ID	Name	Surname	Subject Area	Title	Abstract
P1	Charlotte	Kelly	Applied Microeconometrics/Health Econometrics	Travel time to hospital and self assessed patients with hip replacemenst in West Yorkshire	The association between travel time to hospital and self assessed health for patients in West Yorkshire undergoing hip replacements. The majority of patients have to travel to healthcare facilities to attend appointments and receive treatment. A growing body of literature shows evidence of an association between living further from healthcare facilities and reduced survival rates, increased mortality, loss to follow up, increased length of stay in hospital and having less visitors. This paper investigates the association between travel time to hospital and self assessed health for patients in West Yorkshire undergoing hip replacements.
P2	Charitini	Stavropoulou	Performance, Efficiency and Equity of Health Care Systems	Exploring the link between public funding and innovative health research in the UK	Background: Public bodies and charitable organisations in the UK fund over one third of the country's health research. Yet, the extent to which they support the most innovative and influential researchers is not known. Aim: We explore the link between highly cited papers and public and charitable funding in the UK. Methods: We define highly cited research as peer-reviewed papers that have received more than 1000 citations in the last decade. We search Scopus for the main authors of these papers and focus on those based in a UK institution at the time of publication. We explore whether these authors currently hold a grant as principal investigators from the country's main funding bodies; the National Institute for Health Research, the Medical Research Council and the Wellcome Trust. We compare the results with a random sample of researchers who serve on the boards of these bodies. Results: We identify 273 papers with more than 1000 citations that have at least one UK-based author between January 2007 and December 2017. This creates a list of 172 individuals from a UK institution, who were either first/last or single authors of these papers. Our preliminary results show that of these individuals less than a third currently hold a grant as PIs from a major funder. This is in contrast with the sample of individuals who act as members of board of these bodies. Discussion and conclusions: Though there are many reasons why the majority of some of the most influential UK authors internationally do not hold a grant from the country's major public and charitable funding bodies, the result requires further exploration. Our findings confirm similar trends shown in the US. The paper discusses possible implications and suggests ways forward.
P3	Laia	Maynou-Pujolras	Applied Microeconometrics/Health Econometrics	Age-adjusted mortality, unemployment, education and GDP per capita in Spain	General age-adjusted Spanish mortality has been increasing from 2010 for both males and females, following ten years of a decreasing tendency. This paper sheds light on the reasons for this increase, disentangling the different causes of mortality and relating them to different socioeconomic indicators. Data shows that ischemic heart disease and cancer mortality have been reduced during the last two decades, while, suicides and mortality for drug overdose has increased. This is in line with previous analyses for other countries, such as Case and Deaton (2015, 2017). We contribute to the existing literature by describing the trends in Spain relating to the â€œmortality of despairâ€ and performing an empirical analysis. In particular, we specify panel data models for the Spanish regions from 2000-2015 for different age cohorts, looking at the effect of unemployment, education attainment levels and GDP per capita on the different causes of mortality. Panel cointegration tests are undertaken, and preliminary results show that suicides cointegrate with unemployment and GDP per capita for all ages and for middle age cohorts. While mortality due to drug overdose cointegrates with unemployment, GDP per capita and education for the youngest and middle age cohorts, but not the elderly. To sum up, this paper contributes to the existing emerging literature on the â€œmortality of despairâ€ by providing evidence on the evolution of different causes of mortality in Spain and relating them to socioeconomic indicators by age cohort.

P4	Manuel	Gomes	Applied Microeconometrics/Health Econometrics	Copula selection models for addressing quality of life outcomes missing not at random.	Objectives Missing data poses major challenges to the analysis of self-reported quality-of-life measures, such as EQ-5D, because the reasons for non-response are typically related to patientâ€™s underlying health status, i.e. data are missing not at random (MNAR). Selection models have been routinely used for handling MNAR quality-of-life data, but their validity relies crucially on distributional assumptions about the outcome; yet most studies assume Normality. While non-parametric selection models have been proposed in the econometrics literature, their implementation is challenging. This paper addresses these concerns by proposing flexible copula-based selection models for addressing MNAR outcomes with complex distributions such as those observed for EQ-5D (bimodal, left-skewed). Methods Copula-based selection models accommodate a wide range of non-Gaussian outcomes, offer flexibility on the choice of functional form for both selection and outcome models, and can be easily implemented using standard methods such as multiple imputation. The proposed methods are illustrated in the REFLUX study, which evaluates the causal effect of laparoscopic surgery compared to medical management on long-term quality-of-life (50% missing) in patients with reflux disease. Through simulations we investigated the relative performance of the copula-based approach for estimating treatment effects compared with commonly used selection models (Heckman model and full-information maximum likelihood-FIML). Results In settings with valid exclusion restriction(s), all methods produced unbiased estimates but the copula model provided the lowest mean squared error. With weak/no exclusion restriction(s), unlike the other methods, the copula selection model provided unbiased, precise estimates. These results were robust to alternative outcome and selection model specifications, and data distributions. In the case-study, the copula approach led to stronger treatment effect of surgery vs medical management and lower standard errors compared to FIML and Heckman models. Conclusion Copula-based selection models can make more plausible assumptions when handling missing quality-of-life data. Ongoing work is extending this approach to handle both missing outcomes and confounders.
P5	Ewan	Gray	Applied Microeconometrics/Health Econometrics	Real-world evidence of the effectiveness of adjuvant chemotherapy for early stage breast cancer from Scottish routine data	Objective: Evidence-based guidelines recommend adjuvant chemotherapy in early stage breast cancer whenever treatment benefit is considered sufficient to outweigh the associated risks. However, many groups of patients, such as the over 70s and those with comorbidities, were excluded from the clinical trials that form the evidence base. This study seeks to address the gap in the evidence base using observational data and econometric methods for causal analysis. Methods: Data were obtained from the Scottish cancer registry (SMR06) and linked to other routine health records (inpatient, outpatient and others). All cases of primary breast cancer from 2001 to 2015 were extracted for analysis. Follow-up of vital status until April 2016 is provided by automatic flagging of death records to the cancer registry. Cases eligible for adjuvant chemotherapy were selected based on clinical characteristics. Prognostic scores for breast cancer were calculated using the NHS PREDICT algorithm. Cases were further classified as trial-eligible (similar to patients in previously published clinical trials) and trial-ineligible based on age and comorbidity. Two methods were used to investigate the treatment effect: (1) Survival analysis using Cox regression on a propensity score matched sample and (2) regression discontinuity analysis exploiting a treatment threshold based on NHS PREDICT score. Results: 30,061 eligible cases were selected from 56,565 individual records. Preliminary treatment effect estimates from both (1) and (2) will be presented for trial-eligible and trial-ineligible subgroups. Conclusions: The results will allow an assessment of the validity of the two causal analysis methods in this setting by comparison of the trial-eligible population estimate to past clinical trial results. Treatment effect estimates in trial-ineligible groups will be presented. The effectiveness estimates can be used to inform patient and clinician decision aids.

P6	Yan	Feng	Applied Microeconometrics/Health Econometrics ; Other	Re-modelling the UK EQ-5D-3L values	Objectives: The 2017 English EQ-5D-5L value set differs substantially from the 1997 UK EQ-5D-3L value set recommended by NICE. Possible reasons include: (a) preferences of people have changed over the last 20 years (b) the composition of the general public has changed, affecting average preferences (c) differences in methods used to elicit preferences; (d) differences in the way preference data are modelled. Given the implications of using the 5L value set instead of the 3L value set it is important to understand the contribution of each factor. Aims: To examine the effect on the value sets of the specific approaches taken to modelling. The innovative modelling approaches used in modelling the 5L value set are applied to the 3L data. Isolating the effect of the modelling methods provides a better basis for comparing the two value sets. Data: TTO data from 2,997 respondents and 912 respondents in the MVH and English valuation studies respectively. Methods: 3L and 5L TTO data are modelled addressing data censoring; heteroscedasticity in the errors; and heterogeneity in preferences. Linear regressions provide the comparison baseline. Censored regressions are estimated using the maximum likelihood method. Heterogeneity is modelled using Bayesian methods. Comparisons are made between estimated coefficients from different modelling methods, and for predicted index values. Results: Results suggest differences between the UK 3L and English 5L value sets are primarily caused by differences in the underlying preference data, particularly the large number of values <0 in the former. Applying the 5L modelling methods to 3L valuation data would yield a different value set with different properties than the UK 3L value set. However, the modelling methods exert a greater magnitude of difference on the 5L values than on the 3L values. Results raise questions about the interpretation of the constant in value functions.
P7	Anna	Heath	Economic Evaluation	Development of a New Software Tool to Compute the Expected Value of Sample Information – An application to the HomeHealth intervention.	Development of a New Software Tool to Compute the Expected Value of Sample Information – An application to the HomeHealth intervention.Objectives: The aim of the Expected Value of Sample Information (EVSI) is to use the best available evidence on the cost and effectiveness of a new intervention compared to current practice to calculate the economic value of specific trial designs, including across different sample sizes. Despite the potential benefits of using the EVSI, in terms of finding economically valuable trial designs, practical applications have been limited due to computational difficulties and ease of interpreting the results. The aim of this work is to develop a software tool that can easily calculate the EVSI and present the results to stakeholders. We considered the HomeHealth feasibility study to test the capabilities of the new tool and demonstrate how it might be used in a real world setting. Methods: The tool has been developed in R with an interactive R Shiny interface that clearly presents the results of the EVSI analysis. The EVSI calculations are based on “Moment Matching”, a method that reduces the computational burden of EVSI calculations. The HomeHealth intervention was evaluated using a Bayesian cost-effectiveness model. The EVSI is calculated for two distinct study designs – one focusing on costs and one on the primary outcome. Results: The EVSI calculations demonstrate that a clinical trial for the HomeHealth intervention has economic value. It highlights the need to collect cost data alongside the primary outcome of the trial. The interactive R Shiny tool aids the presentation and interpretation of the results and allows it to be used as part of an application for further funding. Conclusion: We have developed a tool that improves the ease with which EVSI can be calculated for trials going for funding for a full RCT. Future work includes making the tool more user friendly and evaluating how trial methodologists and funders interpret the results.

P8	William	Whittaker	Performance, Efficiency and Equity of Health Care Systems	The need for a deeper understanding of the implications of extending access to primary care in the evenings and weekends	Objectives Extended access to primary care services during evenings and weekends forms an important part of the General Practice Forward View which details NHS England's £246m strategy for GP services to 2020/21. The policy is motivated by rising A&E pressures and patient reported poor access to primary care. Extended appointments have been piloted across NHS England Greater Manchester (NHSEGM) since 2014. Evaluations have concentrated on the implications for emergency hospital care, finding savings in activity are insufficient to offset the cost of extended appointment provision. However, little is known on appointment uptake which could inform how to operationalise the service more efficiently and give insight into implications for equity of access. This paper seeks to inform this debate by assessing (i) uptake of an extended access scheme and (ii) assessing the types of patients using extended appointments. Methods Using unique appointment data provided by NHSEGM pilots in 2016, probability models of appointment use are estimated against day of week, calendar month and patient characteristics. Patient demographics are compared against core hour users as measured via the GP Patient Survey. Results 50,000 appointments were provided with 76% booked and 67% booked and attended. 55% of appointments were pre-booked (45% same-day). Use increased over 2016 and uptake was lowest at weekends. The demographics of patients varied with appointment type (GP or nurse), day of appointment, and booking type (pre-booked or same day). Users were younger than core hour users with 70% aged <50. Conclusion A large proportion of extended appointments are pre-booked suggesting existing evaluations of emergency care implications paint only a partial picture of the impacts of extended access. Users differ from core hour patients suggesting potential impacts on access inequalities. The results shed light on how providers could design an extended access service to target particular population groups.
P9	Lucy	Abel	Economic Evaluation	Early modelling methods for economic evaluation of diagnostic technology: the collective experiences of the Diagnostic Evidence Co-operatives	Early modelling methods for economic evaluation of diagnostic technology: the collective experiences of the Diagnostic Evidence Co-operatives.Background: Decision modelling can be used for the early economic evaluation of technology. Diagnostic tests present a challenge to economic evaluation methods because their effect on health outcomes is indirect and consequently difficult to measure. The NIHR Diagnostic Evidence Co-operatives (DEC) were established to support evidence generation for the development of new diagnostic tests, including early modelling. Objectives: To summarise the experiences of the DECs conducting early modelling of tests and to highlight key methodological developments and outstanding issues. Methods: A questionnaire was developed and circulated among DEC researchers using early modelling for diagnostics (n = 16). It covered the test and population, methods used, strengths and weaknesses of early modelling, and advice for researchers planning similar projects. Responses were collated and summarized narratively. Results: Six projects were included. The interventions included tests intended for diagnosis, screening and treatment stratification within primary and secondary care. All the models provided unexpected and important insights into the future development of the tests. Treatment effectiveness was a crucial determinant of cost-effectiveness in all cases. However useful treatment evidence was lacking in several models, resulting in significant uncertainty in the cost-utility analysis. Similarly, the care pathways that underlie the models are complex. In general, the resources required to develop a valid early model were equivalent to a later model, counter to the perceptions of funders and collaborators. These experiences raise a broader question around evidence generation. Generating evidence on long-term health outcomes from testing is costly and impractical. Decision modelling offers a possible solution, but relies on good quality outcomes evidence that is currently lacking. Conclusions: Comparing and contrasting several projects has provided insight into the limitations and opportunities associated with early modelling of diagnostics. Our aim is to share these experiences, invite feedback and stimulate discussion around future developments in diagnostic early modelling.

P11	David	Epstein	Economic Evaluation	A markov model to estimate the cost-effectiveness of interventions fro treatment of chronic venous leg ulcers	Objectives - This study presents a Markov model to estimate the cost-effectiveness of interventions for treatment of chronic venous leg ulcers. We present for the first time the use of a mathematical procedure to calculate transition probabilities from rates for use in Markov models with tunnel states. Methods. A state-transition model was developed to estimate healing and recurrence of venous leg ulcers under surgical and compression therapy. The states of the model were "unhealed ulcer", "healed ulcer" and "recurrent ulcer". There is one backward transition permitted in the model, from "recurrent ulcer" to "healed ulcer". Rates of these events were estimated from published data. These rates were time-dependent, requiring a semi-Markov structure that was implemented using tunnel states. The transition probabilities between states were derived algebraically from the rates using a mathematical procedure. (The commonly used formula p(t) = 1-exp(-rt), where r is a rate and t is the cycle length, is incorrect in models with more than one transition). A more basic version of our procedure, for situations where rates are constant, was previously presented at HESG in the Canary Isles and subsequently published in Medical Decision Making. The methodological novelty in this work was to extend the basic procedure for applications where rates are time-dependent. Other parameters in the model (relative risks, utilities and costs) were estimated from the literature. Probabilistic sensitivity analysis and other sensitivity analyses were carried out. Results The design of the model will be explained, along with illustration of the mathematical procedure. Results will be shown for quality-adjusted life years (QALY) and lifetime costs per patient Conclusion The extension for models with tunnel states allows the correct derivation of transition probabilities from rates for a wide range of state-transition models. The procedure works with both forward and backward transitions.
P12	Emma	Frew	Economic Evaluation	Understanding resource allocation from a local government perspective: insights from a qualitative study	Background In 2013 public health responsibilities in England shifted from the National Health Service and returned to local government. While broadly welcome, the move occurred at a time of unprecedented financial pressure on public services and decision makers have been faced with making difficult resource allocation decisions since. Methods A qualitative study was conducted with professionals working in public health located within Birmingham Local Authority, and in Birmingham healthcare sector. Eighteen in-depth interviews were conducted to explore how resource allocation decisions were made; what evidence was used to inform those decisions; what weight was attached to costs and outcomes; and how opportunity cost was realised. Decision makers were also asked about their knowledge on economic evaluation and for suggestions on how economic evaluation could best support decision making in the public health context. The interviews were analysed using a constant comparative method. Results Decision makers value an emphasis on achieving outcomes within budgets; they have a focus on meeting diverse population needs; easing access to services; and value a commissioning process that encourages partnership working. Emphasis was on reducing variation in outcomes, rather than maximisation. Services contracts were awarded based on a multi-criteria decision analytic approach. All decisions were constrained by financial pressures, and the legislative and political context. All of the decision makers valued economic evaluation approaches although revealed an uncertainty about the concept of cost-effectiveness and opportunity cost. All expressed a frustration with the difference between cost-effectiveness estimates generated from RCT-evidence, and cost-effectiveness 'on the ground'. Conclusions Based on these findings, it is apparent that economic evaluation as it is conventionally applied, is not supporting public health decision-making. A suggestion for a way forward will be made.

P13	Carol	McLoughlin	Economic Evaluation	Validity of carer-specific and generic quality of life measures in informal carers: a comparison of 5 measures across 4 conditions	Objectives: Carer quality of life (QoL) effects are recommended for inclusion in economic evaluations, but little is known about the relative performance of different types of QoL measures. This study compares, for the first time, the construct validity of three 'care-related' QoL measures - the Carer Experience Scale (CES), CarerQol, and ASCOT-Carer, and two generic QoL measures - the EQ-5D-5L and ICECAP-A in a UK sample of informal carers of adults suffering from dementia, stroke, mental illness or rheumatoid arthritis. Methods: The sample was identified through the Family Resources Survey and screened for inclusion. A questionnaire containing the five QoL measures and additional questions related to the carer, care recipient and the caring situation was posted to eligible carers (n=1,004). Hypotheses regarding the anticipated associations between constructs related to the QoL of carers and QoL scores were developed. Statistical tests were used to assess the relative performance of the measures. Results: The overall response rate was 59% (n=576). To date, each measure has detected statistically significant associations (P<0.01) with the constructs tested, with the associations falling in the expected direction. The 'care-related' QoL measures detected larger effect sizes in tests relating to the respondent being the main carer, and life satisfaction score though moderate/strong effect sizes (>0.3) were reported in all measures. For the variable "patient health status", as measured by the EQ-5D-5L, generic measures detected a stronger association, though weak effect sizes (<0.3) were reported in each measure. Conclusion: The analysis is ongoing but associations between variables hypothesised to have a bearing on care-related QoL are proving to be largely as expected. Further analysis will look in detail at the relative performance of the measures within specific clinical conditions.
P14	Milad	Karimi	Economic Evaluation; Experimental Health Economics/Contingent Valuation	Are preferences over health states informed?	EQ-5D tariffs are based on valuations from the general public of imagined health states. These differ to valuations from patients experiencing states. This could be because the public are uninformed about how ill-health affects their life. This study investigates the extent to which: (a) the publicâ€™s valuations of an imagined health state reflects their expectations about life in that state, and (b) the publicâ€™s expectations of life in an imagined health states resemble the experience of patients in that state. We collected expectations of the public on six consequences of ill-health (enjoyment, relationships, independence, avoiding being a burden, dignity, and activities), alongside VAS-based valuations, for EQ-5D-5L states using an online survey of 1300 UK residents (completed August 2017). Data on the experience of patients came from the Multi Instrument Comparison study, where individuals self-reported the EQ-5D-5L and the consequences. Regression analysis was used to determine the impact of the expectations of consequences on VAS values in comparison to the health state itself (fixed effects regression). Further regressions were estimated to determine any differences between the publicâ€™s expectations and patientsâ€™ experiences of the consequences of the health states (random effects ordered logistic regression). Preliminary analysis suggests that the expected consequences of a health state better explain VAS valuations than the health state itself (adjusted Rsquared of 0.37 vs. 0.29), indicating that health is partly valued based on expected consequences. The public generally overestimates the effect of ill-health (e.g. they expect ill-health to affect their relationships more than patients report it does), but the public: (a) overestimates the effects of mobility and self-care problems more than they overestimate usual-activities problems and pain/discomfort and (b) they underestimate the effect of anxiety/depression problems. Results suggest that EQ-5D tariffs based on imagined states and imperfect information might overestimate the importance of mobility compared to anxiety/depression.

P15	Hareth	Al-Janabi	Economic Evaluation; Health Behaviour and Lifestyle	Identifying 'treatment spillovers' on family carers: a qualitative study	Objectives: The inclusion of caregiver costs and benefits in economic evaluation is widely recommended, though rarely undertaken. A current barrier is a lack of understanding of the types of treatments and policies that may impact on family carers' lives (impacts we term 'treatment spillovers'). The study seeks to identify potential sources of treatment spillover in three major disease areas. Methods: A qualitative study was conducted in the UK with 50 purposively sampled care professionals and family carers with experience of dementia, stroke, or mental health care. For each disease area, focus groups were conducted with care professionals and then with family carers. Supplementary interviews were then used to access key groups of care professionals and family carers not included in the initial focus group. Transcripts were coded and analysed thematically, using descriptive accounts, to identify intervention contexts where treatment spillovers were likely to occur. Results: Our initial findings indicate a range of treatment and care decisions that are likely to affect the costs and outcomes of family carers. These include, for example, the involvement of family carers in delivering interventions in dementia (which can enhance carer fulfilment), choices about the structure of stroke rehabilitation (which can have implications for what patients are ultimately able to do in the home) and the transition between different parts of the health and care system in mental health (which is a frequent source of anxiety for family carers). Qualitative work is ongoing and further analysis will provide a framework for understanding the potential for treatment spillovers for a given new intervention. Conclusions: Interventions were identified that were likely to both (i) directly affect carer costs and outcomes, and (ii) indirectly affects carer costs and outcomes as a result of changes in the patient's outcome. The initial findings of this study offer some guidance for health economists on the potential for treatment spillovers across a variety of interventions contexts and we would welcome further input from HESG on the best way of communicating this.
P16	Edna	Keeney	Economic Evaluation; Other	Different methods for modelling adverse events: implications for effecitveness and cost-effectiveness analyses	Objectives: Published clinical trials report adverse events in different ways. Some report number of patients who suffered at least one event out of total number randomised and others report number of events for a given total exposure. The different data types can be modelled in different ways; therefore, three models have been used in published Bayesian Network Meta Analyses (NMAs); models with a binomial likelihood reporting odds ratios (using a logit link) or hazard ratios (using the complementary log log link) and models with a Poisson likelihood reporting hazard ratios. The objective of this paper is to establish the impact of using different models on effectiveness estimates and the outputs from cost-effectiveness models. Methods: We analysed a dataset used in a recent NMA conducted to inform NICE guideline recommendations regarding insulin choice for patients with type 1 diabetes to prevent severe hypoglycaemic events, using the three previously used models, plus a shared parameter model combining different types of data. Results: The relative treatment effects are similar regardless of which model or scale is used. Differences were seen when the probability of having an event on the baseline treatment was calculated using the different models with the logit model giving a baseline probability of 0.07, the clog-log 0.17 and the Poisson 0.29. These translate into differences of up to £110 in the cost of a hypoglycaemic event and 0.004 in associated disutility when calculating the absolute probabilities of an event to use in an economic model. Conclusions: While choice of outcome measure may not have a significant impact on relative effects for this outcome, care should be taken to ensure that the baseline probabilities used in an economic model are realistic and accurate to avoid over or underestimating costs and effects.

P18	Anum	Shaikh	Economic Evaluation; Performance, Efficiency and Equity of Health Care Systems	Recycling cost-effectiveness models: how and why?	ABSTRACT Aims: The process of evidence synthesis, economic evaluation and new primary research should be seen as an iterative process where new data are merged with existing evidence and the adoption and research decisions revisited. A consequence of this is that decision models should be routinely updated as new data emerge. This paper sets out to investigate: 1) whether or not decision models are being updated, and if yes, 2) how such models are being updated. Methods: A comprehensive review of the literature was undertaken via Embase and PubMed in order to identify examples of where a decision model has been developed to estimate the cost-effectiveness of one treatment versus another, and then the model has been subsequently updated with new input data, for example, incorporating results of new trials, and re-run. Once such studies were identified and retrieved, the Consolidated Health Economic Evaluation Reporting Standards (CHEERS) Checklist was applied and adjusted in order to initially examine the ways in which models are being updated. A textual narrative synthesis method was then adopted to arrange the studies into homogenous groups for further analysis. Results: The review resulted in decision models predominantly being updated in three ways: 1) updating the same study question using the same model based on recent data, 2) updating the same study question using the same model but adapting it to conform to another setting and, 3) updating the model in terms of its structure in order to conform to new treatment practices and data and/or another setting. Not all updated studies compared and discussed their results in relation to the original model. Conclusions: Our study demonstrates that decision models are being updated in three ways. A full systematic review is required to further assess this and to aid in developing guidelines on the necessary steps to be taken when updating models.
P20	Noemi	Kreif	Economic Evaluation; Performance, Efficiency and Equity of Health Care Systems; Global Health	Assessing the extent and quality of evidence on a "value for money" in helath impact evaluations in low-and middle-income countries	Background: There is a growing demand amongst development organisations to base policy upon evidence of 'what works'. In response, recent years have seen the rapid growth of published impact evaluations in global health. While these studies often use sophisticated statistical methods to maximize the internal validity of effectiveness estimates, the question arises â€“ from an economic perspective â€“ as to what extent they reliably inform 'value for money' assessments and decisions over the allocation of limited available resources. Aim: To scrutinize empirically the approaches taken in published impact evaluations, including to quantify to what degree any type of economic evaluation studies have been conducted and to assess the quality of those studies. Methods: The review was conducted using the database of published impact evaluations from the International Initiative for Impact Evaluations (3ie). The database includes studies with experimental or quasi-experimental designs, but excludes drug efficacy trials. Upon locating studies that conducted economic evaluation, we assessed their quality based on criteria derived from the International Decision Support Initiative (iDSI) Reference Case (e.g. considering transparency of the analysis, incorporation of heterogeneity and accounting for uncertainty). Results: We found that amongst impact evaluations conducted between 2010 and 2017 a mere 2% included economic evaluation and, among those that did so, quality was a concern. For instance, half of the studies did not state the evaluation perspective, studies rarely used generic measures of health outcomes such as the QALY or DALY, and failed to characterise appropriately uncertainty due to the precision of parameters or methodological choice. Conclusion: This work highlights some important areas of improvement for impact evaluations in global health, to provide better evidence for decision making. There is a need for research to provide methods guidance on including economic evaluation in the design and conduct of impact evaluations.

P21	Dimitrios	Kourouklis	Economics of Pharmaceutical Research and Development	Public Subsidies and Pharmaceutical Innovation	Governments allocate a budget for biomedical research and development activities on an annual basis. Drawing on that, prior literature has extensively examined whether public funds stimulate private investments in pharmaceuticals. However, there is lack of evidence on how pharmaceuticals manufacturers utilize government budgets for R&D and whether these public subsidies lead to desirable outputs and outcomes. This paper investigates and quantifies the relationship between governmental outlays for R&D and drug development innovation. In this setting, innovation is either incremental or radical. Radical innovation in pharmaceuticals refers to the total number of Phase I, II and III authorized clinical trials for orphan-drugs for rare diseases, while incremental innovation relates to clinical trials for non-orphan medications. For the analyses, a novel dataset based on the European clinical trials registry was created and panel data between 2007 and 2015 originated from sixteen countries of the European Union and ten major pharmaceutical firms were incorporated. The conducted econometric analyses apply an instrumental variable identification strategy, which copes with potential endogeneity issues of public subsidies for R&D. The employed instrument for dealing with that issue is the government effectiveness. Two-stage least squares (2SLS) estimates suggest that 1% increase in public subsidies reduces incremental innovation by 0.97%, while they cause 0.52% decrease in radical pharmaceutical innovation. These estimates indicate that governmental outlays for R&D have significantly negative effect on both non-orphan and orphan drugs clinical trials authorizations. Overall, the results imply a crowding-out effect, less clinical trials approvals, as well as strong focus and interest from the side of the pharmaceutical firms to allocate public subsidies towards riskier and high in return R&D projects.
P22	Roxanne	Kovacs	Experimental Health Economics/Contingent Valuation	Measuring patient trust	Objectives: Trust is crucial for economic development and plays a key role in the provision of health care and the patient-provider relationship. However, trust is difficult to measure. This study, which takes place in Senegal, is the first to make use of a behavioural as well as a survey-based measure of patient trust. It has three objectives: i.) to contribute to our knowledge relating to the measurement of patient trust, ii.) to provide quantitative evidence on the determinants of patient trust and iii.) to assess the construct validity of both measures of trust. Methods: The study was conducted with 667 patients and 258 health providers in randomly selected health facilities in rural Senegal. Our behavioural measure of trust is based on an economic experiment or â€œtrust gameâ€, played with patients and their primary health care providers. Patients receive a monetary endowment and can decide how much they want to transfer to the health provider they just consulted. In case patients transfer a non-zero amount, providers can decide how much they want to return to patients. The amount of money sent by patients is used to measure behavioural trust. Our survey-based measure of trust is obtained from the Trust in Physicians Scale, which is a multi-item questionnaire. We also measure potential determinants of patient trust, such as provider and patient characteristics, provider communication ability (via a questionnaire) and clinical competence (via clinical vignettes). Results: Our study has three main findings. Firstly, we find that measures of trust derived from a survey are associated with measures of trust derived from a behavioural economic experiment. Secondly, we show that continuity of care, provider communication ability and provider competence are positively related to patient trust. Lastly, we demonstrate that behavioural economic experiments have higher construct validity than trust surveys.
P23	Divya	Parmar	Global Health	Spillover Effects of a Public Works Scheme on Maternal Health Services: Results from a Natural Experiment in India	Objective: To assess the spillover effects of the National Rural Employment Guarantee (NREG) scheme on utilization of maternal health services. By guaranteeing 100 days of employment to rural households, current evidence shows that NREG has improved wages and income and reduced food insecurity. In this paper, we want to assess whether the scheme has also led to an increase in the use of maternal health services: antenatal care, deliveries in health facilities, deliveries by cesarean section and postnatal care. Methods: We use the Nationally-represented District-level Household Survey (DLHS), which provides data on the use of maternal health services for the period before and after the implementation of the scheme. We use difference-in-differences to exploit the phased rollout of the scheme and capture its impact on utilization of maternal health services. We assess the heterogeneity of impact by conducting various subgroup analyses. Principal Findings: Overall, the NREG scheme did not have an impact on antenatal and postnatal care. However, it caused a shift in deliveries from private to public facilities. The scheme reduced deliveries by caesarian sections and had a small impact on the reduction in number of home deliveries. Subgroup analyses reveals inequities in the impact of the scheme. Conclusions: Although the NREG scheme targets poor households in rural areas, the increase in the utilization of maternal health services is observed in relatively better-off groups. Poorer household continue to have home deliveries.

P24	Katharina	Hauck	Global Health	Work and home productivity of HIV-positive and HIV-negative individuals in Zambia and South Africa: a cross-sectional baseline survey of the HPTN071/PopART trial	Background: More than 14.5 of the 36.7 million people living with HIV globally do not know their HIV status, making comprehensive testing interventions a critical first step in ending the AIDS epidemic. Home-based testing and counselling (HBTC) involves small teams of community health workers with basic training going from door-to-door and offering services in people's homes. HBTC is very effective, but there is very limited evidence on its costs. The HPTN071(PopART) trial conducted a population-wide HBTC campaign in Zambia. We estimated unit costs for 8 communities. Methods: We applied micro-costing methods to estimate the economic costs of HBTC delivered to over 250,000 individuals between January 2014 and June 2015. Our objective was to calculate total costs, cost per person tested, and cost per person tested positive. Data on salary, equipment, transport, and general administration were extracted from expenditure records. Probabilistic sensitivity analysis was conducted to determine the sensitivity of estimates to uncertainty in the cost components. Findings: 126,208 individuals were tested (uptake 65%), and among those 9,196 (7%) tested HIV-positive. Across study communities, the average costs per population was US$ 7.9, the costs per person tested was US$ 23.1, and the costs per tested positive was US$ 340 in the first round. Costs varied substantially across communities, from US$ 16 to US$29.1 for costs per person tested, and from US$ 184 to US$ 470 for costs per person tested positive. These large variations are associated with differences in the number of tests done per health worker team. Interpretation: The costs of HBTC can be compared with standard healthcare facility-based testing. This informs policy makers and international funding agencies on the merit of intensified testing campaigns in high-prevalence settings. The findings suggest that costs are dependent on the efficiency with which services are provided.
P25	Aurelia	Lepine	Global Health; Applied Microeconometrics/Health Econometrics	The longterm effect of the 2004 tsunami on health outcomes predominantly in the Aceh Province	The 2004 Indian Ocean tsunami devastated many communities across multiple countries and was an international natural disaster unlike any seen before. In Indonesia, the tsunami mostly affected Aceh province where 129,775 people were killed and 36,786 left missing. Since other Indonesian provinces remained unaffected, it provides a natural experiment that we use in order to investigate the long term effect of the tsunami on health outcomes. We use the province level Indonesia Database for Policy and Economic Research (The World Bank, 2015) and reconstruct a synthetic control in order to build a valid counterfactual. We find that 10 years after the disaster, Aceh has managed to converge towards the trend observed in synthetic Aceh in terms of morbidity and child health outcomes. The analysis of transmission channels indicates that resilience of Aceh was mainly explained by coordinated and sustainable international disaster response as well as the use of international disaster diplomacy to strengthen peace and governance.
P26	Marc	d'Elbee	Global Health; Health Behaviour and Lifestyle	Preferences for linkage to HIV care services following a reactive self-test: discrete choice experiments in Malawi and Zambia	Preferences for linkage into confirmatory HIV testing and treatment: discrete choice experiments in Malawi and Zambia HIV burden remains highly concentrated in southern Africa, with an estimated adult prevalence of 8.8% in Malawi and 13% in Zambia. HIV self-testing (HIVST) is now recommended by the World Health Organisation and allows people to test themselves outside of HIV facilities. A person then needs to confirm a reactive self-test using standard HIV testing and start treatment if positive. Though HIVST uptake is high if offered, linkage to care and prevention remains challenging. The current research uses discrete choice experiments (DCE) to identify key drivers of demand for linkage into care following a reactive self-test result in Malawi and Zambia. DCE formative work consisted of a literature review and qualitative studies. Data were collected on tablets within a representative household survey (Malawi n=553, Zambia n=388), pooled across country and analysed using mixed logit models. Preference heterogeneity was explored by country, age, sex, wealth, HIV status and belief that HIV treatment is effective. DCE results were largely consistent across countries. Major barriers for linkage were fee-based testing (β=-1.50 per USD, p<0.01) and long waits for confirmatory testing (β=-0.44 per hour, p<0.01). Community-based confirmatory testing, i.e. at the participant's or counsellor's home (β=0.15, p<0.05), was preferred to facility based confirmation (β=-0.25, p<0.01). Providing separated waiting areas for HIV services at health facilities and mobile clinics was positively viewed in Malawi but not in Zambia. Active support for linkage was less important to respondents than other attributes. Preference heterogeneity was identified: HIV positive participants were more responsive if separated waiting areas whereas poorer and ART non-believers preferred community-based programmes. This DCE identified actionable key programme attributes. In these countries, services may improve linkage to care by providing segregated HIV waiting areas, while treatment sceptics, i.e. those not convinced that treatment works, and the poor, would be better served in their communities.
P27	Ben	Gershlick	Health Behaviour and Lifestyle	The distributional impact of the Soft Drinks Industry Levy	In the March 2017 Budget the Chancellor confirmed that the UK will be implementing the Soft Drinks Industry Levy (SDIL) in April 2018. The levy â€“ the first of its kind in the UK - aims to reduce to amount of sugar people are consuming by focusing on sugary drinks. The design of the tax is novel and its stated intention is to influence industry behaviour (through reformulation, resizing, and similar measures) by taxing producers and importers of added sugar drinks which have over 5g of sugar per 100ml, with a higher tax for those with over 8g per 100ml. Evidence about the potential impact of this kind of levy is limited

P28	Antoine	Marsaudon	Health Behaviour and Lifestyle	Impact of an acute health shock on lifestyles: evidence from French panel data.	Impact of an acute health shock on lifestyles: evidence from French panel data. By investigating the relationship between an acute health shock, namely the first onset of an accident requiring medical care, and lifestyles (i.e. cigarette consumption and the Body Mass Index, BMI), this paper contributes to a better understanding of smoking and eating patterns. Drawing on behavioral economics, the analysis considers the health shock experience as the provision of new and credible information, which can be used to update personal health risk beliefs and which may subsequently affect individuals' lifestyles. Several studies demonstrate that health shocks can induce healthy changes among British adults (Clark and EtilÃ©, 2002); on middle aged and retired Americans (Sloan et al, 2003; Falba, 2005; Khawja et al, 2006b; Keenan, 2009); or on ageing Germans (Sundmacher, 2012). Very little, however, is known in France, either on the impact of such shocks on cigarette consumption levels or on the duration of these effects when they exist. This paper proposes to bridge this gap by contributing upon the existing literature in three ways. First, by identifying some insights on changes in individual cigarette consumption after an exogenous health shock. Second, by determining how long this effect lasts. Third, by providing empirical evidence on how people learn from such shocks about the risks associated with smoking. To explore these issues, we use a French panel data (Gazel) which covers 20.000 individuals (15.000 men and 5.000 women) working for the electricity board (EDF) over the period 1989 to 2014, with rich individual demographic, socio-economic and health-related information. It is collected routinely from first recruitment with EDF and spreads over the whole lifespan (i.e. individuals are between 35-50 at the inclusion and are followed-up for 25 years). To identify the causal effect of the accident, a propensity score matching on pre-accident covariates and pre-accident outcomes is performed. Specifically, we compute a propensity score for facing a shock with a Probit estimation including: demographic (age, gender, marital status, household size), and socioeconomic indicators (monthly household income, personal and fatherâ€™s educational attainment, professional status and self-reported health), along with pre-outcome variables (number of cigarettes smoked and BMI). We then associate a treated individual (i.e. facing a health shock) with a control individual (i.e. who do not face a health shock) based on this propensity score. Additionally, we restrict the sample to observations within the common support range, and individuals with other types of shocks are dropped from sample and thus are not included in the control group. Results suggest that there is a significant effect running from the shock to the number of cigarettes smoked with an impact duration of at least 8 years after the shock. Individuals subject to a shock smoke 2.1 cigarettes less than those who do not face such a shock. There is no effect, however, of the exogenous shock on the BMI. The findings are robust to a series of sensitivity analyses and robustness checks.
P29	Toby	Watt	Health Behaviour and Lifestyle	The nutritional impact of price promotions in sugar sweetened beverages	High bodyweight and unhealthy diets are two major risk factors contributing to an increasing global burden of non-communicable diseases. Obesity is estimated to cost the UK society £47bn a year including direct medical costs and costs related to reduced economic productivity due to sick leave and premature mortality. Reducing this burden is one of the biggest challenges facing health systems and governments worldwide, including in the UK. There is a considerable gap in the academic research on the health impact of food and beverage price promotions in retail stores. The extent to which such pricing strategies contribute to over-consumption of unhealthy foods and beverages or encourage consumption of healthy alternatives is largely unclear. In the UK food retail outlets food price promotions (e.g. discounted, buy 1 get 1 free, or 3FOR2 offers) are very frequent and “higher sugar food and drink items are both more likely to be promoted and more deeply promoted” (PHE, 2015). For example, over 60% of all sugar sweetened beverages by volume were sold through price promotions in 2012 (Kantar Worldpanel). Public Health England estimated that 22% of all food and drink bought in Britain was purchased because of price promotions. Price promotions are argued to increase consumption by making shoppers increasing their household inventory –what is referred to as consumer stockpiling. This stockpiling, can increase consumption through either reducing stock-outs or increasing the household’s usage rate of the foodstuff (Ailiwadi and Neslin (1998), Chandon and Wansink (2002)). The aim of this paper is to measure the extent to which price promotions increase consumption of sugar sweetened beverages using a model developed in the marketing literature (Ailiwadi and Neslin, 1998). We use a large representative panel (Kantar Worldpanel) of consumer scanner data to estimate the effects of promotions on inventory through the quantity of drinks purchased on a given shopping trip. We then estimate the nutritional effect of PPs through the extent to which household consumption of sugary drinks increases as a result of increased household inventory. Using our results we seek to measure the resulting increase in sugar consumption from price promotions through a Monte Carlo experiment.

P30	Ekatarina	Kuznetsova	Health Behaviour and Lifestyle; Applied Microeconometrics/Health Econometrics	The effect of acculturation on immigrants' health behaviour: evidence from the United Kingdom	The health of immigrants is a key indicator of assimilation within receiving societies, alongside employment, education and housing. Acculturation, one of the aspects of health assimilation, is adoption of health behaviours from new culture. The effect of acculturation on immigrants' health behaviours has been studied in countries with considerable immigrant population: US, Australia and Canada. However, there is a lack of evidence from the UK. The existing studies have suffered from the limitation of using cross-sectional data. Researchers highlight the need to study acculturation using longitudinal data. We aim to explore the effect of acculturation on immigrants' health behaviours (smoking, alcohol consumption, physical activity and diet) in the UK using longitudinal data. We exploit the largest UK household panel survey called Understanding Society. We start by specifying a simple cross-sectional model to compare the results to the existing literature. Next we exploit the panel nature of the data and specify a random effects probit model. In addition to the length of stay, we explore other factors that affect acculturation (individual, structural and contextual). In line with the literature, cross-sectional model shows that the probability of smoking increases with the length of stay and immigrants converge to natives' smoking rate over time. The results are less clear for other health behaviours. According to the panel model, length of stay is associated with potentially risky health behaviours (smoking and excessive alcohol consumption) but is not associated with healthy behaviours (regular physical activity and healthy diet). Healthy behaviours are better explained by other acculturation factors than by the length of stay. The adoption of unhealthy behaviours by immigrants leads to increase in morbidity and mortality for certain diseases. Public health policy targeted to specific groups of immigrants based on their acculturation level is required to save future health care costs and individuals' wellbeing.
P31	Xenia	Radu	Health Behaviour and Lifestyle; Applied Microeconometrics/Health Econometrics	We investigate the effects of cuts in benefits on the wellbeing of disabled individuals.	Since the government benefits reform in 2013, the Office of National Statistics dataset points out that general wellbeing seems to have been unaffected, based on published statistics. In this context, we aim to test whether outcomes are different when considering the disabled population group. Existing literature confirms a strong relationship between benefits and mental health, emotional wellbeing, and child development (Milligan, 2011, Haveman, 1995) for the general population. It is also well documented that income is strongly related to wellbeing (Kahneman et al, 1999, Dolan et al, 2008, Winkelmann et al, 1998, Easterlin, 2010). However, the effects on disposable income on the disabled population that rely heavily on state allowances has not been research yet. Our study exploits the Annual Population Survey â€“ Personal Wellbeing dataset and uses different measures of wellbeing (life satisfaction, anxiety, happiness, personal worthiness and self-assessed health). The analysis controls for personal characteristics including the environment where the individuals live, smoking status, marital status, age, gender, ethnicity, and regional indicators such as variations in wage and unemployment rates. Individuals with disability are those considered disabled under the Disability Discrimination Act (1995) and work-limiting disabled. Implementing an instrumental variable estimation in a diff-in-diff setting, we obtain that disabled individuals are worse off on all measures of wellbeing, with the highest declines in life satisfaction and self-assessed health and particular high levels of anxiety. Meanwhile, the general population reports higher scores on wellbeing over the three-year period we analyse.
P32	Francesco Paolo	Candio	Health Behaviour and Lifestyle; Applied Microeconometrics/Health Econometrics	Estimating effectiveness using largely incomplete observational data: a case study to assess cost-effectiveness of physical activity promotion	Background: Evaluations of population level initiatives often rely on observational data characterised by large proportions of missing values. Nonetheless, such programmes represent valuable sources of information on effectiveness. Objectives: Using a largely incomplete observational data set, to estimate effectiveness while handling missing data, particularly selection bias from outcome non-response. Methods: Leeds Let's Get Active (LLGA) is a City Council-led, universal physical activity (PA) programme. LLGA aimed to increase the number of active days (NAD) by adult residents, especially by those inactive. Self-report survey questionnaires were used to collect relevant information on participants. Alternative linear models were estimated to assess the average change in NAD over time. Two ordered response models were estimated to assess the programme distributional effect on baseline PA category over time. Missingness in the data was explored and assumptions about the underlying mechanisms were made explicit. Longitudinal selection effects were explored through estimation of a multivariate probit and a lagged-dependent variable model. A sensitivity analysis with LLGA sub-samples and two alternative missingness scenario analyses were conducted to characterise the uncertainty surrounding the effectiveness results. Results: 79,115 adult residents signed up to LLGA. Of these, 547 provided both baseline and follow-up NAD values. An average one day weekly increase in NAD was estimated. When the increase was broken down by baseline PA category, results suggested evidence for inactive participants to benefit the most from the LLGA universal offer. No large differences in effectiveness estimates were found performing the sensitivity and scenario analyses. Conclusions: Issues related to estimating effectiveness from largely incomplete observational data can be, at least in part, overcome applying analytical techniques to allow more robust evaluations.

P33	Jonathan	James	Health Behaviour and Lifestyle; Experimental Health Economics/Contingent Valuation	Dietary choices among low socio economics	The aim of this study is to analyze dietary choices among low socioeconomic individuals within the context of bounded rationality. More specifically, we run a lab experiment to analyze how the provision of generic and tailored health information influences people's dietary choices. The rationale is that whereas tailored information is personalized and hence instantly relevant and applicable to the person in question, generic information, such as health promotion campaigns run by public health authorities, are by nature more general and require some degree of processing or analysis by the reader in order to apply the information received to his/her own situation. In addition, we also vary experimentally the time available for people to make their dietary choices in order to mimic a situation where time is limited and hence cognitive resources are under some pressure to make quick dietary decisions. 318 participants are first randomly assigned to one of three information treatment groups: i) no health information, ii) generic health information and iii) tailored health information -- delivered via a computer-based health assessment. We also vary the time available for participants to select food items from a specifically designed supermarket tool that is aimed at mimicking an online shopping experience. We find differences in the nutritional composition of food choices by those exposed to generic health information relative to the no information group, mainly in terms of lower fat content by around 20%, as well as lower expenditure on unhealthy items by 34%. By contrast, we find no statistically-significant impact of tailored information on dietary decisions. A follow-up session held 3 months later suggests that these effects do not persist over time. Our findings may have important policy implications for the design of public health information campaigns.
P34	John	Buckell	Health Behaviour and Lifestyle; Experimental Health Economics/Contingent Valuation ; Applied Microeconometrics/Health Econometrics	The impact of flavors, health risks, secondhand smoke and prices on young adults' cigarette and e-cigarette choices	Abstract In response to concerns that electronic cigarettes will attract young people and may lead to greater use of combustibles, regulators are considering a range of tobacco control policies. In the US, the Food and Drug Administration (FDA) has the authority to regulate certain tobacco products and attributes, including flavors and components related to the products' health harms. However, optimal policies remain unclear, in part because evidence on young adults' responses to, and trade-offs between, these attributes is limited. To address this lack of information, we conduct an online discrete choice experiment (DCE) in which young adults (ages 18-22) choose among combustible cigarettes, two types of e-cigarettes (disposable or reusable), and "none of these." Each cigarette-type is characterized by four attributes: (1) available flavors, (2) short-term health risks, (3) risks to others (secondhand smoke), and (4) price. Our sample is structured to be representative of young adults in the US who have ever tried either combustible or electronic cigarettes, with a final sample size of 2,003 respondents. DCE responses are used to estimate preferences for cigarette types and the aforementioned attributes. We find that young adults fall into two broad categories. One group shifts its choices in response to changes in the attributes (attribute-responsive), while the other selects the same outcome regardless of changing attributes (attribute-non-responsive). For the attribute-responsive group, about 70% of the sample, we estimate the impact of each attribute on the choice of cigarette-type and find that choices are motivated mostly by the desire to reduce health risks, particularly health risks to others. We also find that this group prefers non-tobacco flavors in e-cigarettes. These findings suggest that flavor-bans and health harm-based regulations (e.g. banning harmful constituents in e-cigarettes) are particularly likely to induce shifts in young adults' product choices. Thus, they constitute critical information for policymakers attempting to influence these behaviors.

P35	Dan	Liu	Health Policy	The costs and unintended consequences of financial incentives schemes in primary care: a case study of schemes for dementia	Abstract Objectives: The overall aim was to estimate payments and unintended consequences of financial incentive schemes in primary care. We investigated two dementia schemes in primary care as our case study. The schemes appear to have been effective in boosting dementia diagnosis rates but their costs and unintended effects are unknown. Methods: The financial incentive schemes in our case study were (a) the 3-year Directed Enhanced Service DES18, and (b) the 6-month Dementia Identification Scheme (DIS). A literature review was conducted to identify potential unintended effects. We constructed a practice-level dataset covering the period 2006/7 to 2015/16. Difference-in-differences analysis was employed to test the effects of the incentive schemes on (1) quality measures from the Quality and Outcomes Framework (QOF) such as performance on annual dementia review; tests for newly diagnosed cases; and all other incentivised disease areas; and (2) measures from the GP Patient Survey (GPPS) such as patient-centred care, access to care, continuity of care, overall satisfaction, and treating patients with care and concern. We controlled for effects of the contemporaneous hospital incentive scheme for dementia 'Find Assess Investigate and Refer' (FAIR) and for practice characteristics. Results: Participation in DES18 was 98.5%, and for DIS the figure was 76%. Both schemes had positive and significant effects on all quality outcomes, but the effects on some GPPS indicators were negative. In terms of costs, DES18 participants received a mean annual payment of £5,617 and the corresponding figure for DIS participants was £448. The total cost of both schemes was £150m. Conclusions: The primary care incentive schemes for dementia appear to have enhanced not only QOF performance of dementia review and diagnosis, but also have had beneficial spillover effects on QOF performance in other clinical areas. However, findings suggest there may have been a negative impact on patient satisfaction and access.
P36	Mauro	Laudicella	Performance, Efficiency and Equity of Health Care Systems	alternative routes to diagnosis stimulated successful policy interventions reducing the number of emergency diagnoses and associated mortality risk	Background: Studies on alternative routes to diagnosis stimulated successful policy interventions reducing the number of emergency diagnoses and associated mortality risk. A dearth of evidence on the costs of such interventions might prevent new policies from achieving more ambitious targets. Methods: We conducted a retrospective cohort study on colorectal (88,051), breast (90,387), prostate (96,219), and lung (97,696) cancer patients diagnosed after a GP referral or an emergency presentation in the Cancer Registry of England. Resource use and survival were compared one year before and five years after diagnosis, including the costs of GP referrals not converted into a positive diagnosis. A three-part statistical model proposed by Basu&Manning (2010) was implemented to allow for the skewness in the cost distribution, right censoring, and accelerated cost accumulation at the end of life. The effect of rerouting patients' diagnosis on costs was disentangled in two components: one due to accelerating cost accumulation over time (intensity effect) and another due to extending the life of the patient (survival effect). Results: Rerouting a cancer diagnosis results in a relatively small additional costs to the National Health System against additional years of life saved to the patient. The cost per year of life saved is £6,456 in colorectal, £1,057 in breast, -£662 in prostate (savings), and £819 in lung cancer. Reducing the overall prevalence of emergency presentations to the level achieved by the 20% of Clinical Commissioning Groups with the lowest prevalence would result in £11,481,948 against 1,863 years of life saved for Colorectal, £847,750 against 889 years for breast, -£943,434 (cost savings) against 1,195 years for prostate, and £609,938 against 1,011 years for lung cancer. Conclusion: Redirecting diagnoses from emergency presentation to GP referral appears an achievable target that can produce large benefits to patients against modest additional costs to the National Health System.

P37	Alexander	Turner	Performance, Efficiency and Equity of Health Care Systems	The effects of demand and supply pressure on care decisions in Accident and Emergency departments	Background There is increasing concern over the pressure faced by Accident and Emergency (A&E) departments due to increased patient demand and decreased supply of beds. Despite its importance for predicting the impact of pressure-reducing initiatives, there is little evidence on how A&E care decisions respond to pressure. Aims/Objectives To estimate how care decisions in A&E respond to changes in demand and the supply of beds. Data 14.1 million attendances at 139 Type 1 A&E departments in England between April 2015 and March 2016 sourced from Hospital Episode Statistics. Methods We create a measure of contemporary demand pressure for each attendance based on the number of patients attending the same A&E department within four hours of patientâ€™s A&E attendance. We create a measure of available in-patient bed supply for each attendance based on the number of patients occupying beds in the same hospital on the day prior to admission. We use probit regressions to model the probability of admission and multinomial regression to model the choice of patient disposal as a function of demand and supply pressure, controlling for demographic characteristics, diagnosis, type of presenting problem, time of presentation, and hospital fixed effects. Results Compared with demand pressure in the lowest decile, pressure in the highest decile is associated with a 1.35 percentage point reduction in the probability of admission. Estimates from multinomial models imply higher demand pressure also increases the probabilities of discharge without follow-up, referral to providers of less urgent care and leaving without being seen. All demand pressure effects are stronger at higher levels of in-patient bed occupancy. Discussion
P38	Pilar	Garcia-Gomez	Performance, Efficiency and Equity of Health Care Systems	Social protection, health inequalities and the financial crisis in the EU	Abstract In this paper we address several questions related to the evolution of income related health inequalities (IRHI) in 7 EU countries during the recent financial crisis and the role of social protection behind these trends. We first obtain trends in IRHI before and after the financial crisis. Second, we employ a decomposition analysis following the framework used in Baeten et al. (2013) and Coveney et al. (2016) to break down year-to-year changes in inequalities into the contribution of several factors (market-related income mobility, public transfer-related income mobility, inequality in market income and inequality in social transfers). We use individual data from the European Union Survey on Income and Living Conditions for Austria, Belgium, France, Greece, Italy, Portugal and Spain for the years 2004 to 2013. Our preliminary results point to a complex relationship between IRHI and public social transfers, and in particular, pensions. We find that before the financial crisis in 2008, IRHI was significantly increasing in Spain, Greece and Italy, seemingly due to the young outperforming the old in terms of income growth. As the young are on average in better health than the old, this led to an increase in the income gap between those in good and poor health. This changes as a consequence of the crisis, with countries such as Portugal and Greece experiencing significant decreases in IRHI. Second, with regard to social protection, we find clear evidence of its IRHI reducing effect, as it provides a safety net for those with low market income. However, this safety net is not equally effective in all countries. Third, the majority of the IRHI reducing effect of, mainly, pensions appears to be due to income re-ranking of demographic groups. Lastly, we find some evidence that recent pension reforms in Greece had a measurable impact on IRHI.

P39	Ruben	Mujica-Mota	Performance, Efficiency and Equity of Health Care Systems; Applied Microeconometrics/Health Econometrics	The right cot, at the right time, at the right place? Evaluating the design and organisation of neonatal care	Aims: The aim is to estimate the impact of designation of care on infant mortality and costs between neonatal care levels (i.e. NICU, SNU and LNU). Methods: Mortality and length of stay by different levels of care were estimated by causal regression analysis using instrument variables with information on: infant birth weight; sex; gestational age, mode of delivery, quintiles of multiple deprivation; foetuses and unit level of birth or high volume unit of birth. Data: Neonatal data for 2013-2014 were obtained from National Neonatal Research Database using 'Badger' neonatal electronic clinical care records. Geographic and demographic data from Office of National Statistics. Travel time data via a geographic information system. Neonatal Unit costs were taken from nationally published sources (NHS reference costs and Unit Costs of Health and Social Care 2016). Results: Mortality modelling shows birth for very preterm infants in Neonatal Intensive Care Unit (NICU) does not result in mortality reduction relative to birth intermediate care levels of care (LNU), but it does relative to lower levels of care (SNU) (a conservative estimate of 1.2 percentage point lower risk relative to other units). It is currently not possible to estimate the impact of mortality for infants transferred into NICUs. Cost modelling shows that length of stay following birth in NICU is nine days longer and costs £5,715 more than birth in another type of neonatal unit but the differences are not significant. Conclusion: The study illustrates how econometric can be used to estimate the impacts of service reconfiguration that leads to changes in designated levels of care. The research also illustrates that in this particular application, endogeneity is less of a problem than previously assumed, after adjusted for observed covariates, and so suggests that efficiency of estimation can be improved using simpler econometric models.
P40	Zoe	Firth	Performance, Efficiency and Equity of Health Care Systems	Analysis of the impact of austerity on inequality in pre-planned hospital activity per head in England using Hospital Episode Statistics	Objective To investigate how equality in access to pre-planned hospital activity has changed during the current period of austerity. Methods We constructed concentration curves with concentration indexes for elective inpatient and outpatient activity in 2005, 2010 and 2015. These measures show how activity per head at Lower Super Output Area level is distributed amongst the population by the Index of Multiple Deprivation rank, compared to what would be observed with perfect equality across deprivation levels. These concentration curves and indices are adjusted for cost (from NHS Reference Costs) to reflect differences in case mix, and a crude estimate for need. Results (preliminary) For unweighted outpatient appointments, activity per head in 2005 is more unequally distributed towards the more deprived than 2010 and 2015; inequality appears to be decreasing over time. When cost-weighting is applied the difference between years is less substantial. Results for needs weighted analysis to follow. Conclusions Based on this analysis, the picture of inequality in outpatient care appears to be reducing over time but further research is required to account for differences in need. Further research Further research will include a deeper look at the types of care facing restrictions due to austerity and whether activity in these areas has changed disproportionately among different population groups. We will also project pre-austerity activity forward to 2015/16 and compare this with actual activity from 2010-2015 to see how post austerity activity differs to how pre-austerity activity trends would have continued

P41	Philip	Britteon	Performance, Efficiency and Equity of Health Care Systems	Investigating spillovers of physician exposure to pay-for-performance incentives on the outcomes of non-targeted patients	Background Evaluations of quality incentive schemes have identified both positive and negative spillovers onto non-targeted care. Yet, the mechanisms through which these spillovers occur remain unclear. Multitasking theory suggests spillovers are more likely to occur when agents undertake both targeted and non-targeted tasks. We test this theory using the introduction of the Advancing Quality hospital pay-for-performance programme in the North West of England and variation in the overlapping roles of exposed physicians. Objectives To test whether physician exposure to pay-for-performance incentives is associated with the health outcomes of their patients with a non-targeted condition. Data 30-day mortality for 333,991 patients admitted to all hospitals in England for five non-targeted conditions between April 2007 and March 2012. Methods Multivariable regression relating risk-adjusted mortality rates for non-targeted patients to the proportion of targeted patients treated by physicians before and after the introduction of the pay-for-performance programme. Results Preliminary findings show a reduction in mortality for two of the five non-targeted conditions following introduction of the programme; acute renal failure (-2.7 percentage points, CI -4.4 to -1.1) and alcoholic liver disease (-2.0% percentage points; CI -3.7 to -0.3). Compared to the other three, these conditions were treated by physicians with a higher proportion of targeted patients (32% vs 15%). Discussion Larger positive spillovers were observed for non-targeted patients of physicians more exposed to the pay-for-performance incentives. Further work is needed to develop methodology to measure spillover effects. Understanding how spillovers occur is important for the design of future incentives.
P42	Hugh	Gravelle	Performance, Efficiency and Equity of Health Care Systems	Physician competition and low value health care. Evidence from primary care.	Objectives. We investigate whether competition amongst general practitioners (GPs) affects their provision of five types low value (ineffective) care: antibiotics for upper respiratory tract infections, bronchitis, upper respiratory tract infections, imaging for low back pain, and x-rays for bronchitis. Methods. Theory model of provision of low value care. Empirical analysis of detailed records from the Bettering the Evaluation and Care of Health study (BEACH) which draws an annual cross-section random sample of 1,000 GPs. Each GP records detailed information (condition, clinical decisions, patient characteristics) on 100 consecutive consultations immediately after each consultation and on the characteristics of the GP. We use a GP specific (rather than area specific) measure of competition: the distance to the 3rd nearest rival GP. We use data from four rounds of the survey from 2008/9 to 2011/12. We estimate logistic regressions with small area fixed effects to control for unobserved factors correlated with local GP supply and behaviour. Results. The theory model implies that competition can increase some types of low value care and increase others depending on their effects on demand and costs. GPs provide low value care in 44% of relevant consultations and are more likely to do so if they are older, do not work in a teaching practice, and do not belong to a professional association. Older and female patients are more likely to receive low value care. GPs facing more competition are less likely to prescribe antibiotics for URTI and UTI but more likely to prescribe imaging for low back pain and chest x-rays for bronchitis. Results are robust to alternative estimation methods (linear probability models) and specifications of competition. Conclusion. Low value care by GPs is affected by competition from other GPs.
P43	Hannah	Forbes	Performance, Efficiency and Equity of Health Care Systems; Applied Microeconometrics/Health Econometrics	The impact of scaling up primary care on patient care and patient satisfaction	It is expected that primary care will play a vital role in the evolution of a sustainable National Health Service (NHS). Traditionally, UK general practices are small, independent and locally focused, with an average of approximately 7,000 registered patients. Since the publication of the General Practice Forward View in 2015, national policy has been to increase practice size, forming 'super' practices in order to reduce the number of general practices. However there is little literature supporting the benefits of larger scale primary care.

P44	Jonathan	Stokes	Performance, Efficiency and Equity of Health Care Systems; Applied Microeconometrics/Health Econometrics	Does pooling health & social care budgets improve quality and lower costs?	Background There is increasing interest in care integration, especially for patients with multimorbidity. Pooling health and social care budgets has been suggested as a way to align incentives for different providers and lead to care occurring at the most appropriate level (e.g. primary over secondary care) through improved care coordination. This should improve quality and reduce costs by reducing hospital utilisation and delayed discharges. Objectives We exploit the gradual regional roll-out of the Better Care Fund (BCF), a national initiative in England that aims to pool care budgets. We examine whether patients with multimorbidity, who are most at risk of fragmented care, benefit more than patients without multimorbidity. Data We created a cohort of 13.8 million patients admitted to hospital between 1 April 2007 and 31 March 2009 based on national Hospital Episode Statistics. Multimorbidity was defined (from a list of 30 chronic conditions) in two ways: (i) patients with two or more conditions ; or (ii) patients with both a physical- and mental-health condition. This cohort was followed up to 31 March 2016. Methods We used difference-in-differences analysis to assess the overall effects of the BCF on ambulatory care sensitive admissions, total emergency admissions, delayed discharges and total costs of secondary care. We used a triple difference-in-difference approach to examine the differential effects of the BCF for patients with and without multimorbidity. Results Preliminary results indicate no effect of the BCF on the entire population. However, we find differential effects by multimorbidity subgroups, showing a statistically significant 11.8% increase in total costs of secondary care for patients with multimorbidity compared to a reduction of 5.9% in those without. Implications Our findings align with the literature showing that increased care integration results in better identification of unmet need.
P45	Ben	Zaranko	Performance, Efficiency and Equity of Health Care Systems; Applied Microeconometrics/Health Econometrics	Spillovers between health and scoial care	Health care systems in many developed countries face substantial rising demand pressures in the near future. In England, there is considerable concern that recent cuts to publicly funded social care have further increased pressure on hospitals as patients substitute between social and acute care. In this paper, we exploit variation in public spending on social care across local areas and over time to examine the extent of spillovers between hospital and social care. In England, the majority of formal social care is funded and organised by local authorities. Local authorities raise revenue from central government grants and local taxes. As part of a widespread government austerity programme between 2009/10 and 2015/16, grants to local authorities fell substantially. As a result, spending on social care fell on average by 6.4% in real terms over this period. However, the spending cuts varied considerably across different areas, with different areas choosing to protect social care spending to varying degrees. We use this variation in spending to identify the impact of social care spending on hospital use. We address the potential endogeneity of social care spending by instrumenting current spending with the proportion of local authority revenue that came from central government grants in 2009/10. These proportions were determined by a range of historical factors. Cuts to central government grants since 2009/10 have reduced budgets by a much larger percentage in areas that were more reliant on grants (rather than taxes), and in a way that are plausibly exogenous with respect to changes in local needs for hospital care.

P46	Anika	Reichert	Performance, Efficiency and Equity of Health Care Systems; Applied Microeconometrics/Health Econometrics	Clinical priorities and gaming in the light of waiting time target policies – Intended and unintended anticipatory effects	Objectives: In April 2016, the English NHS introduced a maximum waiting time target for Early Intervention in Psychosis (EIP) services. Evidence from physical care suggests that such a policy can be effective in reducing waiting times but also brings the danger of distorting clinical priorities and introducing gaming behaviour by providers. We explore changes to the waiting time distributions in the years prior to the target policy to assess whether this has led to an undesired change in clinical priorities and gaming to meet targets in anticipation of the policy introduction. Methods: We analyse a national cohort of EIP patients from the Mental Health Services Dataset in the period April 2011 to November 2015. We apply three different variants of multilevel survival models: (i) Cox proportional hazard, (ii) piecewise exponential, and (iii) discrete-time survival model, each with mixed effects. Results: Results suggest that the time from referral to acceptance for treatment (referral wait) decreased significantly over the 5-year period for low priority patients. The reduced referral wait did not lead to a reduction in the total wait as patients waited longer for commencement of treatment after being accepted onto the caseload (gaming). In 2011, high priority patients were facing a shorter referral wait than low priority ones. But over time, initially prioritised patients experienced an increase in referral wait compared to low priority patients (distorted priorities). Conclusions: Providers adapted behaviour in anticipation of the target policy by accepting patients earlier for treatment. However, provider ambitions to meet targets led to a distortion of clinical priorities and gaming. The future evaluation of the target policy should take this anticipatory behaviour into account and explore their potential effects on patient outcomes.
P47	Marjon	van der Pol	Performance, Efficiency and Equity of Health Care Systems; Experimental Health Economics/Contingent Valuation	Risk preferences and GP migration	Objectives: Emigration by doctors is of increasing concern given the high training costs and the shortage of doctors in the UK. It is crucial to increase our understanding of emigration decisions. This paper focuses on the role of risk preferences. Emigration is fundamentally a risky decision and evidence suggests that risk seeking individuals are more likely to migrate. However, it is unclear whether this can be generalised to doctors. It could be argued that there is less financial risk associated with emigration and some destination countries have lower rather than higher levels of risk associated with career and clinical care. The aim of this paper is to compare risk preferences of GPs who qualified in the UK and emigrated to Australia with those are currently practising in Scotland. Methods: We use data from Australia's national longitudinal survey of doctors (MABEL) which include 275 GPs who qualified in the UK and data from a survey of 295 Scottish GPs. Risk preferences were elicited for financial risks, career and professional risks and clinical risks on a scale from 1 to 5. Preliminary results: Preliminary results show that Scottish GPs and UK trained GPs in Australia have similar risk preferences for financial risk. However, UK trained GPs in Australia are more risk averse with regards to clinical and career risk. The difference in risk preferences for career risk seems to be mainly driven by the longer term arrivals. Conclusion: The results showed that GPs who emigrated to Australia after qualifying in the UK were more risk averse with regards to career and clinical risk. This may suggest that more risk averse GPs emigrate to Australia due to pull factors, namely lower levels of career and clinical risk in Australia. Alternatively, the NHS climate may push more risk averse doctors away from the UK.
P48	Stephen	Birch	Performance, Efficiency and Equity of Health Care Systems; Other	Opportunities for and implications of skill mix changes in health care pathways	Methods: Data were collected in questionnaires completed by providers (n=2165) and managers (n=800) in health care systems of nine European countries. Managers were asked about care pathways for which they were responsible and providers were asked about the pathways for which they provided care. Managersâ€™ data were used to identify provider group contributions to a care pathway and corroboration of information from providers on whether there are multiple professional contributions to pathway tasks or whether tasks remain confined to one, or a few professions. The provider hours to deliver a pathway task were estimated using a standard care pathway population of 100 patients. Providers reported the percentage of patients that they see for whom they perform the task, the number of times per year a patient on the pathway would receive the task and the number of times they could perform the task allowing for set up time, transitions and comfort breaks during a one hour period, under normal circumstances. The estimates were translated into FTE providers based on the standard working hours of a particular country. The workforce implications of different tasks allocations between professional groups were then explored. Given the differences in task productivity and differences in hourly costs between professional groups the potential cost savings of workforce substitution are estimated together with the implications for freeing up physician time to perform other tasks. Results: The considerable variations observed in the way care is delivered across countries offers opportunities to reduce the costs of care and/or free up physician time for use in other activities.