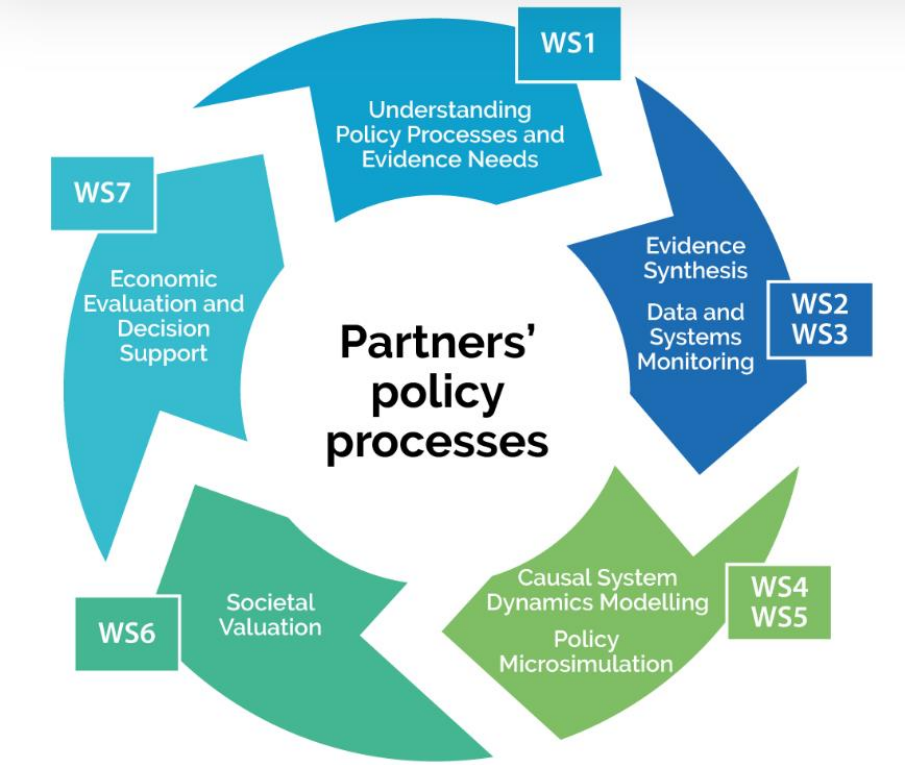
SIPHER response to Australian government Measuring What Matters consultation

SIPHER (Systems science in Public Health and Health Economics Research) is a UK based research consortium led by Professor Petra Meier at the University of Glasgow. We are funded by the UK Prevention Research Partnership, a multi-funder initiative which supports novel research into the primary prevention of non-communicable diseases in order to improve population health and reduce health inequalities.

SIPHER's vision is a shift from *health policy* to *healthy public policy*. This means all policy sectors working together to tackle health inequalities and improve the health of the public. Our eight tightly interwoven workstrands (WS) are using a mix of qualitative and quantitative systems science methods to deliver novel evidence on the costs and benefits of the complex, inter-linked and long-term consequences of policy decisions.



- **WS1 - Understanding Policy Processes & Evidence Needs** uses a novel combination of qualitative methods including interviews, systems mapping, ethnographic research and documentary analysis.
- **WS2 - Evidence Synthesis** develops and applies iterative literature search and review strategies that are suitable for supporting systems modelling.

- **WS3** - **Data & System Monitoring** builds secure data infrastructure, creates detailed synthetic populations and develops a systems monitoring function to inform adaptive policymaking.
- **WS4 - Causal System Dynamic Modellin**g analyses the dynamic and feedback effects of higher order causal processes e.g. the relationships between unemployment, poverty and mortality.
- **WS5** - **Policy Microsimulation** models the impacts of environment and policy on the characteristics of individuals and households, showing how policy impacts differ across geographic areas and societal groups.
- **WS6 - Societal Valuation** provides insight into how people value different policy outcomes and translates the multiplicity of outcomes that arise from a whole-system perspective into common wellbeing measures required for economic evaluation.
- **WS7 - Economic Evaluation & Decision Support** is using distributed, robust multi-objective optimization to develop a cross-sector decision support tool that helps policymakers identify strategies that perform well across key policy outcomes and for different assumptions about future developments.
- **WS8 - Evaluation** uses ongoing multi-perspective process evaluation to evaluate SIPHER's scientific contribution and real-world impact.

Over the last three years we have been focussed on the topic of Inclusive Economies, during this period we have developed a suite of complementary indicator sets which are key to driving our systems modelling. Our understanding of the term 'inclusive economy' is that it is concerned with economic inclusion rather than inclusive growth. This means that whilst acknowledging that there are important questions about the relationship between growth and inclusion we are focussing on the relationship between the extent and nature of inclusion on the one hand, and health and wellbeing outcomes on the other.

Our indicator sets have all been developed following extensive consultation processes and with consideration to the following key criteria to ensure that they are:

- Meaningful to decision makers (capturing a recognisable, relevant aspect of inclusive economies);
- Possible to estimate at local authority (LA) level (for LA analysis and as a building block for larger geographies); -
- Capable of analysis over time (a consistent time series), both historic and updateable; and
- Accessible i.e., published, free and not requiring application process to enable use by non-specialists where possible, in order to be useful in future, beyond SIPHER's initial funding period.

Inclusive Economy Indicators

Our inclusive economy indicators are used in our models to represent the complex relationships between economic inclusion and health and wellbeing, at both individual and societal levels. We used these indicators to understand how economic inclusion varies between different societal groups, as well as using small-area level inclusive economy indicators and typologies to explore change over time. Because of their use in modelling, it was important for us to decide on a relatively small number of indicators. We aimed to capture a) the extent of economic inclusion in places (local authorities, Combined Authorities and other subnational policy geographies), relative to each other, at a given point in time and b) change in economic inclusion over time. Within SIPHER, understanding of aggregate place-level data is combined with understanding of individual-level data, via the construction of a synthetic population dataset, which will shortly be made open access for use by other researchers. The combination of aggregate and individual indicators enables an understanding of the relationships between the kinds of aggregate indicators that policy organisations typically access and use, and what this looks like for groups of individuals, households and small areas, which cannot usually be made visible with publicly available data.

Our first step in developing these indicators was to identify domains/dimensions of inclusive economies for which indicators should be sought. To do this, we collated and compared existing indicator sets (as of early 2021), both from SIPHER's policy partners and wider organisations. This exercise allowed us to identify how some of the common dimensions of inclusive economies had featured in previous indicator sets and how they had been measured. The common dimensions included characteristics of people (human capital) and places (access to services); participation in employment and the quality of employment. More traditional indicators of the economy (its size, shape, dynamism) had also been included in some of these indicator sets.A draft list of broad domains and sub-domains was then shared within the consortium (including policy partners and community panels), and with an expert advisory group, and refined in order to arrive at a set of measures that were agreed to capture the concept of an inclusive economy. For each of these domains, indicators were then selected to best match each concept. Our final list of inclusive economy indicators is a set designed to support the measurement and monitoring of inclusive economies at the place level, and links to individual outcomes.

Table 1 - SIPHER's Inclusive Economy Indicators

ECONOMIC OUTCOMES		
Domain	**Sub-domain**	**Indicator**
Participation in economic activity	Participation in paid employment	% of working-age people who are employed, for local authorities (from APS)
	Involuntary exclusion from the labour market	% of working-age people who are long-term unemployed OR inactive due to ill health or disability (from APS)
Benefits of economic activity being widely shared	Wealth inequality	Ratio of median house prices in least expensive neighbourhood to median in most expensive (ONS estimates)
	Earnings inequality	Ratio of weekly earnings (residents in FT work) between 80th and 20th percentiles (ASHE)
	Poverty	% of children living in low-income households (relative threshold, After Housing Costs) (modelled estimates for local authorities)
	Decent pay (or, the extent to which paid labour provides remuneration adequate for a basic standard of living)	% Of employee jobs that are paid at or above the Living Wage (as defined by the Living Wage Foundation) dation) (data request from ONS)
	Job security/precarity – an aspect of job quality	% of employees in permanent work (APS)
WIDER OUTCOMES/ENABLERS		
Domain	**Sub-domain**	**Indicator**
Education and skills	Whether people are gaining the skills and qualifications to enable economic participation and success	% of adults aged 20-49 with a Level 2 or higher NVQ qualification
Connectivity	Digital connectivity/inclusion	Engagement with digital at LSOA level based on Internet User Classification (IUC)
	Physical connectivity	Public transport accessibility measure
Affordability/costs of living	Housing affordability	Ratio of median house prices to median (workplace) earnings
	Costs of Living	Fuel poor households
Structures and systems enabling inclusion	Inclusion in decision-making	% Voter turnout in local elections

Each domain is linked to a data source which enables the indicators to be tracked and analysed at local authority level thereby ensuring this output can be used beyond its application in SIPHER's modelling processes. More detail including a full breakdown of data sources can be found in this Technical Paper.

The SIPHER 7 Wellbeing Indicators

As a precursor to our systems-based analysis of the complex relationships between upstream policies and wellbeing, economic and equality outcomes we developed a common set of wellbeing indicators from different domains such as health, income, employment status etc. One challenge associated with multiple indicators of wellbeing is that they can be difficult to interpret.

For example, if someone's self-reported health improves but their disposable income goes down: is this change, overall, for the better, worse, or no different? For SIPHER models to be informative for decision making, we needed a measure that combines the various indicators of wellbeing in a single index by applying relative weights to each of them.

We identified a set of domains of life that collectively represent the overall wellbeing of a person, and for each domain selected one indicator to best represent it. The seven indicators that form the SIPHER-7 were selected by members of the Consortium through an iterative internal and external consultation process that is described here. The linked report also shows descriptive statistics to illustrate SIPHER-7 in the UK general population, using data from the UK Household Longitudinal Study "Understanding Society". Details of how we developed the single index, known as 'Equivalent Income' can be found in this blogpost.

Table 2 - SIPHER-7 Wellbeing Indicators

Domain	Indicator	Response categories
Income	Disposable§ income of your household is …	Median values of deciles of household disposable income after housing costs.
Employment	Your employment situation is….	FT employment‡; PT employment; FT education / training / apprenticeship; PT education / training / apprenticeship; volunteering; informal caregiving; home making; job seeking; retired; long term sick or disabled; other
Effects of physical health	You accomplish less because of your physical health …	None of the time / a little of the time / some of the time / most of the time / all the time
Effects of mental health	You accomplish less because of your emotional problems …	
Neighbourhood safety	You are concerned about the safety of the neighbourhood you live in …	Hardly ever / some of the time / often
Housing	Your home is in a reasonable state of repair, has reasonable facilities (cooking/washing) and provides reasonable warmth …	Yes to all of these / yes to some of these / none of these
Social isolation	You feel isolated from others …	Hardly ever / some of the time / often

§ Monthly (or weekly) income after tax, national insurance, any occupational pension contributions, and after deducting your rent, mortgage payments or other housing costs[2].

‡ Employment includes self-employment. Employment includes being on maternity / parental / sick / furlough leave.

Following on from the development of the indicators our Societal Valuation Workstrand (WS6) has carried out a series of large scale online Discrete Choice Experiment (DCE) surveys to elicit the relative wellbeing preferences of members of the public across different domains of wellbeing from both their individual perspective and with consideration to society as a whole. We are still in the process of analysing the data however the results from our first wave of

surveys have provided us with some interesting insights into what really matters to people. For example, feeling lonely often is worse than physical health affecting daily activities most of the time, but better than mental health affecting daily activities most of the time. Another finding is that being unemployed and actively seeking work is similar to being concerned about neighbourhood safety some of the time.

Health Indicators - Quality Adjusted Life Expectancy (QALE)

Modelling and evaluating the impact of public policy on health requires a shared understanding of how we conceptualise and measure health as an outcome. Our primary health indicator is Quality Adjusted Life Expectancy (QALE). Simply put, QALE is a variation on standard life expectancy, where the value of each single year of age is weighted by the average health of the population at that age (as measured on a 0-1 scale where 0 represents death, and 1 represents perfect health). This means that QALE is a measure of the cumulative expected health that somebody will experience over their lifetime.

As such, QALE is a summary measure of health in a population, which encompasses both health and length of life. Unlike the more widely used HLE (or DFLE), QALE captures health across the whole life course. As a result, QALE is sensitive to improvements in both health-related quality of life at any point in people's lives and also in length of life, whereas HLE is only sensitive to improvements which extend the period during which individuals are living in good health. This means that QALE can be influenced by interventions that target people at any stage of their life, from childhood to very old age, whereas HLE is largely influenced by interventions that target people in their 40s to 60s. A further benefit of QALE is that it is very closely aligned with the concept of a Quality-Adjusted Life Year (QALY) – one way of thinking about QALE is as an individual's future expected QALYs at birth. This has significant benefits for health economic modelling – a model that incorporates QALE can be more easily used for cost-effectiveness analyses. We also have a range of supplementary health indicators, listed below and described in more detail here.

- SF-12 Mental and Physical Health Components (Self-reported health)
- Receipt of benefits due to inability to work through ill health
- Hospital admissions for non-communicable diseases
- Emergency admissions to hospital for any cause

Taken together these indicators form a broad 'basket' of health measures, which notwithstanding some limitations, collectively cover all of our requirements and are able capture impacts of public policy on health and health inequalities in our modelling outputs.