndrome	3	0	nr	1.15	N.A.			
Coarctation of aorta	2	0	nr	0.77	N.A.			
Choanal atresia, bilateral	0	0	nr	0.00	N.A.			
Cleft palate without cleft lip	9	1	nr	3.84	N.A.			
Cleft lip with or without cleft palate	24	1	nr	9.61	N.A.			
Oesophageal atresia / stenosis with or without fistula	5	1	nr	2.31	N.A.			
Small intestine atresia / stenosis	4	0	nr	1.54	N.A.			
Anorectal atresia / stenosis	4	1	nr	1.92	N.A.			
Undescended testis (36 weeks of gestation or later)	90	0	nr	34.58	N.A.			
Hypospadias	8	0	nr	3.07	N.A.			
Epispadias	2	0	nr	0.77	N.A.			
Indeterminate sex	2	0	nr	0.77	N.A.			
Renal agenesis	1	1	nr	0.77	N.A.			
Cystic kidney	3	1	nr	1.54	N.A.			
Bladder exstrophy	3	0	nr	1.15	N.A.			
Polydactyly, preaxial	8	0	nr	3.07	N.A.			
Total Limb reduction defects (include unspecified)	10	1	nr	4.23	N.A.			
Transverse	3	1	nr	1.54	N.A.			
Preaxial	2	0	nr	0.77	N.A.			
Postaxial	2	0	nr	0.77	N.A.			
Intercalary	1	0	nr	0.38	N.A.			
Mixed	1	0	nr	0.38	N.A.			
Diaphragmatic hernia	6	0	nr	2.31	N.A.			
Total Abdominal wall defects (include unspecified)	4	2	nr	2.31	N.A.			
Omphalocele	2	1	nr	1.15	N.A.			
Gastroschisis	2	1	nr	1.15	N.A.			
Prune belly sequence	0	0	nr	0.00	N.A.			
Trisomy 13	0	0	nr	0.00	N.A.			
Trisomy 18	3	0	nr	1.15	N.A.			
Down syndrome, all ages (include age unknown)	27	1	nr	10.76	N.A.			
<20	3	0	nr	11.23	N.A.			
20-24	5	0	nr	4.64	N.A.			
25-29	4	1	nr	6.76	N.A.			
30-34	6	0	nr	17.60	N.A.			
35-39	3	0	nr	22.34	N.A.			
40-44	6	0	nr	147.42	N.A.			
45+	0	0	nr	0.00	N.A.			

N.A.=not available
nr = not reported

United Arab Emirates, 2000

Live births (L)	8,106
Stillbirths (S)	72
Total births	8,178
Number of terminations of pregnancy (ToP) for birth defects	not permitted

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	3	1		4.89		0.86	4	
Spina bifida	3	1		4.89		0.81	4	
Encephalocele	0	0		0.00		0.00	4	
Microcephaly	2	0		2.45		1.22	4	
Arhinencephaly / Holoprosencephaly	1	0		1.22		0.73	4	
Hydrocephaly	5	0		6.11		1.22	4	
Total Anophthalmos / Microphthalmos (include unspecified)	0	0		0.00		N.A.		
Anophthalmos	0	0		0.00		N.A.		
Microphthalmos	0	0		0.00		N.A.		
Total Anotia / Microtia (include unspecified)	0	0		0.00		0.00	4	
Anotia	0	0		0.00		N.A.		
Microtia	0	0		0.00		0.00	4	
Transposition of great vessels	3	0		3.67		1.37	4	
Tetralogy of Fallot	1	0		1.22		0.62	2	
Hypoplastic left heart syndrome	1	0		1.22		0.28	4	
Coarctation of aorta	1	0		1.22		1.85	2	
Choanal atresia, bilateral	2	0		2.45		3.64	4	
Cleft palate without cleft lip	3	0		3.67		0.84	4	
Cleft lip with or without cleft palate	6	0		7.34		1.37	4	
Oesophageal atresia / stenosis with or without fistula	0	0		0.00		0.00	4	
Small intestine atresia / stenosis	4	0		4.89		1.63	4	
Anorectal atresia / stenosis	4	0		4.89		0.73	4	
Undescended testis (36 weeks of gestation or later)	nr	nr		N.A.		N.A.		
Hypospadias	nr	nr		N.A.		N.A.		
Epispadias	nr	nr		N.A.		N.A.		
Indeterminate sex	1	0		1.22		0.46	4	
Renal agenesis	1	0		1.22		0.92	4	
Cystic kidney	4	0		4.89		1.22	4	
Bladder exstrophy	0	0		0.00		0.00	4	
Polydactyly, preaxial	0	0		0.00		0.00	4	
Total Limb reduction defects (include unspecified)	0	0		0.00		0.00	4	
Transverse	0	0		0.00		0.00	2	
Preaxial	0	0		0.00		0.00	2	
Postaxial	0	0		0.00		0.00	2	
Intercalary	0	0		0.00		N.A.		
Mixed	0	0		0.00		N.A.		
Diaphragmatic hernia	4	0		4.89		0.86	4	
Total Abdominal wall defects (include unspecified)	3	0		3.67		0.70	2	
Omphalocele	1	0		1.22		0.52	4	
Gastroschisis	2	0		2.45		3.64	4	
Prune belly sequence	0	0		0.00		0.00	4	
Trisomy 13	1	0		1.22		1.22	4	
Trisomy 18	0	0		0.00		0.00	4	
Down syndrome, all ages (include age unknown)	18	0		22.01		1.24	4	
<20	0	0		N.A.		N.A.		
20-24	1	0		N.A.		N.A.		
25-29	4	0		N.A.		N.A.		
30-34	2	0		N.A.		N.A.		
35-39	7	0		N.A.		N.A.		
40-44	2	0		N.A.		N.A.		
45+	1	0		N.A.		N.A.		

N.A. = not available
nr = not reported

TABLE 34

USA: Atlanta, 2000

Live births (L)	50,019
Stillbirths (S)	500
Total births	50,519
Number of terminations of pregnancy (ToP) for birth defects	nr

Birth Defects	Number of cases			Rates*10.000		O/E	YB	Remark
	L	S	ToP	L+S	L+S+ToP	L+S		
Anencephaly	5	5	7	1.98	N.A.	1.17	13	
Spina bifida	11	0	5	2.18	N.A.	0.83	9	
Encephalocele	0	0	1	0.00	N.A.	0.00	14	
Microcephaly	29	0	1	5.74	N.A.	0.75	6	
Arhinencephaly / Holoprosencephaly	2	1	1	0.59	N.A.	0.67	26	
Hydrocephaly	26	3	3	5.74	N.A.	0.89	19	
Total Anophthalmos / Microphthalmos (include unspecified)	16	0	1	3.17	N.A.	0.93	16	
Anophthalmos	2	0	0	0.40	N.A.	0.75	26	
Microphthalmos	14	0	1	2.77	N.A.	0.94	18	
Total Anotia / Microtia (include unspecified)	10	0	0	1.98	N.A.	1.32	26	
Anotia	1	0	0	0.20	N.A.	1.23	26	
Microtia	9	0	0	1.78	N.A.	1.32	26	
Transposition of great vessels	37	0	0	7.32	N.A.	1.45	26	
Tetralogy of Fallot	18	0	0	3.56	N.A.	0.93	26	
Hypoplastic left heart syndrome	10	0	1	1.98	N.A.	0.75	26	
Coarctation of aorta	27	0	0	5.34	N.A.	1.19	26	
Choanal atresia, bilateral	3	0	0	0.59	N.A.	1.78	26	
Cleft palate without cleft lip	36	0	1	7.13	N.A.	1.33	26	
Cleft lip with or without cleft palate	39	0	5	7.72	N.A.	0.83	19	
Oesophageal atresia / stenosis with or without fistula	13	0	0	2.57	N.A.	1.15	26	
Small intestine atresia / stenosis	14	0	0	2.77	N.A.	1.67	26	
Anorectal atresia / stenosis	18	0	1	3.56	N.A.	0.95	25	
Undescended testis (36 weeks of gestation or later)	58	0	0	11.48	N.A.	N.A.		
Hypospadias	36	0	0	7.13	N.A.	0.68	2	▼
Epispadias	2	0	0	0.40	N.A.	0.63	25	
Indeterminate sex	8	0	0	1.58	N.A.	1.25	20	
Renal agenesis	4	0	2	0.79	N.A.	0.73	16	
Cystic kidney	26	2	1	5.54	N.A.	1.18	15	
Bladder exstrophy	0	0	0	0.00	N.A.	0.00	26	
Polydactyly, preaxial	5	0	1	0.99	N.A.	0.40	26	
Total Limb reduction defects (include unspecified)	27	3	3	5.94	N.A.	1.15	26	
Transverse	16	3	1	3.76	N.A.	1.17	26	
Preaxial	7	3	1	1.98	N.A.	2.21	26	
Postaxial	1	0	0	0.20	N.A.	0.71	26	
Intercalary	1	0	0	0.20	N.A.	0.71	26	
Mixed	1	0	0	0.20	N.A.	0.47	18	
Diaphragmatic hernia	8	2	3	1.98	N.A.	0.86	26	
Total Abdominal wall defects (include unspecified)	31	4	3	6.93	N.A.	1.56	17	
Omphalocele	12	3	2	2.97	N.A.	1.27	17	
Gastroschisis	19	1	1	3.96	N.A.	1.98	26	▲
Prune belly sequence	1	0	0	0.20	N.A.	0.51	25	
Trisomy 13	6	1	1	1.39	N.A.	1.25	26	
Trisomy 18	3	2	11	0.99	N.A.	0.52	21	
Down syndrome, all ages (include age unknown)	51	5	13	11.08	N.A.	1.03	22	
<20	1	0	0	1.94	N.A.	0.26	20	
20-24	3	1	0	3.58	N.A.	0.46	20	
25-29	7	0	1	5.23	N.A.	0.73	20	
30-34	11	3	4	10.88	N.A.	1.02	16	
35-39	19	0	5	28.66	N.A.	1.29	20	
40-44	7	1	3	64.15	N.A.	1.03	20	
45+	2	0	0	333.33	N.A.	1.63	20	

N.A. = not available
nr =not reported

USA: Atlanta, time trend analysis 1974-2000

Birth prevalence rates: (L+S) * 10,000

	1974-79	1980-84	1985-89	1990-94	1995-99	2000	Trend
Births	143,922	139,240	173,520	194,162	218,110	50,519	
Anencephaly	5.35	3.95	2.77	1.39	1.51	1.98	▼
Spina bifida	7.16	6.61	5.65	3.40	2.34	2.18	▼
Encephalocele	1.88	2.44	1.73	1.03	1.19	0.00	▼
Microcephaly	5.00	6.03	6.05	4.79	8.07	5.74	▲
Arhinencephaly / Holoprosencephaly	0.56	0.79	1.09	1.29	0.64	0.59	
Hydrocephaly	9.59	9.26	6.86	5.30	6.69	5.74	▼
Total Anophthalmos / Microphthalmos (include unspecified)	4.45	4.45	3.63	3.61	2.98	3.17	▼
Anophthalmos	0.56	0.65	0.52	0.77	0.23	0.40	
Microphthalmos	3.89	3.81	3.11	2.83	2.75	2.77	▼
Total Anotia / Microtia (include unspecified)	1.53	1.51	1.84	1.24	1.42	1.98	
Anotia	0.21	0.22	0.06	0.15	0.18	0.20	
Microtia	1.32	1.29	1.79	1.08	1.28	1.78	
Transposition of great vessels	4.86	5.75	4.73	4.84	5.14	7.32	
Tetralogy of Fallot	2.92	3.73	4.15	3.55	4.45	3.56	
Hypoplastic left heart syndrome	2.29	3.02	2.07	2.94	2.84	1.98	
Coarctation of aorta	3.89	4.24	5.13	4.27	4.68	5.34	
Choanal atresia, bilateral	0.42	0.07	0.46	0.21	0.46	0.59	
Cleft palate without cleft lip	7.71	3.95	5.19	4.69	5.46	7.13	
Cleft lip with or without cleft palate	11.46	11.28	8.88	9.17	8.85	7.72	▼
Oesophageal atresia / stenosis with or without fistula	2.29	2.51	2.36	2.11	2.02	2.57	
Small intestine atresia / stenosis	1.46	1.65	1.67	1.80	1.65	2.77	
Anorectal atresia / stenosis	4.66	3.52	4.26	3.66	3.16	3.56	▼
Undescended testis (36 weeks of gestation or later)						11.48	N.A.
Hypospadias	1.25	1.58	4.61	4.79	8.07	7.13	▲
Epispadias	0.97	0.86	0.63	0.62	0.41	0.40	▼
Indeterminate sex	2.29	1.80	1.09	1.08	1.24	1.58	▼
Renal agenesis	2.08	1.80	1.04	1.13	0.92	0.79	▼
Cystic kidney	2.43	2.73	4.15	4.58	5.23	5.54	▲
Bladder exstrophy	0.49	0.22	0.23	0.36	0.09	0.00	
Polydactyly, preaxial	1.95	1.87	2.59	3.35	2.38	0.99	
Total Limb reduction defects (include unspecified)	6.18	4.45	4.55	4.64	5.96	5.94	
Transverse	3.68	3.09	2.77	3.40	3.16	3.76	
Preaxial	1.18	0.57	0.75	0.82	1.10	1.98	
Postaxial	0.21	0.22	0.35	0.26	0.32	0.20	
Intercalary	0.63	0.22	0.29	0.05	0.28	0.20	
Mixed	0.07	0.36	0.29	0.10	0.78	0.20	▲
Diaphragmatic hernia	2.57	2.30	2.82	2.27	1.79	1.98	
Total Abdominal wall defects (include unspecified)	5.56	4.96	5.07	5.05	3.48	6.93	
Omphalocele	3.89	3.09	2.94	2.32	1.93	2.97	▼
Gastroschisis	1.67	1.87	2.13	2.73	1.56	3.96	
Prune belly sequence	0.63	0.50	0.46	0.26	0.32	0.20	▼
Trisomy 13	1.18	1.01	1.21	1.03	1.10	1.39	
Trisomy 18	0.63	1.80	1.79	1.70	2.34	0.99	▲
Down syndrome, all ages (include age unknown)	8.82	10.99	10.14	11.02	11.39	11.08	▲
<20		7.01	6.48	7.23	9.17	1.94	
20-24		6.68	8.65	6.95	8.39	3.58	
25-29		8.29	6.82	7.22	6.76	5.23	
30-34		16.81	12.40	9.85	9.87	10.88	▼
35-39		20.65	21.44	25.91	20.48	28.66	
40-44		80.32	66.62	53.10	63.11	64.15	
45+		0.00	0.00	243.90	251.26	333.33	

N.A. = not available (lack of historical data)

9.5 Observed to Expected Ratio, 2000

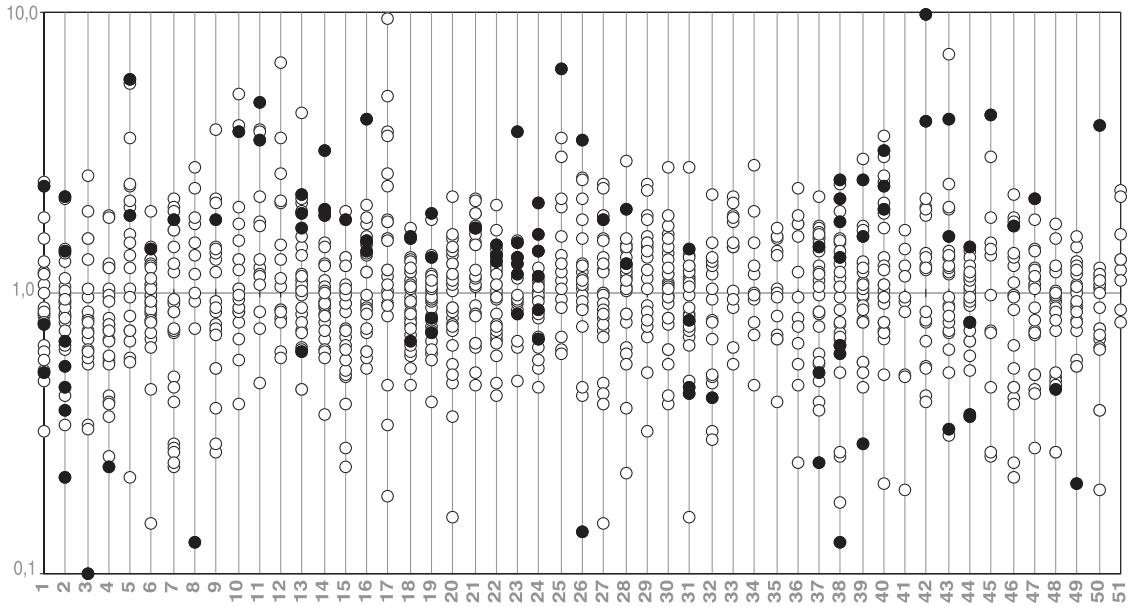
9.5.1 Summary of the Results of the Observed to Expected Ratios, 2000

Malformation	O/E ratio >1		O/E ratio <=1	
	Number	Statistically significant	Number	Statistically significant
Anencephaly	9	1	22	2
Spina bifida	9	2	22	5
Encephalocele	6	0	25	1
Microcephaly	8	0	22	1
Arhinencephaly / Holoprosencephaly	13	2	15	0
Hydrocephaly	13	1	18	0
Total Anophthalmos / Microphthalmos (include unspecified)	9	1	21	0
Anophthalmos	8	0	17	1
Microphthalmos	9	1	19	0
Total Anotia / Microtia (include unspecified)	11	1	15	0
Anotia	12	2	8	0
Microtia	9	0	12	0
Transposition of great vessels	18	3	11	1
Tetralogy of Fallot	11	3	16	0
Hypoplastic left heart syndrome	9	1	19	0
Coarctation of aorta	14	3	13	0
Choanal atresia, bilateral	17	0	10	0
Cleft palate without cleft lip	14	2	17	1
Cleft lip with or without cleft palate	13	2	18	2
Oesophageal atresia / stenosis with or without fistula	14	0	16	0
Small intestine atresia / stenosis	18	2	11	0
Anorectal atresia / stenosis	16	3	15	0
Undescended testis (36 weeks of gestation or later)	8	5	10	1
Hypospadias	14	4	16	2
Epispadias	11	1	9	0
Indeterminate sex	14	1	12	1
Renal agenesis	10	1	19	0
Cystic kidney	20	2	8	0
Bladder exstrophy	13	0	16	0
Polydactyly, preaxial	15	0	13	0
Total Limb reduction defects (include unspecified)	15	1	15	3
Transverse	7	0	12	1
Preaxial	10	0	8	0
Postaxial	5	0	13	0
Intercalary	7	0	10	0
Mixed	6	0	10	0
Diaphragmatic hernia	16	1	13	2
Total Abdominal wall defects (include unspecified)	15	4	15	3
Omphalocele	13	2	15	1
Gastroschisis	16	3	12	0
Prune belly sequence	4	0	17	0
Trisomy 13	11	2	16	0
Trisomy 18	14	2	13	1
Down syndrome, all ages (include age unknown)	12	1	18	3
<20	6	1	16	1
20-24	9	1	15	1
25-29	13	1	12	1
30-34	6	0	19	2
35-39	10	0	15	2
40-44	9	1	15	1
45+	8	0	10	0
Total	577	64	754	40

Note: The total number of ratios was 1,331. The reasons why the number of ratios is different malformation by malformation are due to the fact that some registries did not contribute in some malformations and that some expected ratios were not computable. The number of ratios is very high so we expect to have a certain number (about 5%) of significant ratios just by chance. The exact calculation of the number of "chance" significance is obstructed by the presence of correlated ratios (e.g. total and by maternal age Down syndrome).

9.5.2 Graph of the Observed to Expected ratio, 2000

Observed to Expected Ratio, 2000



Ratio of observed and expected number of selected malformations, 2000, plotted on a log scale. Expected numbers are calculated as mentioned in the "notes on statistical analysis". Significant ratios are indicated by closed circles, the others by open circles.

Legend

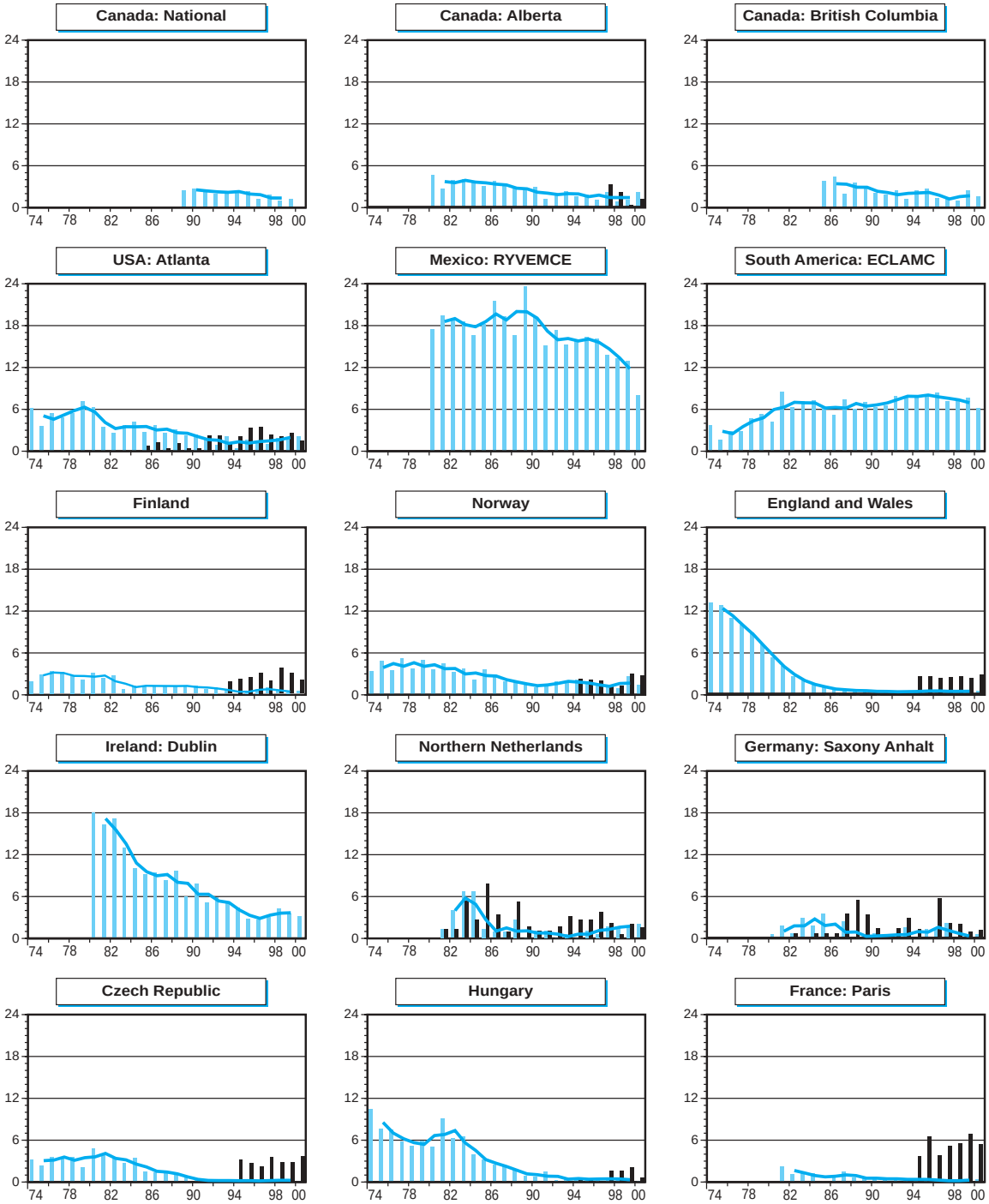
1 Anencephaly
2 Spina bifida
3 Encephalocele
4 Microcephaly
5 Arhinencephaly / Holoprosencephaly
6 Hydrocephaly
7 Total Anophthalmos / Microphthalmos (include unspecified)
8 Anophthalmos
9 Microphthalmos
10 Total Anotia / Microtia (include unspecified)
11 Anotia
12 Microtia
13 Transposition of great vessels
14 Tetralogy of Fallot
15 Hypoplastic left heart syndrome
16 Coarctation of aorta
17 Choanal atresia, bilateral
18 Cleft palate without cleft lip
19 Cleft lip with or without cleft palate
20 Oesophageal atresia / stenosis with or without fistula
21 Small intestine atresia / stenosis
22 Anorectal atresia / stenosis
23 Undescended testis (36 weeks of gestation or later)
24 Hypospadias
25 Epispadias
26 Indeterminate sex
27 Renal agenesis
28 Cystic kidney
29 Bladder exstrophy
30 Polydactyly, preaxial
31 Total Limb reduction defects (include unspecified)
32 Limb reduction defects, Transverse
33 Limb reduction defects, Preaxial
34 Limb reduction defects, Postaxial
35 Limb reduction defects, Intercalary
36 Limb reduction defects, Mixed
37 Diaphragmatic hernia
38 Total Abdominal wall defects (include unspecified)
39 Omphalocele
40 Gastroschisis
41 Prune belly sequence
42 Trisomy 13
43 Trisomy 18
44 Down syndrome, all ages (include age unknown)
45 Down syndrome, <20
46 Down syndrome, 20-24
47 Down syndrome, 25-29
48 Down syndrome, 30-34
49 Down syndrome, 35-39
50 Down syndrome, 40-44
51 Down syndrome, 45+

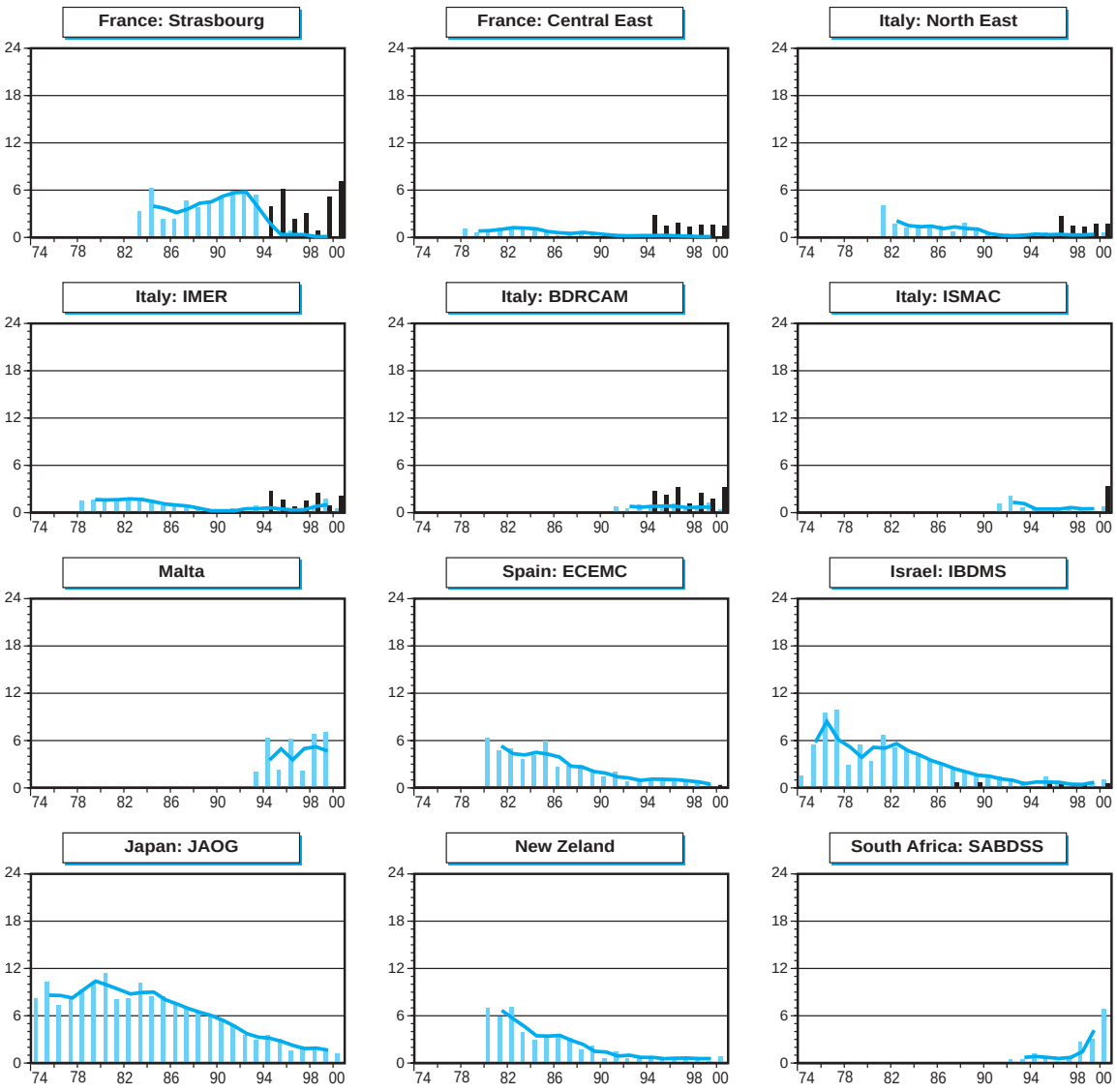
9.6 List of Time Trends Graphs

9.6 List of Time Trends Graphs

Anencephaly

Time trends 1974-2000 (Birth prevalence rates per 10,000)

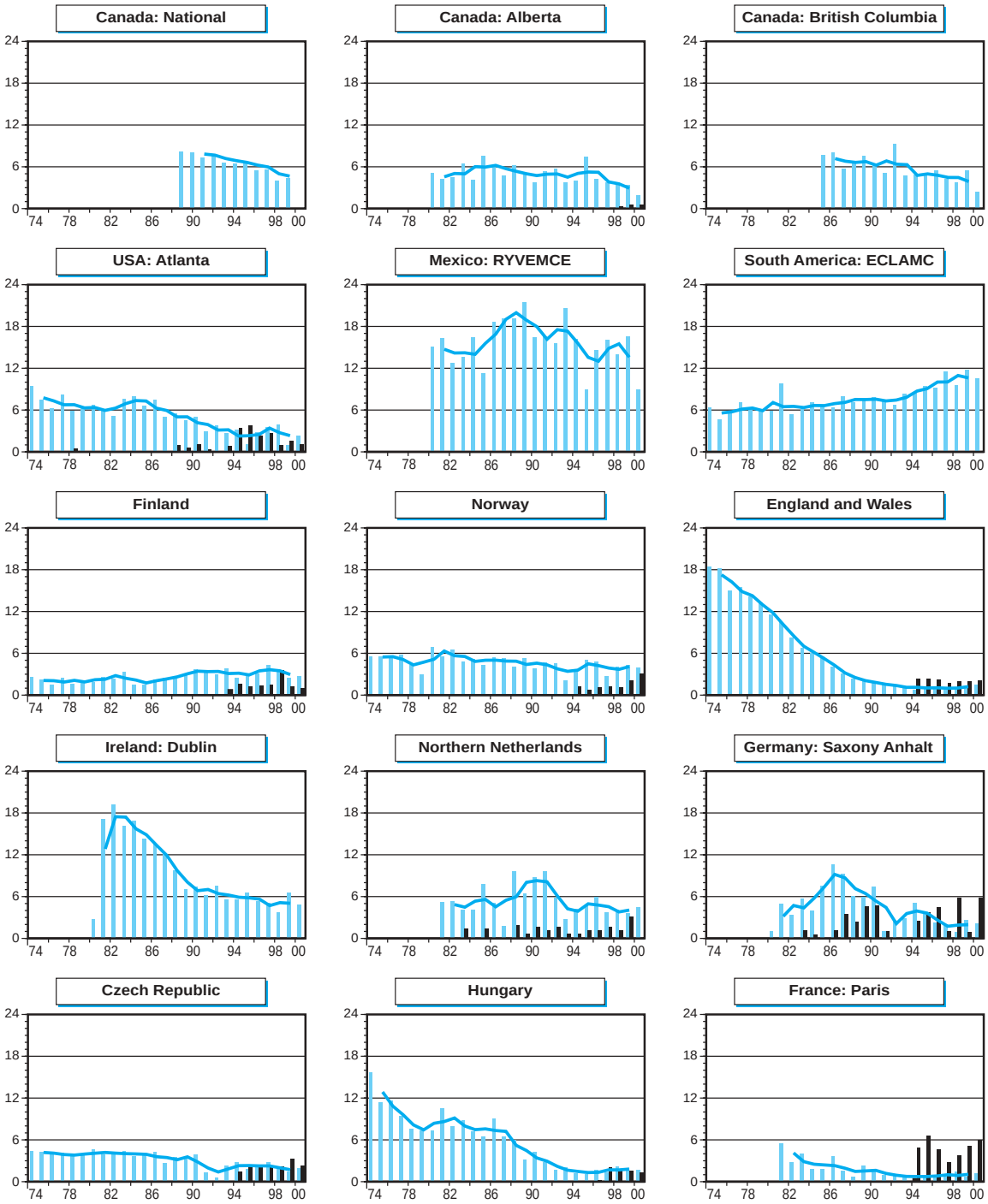


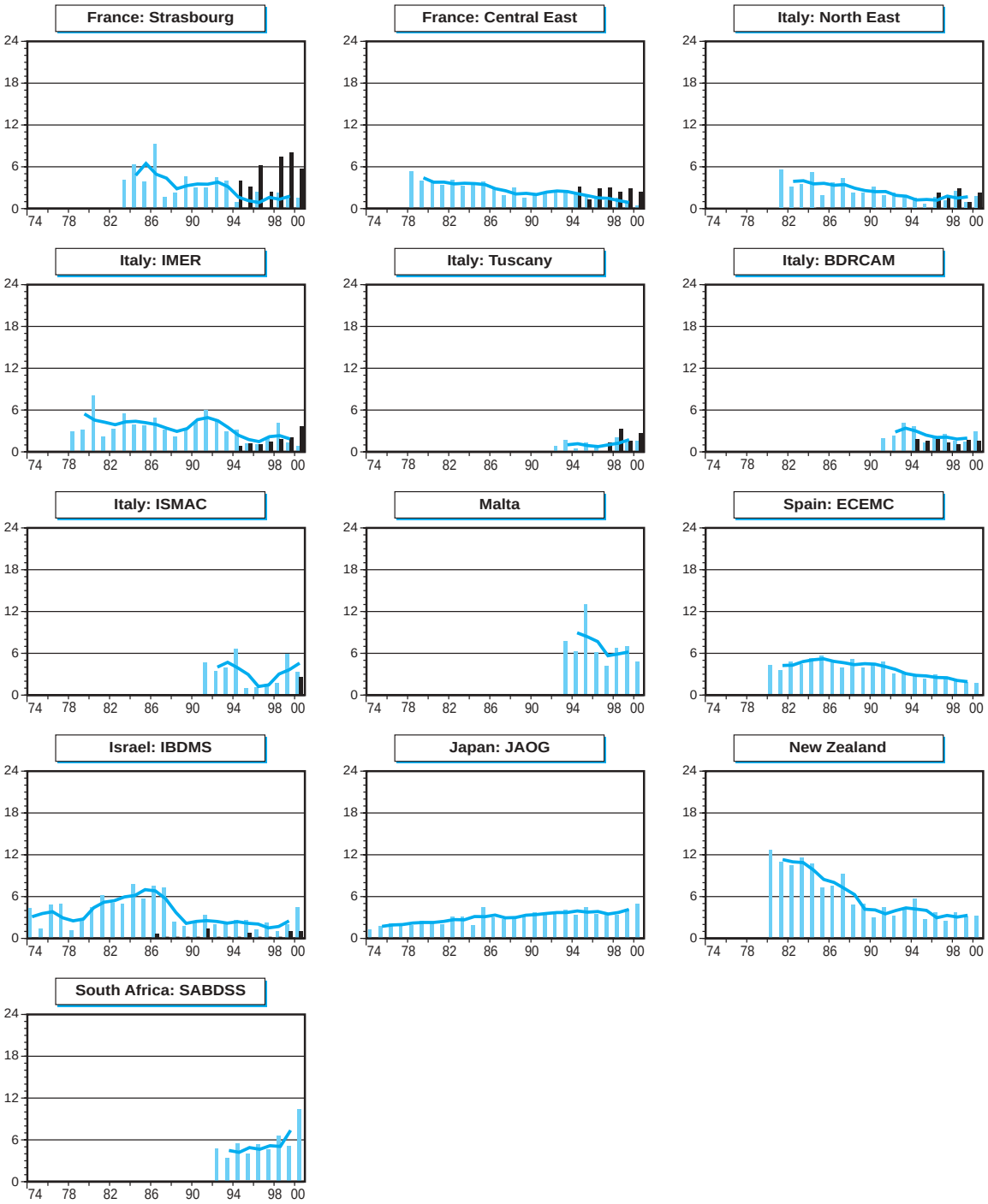


Note: L+S rates, ToP rates 3-year moving average trend

Spina bifida

Time trends 1974-2000 (Birth prevalence rates per 10,000)

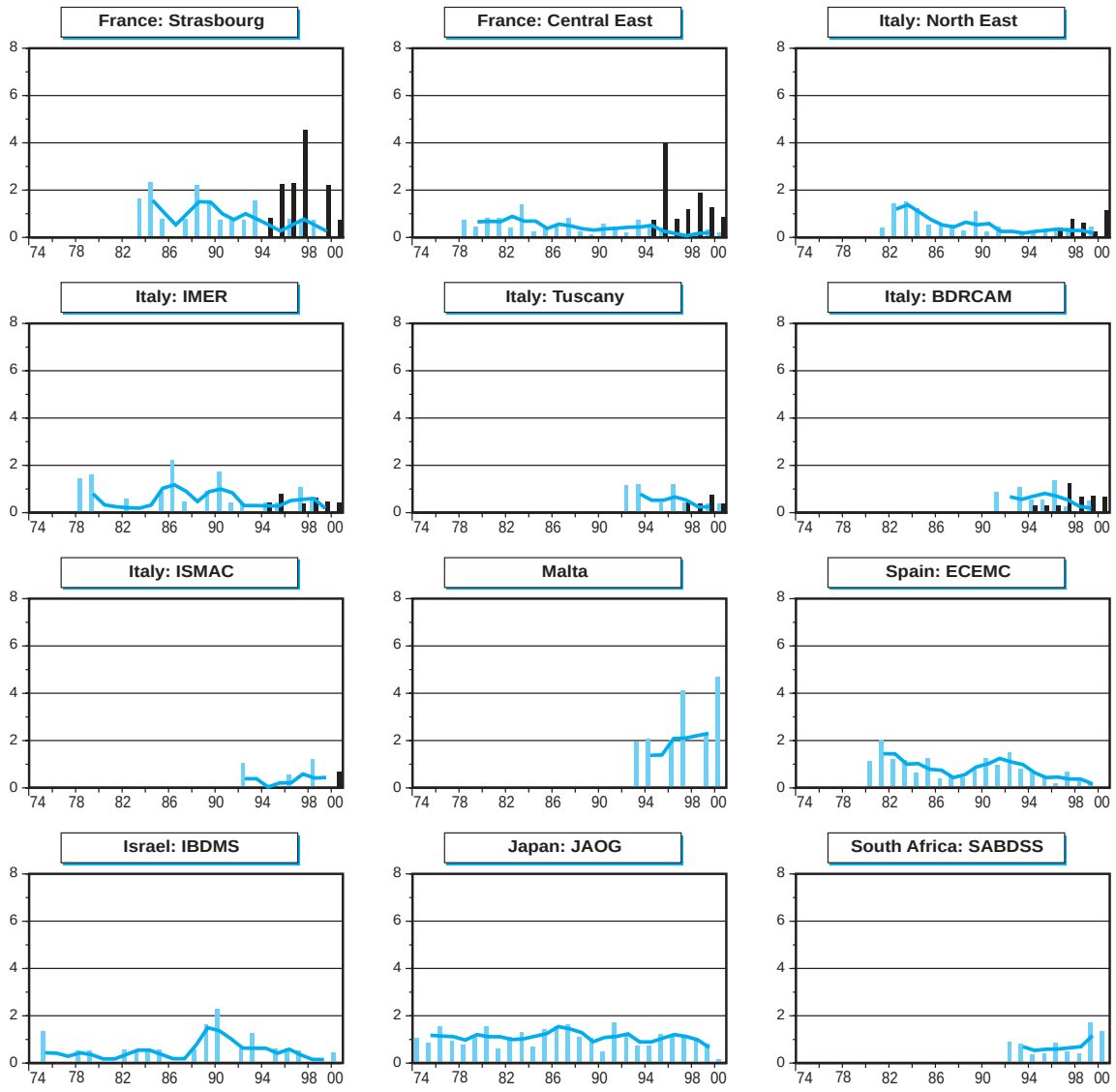




Note: L+S rates, ToP rates — 3-year moving average trend

Encephalocele

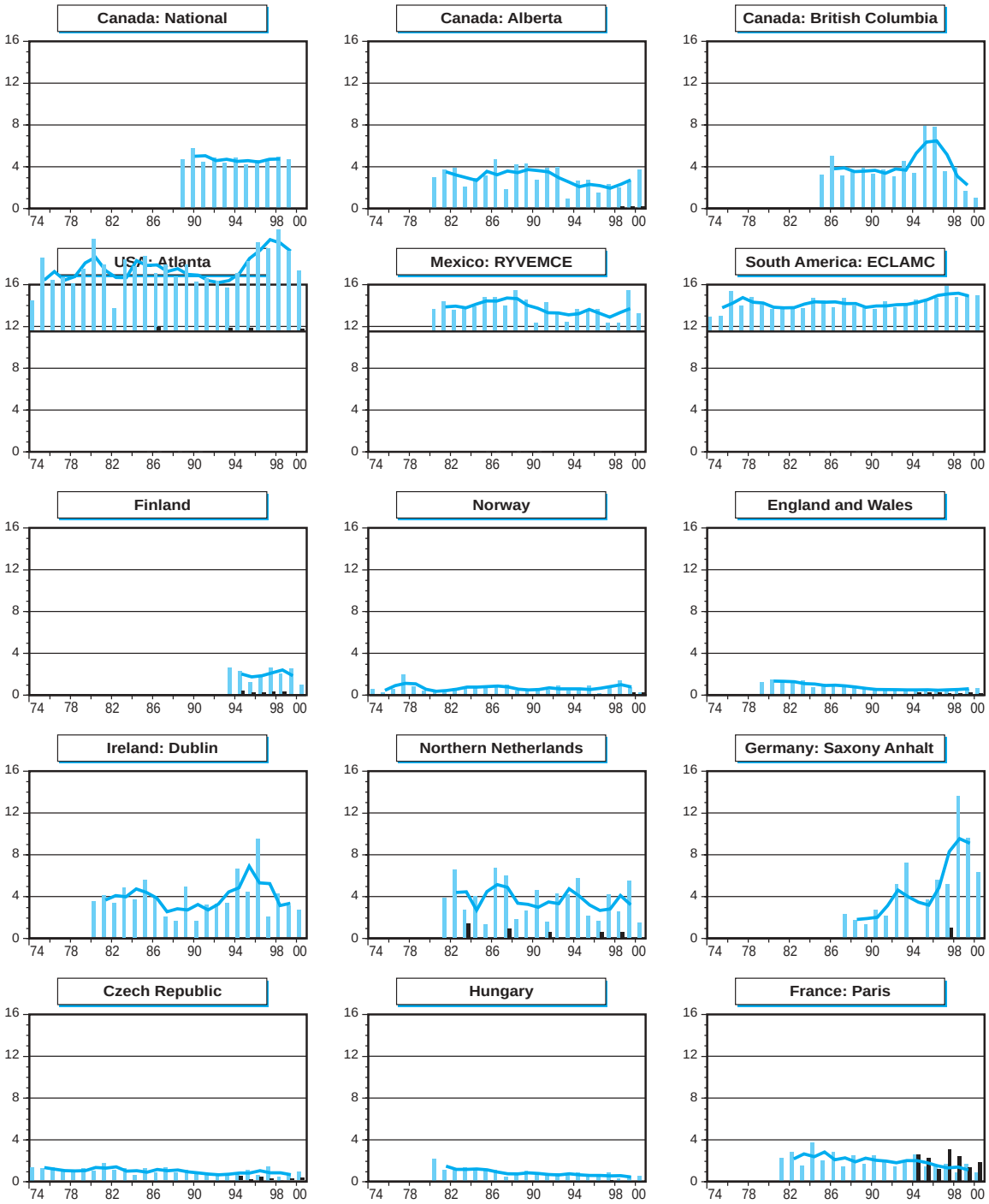
Time trends 1974-2000 (Birth prevalence rates per 10,000)

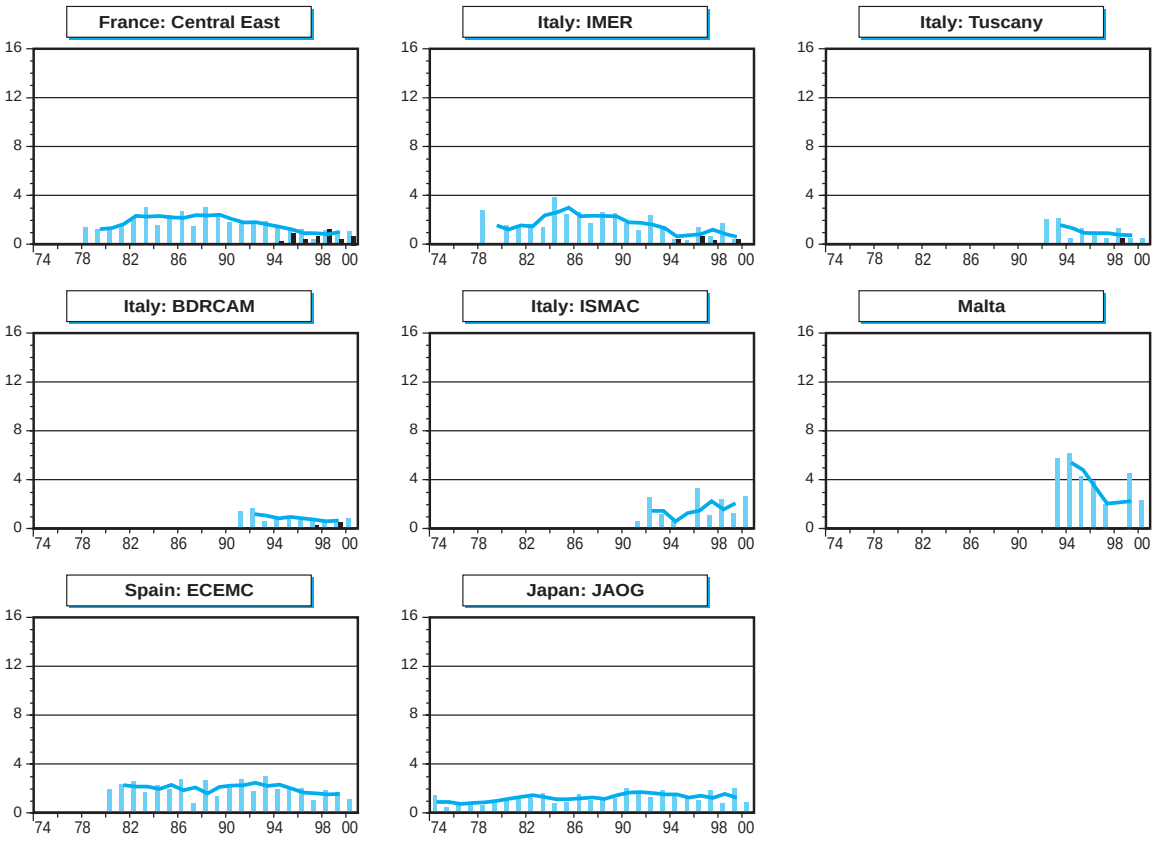


Note: L+S rates, ToP rates — 3-year moving average trend

Microcephaly

Time trend 1974-2000 (Rates per 10,000): 3-year moving average.

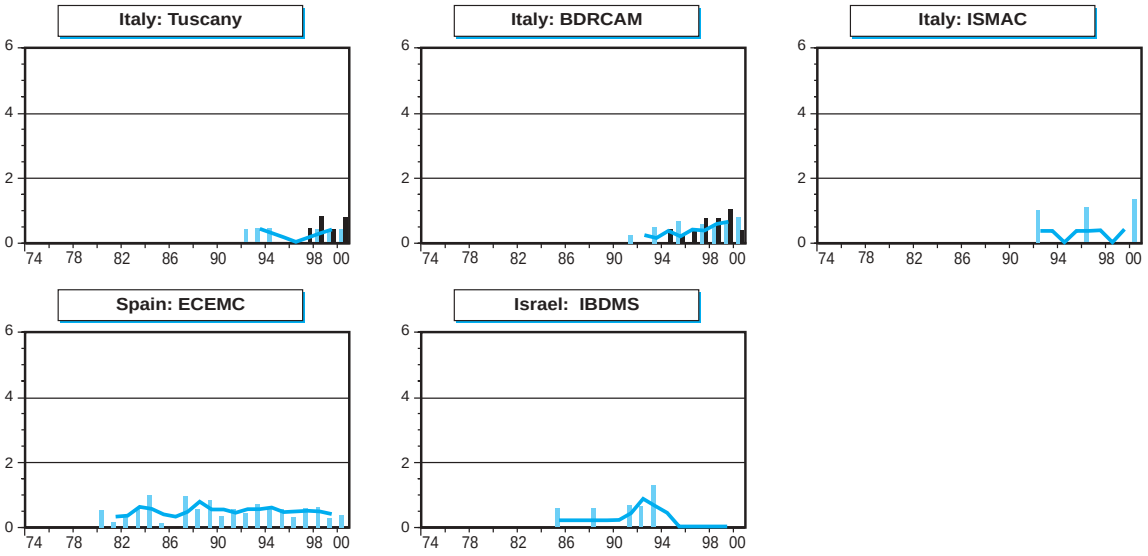




Note: L+S rates, ToP rates — 3-year moving average trend

Arhinencephaly/Holoprosencephaly

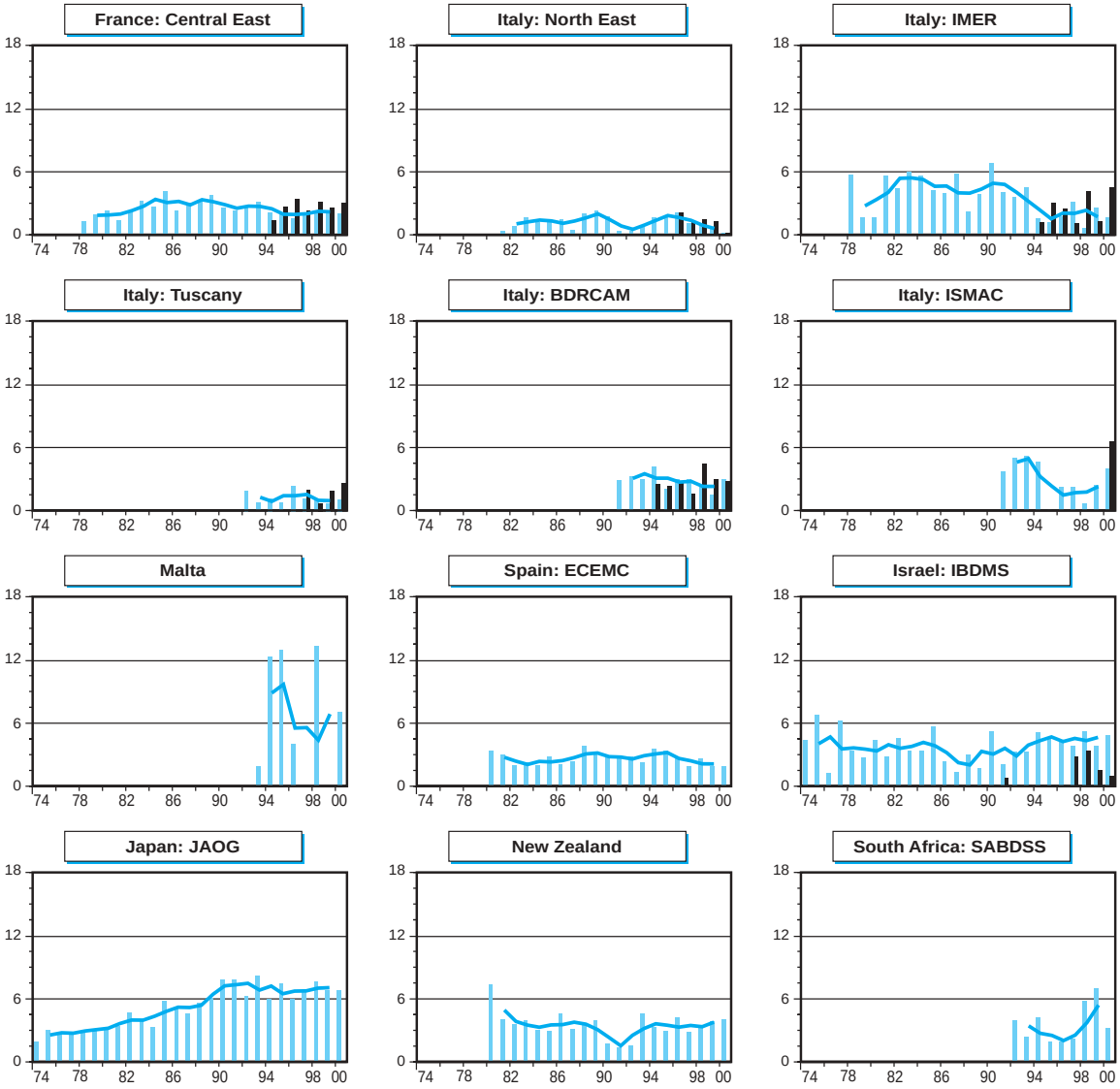
Time trends 1974-2000 (Birth prevalence rates per 10,000)



Note: L+S rates, ToP rates 3-year moving average trend

Hydrocephaly

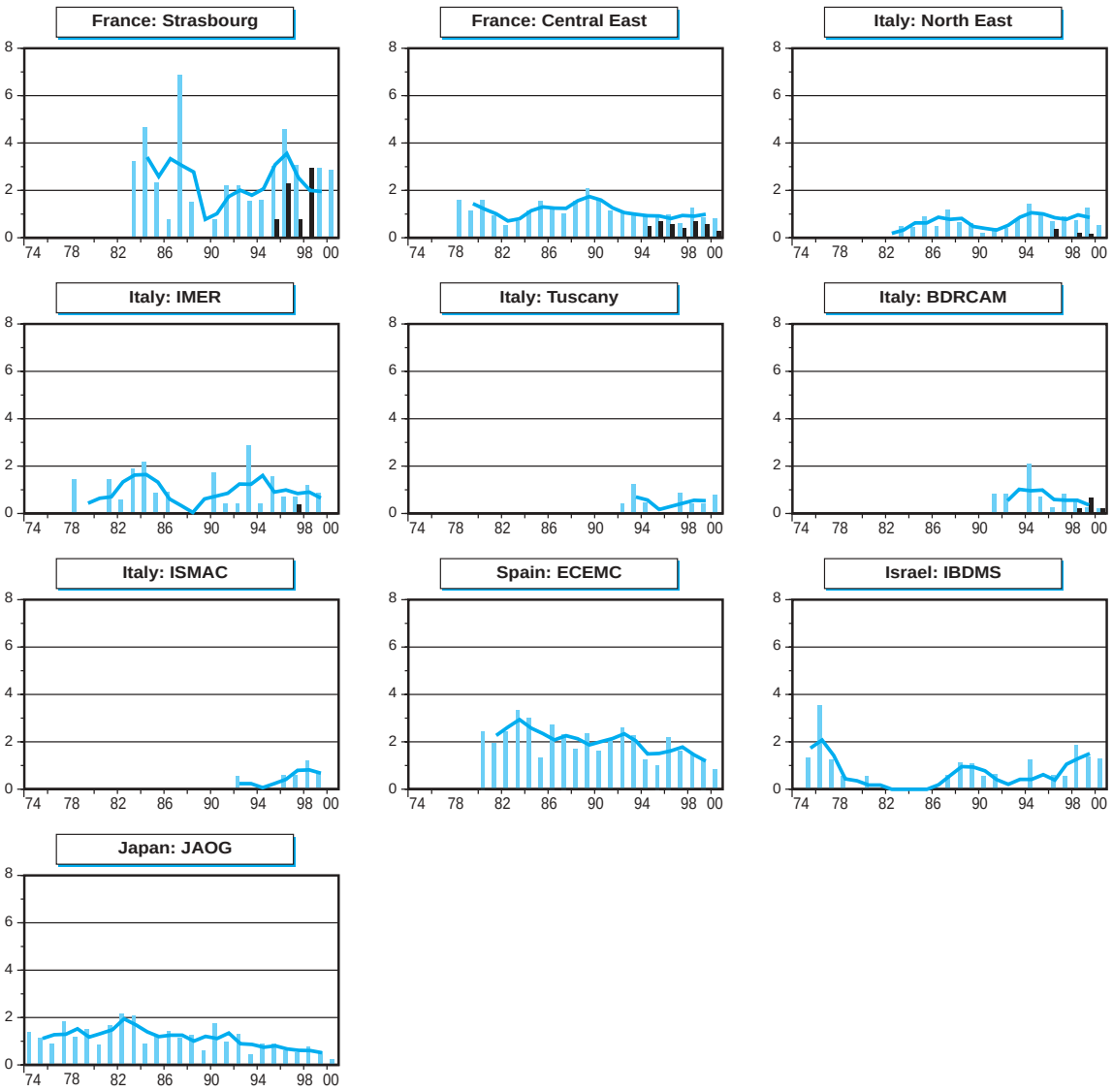
Time trends 1974-2000 (Birth prevalence rates per 10,000)



Note: L+S rates, ToP rates — 3-year moving average trend

Anophthalmos/Microphthalmos

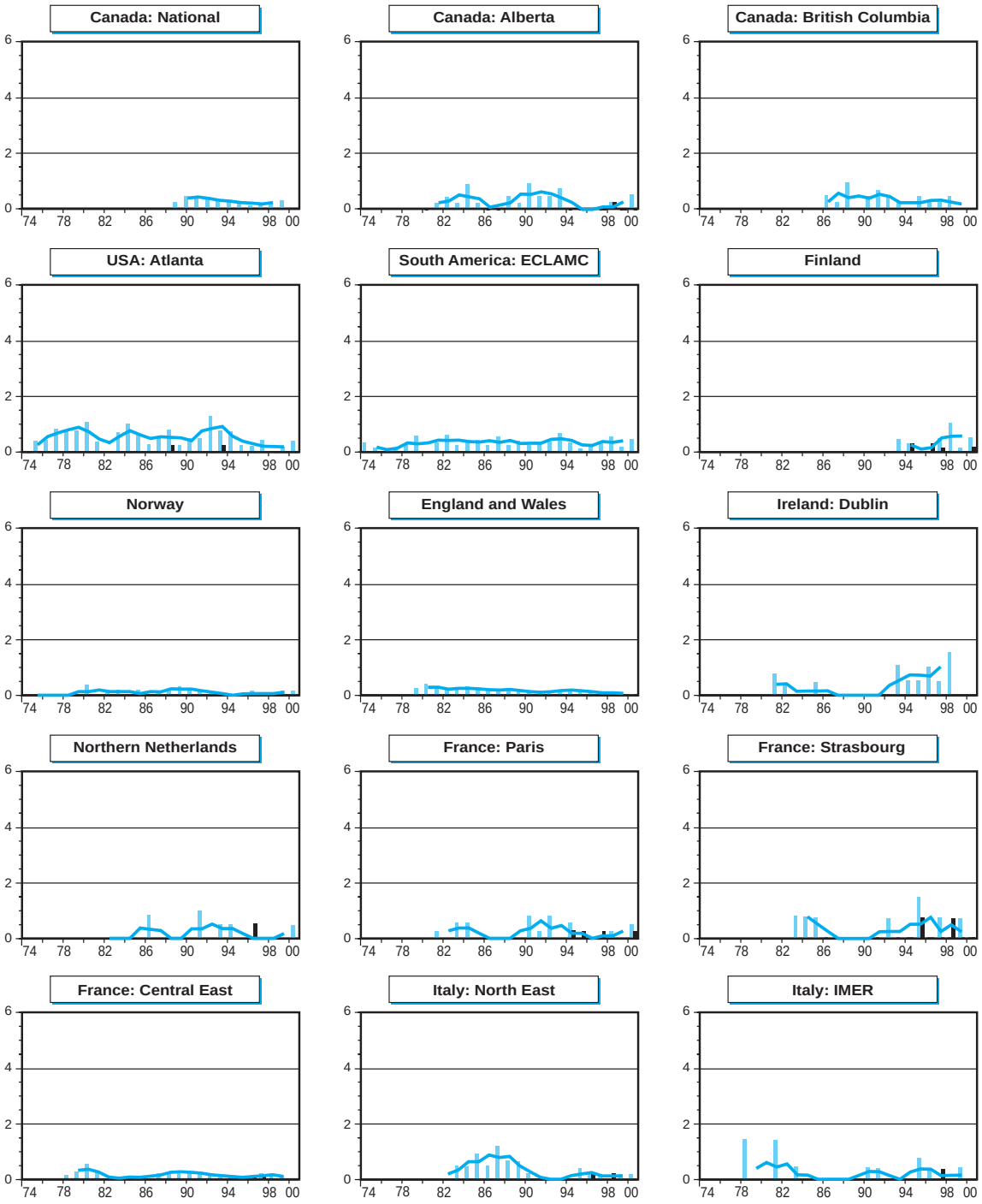
Time trends 1974-2000 (Birth prevalence rates per 10,000)

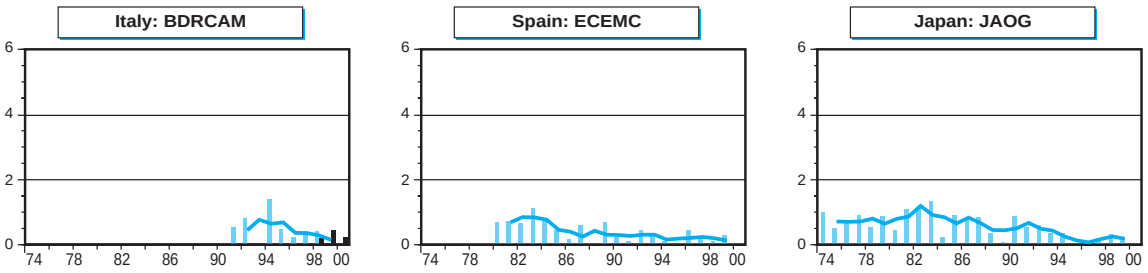


Note: L+S rates, ToP rates 3-year moving average trend

Anophthalmos

Time trends 1974-2000 (Birth prevalence rates per 10,000)

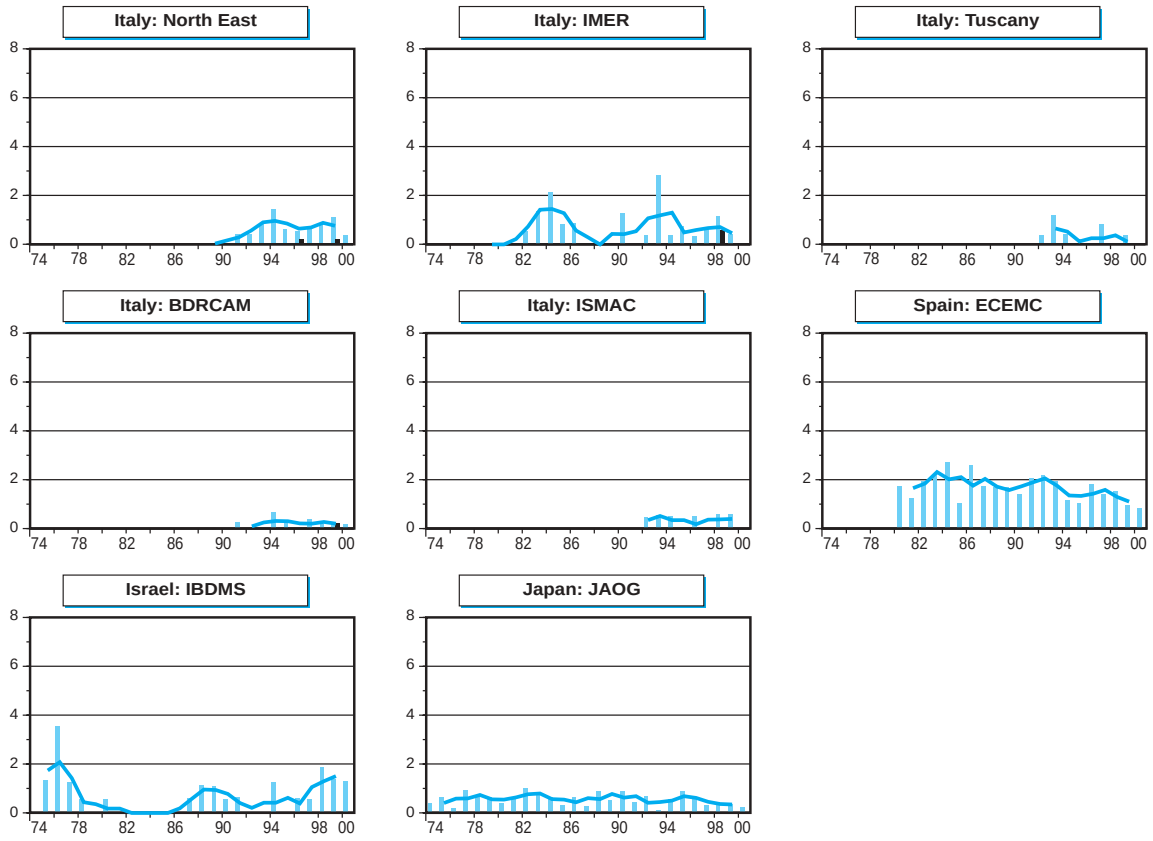




Note: L+S rates, ToP rates 3-year moving average trend

Microphthalmos

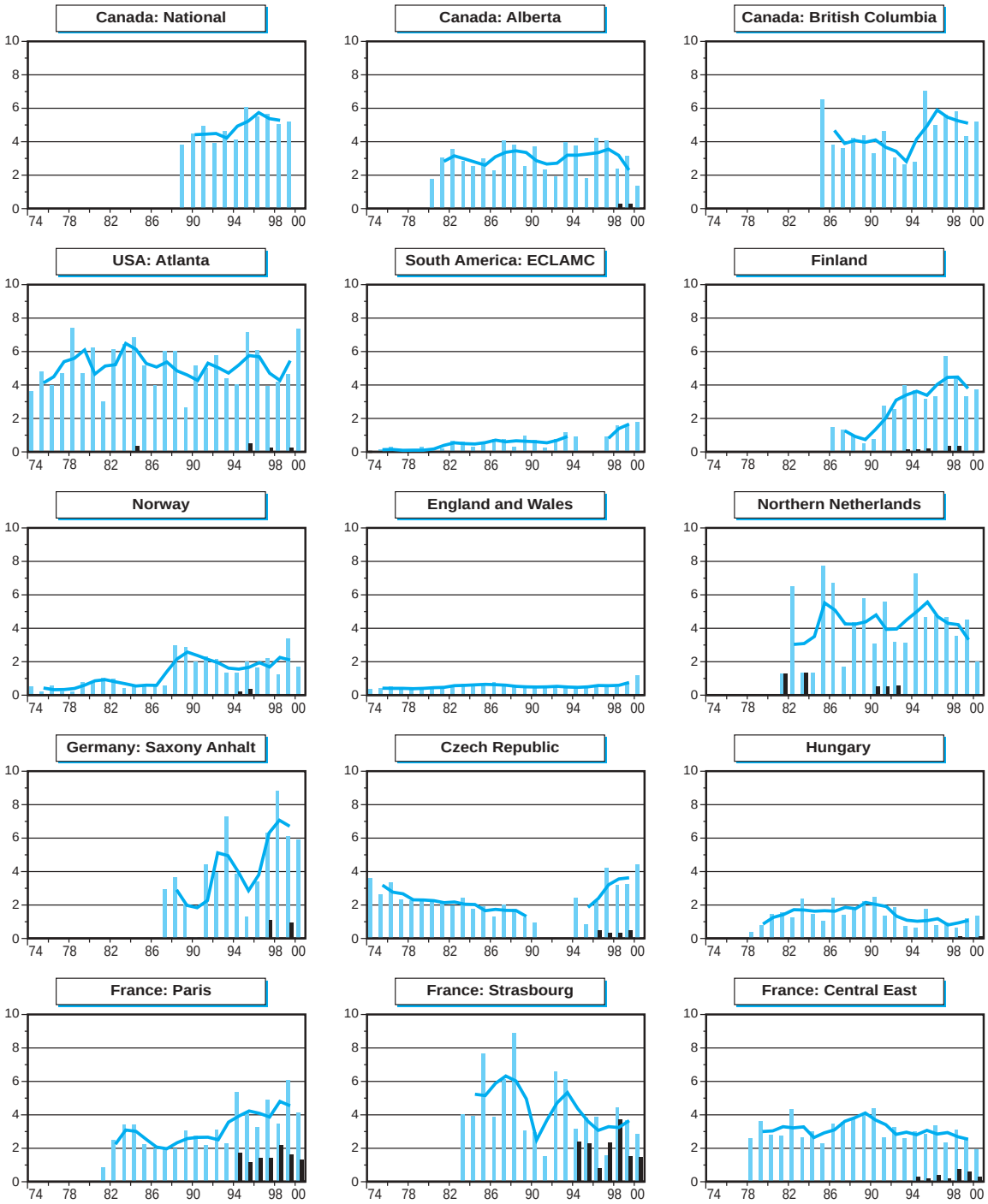
Time trend 1974-2000 (Rates per 10,000): 3-year moving average.

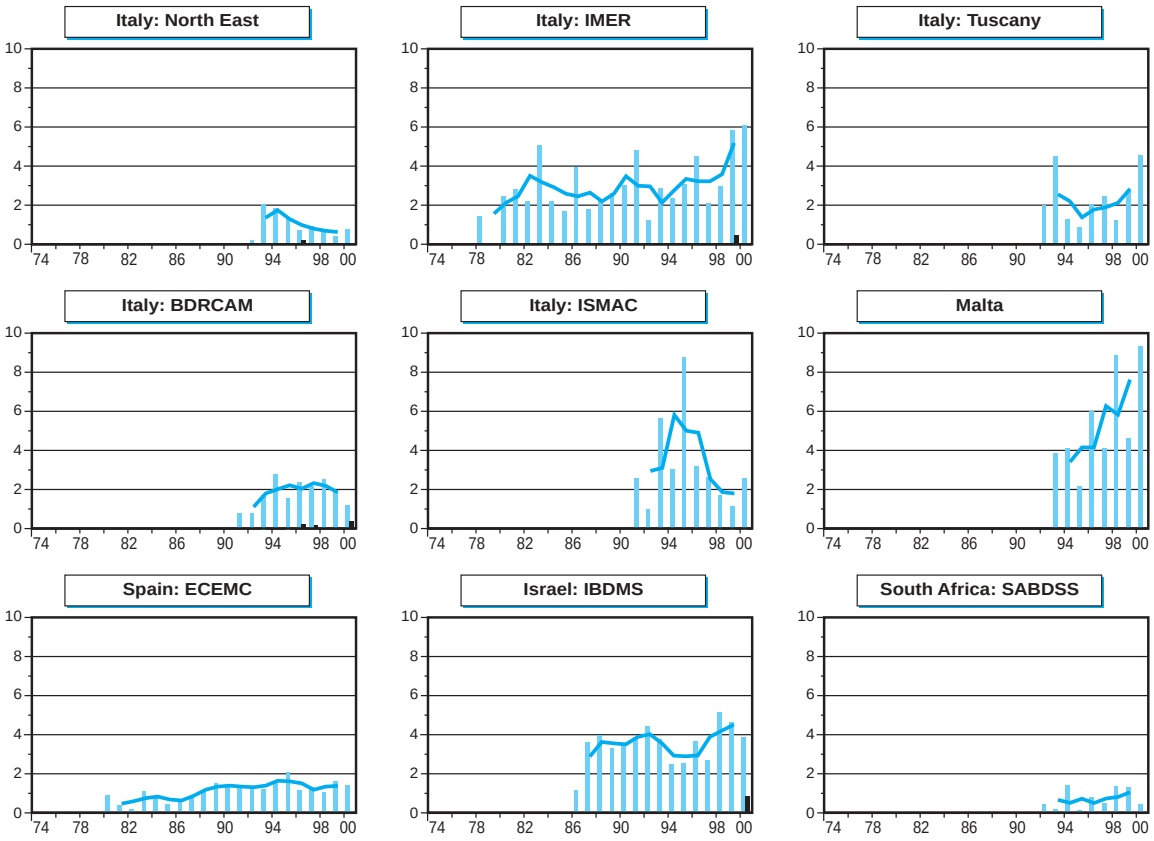


Note: L+S rates, ToP rates 3-year moving average trend

Transposition of great vessels

Time trends 1974-2000 (Birth prevalence rates per 10,000)

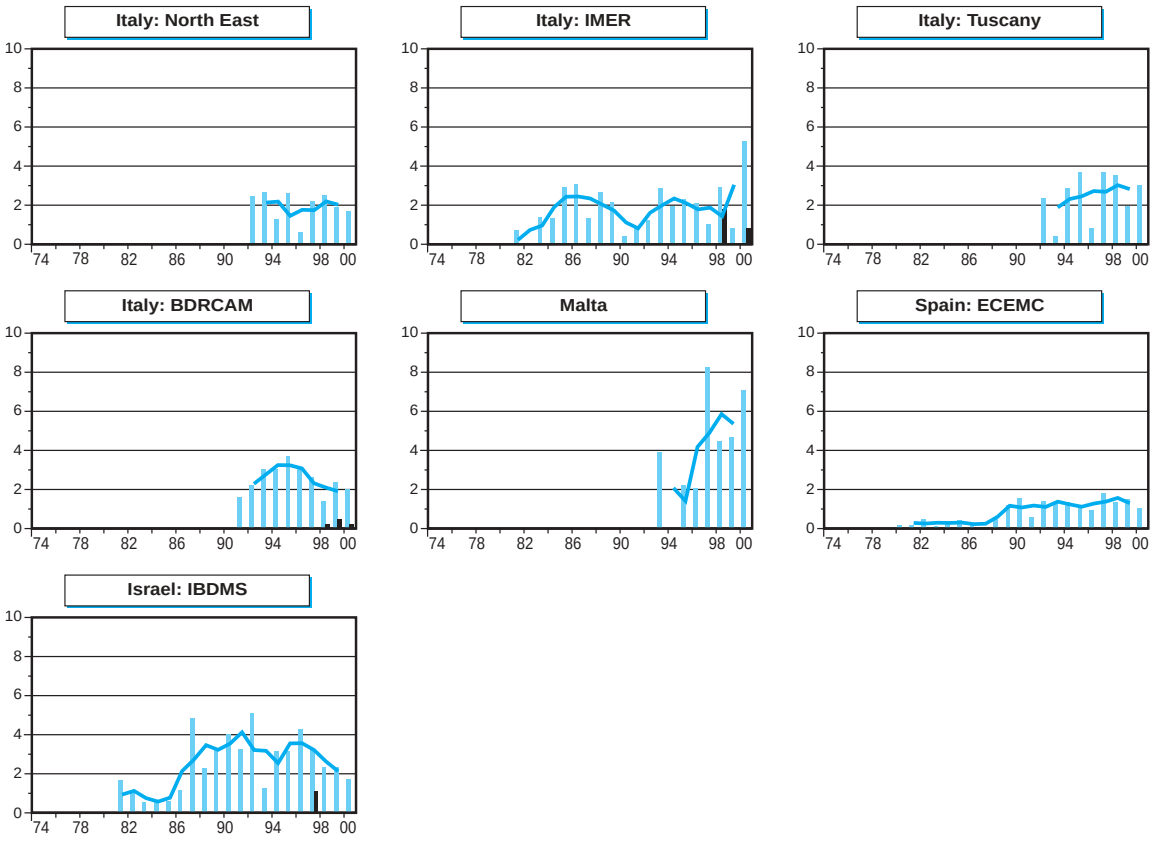




Note: L+S rates, ToP rates 3-year moving average trend

Tetralogy of Fallot

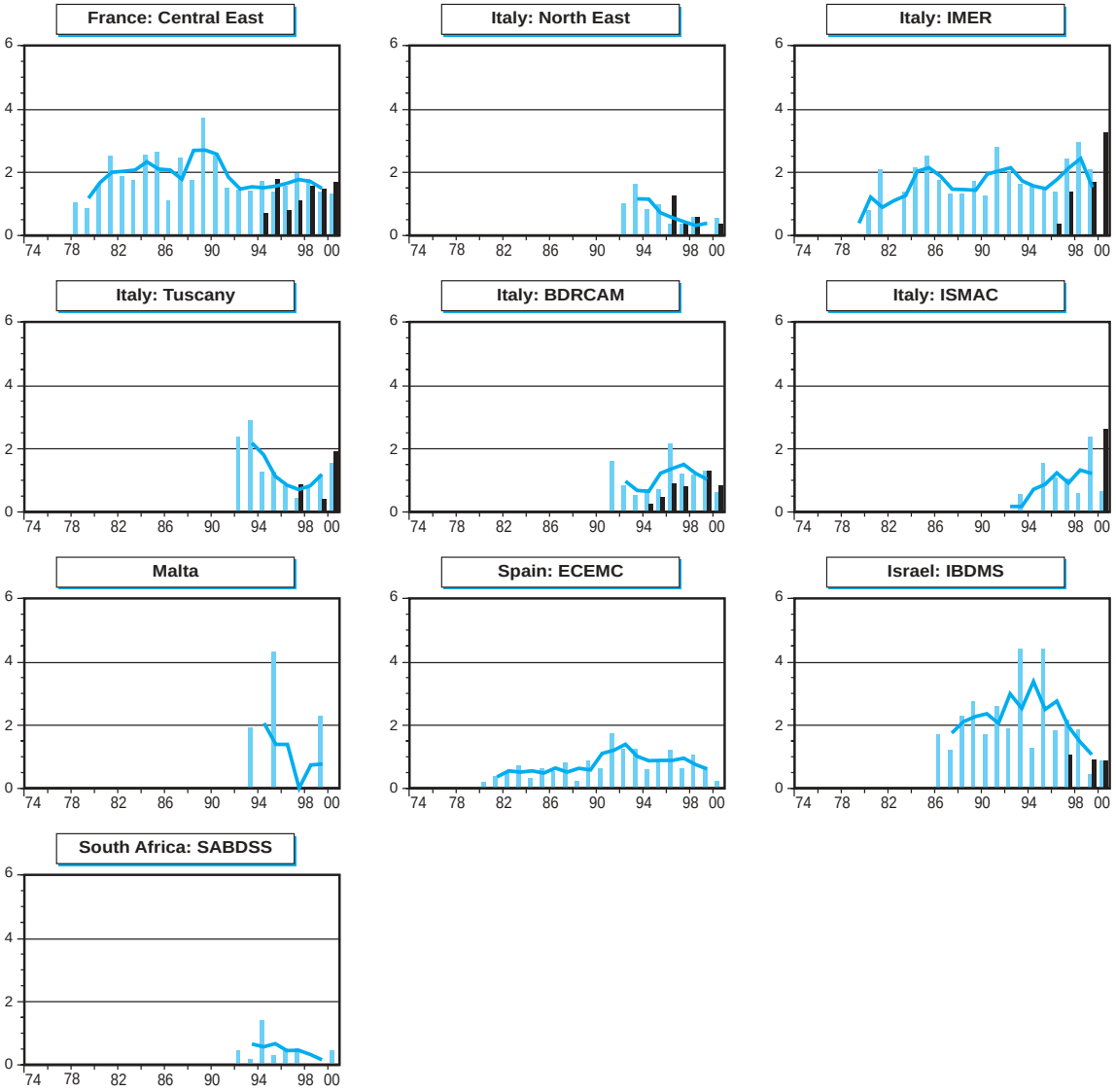
Time trends 1974-2000 (Birth prevalence rates per 10,000)



Note: L+S rates, ToP rates — 3-year moving average trend

Hypoplastic left heart syndrome

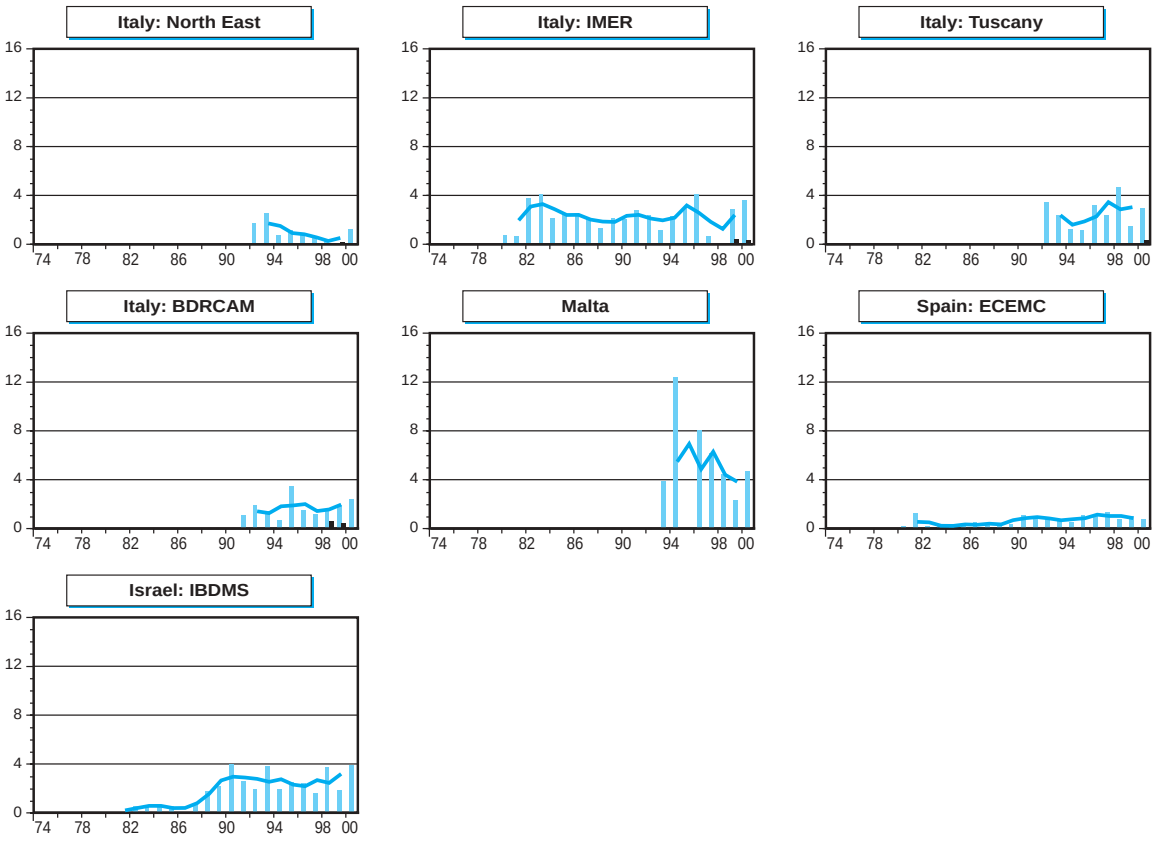
Time trends 1974-2000 (Birth prevalence rates per 10,000)



Note: L+S rates, ToP rates 3-year moving average trend

Coarction of aorta

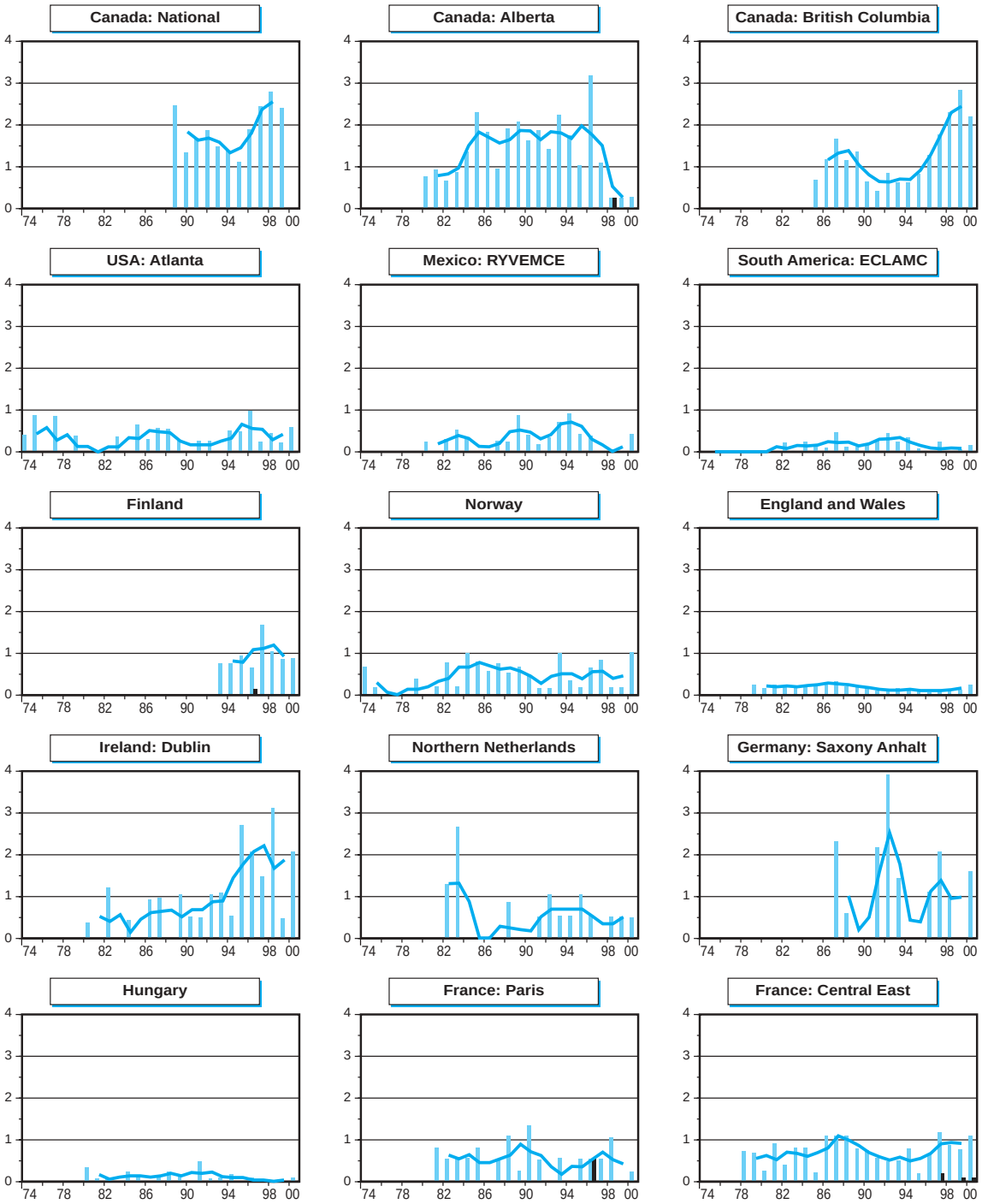
Time trends 1974-2000 (Birth prevalence rates per 10,000)

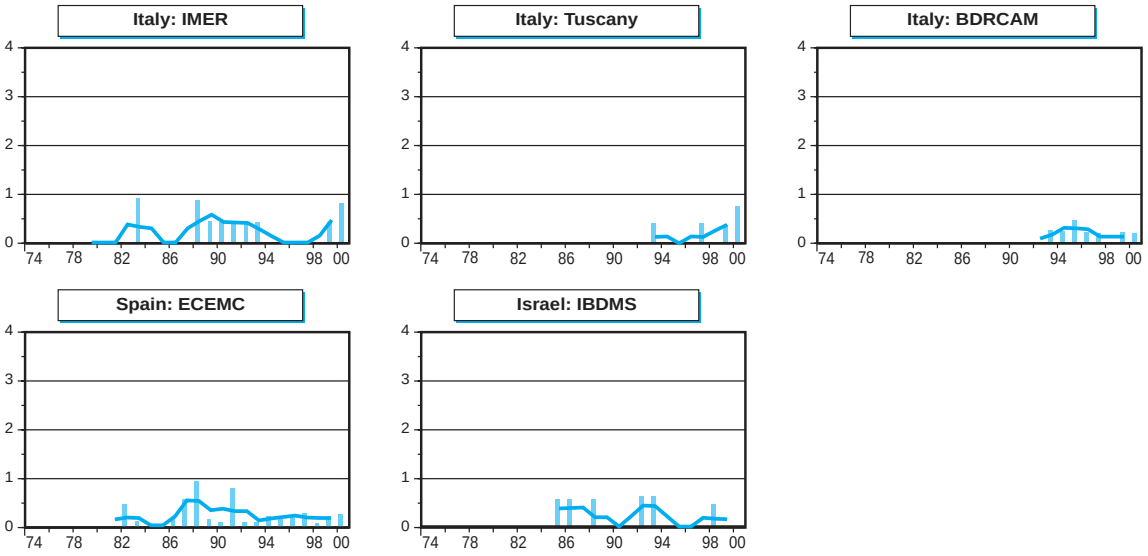


Note: L+S rates, ToP rates 3-year moving average trend

Choanal atresia, bilateral

Time trends 1974-2000 (Birth prevalence rates per 10,000)

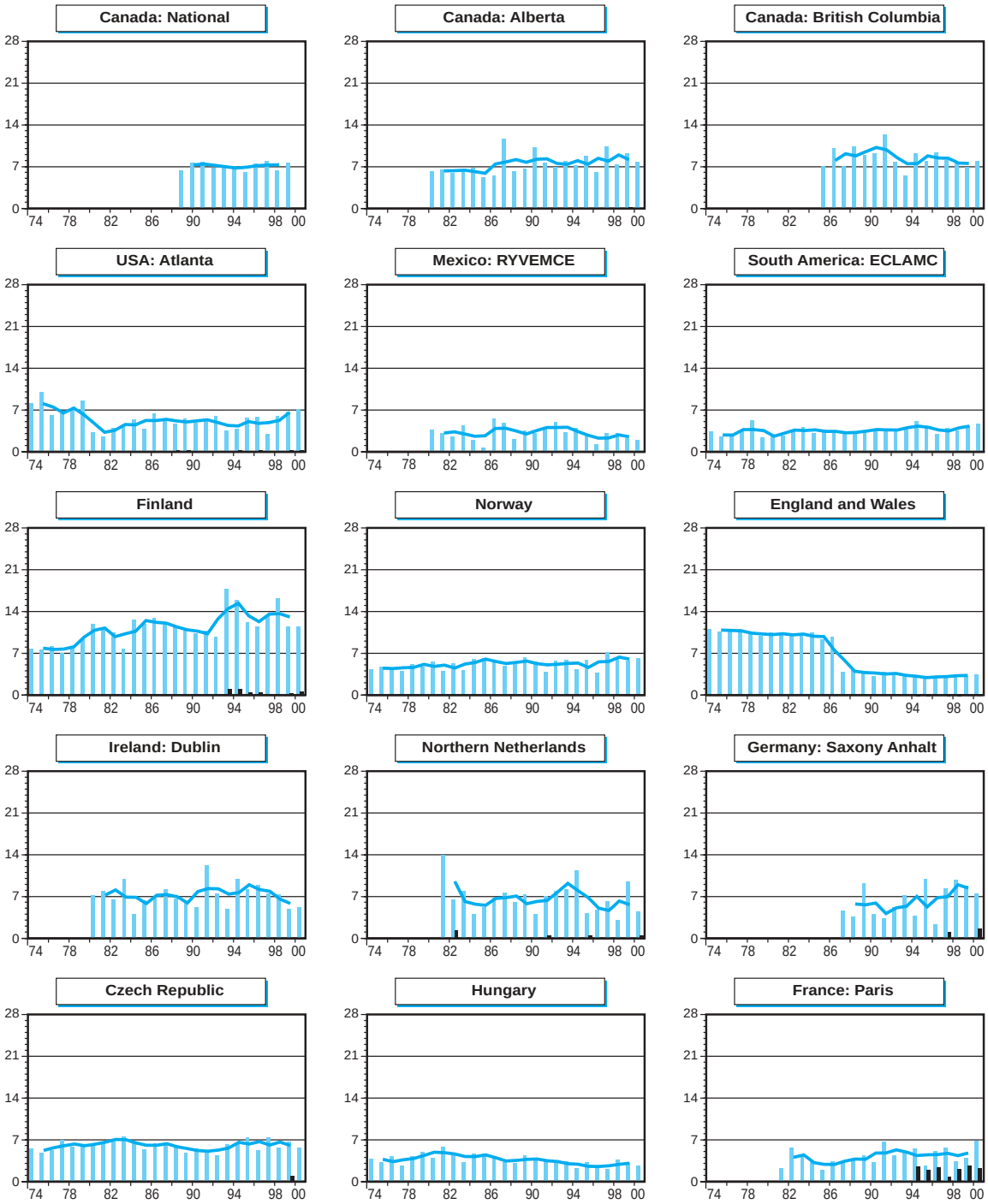


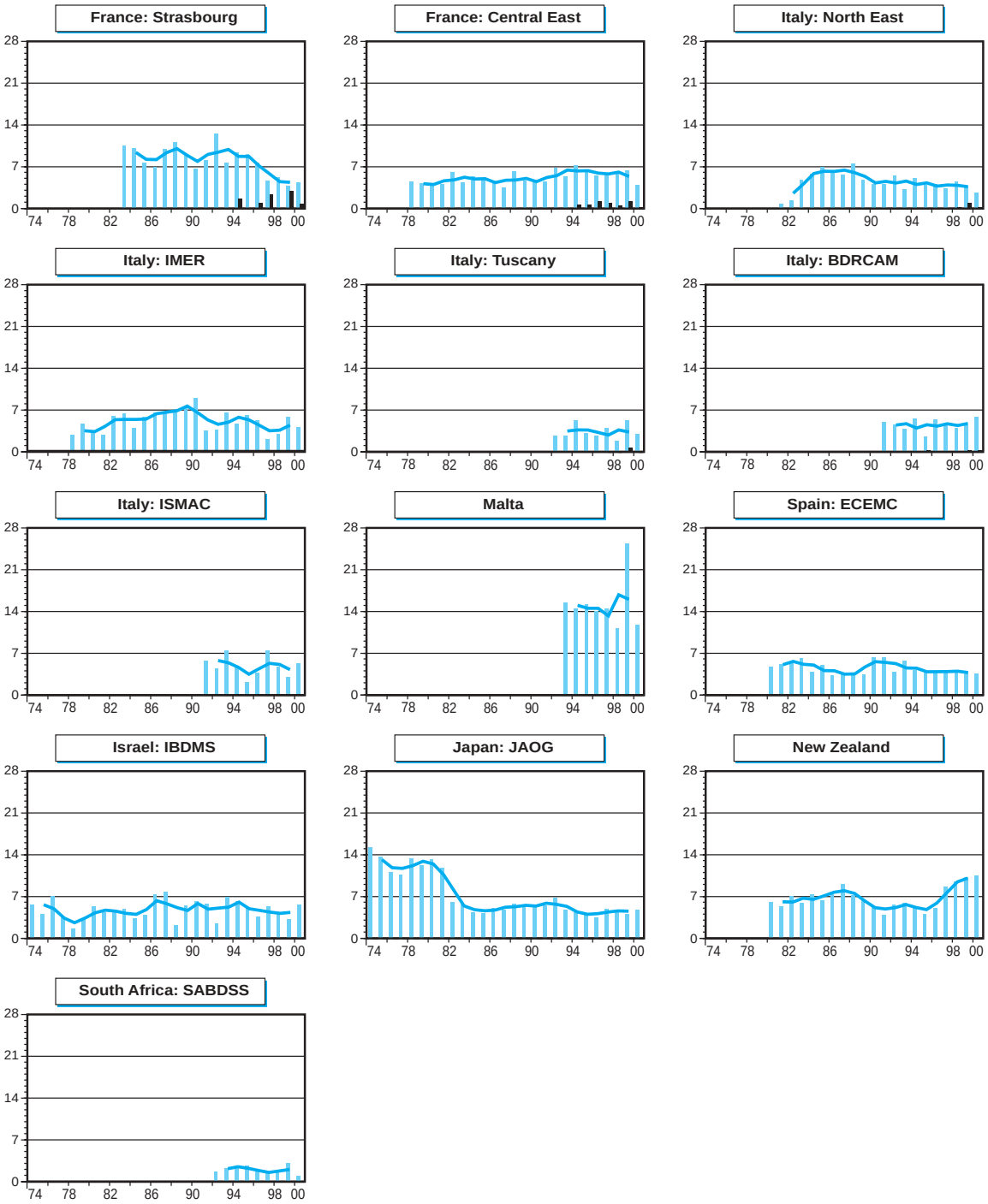


Note: L+S rates, ToP rates 3-year moving average trend

Cleft palate without cleft lip

Time trends 1974-2000 (Birth prevalence rates per 10,000)

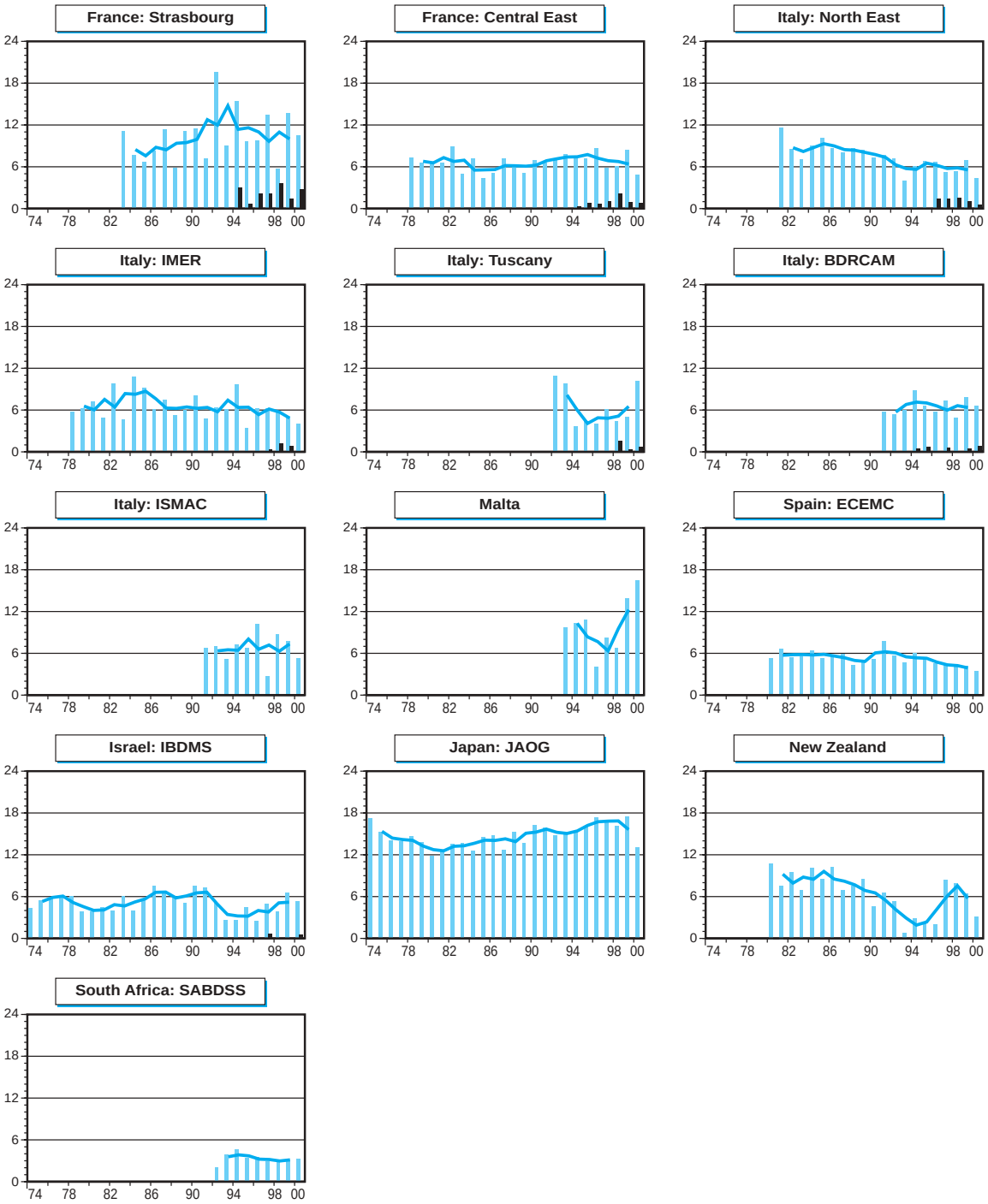




Note: L+S rates, ToP rates 3-year moving average trend

Cleft lip with or without cleft palate

Time trends 1974-2000 (Birth prevalence rates per 10,000)



Note: L+S rates, ToP rates — 3-year moving average trend

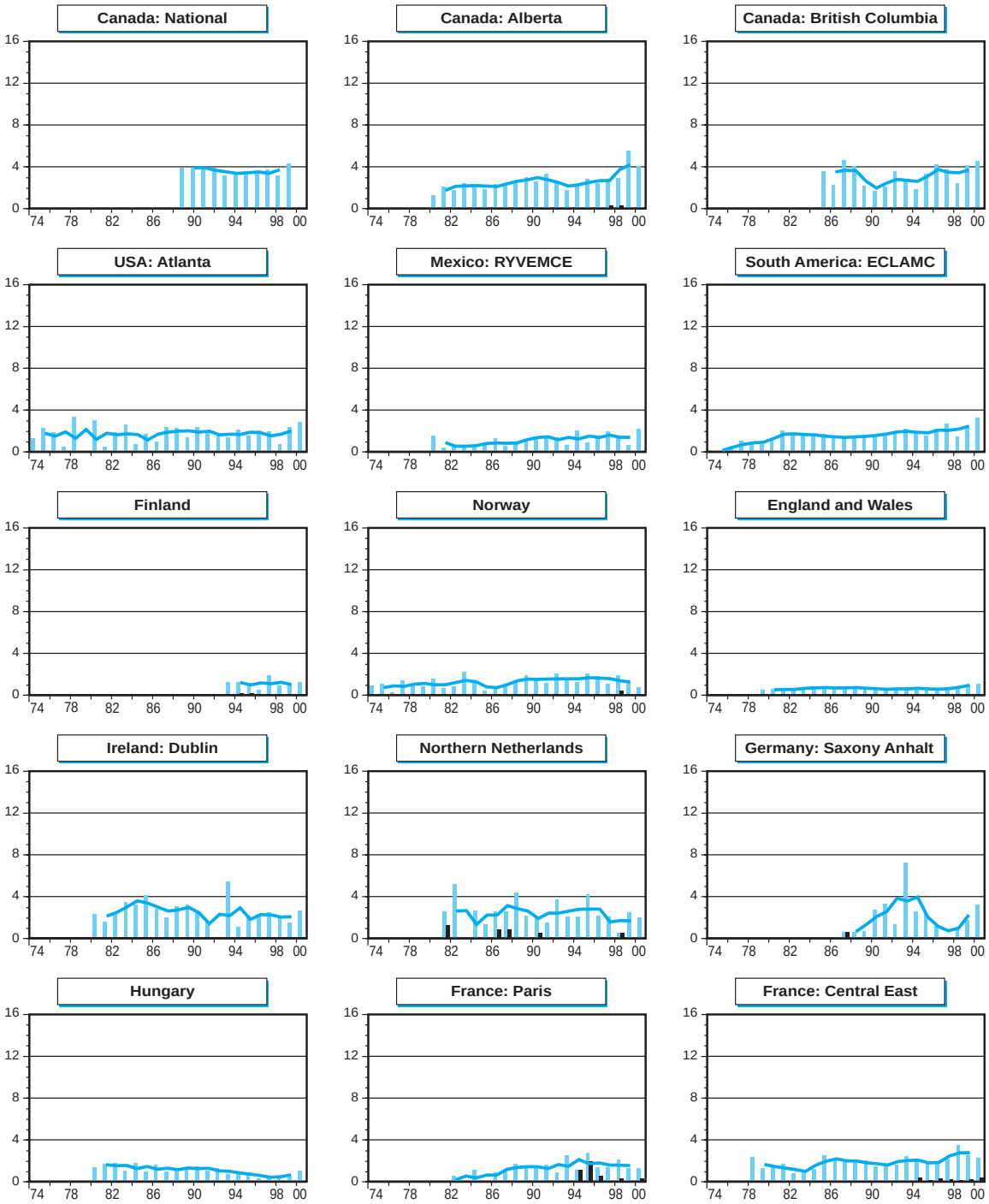
Oesophagel atresia/stenosis with or without fistula

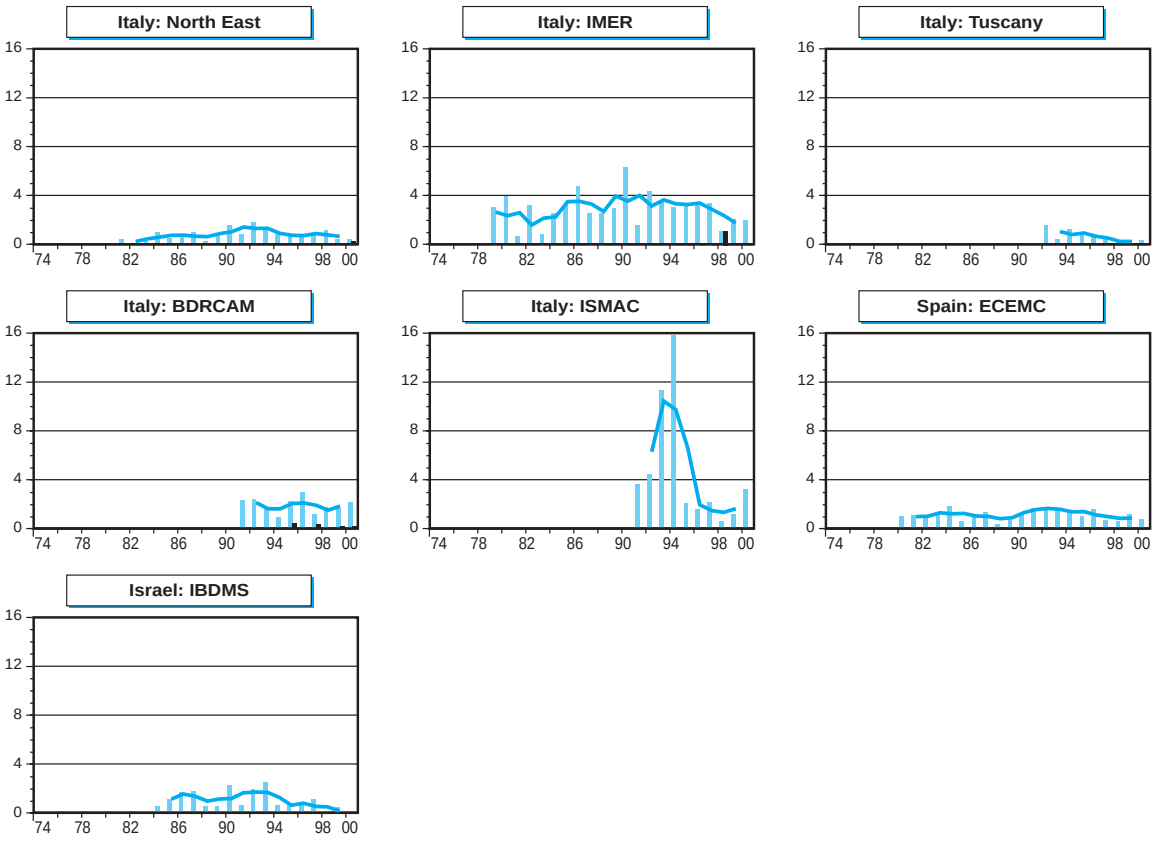
Time trends 1974-2000 (Birth prevalence rates per 10,000)

Note: L+S rates, ToP rates — 3-year moving average trend

Small intestine atresia/stenosis

Time trends 1974-2000 (Birth prevalence rates per 10,000)

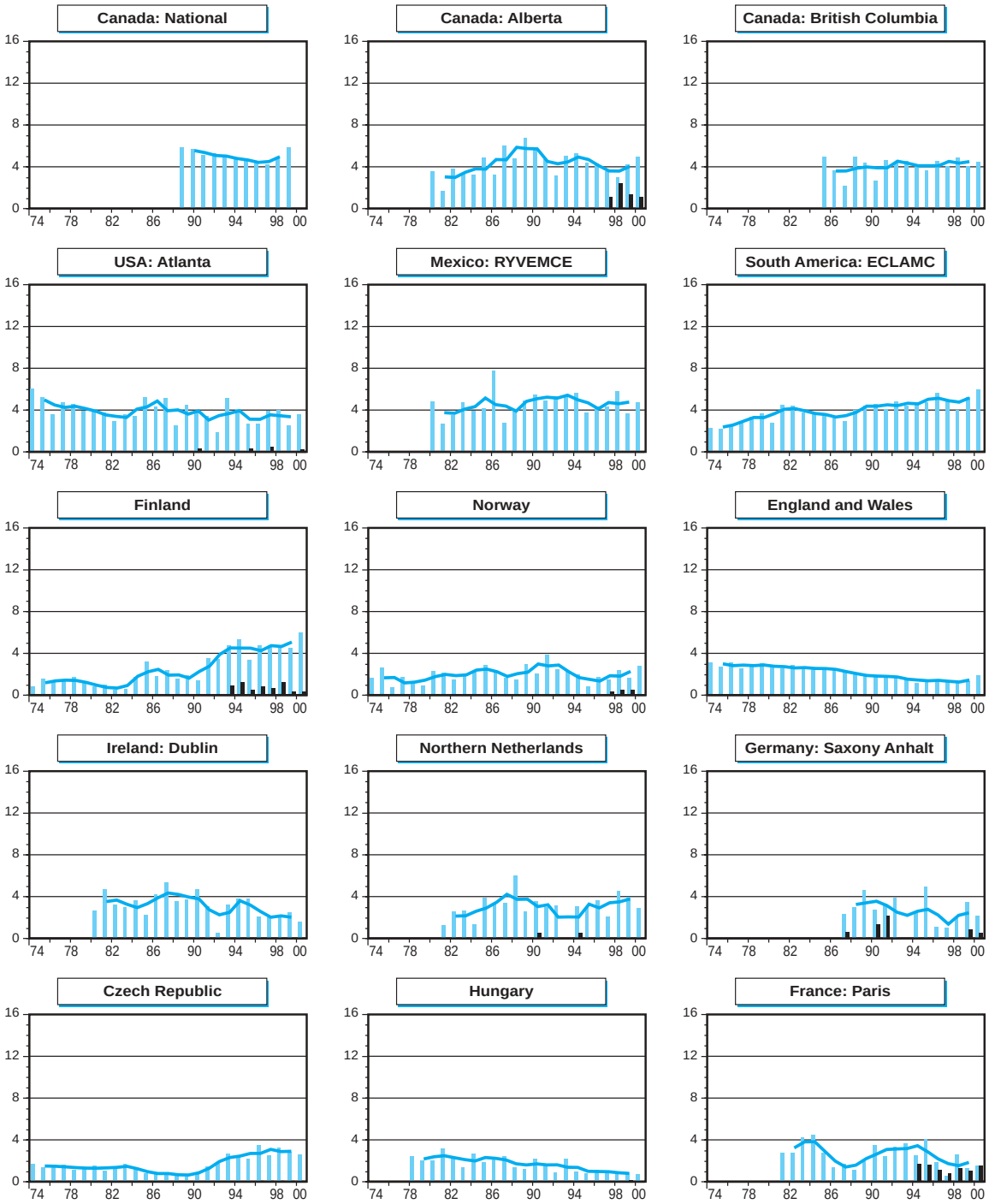


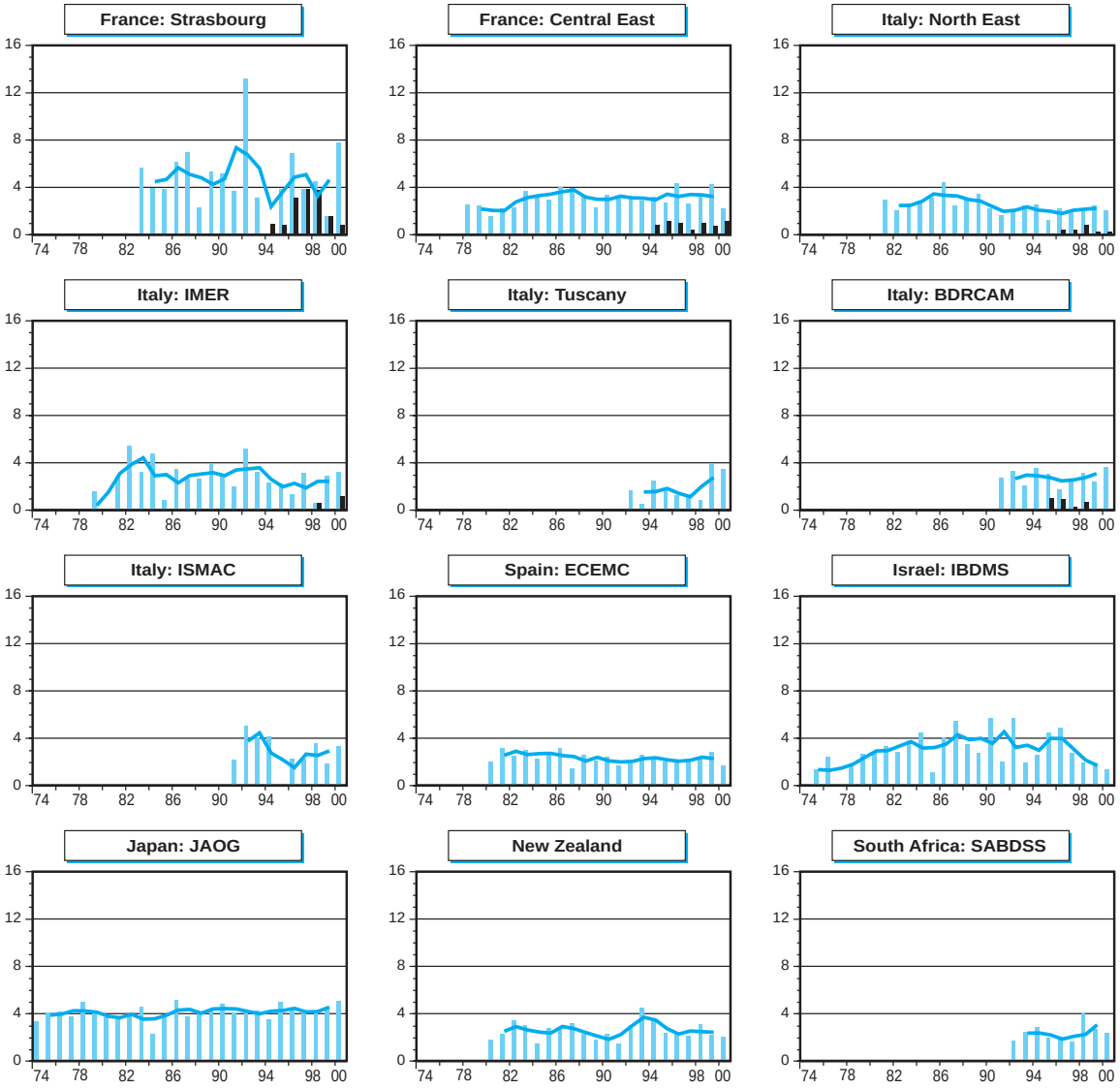


Note: L+S rates, ToP rates 3-year moving average trend

Anorectal atresia/stenosis

Time trends 1974-2000 (Birth prevalence rates per 10,000)

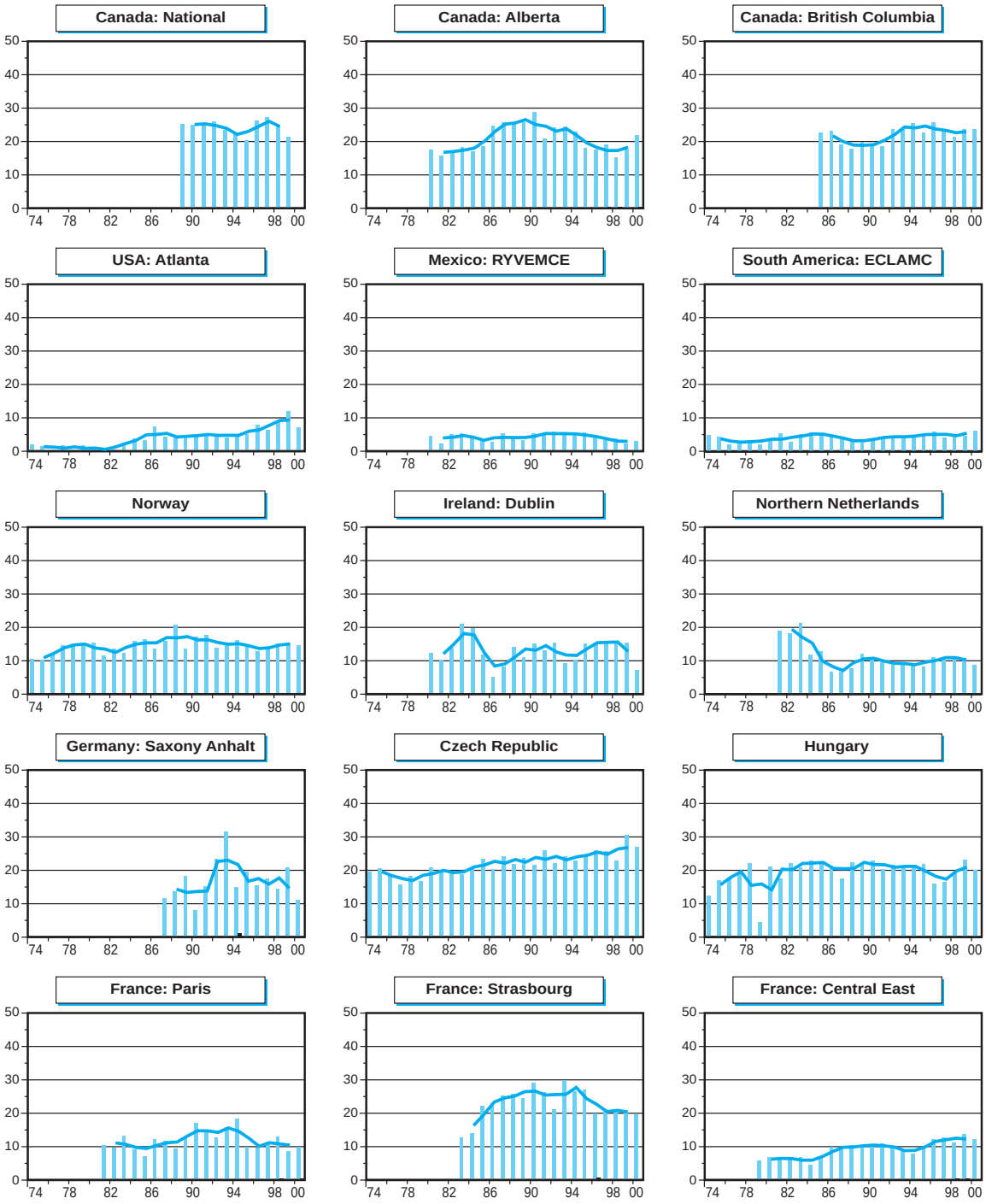


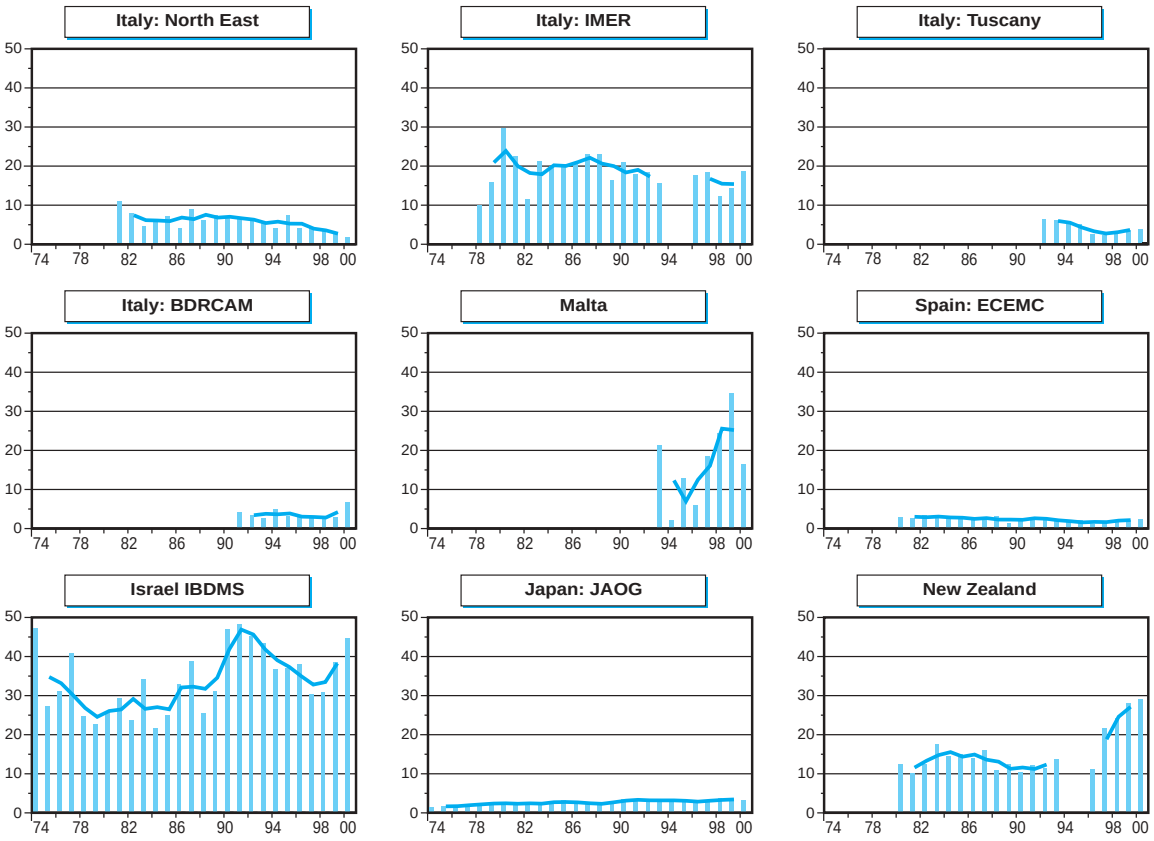


Note: L+S rates, ToP rates 3-year moving average trend

Hypospadias

Time trends 1974-2000 (Birth prevalence rates per 10,000)

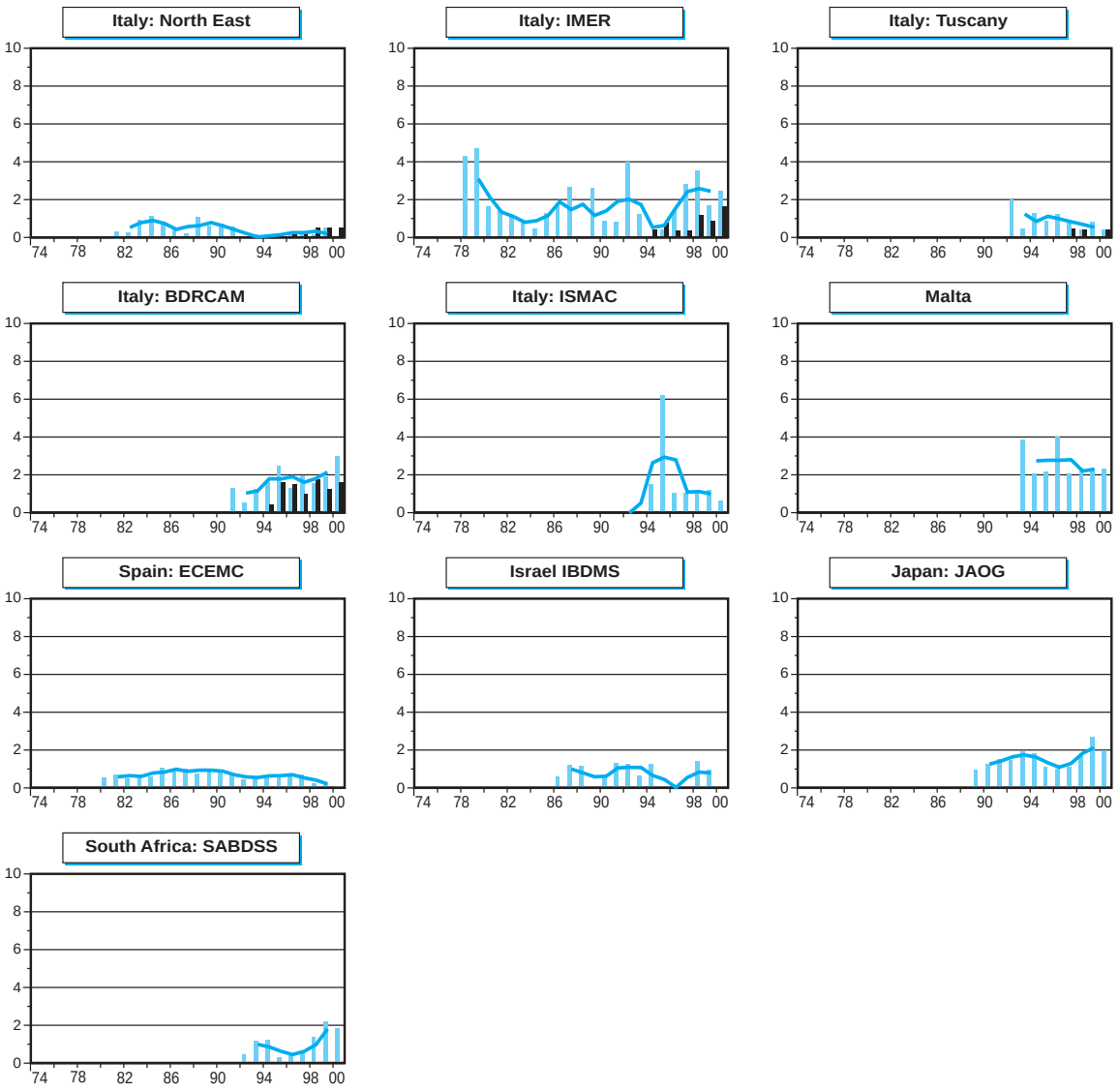




Note: L+S rates, ToP rates 3-year moving average trend

Renal agenesis

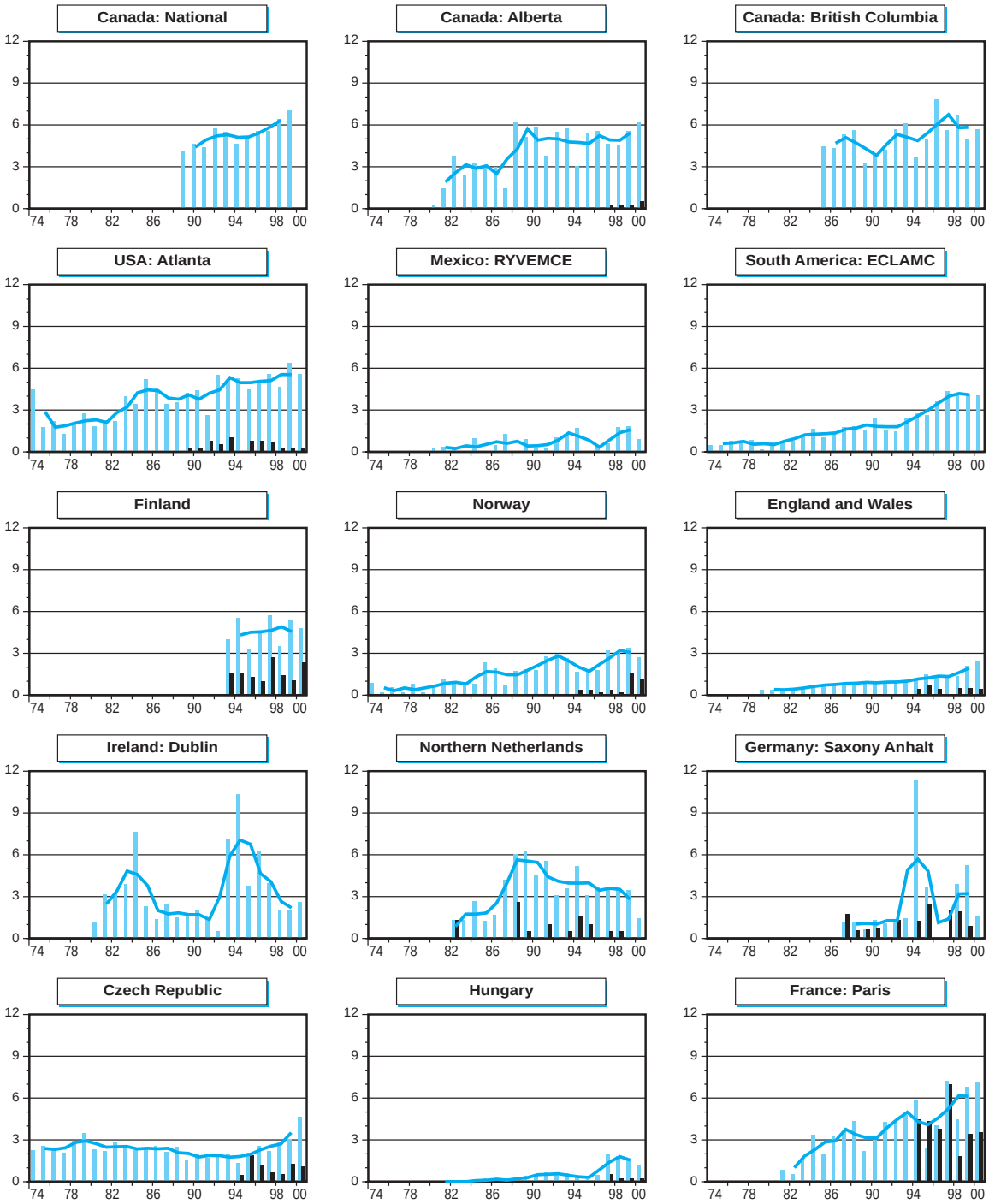
Time trend 1974-2000 (Rates per 10,000): 3-year moving average.

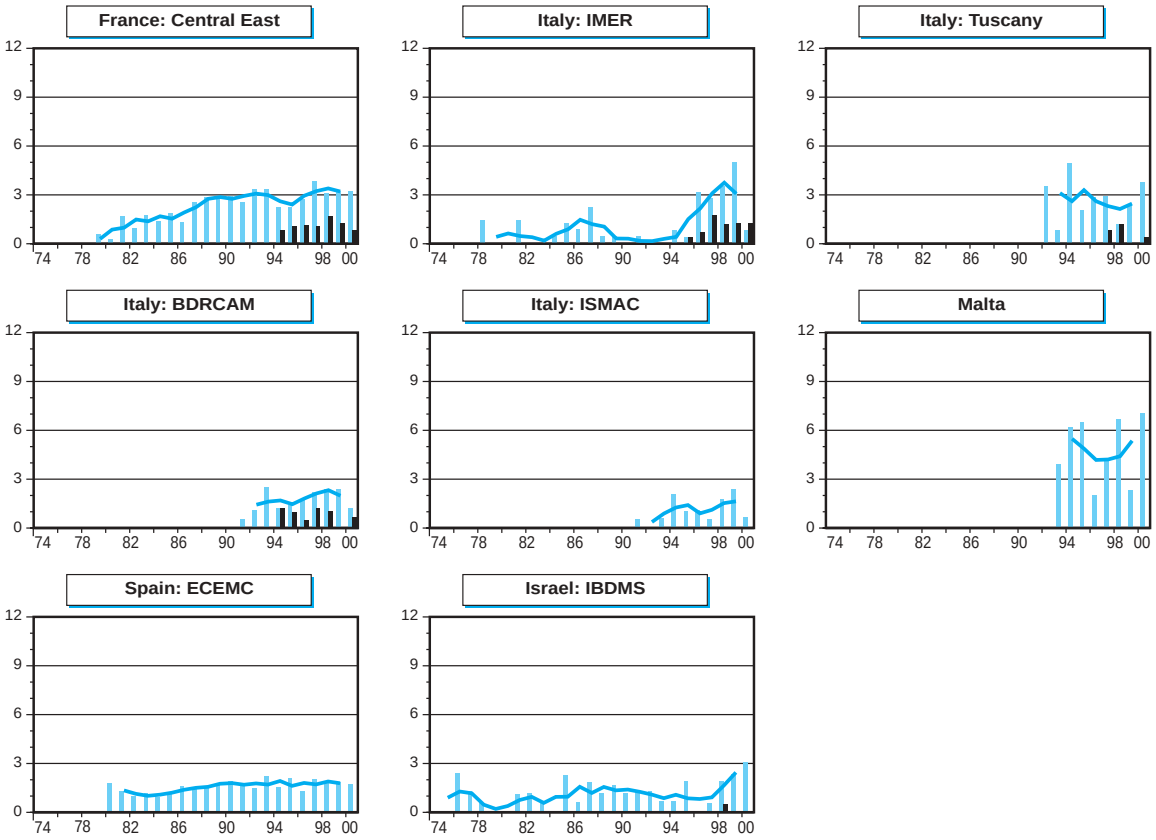


Note: L+S rates, ToP rates 3-year moving average trend

Cystic Kidney

Time trends 1974-2000 (Birth prevalence rates per 10,000)

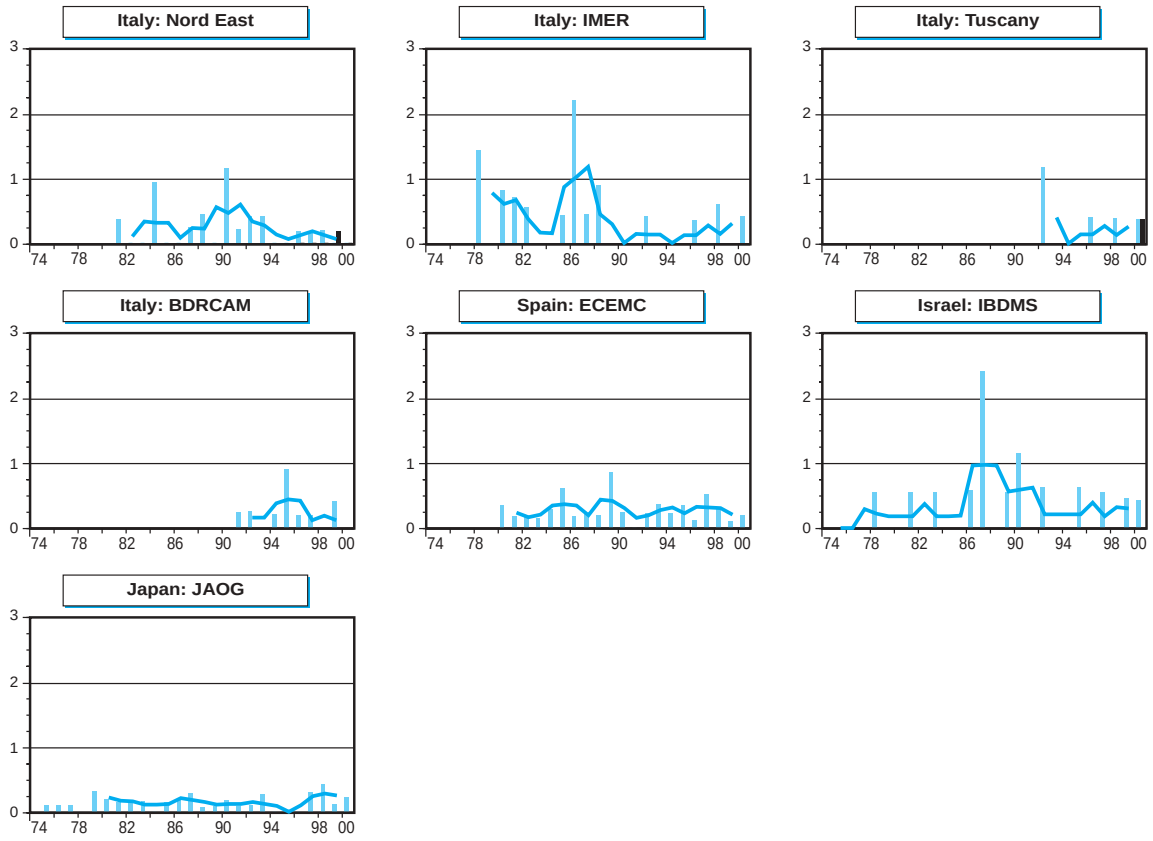




Note: L+S rates, ToP rates 3-year moving average trend

Bladder exstrophy

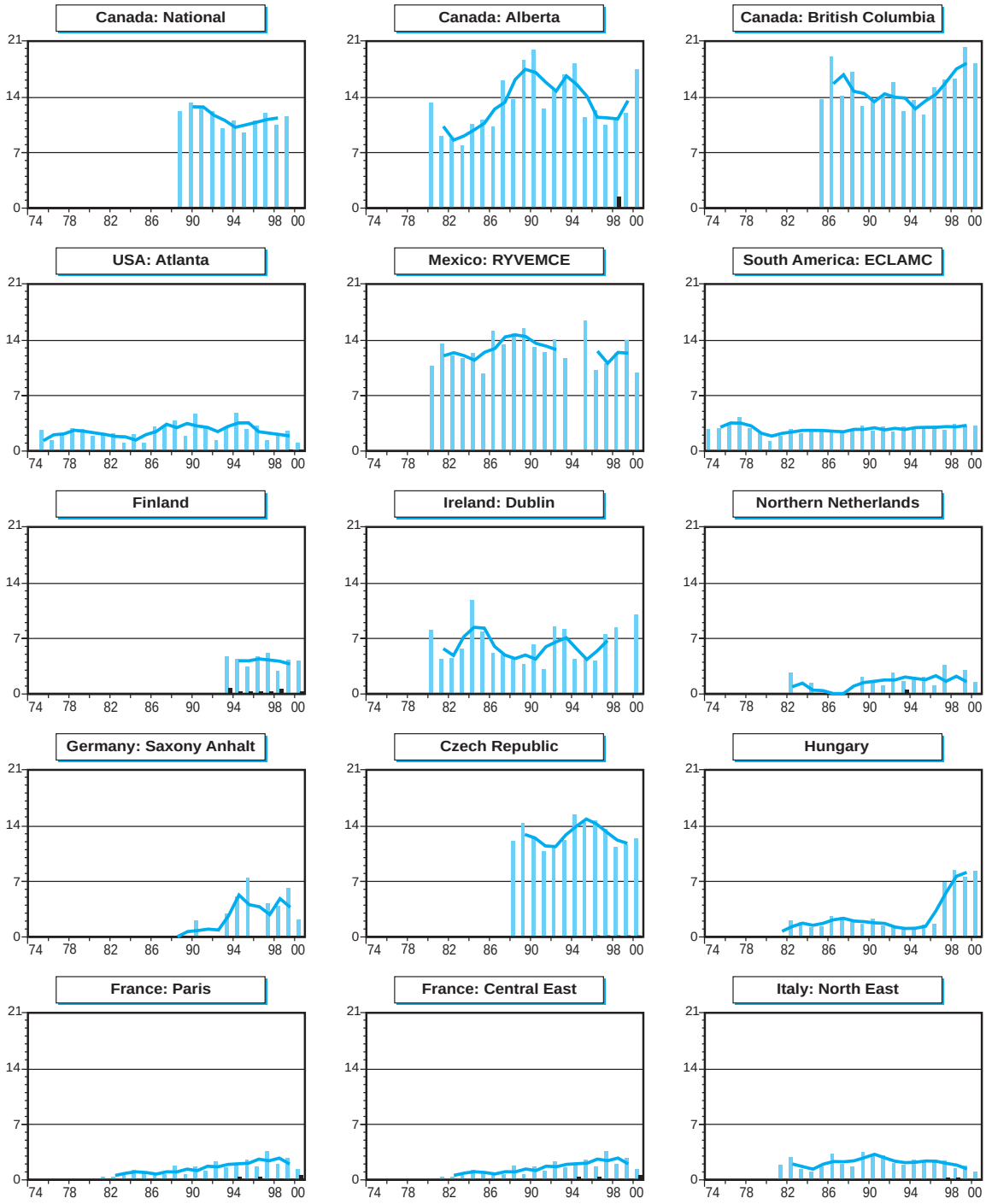
Time trends 1974-2000 (Birth prevalence rates per 10,000)

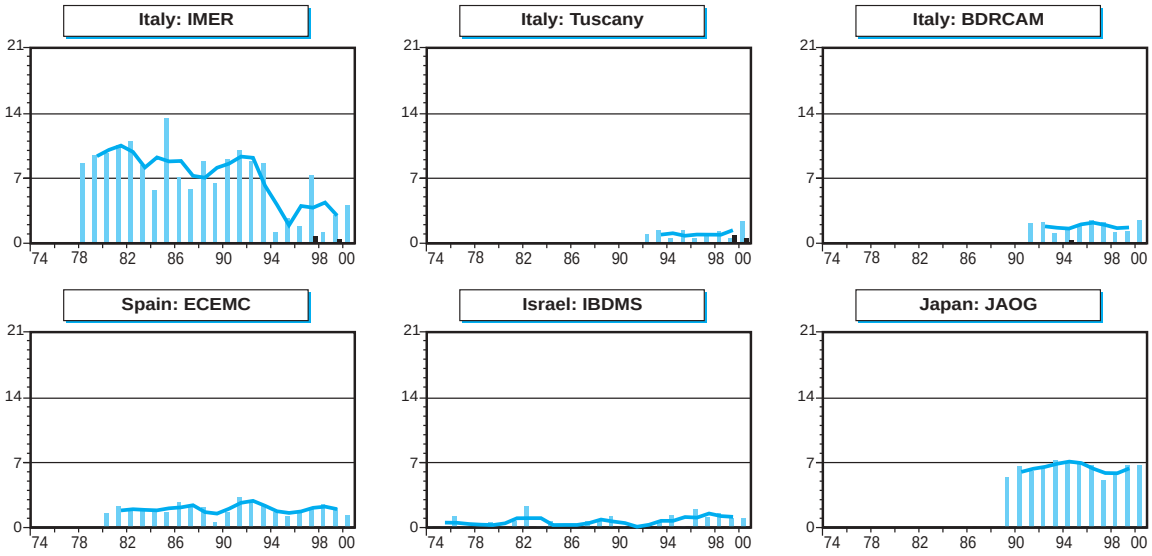


Note: L+S rates, ToP rates 3-year moving average trend

Polydactyly, preaxial

Time trends 1974-2000 (Birth prevalence rates per 10,000)

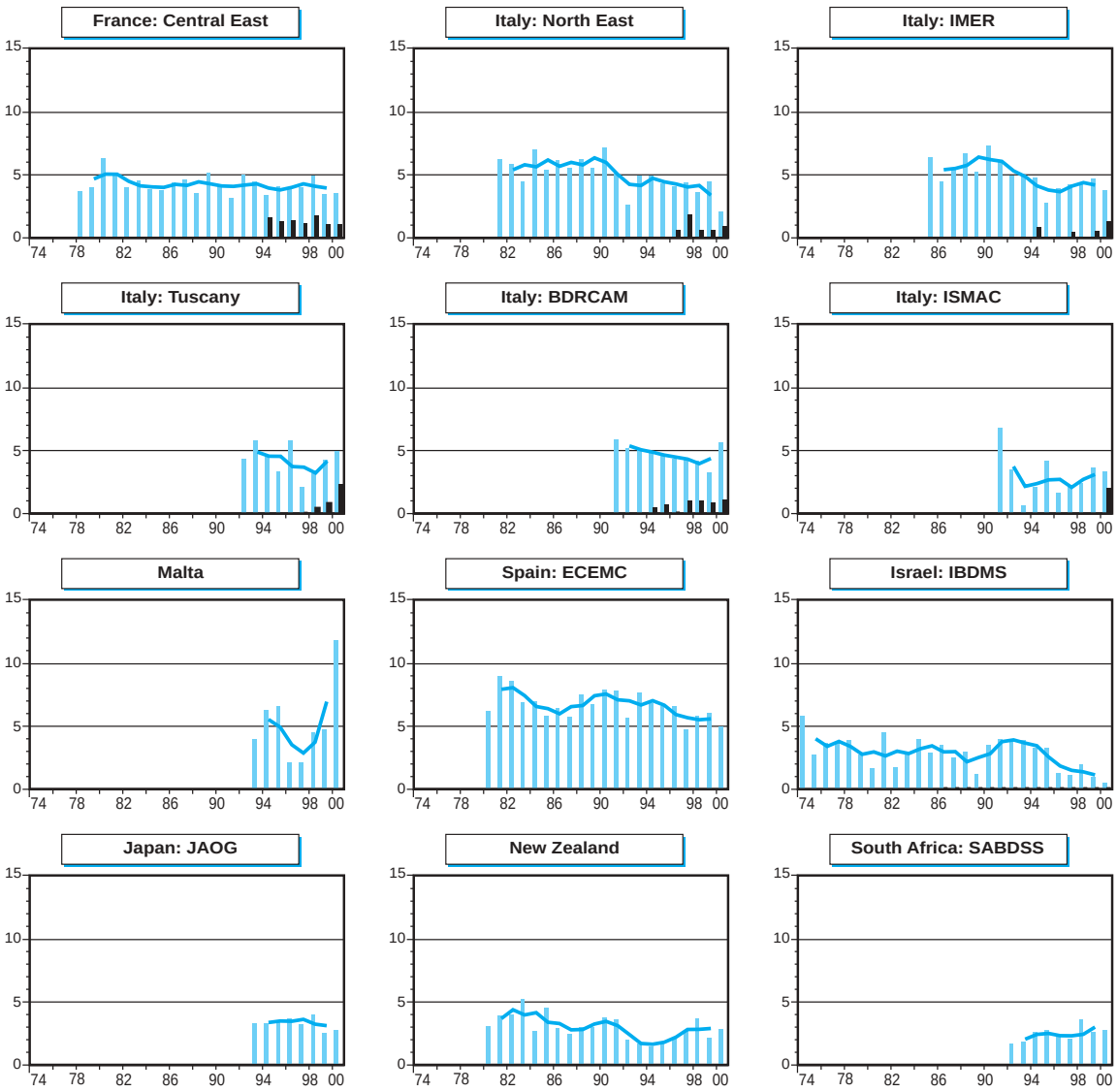




Note: L+S rates, ToP rates 3-year moving average trend

Limb reduction defects

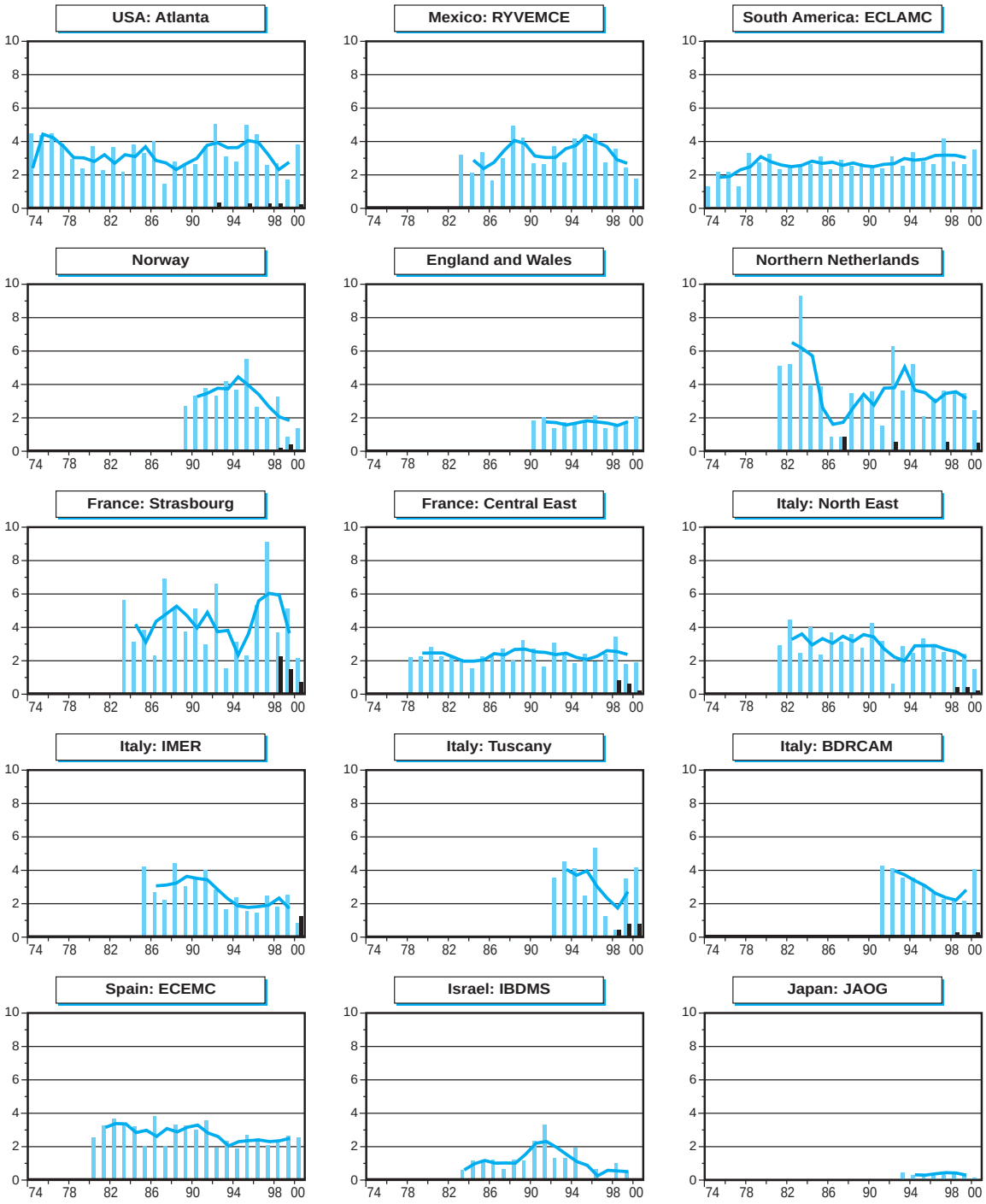
Time trends 1974-2000 (Birth prevalence rates per 10,000)



Note: L+S rates, ToP rates — 3-year moving average trend

Limb reduction defects, transverse

Time trends 1974-2000 (Birth prevalence rates per 10,000)



Note: L+S rates, ToP rates — 3-year moving average trend

Limb reduction defects, preaxial

Time trends 1974-2000 (Birth prevalence rates per 10,000)

Note: L+S rates, ToP rates — 3-year moving average trend

Limb reduction defects, postaxial

Time trends 1974-2000 (Birth prevalence rates per 10,000)

Note: L+S rates, ToP rates — 3-year moving average trend

Limb reduction defects, intercalary

Time trends 1974-2000 (Birth prevalence rates per 10,000)

Note: L+S rates, ToP rates — 3-year moving average trend

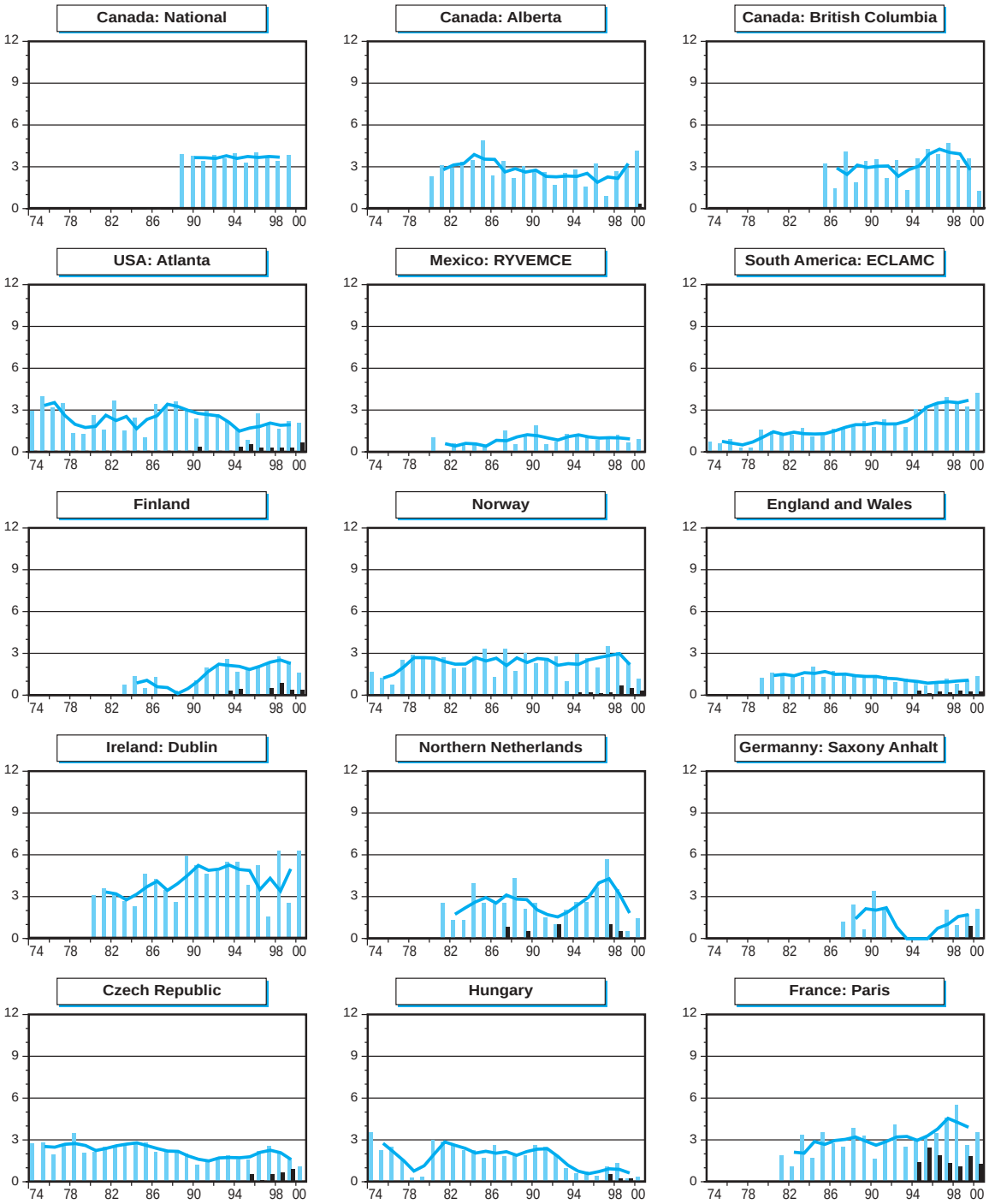
Limb reduction defects, mixed

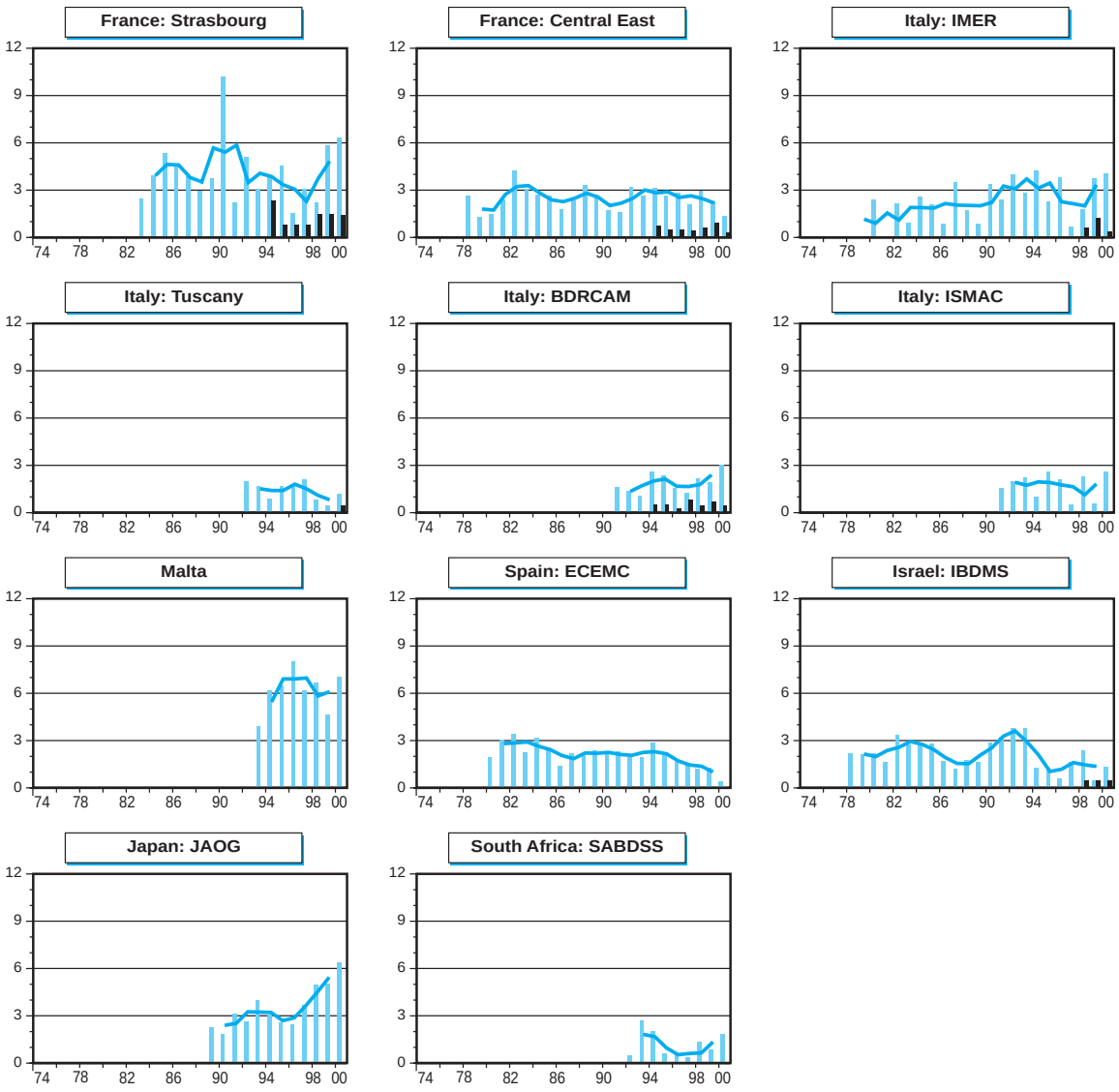
Time trends 1974-2000 (Birth prevalence rates per 10,000)

Note: L+S rates, ToP rates — 3-year moving average trend

Diaphragmatic hernia

Time trends 1974-2000 (Birth prevalence rates per 10,000)

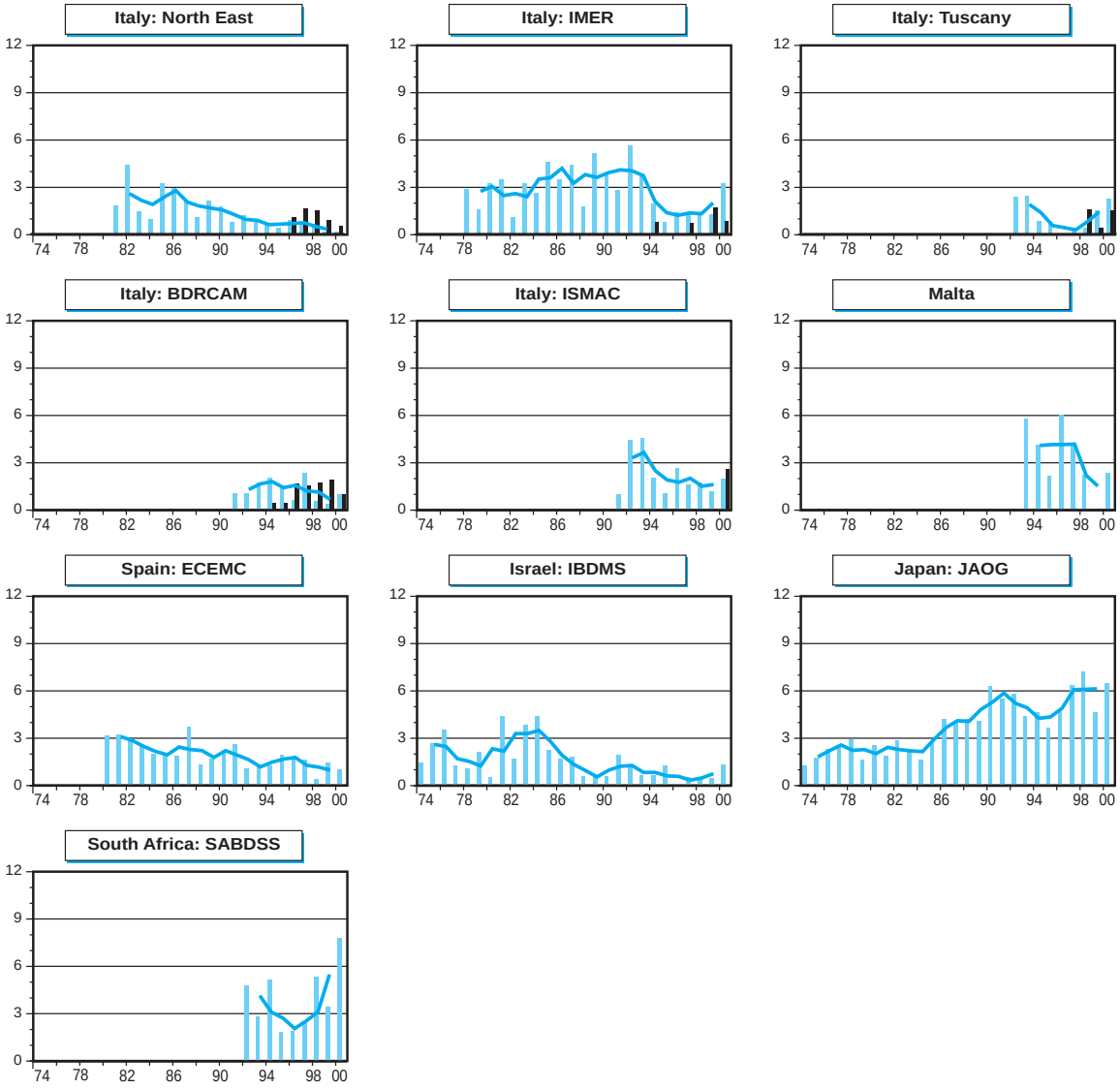




Note: L+S rates, ToP rates 3-year moving average trend

Abdominal wall defects, total

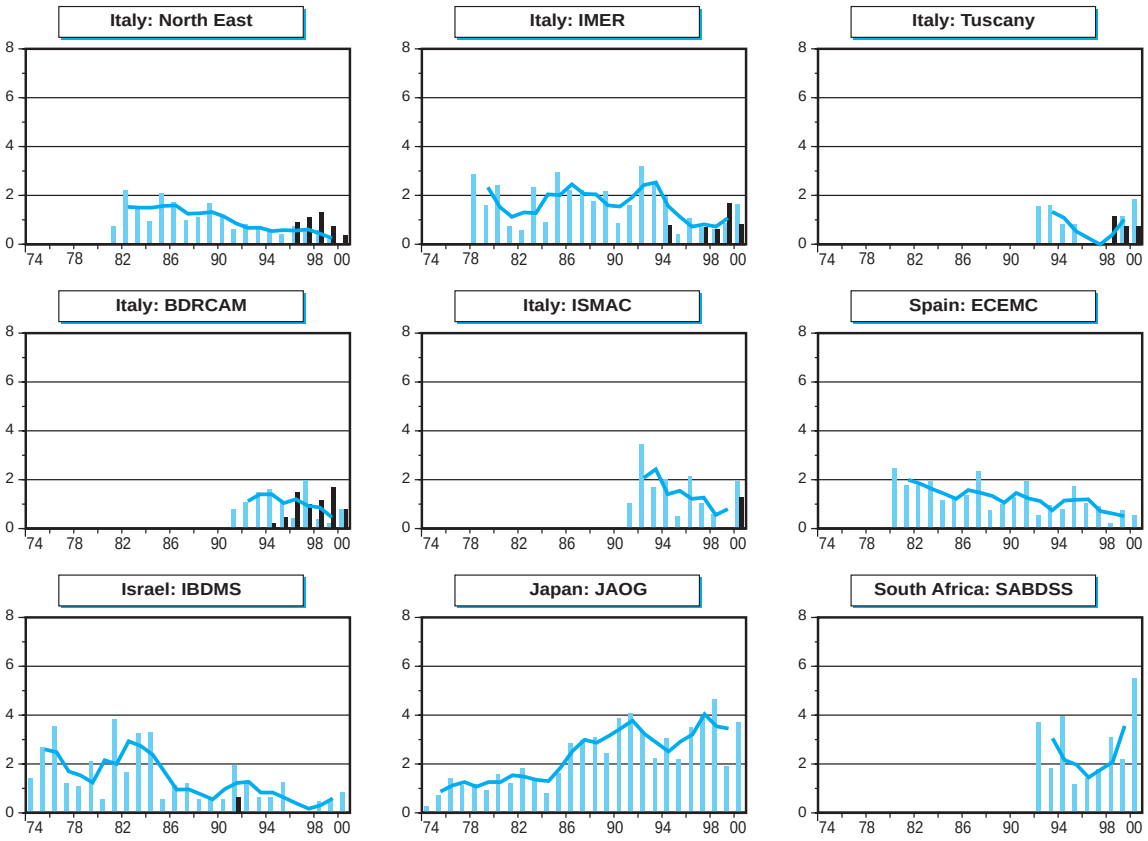
Time trends 1974-2000 (Birth prevalence rates per 10,000)



Note: L+S rates, ToP rates 3-year moving average trend

Omphalocele

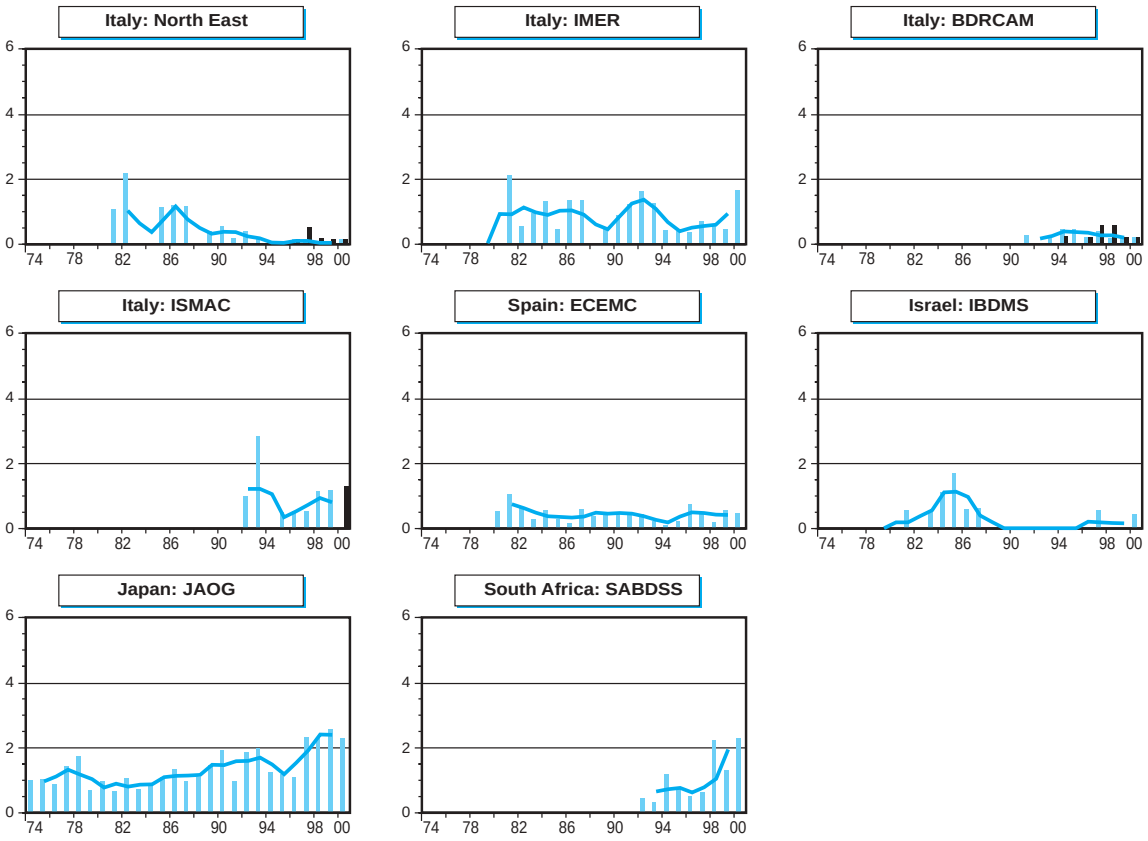
Time trends 1974-2000 (Birth prevalence rates per 10,000)



Note: L+S rates, ToP rates 3-year moving average trend

Gastroschisis

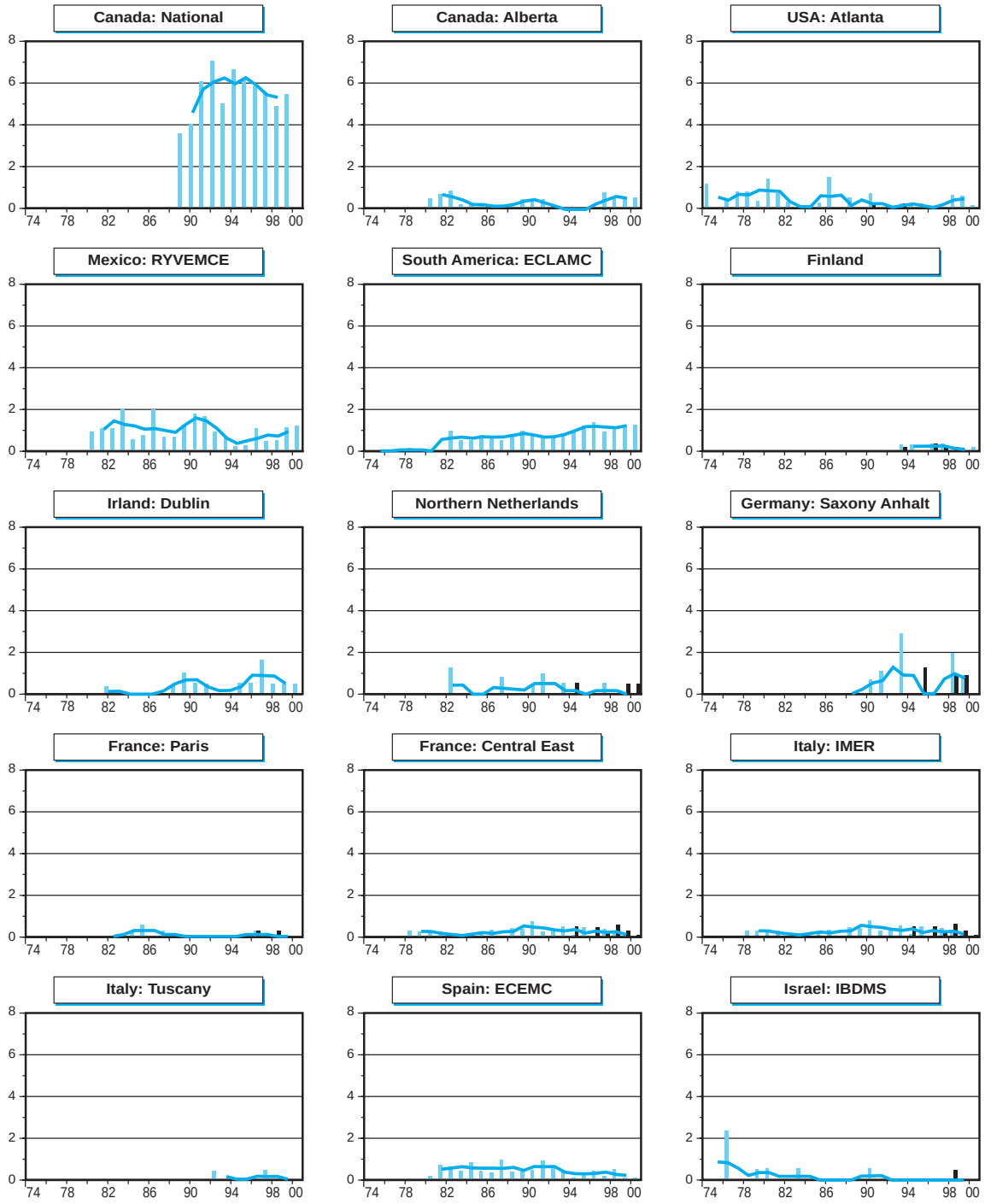
Time trends 1974-2000 (Birth prevalence rates per 10,000)



Note: L+S rates, ToP rates 3-year moving average trend

Prune belly sequence

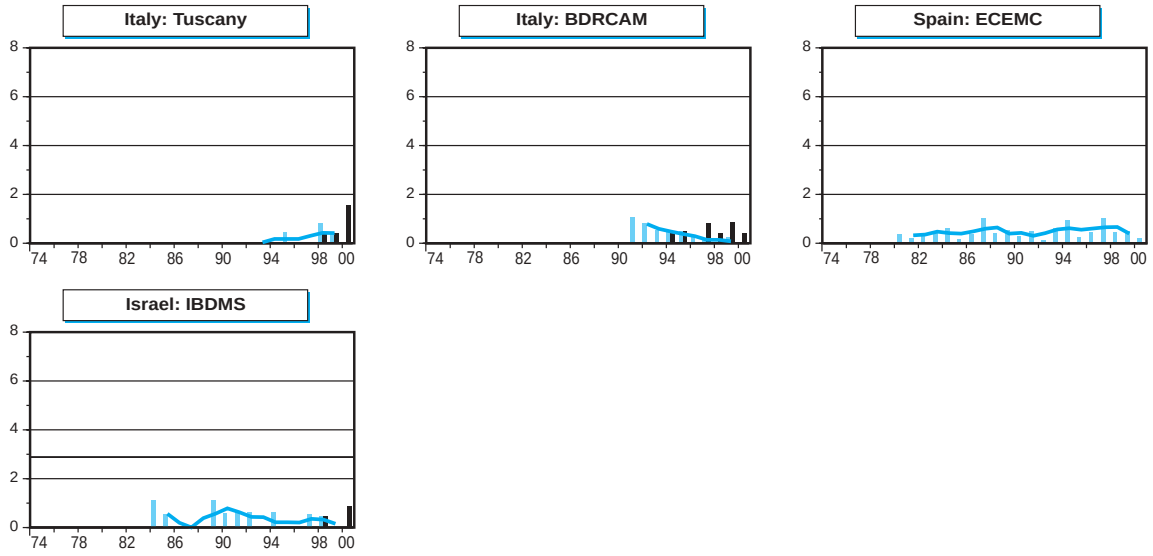
Time trends 1974-2000 (Birth prevalence rates per 10,000)



Note: L+S rates, ToP rates — 3-year moving average trend

Trisomy 13

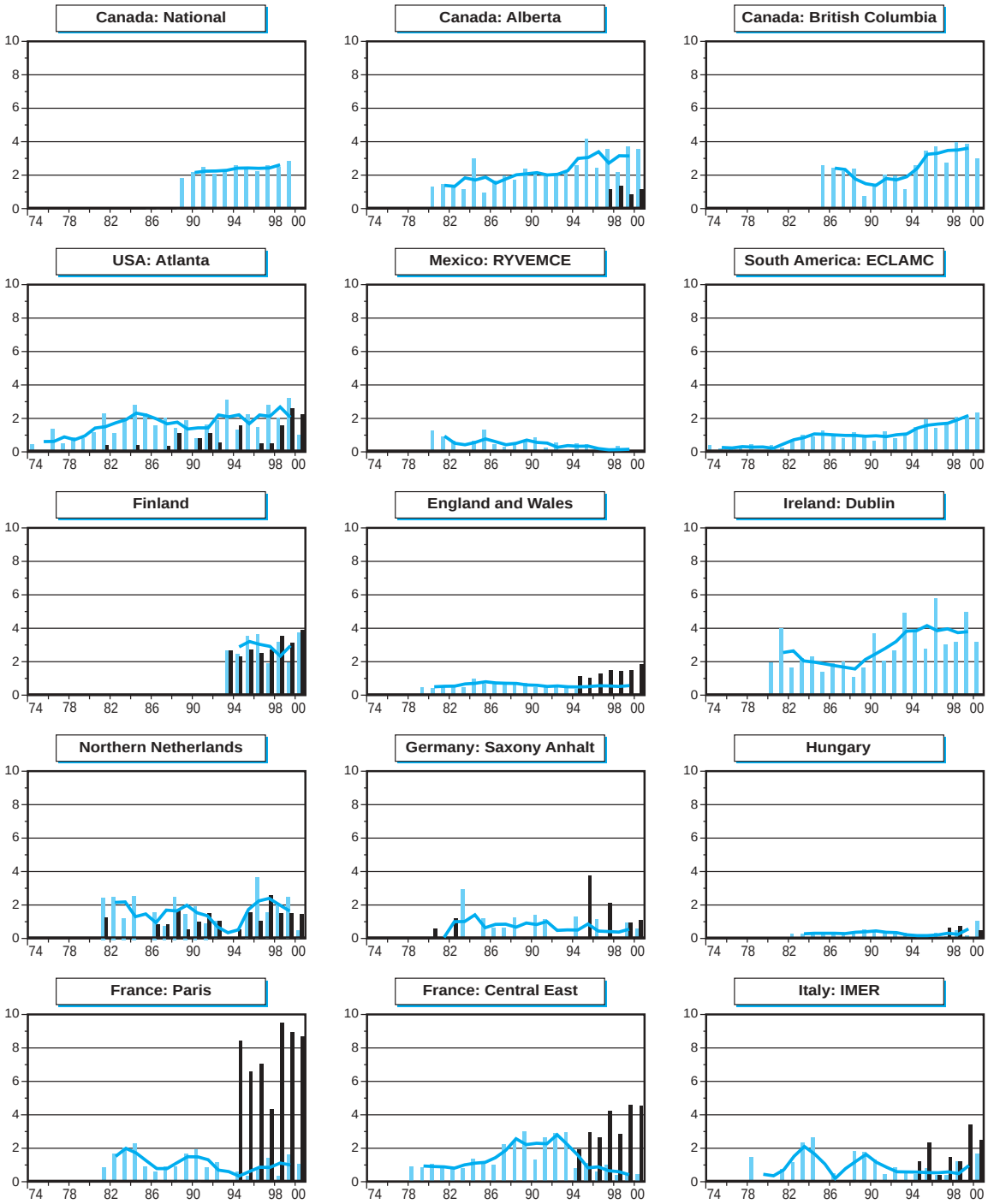
Time trends 1974-2000 (Birth prevalence rates per 10,000)

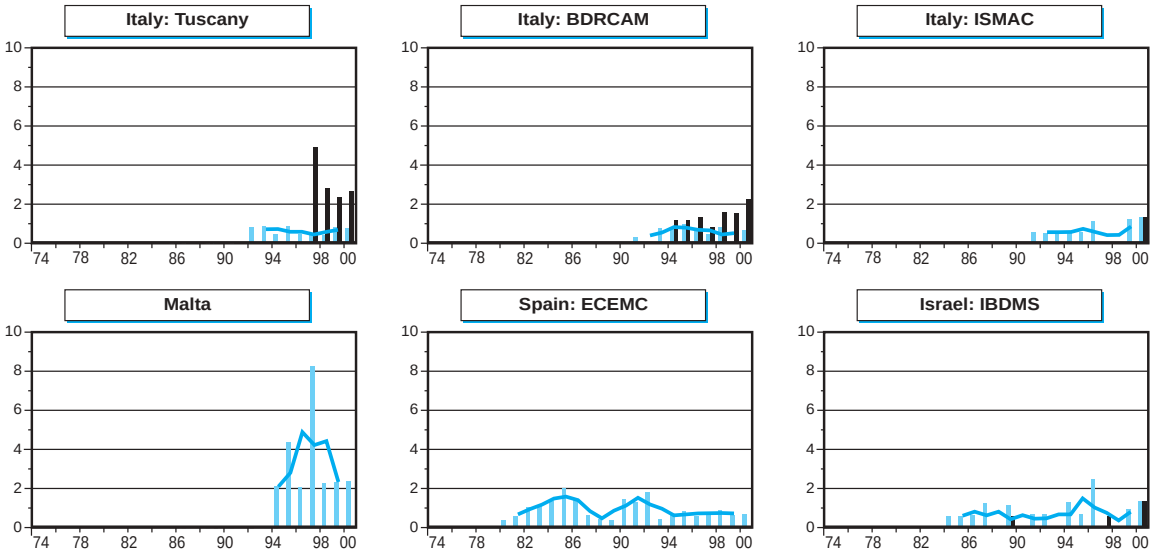


Note: L+S rates, ToP rates — 3-year moving average trend

Trisomy 18

Time trends 1974-2000 (Birth prevalence rates per 10,000)

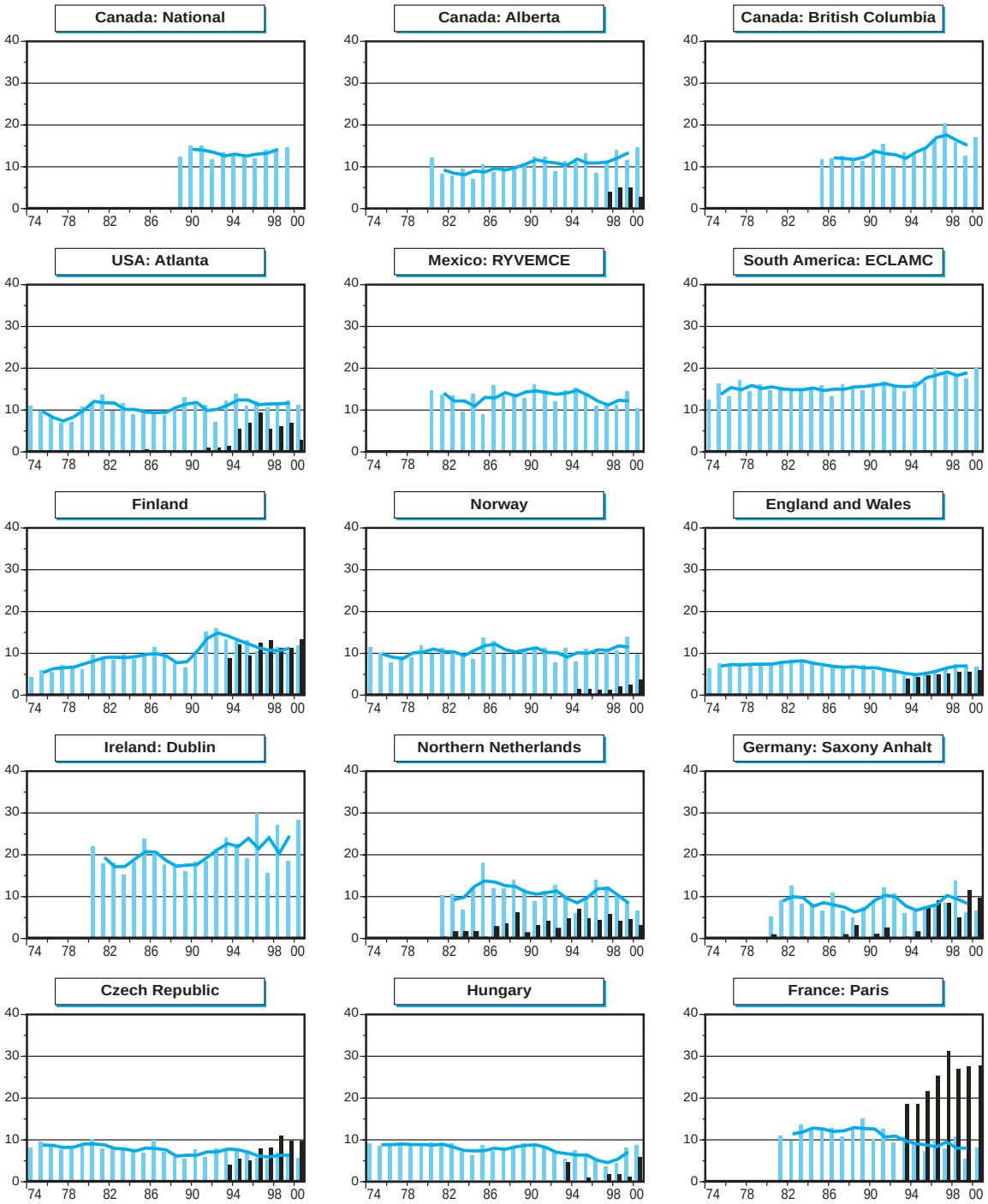


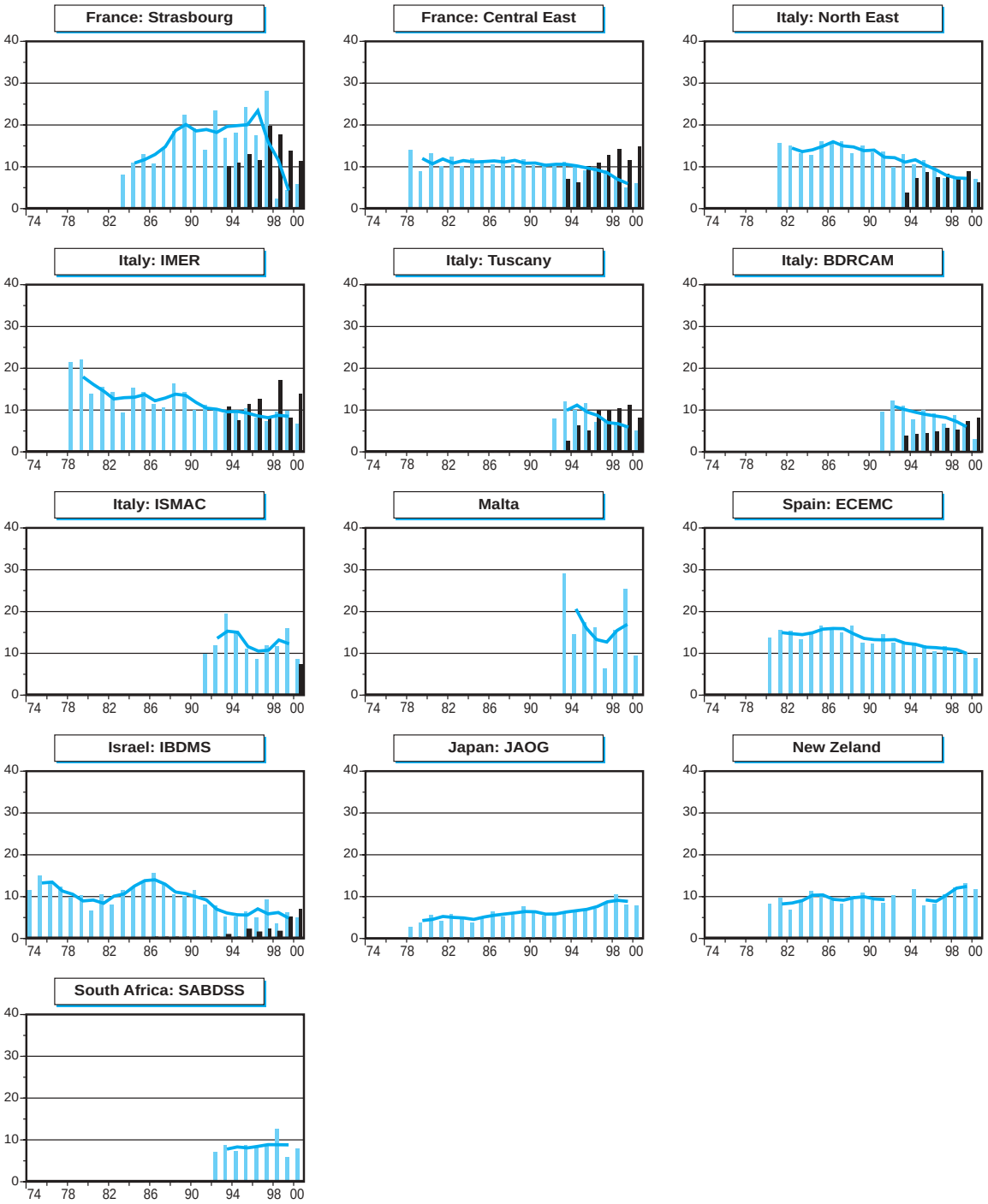


Note: L+S rates, ToP rates 3-year moving average trend

Down syndrome

Time trends 1974-2000 (Birth prevalence rates per 10,000)





Note: L+S rates, ToP rates 3-year moving average trend

Canada National
The situation for the Canadian system remained generally unchanged this year. Small changes in anomaly-specific rates are likely diagnostic in nature and are under investigation at the provincial level.

England and Wales
The data from England and Wales are very similar to those observed in recent years. We are continuing to increase the proportion of records received from local congenital anomaly registers (rather than from each individual Health Authority) and this is improving completeness of reporting.

Finland
The increasing prevalences of many malformations in Finland are due to a better case ascertainment after a change in the registry activity and functions at the beginning of the 1990's. The decreasing prevalences of anencephaly and of Down syndrome of elder mothers are due to effective prenatal diagnostics and pregnancy terminations. The situation of indeterminate sex and coarctation of aorta is followed-up by the registry.

France Central East
With respect to the comments due about Annual Data for 2000, decreasing O/E ratios ween for NTD, CNS anomalies, cardiac defects, transverse limb defects, intersex, renal agenesis and chromosome anomalies are obviously attributable to prenatal diagnosis followed by induced abortions. This is less expected for esophageal atresia and cleft lip, but this is probably due to a decrease in cases of multiple anomalies including these malformations, due again to induced abortions.
The increasing trends for gastroschisis and hypospadias are seen in several other registries and suggestions are made in the literature, but no certainty. For cystic kidneys, the trend is interpreted as an increased number of cases identified by prenatal diagnosis, that would have been diagnosed much later in life some 10 years ago.
With respect to thumb duplications, we explored a cluster in 1992 with no risk factor detected, and at that time realised that our rates were lower than in other registries. The trend may be related to changing ascertainment.

France: Paris
In general, the trends in the Paris Registry remain relatively stable in 2000 compared with the previous period: the prevalence at birth for severe congenital anomalies including Down syndrome continue to decrease, for the most part due to the expansion of prenatal diagnosis. The trend towards an increase in the prevalence of some of the correctable malformations (cardiac, digestive, abdominal wall and diaphragmatic defects) might be in part due to referral of patients from outside our usual catchment area to specialized Parisian maternity units. Note however that the gastroschisis rate was particularly high in 2000, without any evidence of specific exposure. We also observed a high prevalence of NTD and cleft palate without obvious explanation. For cystic kidney, the increasing trend could be due to increased prenatal diagnosis by ultrasound.

Hungary
Live birth time trends for birth defects can be attributable to change in ascertainment, improved prenatal detection of certain types of anomalies. For instance, in year 2000 more cases diagnosed with Down syndrome were included compared to previous years as we organized an active search to obtain additional cases from prenatal diagnostic centers and cytogenetic laboratories. It is difficult to give a definite answer for a significant change in prevalence over time as there are several factors, which influence the yearly rates in Hungary.

Ireland: Dublin
Anencephaly and Spina Bifida - most of the decline occurred during the period 1980-1995, although the reasons are unclear, they could be related to improved nutrition in the population.
Arinencephaly/Holoprosencephaly: the trend appears to be associated with advancing maternal age.
Microphthalmos: the trend is associated moreso with cases of multiple congenital anomaly rather than isolated microphthalmos.
Total limb reduction defects: the reasons for the changing trend are unclear.
Gastroschisis: the reasons for the rising trend are unclear but the trend is similar to that observed in other countries.
Prune belly sequence: interpret with caution as numbers are very small. Trisomy 13, Trisomy 18, Down Down syndrome: the changing maternal profile in the country towards having children at a later age may have contributed significantly to the trend.

Israel
Anencephaly, Spina Bifida, Omphalocele and Down syndrome continue to reveal decreased trends.However, the previous increased trends for esophageal atresia and ano-rectal atresia were not observed this time. Increased rates of Fallot and Coarctation are explained by the greater number of cardiac patients referred to my Hospital - Rabin Medical Center, Department of Neonatology - during the last years. Regarding the undescended testis, I have very good and complete data for my Hospital, the Rabin Medical Center. However, this is not a major congenital malformation and its prevalence at birth is 3% (but only 0.5 % at age of one year).

Italy: BDRCAM
The situation in Campania is quite similar to that observed in the last years except for Down's syndrome. The decreasing total prevalence and decreasing trend for specific maternal classes age is due probably to amelioration of performance of prenatal diagnosis. In Italy in 1999 country law dispose that women with =>35 years can be require free prenatal diagnosis to National Health Service.

Italy: Tuscany
The significant excess of CL(P) must be considered taking into account the slight decreasing observed for CP only. Other birth defects show high but insignificant O/E ratio, among which the increasing of abdominal wall defects appears worth of note. O/E ratios less than 1 result in general for defects with high impact of TOP.

Malta
Malta data has remained basically the same except for a seemingly increasing trend in the occurrence of hypospadias. This is probably due to increased reporting by the paediatric surgeon engaged in Malta's major general hospital since 1997.

New Zealand
Most of the changes over time can be attributed to the changes in the method of ascertaining the cases and the classificaiton of defects. For example, the case ascertainment change from extracting data from a specific form to the electronic retrieval of livebirth data from the national hospital admission/discharge system.
For the NZ 2000 data, we are investigating the increase in clefts but some of this increase may be due to the change in the classification since the baseline

South America ECLAMC
Significant raising secular trends for most anomaly types reflects the improved pre and perinatal ascertainment mainly due to ultrasonography, as well as to derived last trimester pregnancies to deliver at large university hospitals, more likely to be engaged in a voluntary, hospital-based research program as ECLAMC.

Spain
The situation in Spain is quite similar to that observed in the last years, and there is no change that deserves a special comment.

Ukraine
Birth Defects monitoring applying international standards started in Rivne and Volyn oblasts of Ukraine in January 1, 2000. No comparisons with previously collected data are feasible since prior methods are distinct from current methods.
Starting in 2001, we had to expand the ascertainment period from birth to 7 days to from birth to 28 days of age. Starting in 2002, two other oblasts of Ukraine (Kherson and Khmelintsky) joined the surveillance system.
This will increase the number of birth under surveillance from 27000 to 50000.

Surveillance on Malformation and Drug Exposure (MADRE) 2000

11

Elisabeth ROBERT-GRANSIA (France-Central East)
Gian Luca Di Tanna (ICBD)

MADRE is an acronym for MAlformation DRug Exposure surveillance. This project was set up in 1990 to survey the simultaneous occurrence of malformations and first trimester drug exposures with the aim of raising hypotheses about possible teratogenic effects of either newly marketed drugs or of drugs for which prescribing was modified for women of childbearing age.
After several years of existence, the project has become routine surveillance.

Methodology
Those birth defects registries that have information report individual pairs of malformation(s)-drug(s). The methodology was presented in detail elsewhere (1). In a few words, for each drug-malformation combination where more than two cases are observed, a set of 2¥2 tables is formed and analyzed in the case-control fashion. A case is defined as an infant with the malformation in question, alone or in combination with other malformations. An infant is considered exposed if the mother used the drug in question alone or in combination, and unexposed otherwise. The significance of clusters of cases at a specific drug-malformation pair was assessed by comparing use of the specific drug with its use in all other malformations.

Coding and checking reported data was taken care of by Elisabeth Robert-Gnansia, statistical analyses were performed by Gian Luca Di Tanna at ICBD. Several levels of specificity for drugs and malformation codes were cross-tabulated (3/3, 3/5, 4/5 grids).

Results
As shown in table 1, new cases have come from five programs in 2000: Japan, Italy IMER, Israel, France Paris, Northern Netherlands, and France Central East. The total number of cases registered in the database is now 11,231, representing 370 more cases registered in 2000.

Table 1. Number of malformed fetuses exposed to drugs during the 1st trimester by registry and year

Program / Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Total
Australia	28	20	20									68
France Central East	132	146	113	178	183	135	186	218	220	278	214	2,003
France Paris			219	170	183	154	136	126	113	121		1,222
Israel IBDMS	15	15	27	16	6	12	15	14	16	16	13	165
Italy IMER	73	71	114	132	75	76	74	57	51	46	38	807
Italy IPIMC	189	261	437	394	359							1,640
Italy ISMAC		27	21	21	7	7	11					94
Japan JAOG	48	41	52	51	35	43	32	57	73	44	51	527
Northern Netherlands	235	80	70	45	86	70	128	195	175	185	54	1,323
South America ECLAMC	61	255	458	714	674	624	596					3,382
Total	**781**	**916**	**1,531**	**1,721**	**1,608**	**1,121**	**1,178**	**667**	**648**	**690**	**370**	**11,231**

The routine analysis of data did not reveal any new association in 2000. A literature review was performed in order to use the complete MADRE database for testing hypotheses raised in articles dealing with drug exposures during pregnancy and congenital malformations. None of these papers concluded that the drug or drug category studied might be teratogenic. References follow, with results of the search made in the MADRE database.

1. Czeizel AE, Sorensen HT, Rockenbauer M, Olsen J. A population-based case-control teratologic study of nalidixic acid. Int J Gynaecol Obstet. 2001; 73: 221-8.
❑ No exposed case in the database

2. Pergola PE, Kancharla A, Riley DJ. Kidney transplantation during the first trimester of pregnancy: immunosuppression with mycophenolate mofetil (mycophenolic acid), tacrolimus, and prednisone. Transplantation. 2001: 15: 994-

7. Review.
- ❑ No exposed case in the database for mycophenolic acid and tacrolimus
- ❑ Prednisone: 47 exposed cases from 8 programmes
- 9 cardiac defects (3 ventricular septal defects, 2 atrial septal defects, 2 patent ductus arteriosus, 1 transposition of great arteries, 1 auriculo-ventricular block)
- 1 oro-facial cleft

3. Czeizel AE, Rockenbauer M, Sorensen HT, Olsen J. Use of cephalosporins during pregnancy and presence of congenital abnormalities: a population-based, case-control study. Am J Obstet Gynecol. 2001; 184: 1289-96.
- ❑ 24 cases from 5 programmes
- ❑ cases of hydronephrosis from 2 programmes.

4. Drinkard CR, Shatin D, Clouse J. Postmarketing surveillance of medications and pregnancy outcomes: clarithromycin and birth malformations. Pharmacoepidemiol Drug Saf. 2000; 9: 549-56.
- ❑ 1 case: transposition of great arteries

5. Diav-Citrin O, Shechtman S, Gotteiner T, Arnon J, Ornoy A. Pregnancy outcome after gestational exposure to metronidazole: a prospective controlled cohort study. Teratology. 2001; 63: 186-92.
- ❑ 11 cases from 2 programmes. No pattern

6. Norgard B, Czeizel AE, Rockenbauer M, Olsen J, Sorensen HT. Population-based case control study of the safety of sulfasalazine use during pregnancy. Aliment Pharmacol Ther. 2001; 15: 483-6.
- ❑ 14 cases from 4 programmes. No pattern

7. Isaacs RJ, Hunter W, Clark K. Tamoxifen as systemic treatment of advanced breast cancer during pregnancy--case report and literature review. Gynecol Oncol. 2001; 80: 405-8. Review.
- ❑ No exposed case in the database

8. Einarson A, Lyszkiewicz D, Koren G. The safety of dextromethorphan in pregnancy: results of a controlled study. Chest. 2001; 119: 466-9.
- ❑ 7 cases from 1 programme. No pattern

9. Glueck CJ, Phillips H, Cameron D, Sieve-Smith L, Wang P. Continuing metformin throughout pregnancy in women with polycystic ovary syndrome appears to safely reduce first-trimester spontaneous abortion: a pilot study. Fertil Steril. 2001; 75: 46-52.
- ❑ cases from 2 programmes. No pattern

Comments

The 47 cases exposed to prednisone include 9 cardiac defects, which is the expected proportion, and one oro-facial cleft. The association between corticosteroids and clefts was commented upon in the previous report, and a wider analysis was made on it, which is under publication.

The association of cephalosporins with hydronephrosis can be considered as a hypothesis, although cephalosporins have been used for many years and are not considered as teratogenic.

Indications for antibiotics are to be checked as a possible etiology for the hydronephrosis, and analysis will be performed again when more cases are present in the database.

Guido Cocchi (Italy: IMER)
Gian Luca Di Tanna (ICBD)

Introduction

Since 1993, a specific analysis of prenatal diagnosis of Down Syndrome (DS) has been the responsibility of the "Prenatal Diagnosis Committee" (PDC) of the International Clearinghouse. The survey aims to assess the progressive increase in use and spread of prenatal diagnosis techniques and the impact of elective termination on prevalence rates at birth of DS, in countries where elective abortions are performed.

DS screening in the second trimester using a variety of combinations of maternal serum markers such as the so called "Triple-Test" [human Chorionic Gonadotropin (hCG), unconjugated estriol (uE), and a-fetoprotein (sAFP)] or other multiple-marker screening tests including free b-subunit of hCG and dimeric inhibin A, has become an established but controversial part of antenatal care over the past decade. DS screening in the first trimester is now under discussion and the application of nuchal translucency measurements (NT screening) at 10-14 weeks of gestation is debated. The potential impact of combining maternal age with fetal nuchal translucency thickness and maternal serum free b-hCG and pregnancy-associated plasma protein-A (PAPP-A) seems to be increasing.

Participation of the Clearinghouse programmes worldwide provides a unique opportunity to analyse international variations on the use of prenatal diagnosis (Chorion Villus Sampling = CVS, Amniocentesis= AC, Cordocentesis= CC), and access to screening, as well as differences in advice and abortion legislation. In addition, repeating this study over time makes it possible to follow the evolution of these techniques and to evaluate the impact of each practice on the prevalence of DS.

2000 Data

During 2000, 17 programmes provided data on 2041 cases of DS, 1092 of them (53.5%) were prenatally diagnosed and terminated. The total number of births under surveillance in 2000 was 1,326,285. The number of participants increased to 17 (Table 1). Three new registries joined the survey: Germany: Saxony-Anhalt, Italy: ISMAC and Sweden. Two other Registries (Hungary and Norway), as in the previous years, were excluded from this analysis because their data lacked some information. The percentage of terminations of pregnancy (ToP) ranged from the lowest values in Canada: Alberta 15.6% and 18.8% in USA: Atlanta (Table 2), to the highest in France: Paris that reached 77.9%. Also the other two Registries of France are among the highest percentages of terminations (Central East 71.7%; Strasbourg 66.7%). This homogeneity in Registries of the same nation is less evident in the five Registries of Italy where percentages of ToP range from a minimum in Italy: ISMAC of 43.8% to a maximum of 73.2% in Italy: BDRCam. Finland, as in the previous years, shows a value (52.8%) that is close to the mean value of all the 17 Registries (53.5%).

In the last period of the 8-year trend analysis we observed a slight increase in the annual rate of ToP. This temporal trend is significant at regression analysis ($p < 0.01$). This variation reflects mainly the level of the increasing spread of prenatal diagnosis techniques, the strategy of prevention for DS, and the national legal regulations in the case of late diagnosis: in France, for instance, there is no upper time limit for pregnancy termination.

Overall, the proportion of DS pregnancies, which were terminated among women at higher risk (≥35 years old), was about 80% in France (79.8% in Central East, 78.2% in Paris, and 100% in Strasbourg). A very high value was observed in Germany: Saxony-Anhalt (85.7%). Values around 70% were observed in the Czech Republic (72.2%) and in Italy with a mean value of 70.6%, but with a wide range: 81.1% in Campania and 50% in Sicily. Scandinavian Countries showed very similar rates: 65.9% in Finland and 65.7% in Sweden. The lowest percentages of ToP in mothers aged 35 and over, were observed in the USA: Atlanta (21.1%) and in Canada: Alberta (33.3%) (Table 3).

Also in the group of younger women (30-34 years of age) some Registries reached percentages of ToP ≥ 70%: the registries of France (Paris 83.9%, Central East: 70.0%) and the Czech Republic: 70.3%. Three other Registries show values of ToP ≥ 60% (Italy: IMER 66.7%, Israel: IBDMS 62.5% and Italy: ISMAC 60.0%). All the other Registries show values lower than 50% with the lowest in Canada: Alberta (10.0%) and USA: Atlanta (22.2%).

In the eleven European registries that provided a data set for 8 years (1993-2000), a regular increase in the percentage of ToP was observed: 41.5% in 1993, 45.9% in 1994, 48.5% in 1995, 50.9% in 1996, 52.2% in 1997, 53.8% in 1998, 55.2% in 1999 and

57.8% in 2000. The increase is seen in both younger women (£34 years) and older women (≥35 years) even though the majority of ToP occurs in the older group: 671/1092 (61.4%). The impact of prenatal diagnosis over time is less evident in the older mothers: 63% in 1993, 65.3% in 1994, 65.4% in 1995, 66.0% in 1996, 67.7% in 1997, 65.3% in 1998, 68.3% in 1999 and 64.7% in 2000. In the group of younger mothers (£34 years) the increase of ToP through the years is more evident: 24.7% in 1993, 31.2% in 1994, 33.3% in 1995, 36.3% in 1996, 39.4% in 1997, 43.6% in 1998, 45.5% in 1999 and 41.9% in 2000. This significant trend ($p<0.0001$) in the younger group may be explained by a better identification of women who may be at risk from factors other than maternal age, as in England and Wales and in France. It may also be due to a better knowledge of ultrasonographic signs in the first trimester (i.e. NT screening) and consequently a better yield of routine ultrasound, or it may be related to multiple-marker screening in other countries such as Italy. That may explain the increased detection in the younger group of women.

The most common technique of prenatal diagnosis remained amniocentesis in 2000(Table 4), with a mean value of 71.4%. The practice of CVS, with a mean value of 21.2%, showed a little increase year by year: 18.3% in 1995, 19.0% in 1996, 19.3% in 1997, 18.2% in 1998, 20.2% in 1999 and 21.8% in 2000. CVS has been used mainly in England and Wales (36.6%) and in Finland (33.3%). In the Registries of France the mean percentage is 15.7% while the mean value in Italy is 9.83%. The programmes, where CVS is more frequently used, show the lowest mean gestational ages at pregnancy termination in the older maternal age group (>35): England and Wales (16.4±3.0wks), Finland (17.0±2.2wks) and France: Strasbourg (15.9±4.4wks) (Table 5).

The mean age (wks) of terminations is heterogeneous and significantly different among the programs in both maternal age groups. In the younger group (£34 years) there is a lower limit of 15.8±3.8wks (France: Strasbourg) to an upper limit of 22.6±6.4wks (Israel: IBDMS) while in the older group of maternal age (≥35 years) lower limit of 15.9±4.4 is observed in France: Strasbourg and upper limit of 20.4±1.4wks in Italy: Campania. Twelve of 16 Registries show a mean value less than 20 wks (Table 5).

The prevalence at birth of DS decreased over the past 8 years in the majority of the programmes (Table 6). These are the programmes that showed the highest rate of terminations and an increase in the termination year by year. In the same way the highest rates of prevalence at birth were observed in the Programmes where terminations were lowest (Canada: Alberta and USA: Atlanta) a notable exception being Finland, which has a very high rate of DS at birth (11.8 per 10,000) in spite of a termination rate of more than 50%.

Table 1. List of the programs participating in the Prenatal Diagnosis Study in the years

	1993	1994	1995	1996	1997	1998	1999	2000
Australia	X	X	X	X	X	X		
Canada: Alberta					X	X	X	X
Czech Republic	X	X	X	X	X	X	X	X
England & Wales	X	X	X	X	X	X	X	X
Finland	X	X	X	X	X	X	X	X
France: Central-East	X	X	X	X	X	X	X	X
France: Paris	X	X	X	X	X	X	X	X
France: Strasbourg	X	X	X	X	X	X	X	X
Germany: Saxony-Anhalt								X
Israel: IBDMS	X	X	X	X	X	X	X	X
Italy: BDRCam	X	X	X	X	X	X	X	X
Italy : ISMAC								X
Italy : IMER	X	X	X	X	X	X	X	X
Italy : North-East	X	X	X	X	X	X	X	X
Italy : Tuscany	X	X	X	X	X	X	X	X
Northern Netherlands	X	X	X	X	X			
Sweden								X
USA: Atlanta	X	X	X	X	X	X	X	X

Table 2. Percentage (%) of terminations (TOP) among the total number of cases recorded in 2000

Monitoring Program	Maternal Age (years)					
	<= 29	30 – 34	35 – 37	38 – 39	>= 40	Total
Canada: Alberta	0.0	10.0	25.0	28.5	44.4	15.6
Czech Republic	57.4	70.3	78.6	57.1	73.3	64.0
England & Wales	27.5	43.7	63.4	56.0	57.6	47.2
Finland	24.0	38.0	59.3	66.7	69.8	52.8
France: Central East	76.4	70.0	75.0	92.3	76.1	71.7
France: Paris	66.7	83.9	81.0	73.9	79.1	77.9
France: Strasbourg	50.0	28.6	100.0	100.0	100.0	66.7
Germany: Saxony-Anhalt	66.7	28.6	28.6	100.0	33.3	60.0
Israel: IBDMS	33.3	62.5	60.0		100	59.3
Italy: BDRCam	66.7	57.1	80.0	75.0	84.6	73.2
Italy: IMER	44.5	66.7	83.3	85.7	72.7	68.0
Italy: ISMAC	20.0	60.0	42.9	33.3	75.0	43.8
Italy: North East	16.7	41.2	66.7	83.3	46.7	47.2
Italy: Tuscany	0.0	33.3	100	62.5	77.8	56.7
Northern Netherlands	25.0	0.0	33.3	0.0	100.0	31.6
Sweden	19.4	35.7	52.6	77.8	72.1	42.5
USA: Atlanta	7.7	22.2	15.4	27.3	23.1	18.8

Table 3 Percentage of mothers aged 35 and over in the monitoring programs participating in the study and percentage of terminations (Top) in the same group of mothers. Prevalence rate in live and stillbirths (per 10,000) and comparison with the rate after inclusing of Top

Monitoring Program	% of mothers in mothers	% of ToP	Prevalence rate (* 10,000)	
	aged >=35	aged >=35	L+S	L+S+ToP
Canada: Alberta	14.7	33.3	29.4	44.1
Czech Republic	6.1	72.2	17.8	64.2
England & Wales	16.6	59.2	15.7	38.5
Finland	18.5	65.9	28.5	83.5
France: Central East	16.8	79.8	11.6	57.5
France: Paris	25.9	78.2	18.6	85.3
France: Strasbourg	14.8	100.0	0.0	52.3
Germany: Saxony-Anhalt	9.6	85.7	11.1	77.6
Israel: IBDMS	15.9	69.2	10.9	35.5
Italy: BDRCam	13.8	81.8	5.8	31.8
Italy: IMER	17.0*	77.4	16.7	73.8
Italy: ISMAC		50.0		
Italy: North East	27.7	64.1	9.7	27.1
Italy: Tuscany	22.4	75.0	8.4	33.7
Northern Netherlands	15.2	50.0	16.2	32.4
Sweden	17.0	65.7	22.0	64.0
USA: Atlanta	15.7	21.1	36.5	47.9

Table 4 . Down Syndrome techniques of prenatal diagnosis (number of cases) registered in 1998 grouped in maternal age classes

Monitoring Program	<35				35-39				>39				Tot			
	CVS	AC	CC	UK	CVS	AC	CC	UK	CVS	AC	CC	UK	CVS	AC	CC	UK
Canada: Alberta	0	1	0	1	0	2	0	2	0	3	0	1	0	6	0	4
Czech Republic	1	56	4	0	0	15	0	0	0	11	0	0	1	82	4	0
England & Wales	43	68	18	0	57	70	18	1	31	38	13	1	131	176	49	2
Finland	6	11	0	1	7	21	0	0	12	17	0	0	25	49	0	1
France: Central East	6	57	1	10	5	41	0	5	3	27	0	2	14	125	1	17
France: Paris	4	36	0	0	5	28	0	1	10	24	0	0	19	88	0	1
France: Strasbourg	4	1	0	0	5	4	0	0	2	0	0	0	11	5	0	0
Germany: Saxony-Anhalt	1	5	0	0	0	11	0	0	0	1	0	0	1	17	0	0
Israel: IBDMS	1	6	0	0	0	6	0	0	1	2	0	0	2	14	0	0
Italy: BDRCam	0	10	0	0	0	7	0	0	0	11	0	0	0	28	0	0
Italy: IMER	1	9	0	0	1	15	0	0	1	7	0	0	3	31	0	0
Italy: ISMAC	0	4	0	0	0	4	0	0	0	3	0	0	0	11	0	0
Italy: North East	1	6	0	0	3	15	0	0	4	3	0	0	8	24	0	0
Italy: Tuscany	0	2	0	0	1	7	0	0	0	7	0	0	1	16	0	0
Northern Netherlands	0	1	0	0	0	2	0	0	0	3	0	0	0	6	0	0
Sweden	4	18	0	0	4	30	0	0	4	27	0	0	12	75	0	0
USA: Atlanta	0	5	0	0	0	5	0	0	0	3	0	0	0	13	0	0
Total	72	296	23	12	88	283	18	9	68	187	13	4	228	766	54	25
%	**17.9**	**73.4**	**5.7**	**3.0**	**22.1**	**71.1**	**4.5**	**2.3**	**25.0**	**68.8**	**4.8**	**1.5**	**21.2**	**71.4**	**5.0**	**2.3**

CVS = Chorionic Villus Sampling
AC = Amniocentesis
CC = Chordocentesis
UK = Unknown

Graph 1. Down Syndrome technique of prenatal diagnosis (percentages)

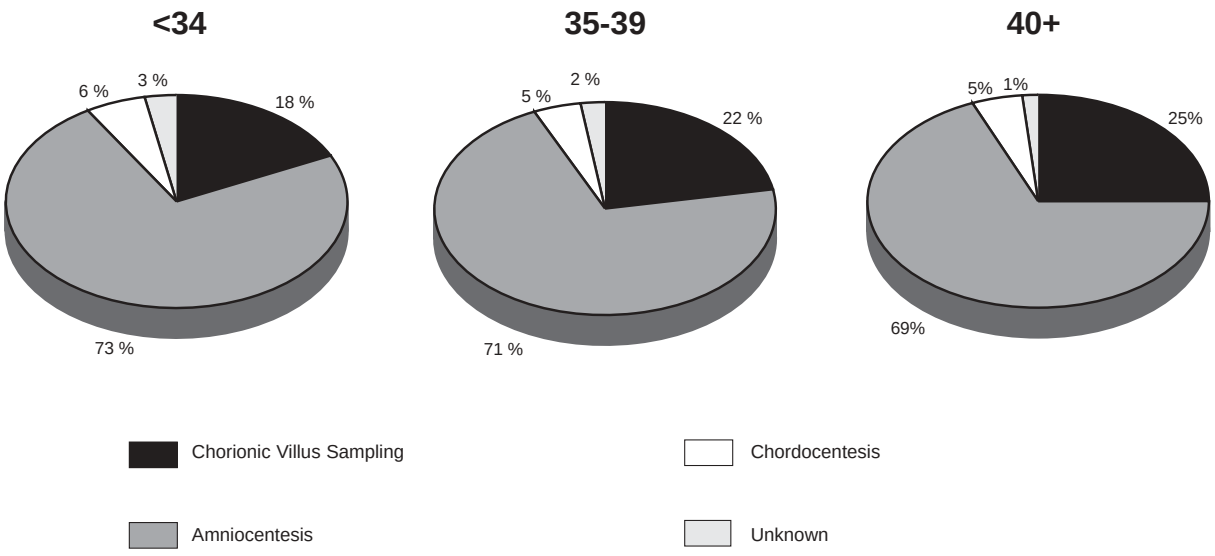


Table 5. Mean gestational age (weeks) and Standard Deviation of induced abortions by maternal age group and by type of prenatal diagnosis

Monitoring Program	<=34			>=35		
	CVS	AC	Total	CVS	AC	Total
Canada: Alberta						
Czech Republic	14.0±0	20.71±1.79	20.60±1.98	-	19.65±1.74	19.65±1.74
England & Wales	14.07±2.03	19.30±2.38	17.26±3.40	13.88±2.13	18.56±1.81	16.45±3.04
Finland	14.33±0.82	18.64±1.29	17.12±2.39	14.53±0.90	18.24±1.36	17.0±2.15
France: Central East	14.0±2.00	21.05±4.89	20.46±5.10	14.75±2.22	19.78±2.29	19.33±2.68
France: Paris	13.75±0.50	20.03±3.62	19.40±4.01	13.60±1.50	19.10±2.45	17.87±3.23
France: Strasbourg	14.25±1.71	22.0±0	15.80±3.77	13.29±0.76	20.50±4.36	15.91±4.39
Germany: Saxony Anhalt	16.0±0	19.0±1.22	18.50±1.64	-	20.0±1.48	20.0±1.48
Israel: IBDMS	13.0±0.0	24.17±5.27	22.57±6.40	13.0±0	21.0±2.00	20.11±3.26
Italy: BDRCam	-	19.50±2.17	19.50±2.17	-	20.41±1.42	20.41±1.42
Italy: IMER	17.0±0	20.33±2.12	20.00±2.26	14.50±0.71	19.73±1.55	19.29±2.10
Italy: ISMAC	-	20.75±0.96	20.75±0.96	-	20.26±1.35	20.26±1.35
Italy: North East	14.0±0	20.83±2.23	19.86±3.29	13.71±1.50	19.29±1.53	17.67±2.99
Italy: Tuscany	-	19.50±0.71	19.50±0.71	14.0±0	19.07±1.44	18.73±1.91
Northern Netherlands	-	18.0±0	28.0±0	-	19.75±2.22	19.75±2.22
Sweden	18.00±1.41	16.11±2.37	16.45±2.30	16.50±0.71	16.57±1.50	16.56±1.45
USA: Atlanta	-	23.67±5.51	23.67±5.51	-	19.67±1.53	19.67±1.53

Table 6. Prevalence at birth (x 10,000) in the years of DS in the programs participating in the survey

Programme	1993	1994	1995	1996	1997	1998	1999	2000
Canada: Alberta	11.45	11.07	13.15	8.49	11.14	14.02	11.56	14.65
Czech Republic	7.52	7.67	7.26	5.51	5.06	6.72	6.57	5.37
England & Wales	4.59	4.73	4.91	5.50	6.39	7.18	6.71	6.60
Finland	13.21	12.83	12.94	10.33	10.07	11.33	10.04	11.76
France: Central East	10.98	10.43	8.91	9.47	9.01	6.83	4.86	5.83
France: Paris	10.61	9.19	7.05	9.67	7.78	10.48	5.24	7.87
France: Strasbourg	16.75	17.87	24.04	17.44	27.95	2.20	4.34	5.62
Germany: Saxony Anhalt	5.79	6.33	7.43	7.86	8.33	13.65	6.09	6.38
Israel: IBDMS	5.06	5.03	6.32	4.87	9.13	3.28	6.01	4.74
Italy: BDRCam	10.94	7.63	10.01	9.22	6.74	8.73	6.33	2.99
Italy: IMER	8.97	9.27	10.24	7.97	7.27	9.36	9.58	6.47
Italy: ISMAC	19.29	14.82	10.87	8.54	11.71	11.60	15.94	8.49
Italy: North East	12.87	10.31	11.46	9.14	7.15	7.23	7.17	6.90
Italy: Tuscany	11.83	9.80	11.42	6.91	7.34	6.28	6.14	4.90
Northern Netherlands	9.86	5.74	9.38	13.74	11.91	10.03	8.43	6.35
Sweden							14.01	11.01
USA: Atlanta	12.02	13.81	10.93	11.98	10.49	11.46	12.00	11.08

Annual Report on Multiple Congenital Anomalies, 2000

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Purpose and rationale

The annual review of cases of multiple congenital anomalies (MCA) is designed as an additional tool to detect increases in birth defect occurrence due to teratogens. Because at least some teratogens (eg, rubella, thalidomide, and retinoic acid) cause MCAs rather that isolated defects, the systematic evaluation of MCA can be a useful adjunct to standard monitoring, which usually examines one defect at the time. In this report we used several complementary approaches to detect unusual trends in MCA occurrence. We report here some findings of such analysis.

Methods and data

This year, ten programs participated in the annual monitoring of MCA (Table 1), which evaluated birth outcomes that occurred in 2000. Collectively, the ten programs provided information on 1,846 cases ascertained among nearly 570,000 births. For each case, program directors provided a case listing that included a description of the defects. One of us (MR) reviewed such case information and coded the defects. Such review also served to assess data quality, identify sequences, and provide a further opportunity for an "astute clinician" evaluation of the collective data. We then focused on the subset of 770 cases of two or more major unrelated defects of unknown etiology (Table 1). These 770 cases form the basis of the remainder of the report. Rates were computed using liveborn infants as denominators, though we included stillborn infants among the cases (numerators).

The analyses were conducted by importing case information into an Access database and then exporting select data into a SAS (version 8) environment, where most of the numerical analyses were completed. This phase was followed by a reevaluation of the cases that had the MCA patterns flagged by any of the analytic approaches.

Classification and comparisons

We used a coding system specifically devised for MCA analysis to code and classify defects. These defects were then collapsed into 48 groups (table 2). To identify unusual MCA occurrences in the current year we compared rates and MCA patterns for these cases with those in the accumulated baseline of MCA cases born during 1992-1998. We computed rates for each of the 48 MCA components as well as for defect combinations. The latter included all combinations of the 48 defect groups (two- or three-defect combinations), as well as certain combinations that have been associated with recognized teratogenes such as rubella, retinoic acid, and thalidomide. We also searched for new defect combinations, i.e., combinations that had not been seen in the baseline. Statistical significance was determined based on a $p = 0.01$ cutoff of the appropriate Poisson distribution. In the analysis we focused on combinations of major defects, though some minor defects are also shown in the tables.

Findings and comments

The overall rate of MCA cases (2 or more unrelated defects of unknown etiology) was 13.5 per 10,000 births (Table 1), through such rate varied noticeably across programs. However, because programs vary in the ascertainment, diagnostic follow-up, and reporting of cases, comparison of rates between registries is probably not very informative in the absence of further information.

Monitoring of individual components defects is summarized in Table 2. For each defect group we show the number observed among MCA cases and the number of cases expected from the baseline. To assess the extent and impact of rate variations we present rate ratios and rate differences. From the latter we estimate the number of excess cases observed in 2000; this number will be positive when more cases than expected were observed, and negative when less cases were observed. Because the number of excess cases conveniently gauges the impact of these rate variations, we ordered the table on such number. Finally, we note which rate variations fell outside Poisson expectations (*, $p < 0.05$; **, $p < 0.01$). For example, one increase and six decreases in table 2 fell beyond the $p = 0.01$ threshold.

Overall, there were nearly 300 fewer defect occurrences in this period (sum of excess cases) than expected from the baseline. Two heterogeneous defect groups appeared over-represented in this first approach: a) other brain defects and b) anomalies of the intestinal tract and digestive system (liver, biliary system, and pancreas). These

two groups also surfaced in the evaluation of two-defect combinations (table 3) and three-defect combinations (table 4). A review of the case listing for all these cases did not identify striking clusters of specific events. We noticed several occurrences of cerebral cysts within the first defect group, and a small group of liver and biliary anomalies (including biliary atresia) in the second group. Follow-up of these cases has not identified commonalities in exposures. Another combination that we will follow-up is that of spina bifida and gastroschisis (Table 3). Finally, no increase of patterns attributable to select known teratogens was identified.

Summary

The latest review flagged a few heterogeneous groups of anomalies among MCA cases. Clinical review and initial follow up has not uncovered striking patterns of specific malformations or commonalities in exposures. No increase in MCA pattern associated with known teratogens was noted.

Monitoring of MCA is labor intensive, both for the registries that provide detailed case descriptions and for the monitoring staff that reviews, codes, analyzes, and reports the data. Further work is required if certain events warrant further investigation. Nevertheless, MCA monitoring continues to be a regular Clearinghouse activity because it can provide an additional safety net against unrecognized epidemics of birth defects due to teratogens, by identifying unusual trends and patterns of MCA cases.

Table 1. Cases and rates of multiple congenital anomalies (MCA) by source and type, ICBDMS

Registry	Births	Total cases evaluated	Cases of known etiology	Cases of unknown etiology		
		Total		< 2 major anomalies	2 or more	
					Number	Rate
Canada: British Columbia	40,775	636	71	468	97	23.8
Finland	56,969	223	78	27	118	20.7
France: Central East	108,057	406	240	45	121	11.2
France: Paris	39,400	63	1	2	60	15.2
France: Strasbourg	14,238	46	10	3	33	23.2
Israel: IBDMS	23,224	32	0	4	28	12.1
Italy: Emilia Romagna	24,712	50	0	1	49	19.8
Mexico: RYVEMCE	23,606	30	4	3	23	9.7
South America: ECLAMC	187,727	334	76	34	224	11.9
USA: Atlanta	50,519	26	9	0	17	3.4
Total	**569,227**	**1,846**	**489**	**587**	**770**	**13.5**

Table 2. Occurrence of component defects in MCA patterns and comparison with baseline, ICBDMS

Defect group	Observed	Expected	Rate	Rate	Excess	Poisson
	No.	No.	Ratio	Difference	no. cases	flag
Other brain defects	75	62.0	1.2	2.3	13.0	*
Intestinal, biliary, pancreas anomalies	45	33.3	1.4	2.1	11.7	*
A/polysplenia	16	8.8	1.8	1.3	7.2	**
Lumbo-sacral axial skeleton defects	11	7.3	1.5	0.7	3.7	
Gastroschisis	18	15.1	1.2	0.5	2.9	
Situs inversus	13	10.3	1.3	0.5	2.7	
Laryngeo-tracheal	6	4.4	1.4	0.3	1.6	
Cleft lip+/palate	95	93.8	1.0	0.2	1.2	
Ring constriction or fibrotic band	3	2.0	1.5	0.2	1.0	
Cystic kidney	34	33.3	1.0	0.1	0.7	
Broncho-pulmonary	32	31.3	1.0	0.1	0.7	
Small intestinal atresias	9	8.9	1.0	0.0	0.1	
Teratoma, sirenomelia	4	3.9	1.0	0.0	0.1	
Gut malrotation	10	10.3	1.0	-0.1	-0.3	
Other ear anomalies	17	18.2	0.9	-0.2	-1.2	
Duodenal atresia	12	13.9	0.9	-0.3	-1.9	
Craniostenosis	8	10.4	0.8	-0.4	-2.4	
Bladder extrophy/epispadias	6	8.6	0.7	-0.5	-2.6	
Polydactyly	77	79.9	1.0	-0.5	-2.9	
Vessel anomalies	14	17.1	0.8	-0.5	-3.1	
Severe genetalia defects	26	29.6	0.9	-0.6	-3.6	
Congenital heart defects	314	318.2	1.0	-0.7	-4.2	
Encephalocele	13	17.4	0.7	-0.8	-4.4	
Other urinary tract defects	104	108.6	1.0	-0.8	-4.6	
Anencephaly	10	15.1	0.7	-0.9	-5.1	
Holoprosencephaly	8	13.3	0.6	-0.9	-5.3	
Spina Bifida	28	33.7	0.8	-1.0	-5.7	
Microcephaly	30	36.9	0.8	-1.2	-6.9	
Neck anomalies	10	16.9	0.6	-1.2	-6.9	
Limb reduction defect	11	18.3	0.6	-1.3	-7.3	*
Other eye anomalies	30	37.5	0.8	-1.3	-7.5	
Limb reduction defect, preaxial	20	28.4	0.7	-1.5	-8.4	
Other severe craniofacial defects	12	21.5	0.6	-1.7	-9.5	*
Choanal atresia	5	14.5	0.3	-1.7	-9.5	**
Syndactyly	28	40.2	0.7	-2.2	-12.2	*
Renal a/dysgenesis	49	61.9	0.8	-2.3	-12.9	
Cleft palate	56	69.0	0.8	-2.3	-13.0	
Diaphragmatic hernia	30	43.4	0.7	-2.4	-13.4	*
Anorectal atresia	83	97.7	0.8	-2.6	-14.7	
Esophageal atresia	68	83.3	0.8	-2.7	-15.3	*
A-microtia	34	49.9	0.7	-2.8	-15.9	*
Limb reduction defects, other types	21	37.2	0.6	-2.9	-16.2	**
Deformations	114	131.9	0.9	-3.2	-17.9	
A-microphtalmia	21	39.8	0.5	-3.3	-18.8	**
Hypospadias	46	67.2	0.7	-3.7	-21.2	**
Other axial skeleton defects	76	97.4	0.8	-3.8	-21.4	*
Hydrocephaly	55	78.0	0.7	-4.1	-23.0	**
Omphalocele	23	47.2	0.5	-4.3	-24.2	**

Table 3. Select defect combinations (see text) among MCA cases, ICBDMS, 2000

Defect (a)	Defect (b)	Observed	Expected	Rate ratio	Rate difference	Excess no. cases	Poisson Flag
Other brain defects	Congenital heart defects	33	22.4	1.5	1.9	10.6	*
Congenital heart defects	Intestinal, biliary, pancreas anomalies	21	13.6	1.5	1.3	7.4	*
Congenital heart defects	A/polysplenia	10	4.5	2.2	1.0	5.5	**
Deformation(s)(incl clubfoot-hip)	Intestinal, biliary, pancreas anomalies	9	4.2	2.1	0.8	4.8	*
Gastroschisis	Spina Bifida	5	1.4	3.7	0.6	3.6	**
Other brain defects	Polydactyly	10	6.7	1.5	0.6	3.3	
Other brain defects	Broncho-pulmonary(incl lung hypop.)	5	1.7	3.0	0.6	3.3	**
Other brain defects	Other small intestinal atresias	7	3.9	1.8	0.5	3.1	*
A-microphtalmia	Intestinal, biliary, pancreas anomalies	3	0.8	4.0	0.4	2.2	**
Intestinal, biliary, pancreas anomalies	A/polysplenia	4	1.8	2.2	0.4	2.2	*
Intestinal, biliary, pancreas anomalies	Other urinary tract defects	8	5.9	1.4	0.4	2.1	
Intestinal, biliary, pancreas anomalies	Cystic kidney	4	2.0	2.0	0.4	2.0	*
Other brain defects	Vessel anomalies (including SUA)	3	1.1	2.8	0.3	1.9	*
Other axial skeleton defects	Other ear anomalies	3	1.4	2.2	0.3	1.6	*

Table 4. Select combination of three defect categories among MCA cases, ICBDMS, 2000 data

Defect combination	Observed no.	Expected no.	Rate ratio	Rate difference	Excess no.	Poisson Flag
Anorectal atresia, heart defects, severe genital defects	4	1.2	3.3	0.5	2.8	**
Diaphragmatic hernia, other urinary tract defects, other axial skeleton defects	3	0.6	5.0	0.4	2.4	**
Heart defects, hypospadias, cleft lip	3	0.8	4.0	0.4	2.2	**
Other brain defects, heart defects, intestinal/biliary/pancreatic anomalies	3	1.7	1.8	0.2	1.3	

References by ICBDMS Members, 2001-2002

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Selection of papers by Program Directors and their Collaborators are reported as following. The details are sent from the Programme Directors.
The collaborative publications (made by two or more ICBDMS members in any context) are first shown and not repeated in the specific registries section.
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