least 20%. The SEs of the MSM associations were in median 19.4% greater than the respective conventional SEs (IQR: 2.4% to 47.5%) in the 156 available associations. In 88 papers, MSMs were used to analyse real data; only 53 (60.2%) of these papers reported that stabilised inverse-probability weights (IPWs) were used, and only 28 (31.8%) reported that they verified that the mean of the stabilised IPWs was close to one.

Conclusions We found important differences between MSMs and conventional models in real studies. Reporting of MSMs can be improved.

P1-55 COMPARISON OF TWO CRITERIA TO EVALUATE PHYSICAL ACTIVITY PATTERN IN ADULTS

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Background The international literature has presented several criteria for classifying people in terms of physical activity pattern, making it difficult to compare the results.

Objective The study aims to evaluate the reliability between two criteria used to classify physical activity pattern, in adults living in Ribeirão Preto, SP, Brazil, in 2006.

Methods Using data from a cross-sectional population-based study, the International Physical Activity Questionnaire (IPAQ) and the American College of Sports Medicine/American Heart Association (ACSM/AHA) criteria were applied. The κ statistic estimated by point and 95% CIs, stratified by gender, age, education level and income was applied to evaluate reliability between the two criteria.

Results The results showed an agreement close to the unity ($\kappa \approx 1$) between the two criteria, in both genders, with crude coefficients k_{male}=0.95 (95% CI 0.83 to 1.06) and k_{female}=0.93 (95% CI 0.85 to 1.01). The lowest magnitude of κ were found in the age group of 60 years and over in both genders [k_{male}=0.87 (95% CI 0.60 to 1.15); k_{female}=0.88 (95% CI 0.70 to 1.06)], and among illiterate women or with <01 year of education [k=0.72 (95% CI 0.34 to 1.09)].

Conclusions The IPAQ and ACSM/AHA criteria showed practically the same ability to classify participants in terms of physical activity levels, allowing comparison of population-based studies that have used the IPAQ instrument to obtain information about physical activity practice. The results pointed out the higher prevalence of "actives" when the second criteria was applied and "walking" was the main practice of physical activity.

P1-56 UNDERSTANDING THE NATURAL PROGRESSION IN FEV_1 DECLINE IN PATIENTS WITH LUNG DISEASE

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Introduction We outline a novel approach for longitudinal modelling of lung function with long-term follow-up in which within-patient variation over time is described by a stationary (mean-reverting) stochastic process, and apply these techniques to a unique dataset of cystic fibrosis patients in Denmark. The aim is to quantify how lung function changes in chronic lung diseases.

Methods The Danish CF register contains data collected on a monthly basis with up to 30 years of follow-up. Our statistical analysis framework is that of a linear mixed effects model with longitudinally structured correlation. Using open-source software we describe how to partition the variability in the data into three components (between and within patient, and measurement error) using the empirical variogram. A parametric model for lung function decline can then be developed. We apply this approach to explore the effect of age, birth cohort and infection status on lung function decline.

Results The dataset contains 70 448 measures on 479 patients seen between 1960 and 2009. The empirical variogram shows slowly decaying long-term correlation (>15 years) in FEV1, with half of the variability in lung function explained by within person variation. The mean rate of lung function decline is 0.96% per year (95% CI 0.86 to 1.07). There is a significant cohort effect, and chronic infection significantly increases the rate of lung function decline.

Conclusions We apply a novel modelling approach to demonstrate that lung function in early life in the Danish cystic fibrosis population is correlated with lung function over 15 years later.

P1-57 USING PARTIAL LEAST SQUARES REGRESSION FOR THE AGE-PERIOD-COHORT ANALYSIS

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Background Identification has been a problem with the Age-Period-Cohort analysis. Since Age + Cohort = Period, there is no unique solution using generalised linear modelling. To overcome this problem of perfect collinearity we propose to use partial least squares regression (PLSR), a dimension-reduction technique widely used in bioinformatics. Data from a large Taiwanese cohort was used to illustrate our approach.

Methods PLSR is a set of algorithms that aims to maximise the covariance between outcome and successively extracted orthogonal components under the constraint that the sum of squared weights is equal to unity. To assess the impact of age, birth year and year of examination on the levels of metabolic syndrome (MetS) components, we used PLSR to analyse data collected by Mei-Jaw clinics in Taiwan in years 1996 and 2006. Confounders, such as the number of years in formal education, alcohol intake, smoking history status, and betel-nut chewing were adjusted for.

Results As the age of individuals increased, the values of components generally increased. People born after 1970 had lower fasting plasma glucose, lower body mass index, lower diastolic blood pressure, lower triglycerides, lower low-density cholesterol lipids and greater high-density cholesterol lipids. A similar pattern between the trend in levels of metabolic syndrome components against birth year of birth and economic growth in Taiwan were also found.

Conclusions Our study found cohort effects in some MetS components, suggesting associations between the changing environment and health outcomes in later life. PLSR provides a flexible analytical strategy for the Age-Period-Cohort analysis.

P1-58 THE VOLUMETRIC MEASUREMENT OF BRAIN IMAGING BIOMARKERS FOR EPIDEMIOLOGICAL STUDIES CAN BE MISLEADING IN THE VALIDATION OF IMAGE SEGMENTATION METHODS

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Large scale neuro-epidemiology studies using brain imaging need tissue segmentation methods to determine lesion or normal tissue

volumes. These techniques are often validated statistically using analyses intended for one-dimensional not 2D or 3D data. We highlight drawbacks of this approach and propose an alternative. We measured intracranial (ICV), cerebrospinal fluid (CSF) and white matter lesion (WML) volumes on structural MR brain images of individuals from the Lothian Birth Cohort 1936(www.disconnectedmind.ed.ac.uk) with a reference standard (RS) and two automated methods (M1 and M2). We used 18 subjects representing a range of CSF and WML volumes. We compared agreement with Bland-Altman[1] and similarity using the Jaccard Index.[2] The Bland-Altman method suggested different agreement between the automated measures and RS than was apparent on visual inspection of the segmented volumes or the similarity index. For example, the difference between the ICV RS and M1 was larger (1.44%) than between RS and M2 (0.71%), but the similarity indices were 0.96 and 0.97 respectively. For CSF, the M2 volume had sixfold worse agreement with RS than M1 (mean difference M2=131.2 cm^3 vs M1=20 cm^3) but the mean similarity index was 0.54 for both methods. Apparently good agreement for WML volumes mirrored a high similarity index, but it was not always an indicator of good segmentation assessed visually. The validation of tissue/lesion segmentation methods on medical images for epidemiological studies should include spatial information by plotting similarity indices across the sample.

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P1-59 TOPICS RELATED TO SKIN CANCER WHICH AROUSE GREATER DEMAND FOR INFORMATION DURING NATIONAL CAMPAIGNS IN BRAZIL

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Introduction Institutional campaigns of prevention of skin cancer, strongly emphasise the importance of individual responsibility in the protection against excessive sun exposure and early identification of pre cancerous lesions. Despite the large investment of public resources, there are few studies that identify the topics most sought during the campaigns—which may indicate a collective motivation to change behaviour. The analysis of log files of qualified websites has become recently a simple way to estimate the collective demand for health information on internet.

Methods The Brazilian National Cancer Institute (INCA) website was selected by its popularity and volume of qualified information. We studied 4800 pages over 4 years (January 2006 to December 2009) by means of log analyser software. We estimated the access to skin cancer pages during November (month of two national campaigns concerning cancer prevention).

Results The pages about melanoma (epidemiology, diagnosis and treatment) consistently attracted the highest number of hits during the entire period (annual mean of 3200; 6127; 8785; and 10864 hits from 2006 to 2009, respectively). The highest peaks of interest were observed in November (during campaigns) with monthly mean of 5366; 8593; 11 977; and 13 496 hits. In contrast, the self skin exam—most accessed topic on prevention—had a much smaller number of hits: 1710; 2640; 3722; and 3197.

Conclusions Institutional campaigns can motivate the search for information about skin cancer, although this search has little focus on issues related to prevention or early detection.

P1-60 EUROPEAN GUIDELINES FOR COLORECTAL CANCER SCREENING—INITIAL STANDARDS

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Introduction Colorectal cancer (CRC) is the 4th most common cause of cancer death worldwide. The efficacy of screening in reducing CRC mortality has been proven in RCTs. The EU recommends population-based screening with appropriate quality at each step in the screening process. Evidence-based, multidisciplinary European Guidelines for Quality Assurance in Colorectal Cancer Screening and Diagnosis have been developed by experts and will be published shortly by the European Commission. The EU Guidelines include a summary table of performance standards in CRC screening.

Methods A multidisciplinary, pan-European group of experts in implementation, evaluation and quality assurance of colorectal cancer screening led by an editorial board drafted and revised the guidelines outline and key clinical questions covering the entire screening process. An expert literature group provided additional scientific support in defining the questions, conducting the respective literature reviews and evaluating the evidence. The bibliographic searches (Medline, Embase, Cochrane Library) covered the years 2000–2008. In selected cases, references not identified by the above process were included in the evidence base, for example, relevant articles published after 2008 identified by the authors.

Results For 13 parameters sufficient evidence was found from published trials and the experience in implementation of population-based screening programmes to achieve consensus on recommended targets across the EU.

Conclusions Initial performance standards have been developed which are suitable for a pan-European setting. Programmes should monitor numerous additional parameters to maintain and continuously improve quality. All standards should be constantly reviewed and revised accordingly with regard to results achieved and best clinical practice.

P1-61 CAN ROUTINE HOSPITAL ACTIVITY DATA BE UTILISED TO PROVIDE RELIABLE INFORMATION ABOUT HOSPITAL INCIDENCE OF CASES OF SEVERE SEPSIS?

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Introduction "Severe sepsis", defined as sepsis plus organ failure, is a heterogeneous and complex condition which occurs across all specialities, causes significant morbidity and mortality (case fatality rate about 30%), and consumes substantial healthcare resources. Yet the diagnostic coding schemes commonly in use do not have a code for this prognostically-important diagnosis, and epidemiological data are hence scarce. Our study aimed to develop an algorithm to ascertain cases of severe sepsis from routine hospital data.

Method The algorithm was developed iteratively, utilising Scottish hospital activity data (n=133 597 selected admissions ie, having an infection code and/or hospital death), secondary analysis of national prospectively-collected critical care research data (n=2687) and