The Strategy Unit.

Herefordshire and Worcestershire STP Economic Impact Study

Phase 2

west midlands
ACADEMIC HEALTH SCIENCE NETWORK

NHS
Midlands and Lancashire
Commissioning Support Unit

Project rationale, scope and key findings

Rationale

Public sector services rarely think of themselves as economic actors, but there is a growing sense of the contribution they can make to local growth. *The NHS Long Term Plan* seeks to support wider social goals, including through the concept of the NHS being an 'anchor institution' in local economies.[1]

Decisions about the way public resources are allocated and service models configured have material socio-economic consequences beyond their impact on individual citizens. If these wider consequences are known and embraced in decision-making, there is potential to derive greater overall benefit from the investment of each public sector pound.

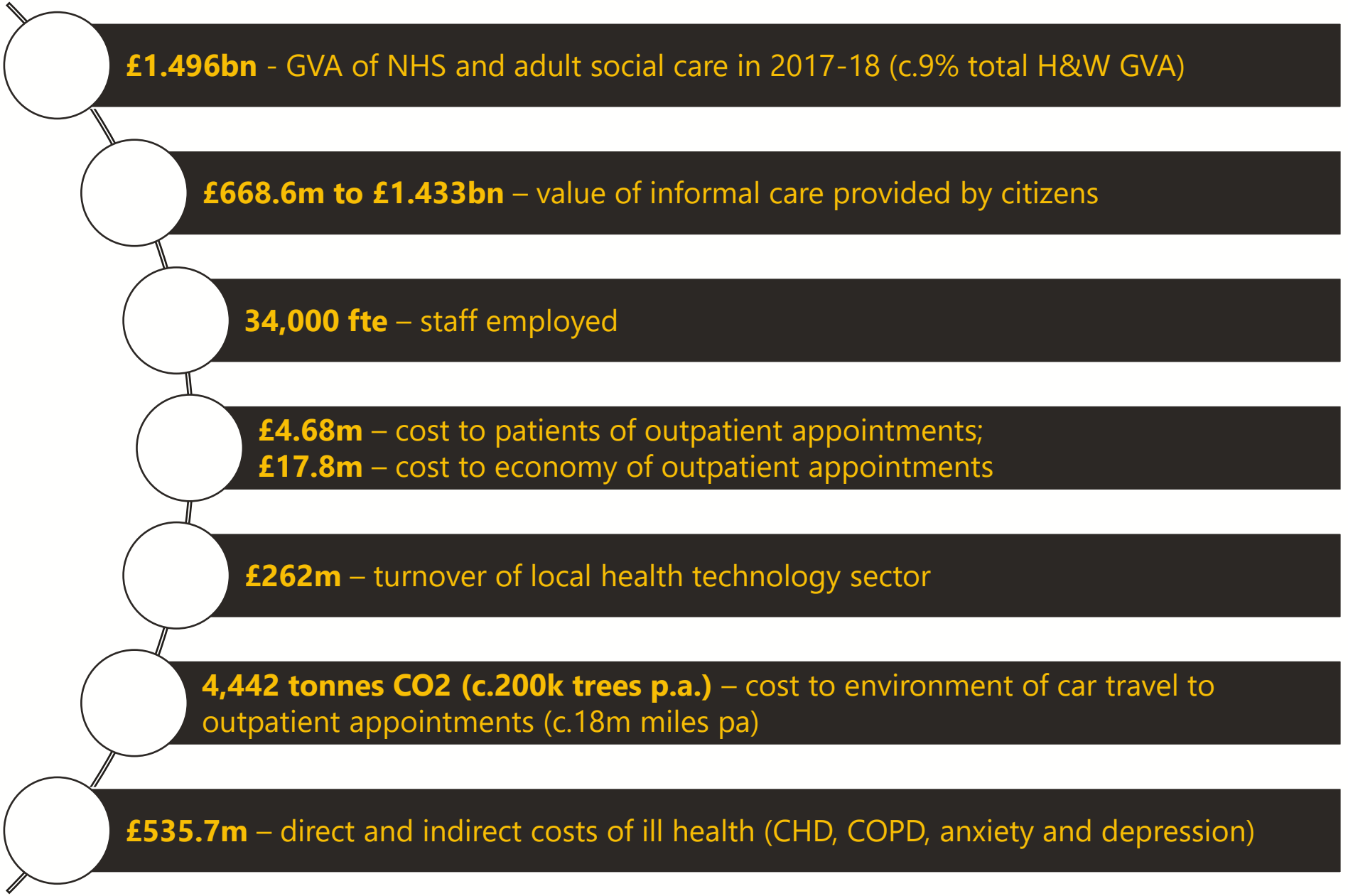
With support from the West Midlands Academic Health Science Network, Herefordshire and Worcestershire STP is seeking understand:

a) Its current impact on the wider local economy; and

b) How that impact might be increased.

1. https://www.longtermplan.nhs.uk/online-version/appendix/

Current impact of the NHS - phase one findings



Scope

The baseline phase of this project analysed the current impact of health and care services on the wider local economy. It was completed in September 2019 with the submission of the full phase 1 report and a summary presentation to the STP Partnership Board.

The second phase of this work is reported here and involved an analysis of two potential initiatives, agreed with the project steering group, that could enhance the STP's wider socio-economic impact. The selected initiatives were:

- **Reducing the adverse impacts of attending face to face hospital outpatient appointments**
- **Realising the benefits of providing increased support to informal carers.**

The initiatives are linked to existing STP priority areas of outpatient transformation and commitment to carers, and the assumptions used in the modelling were either derived from the international evidence base and/or provided by the STP.

The level of analysis undertaken reflects the desire to establish proof of concept. More detailed work would be required to build a local business case for implementing the initiatives.

Key findings – outpatient transformation

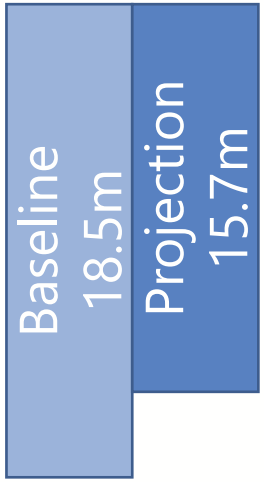
By achieving the LTP ambition of a 30% shift in outpatient appointments by 2024/24, which results from the combination of reducing unnecessary appointments and converting those remaining appointments that do not require face-to-face contact to be delivered virtually, it has been estimated that:

- **GVA can be increased by £2.6m** through reduced absence from work as a result of travelling to, waiting for and attending appointments
- **2.78m less miles** are travelled to attend appointments
- **Carbon emissions are reduced by 671 tonnes**
    - This is the equivalent of the estimated impact of 1000 economy-class return flights from London to New York
- Following this reduction, if outpatient pollution levels remain the same for another 10 years, this will have avoided **869 COPD** cases. This is the equivalent of a **£2,537,857 saving.**

Impact of reducing outpatient appointments - 2023/24

GVA loss

Miles travelled



CO_2 emissions

Annual tree carbon offset requirement

Patient costs

Baseline: 2017/18
Projected: 2023/24

Charts shown are not to scale

Key findings – informal carers support

The initiative is concerned with providing additional information and support services for informal carers of working age. This could include; providing initial information about how to provide effective and productive care, learning how to cope with their caring responsibilities and highlighting where they can access help.

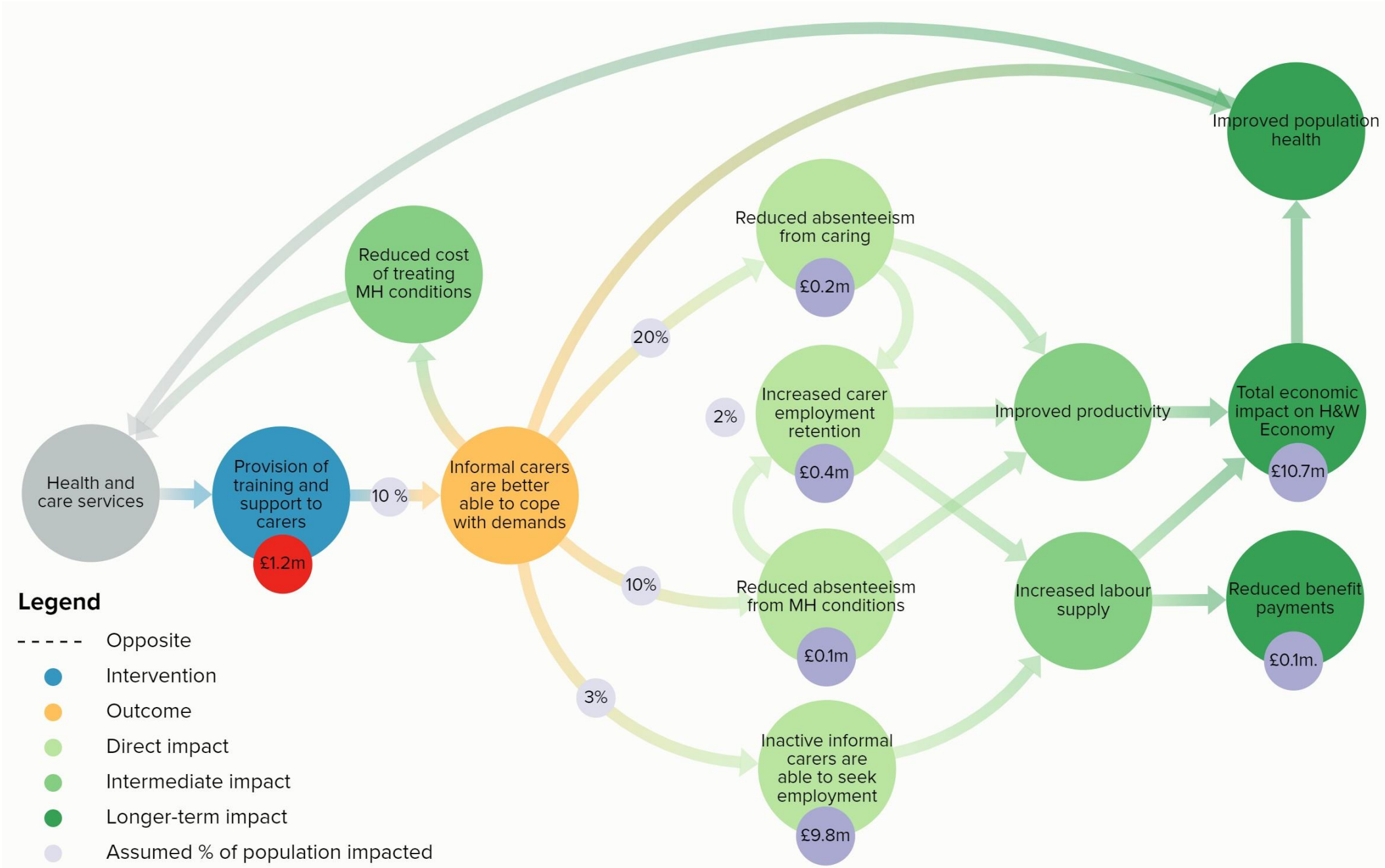
The **value of informal care** provided by citizens in the Herefordshire and Worcestershire was estimated in phase one of the project to be the **equivalent of £1.433bn in 2017/18** (if it was to be replaced with funded home care). This is comparable to total NHS spend in the STP.

Some of this informal care is provided at the expense of other economic activity. Through better planning and support for informal carers, some of these carers could play a greater role in the labour market.

An **investment of £1.2 million** from health and organisations, supporting informal carers could **generate an economic benefit of over £10.7 million**. This is through improved productivity, employee retention and informal carers returning to the labour market. A considerable proportion of this impact is through the filling of hard to fill vacancies.

(It should be noted that in reality, it may not be possible to fill all these vacancies with informal carers. This would decrease the economic impact of the initiative.)

Impact of increased support to informal carers



Reducing the adverse impacts of hospital outpatient appointments

The initiative

Rationale

Outpatient appointments are commonly identified as in need of transformation. There are increasing numbers of appointments, spiralling costs and a considerable number of appointments are cancelled, or patients do not attend. The NHS Long Term Plan highlighted that the model is outdated and unsustainable and it aims to reduce face-to-face appointments by 30% by 2023/24.

Intervention

Avoiding unnecessary outpatient appointments and converting those remaining appointments that do not require face-to-face contact to be delivered virtually.

Impacts

- Reduced environmental impact and potential associated long-term health impact
- Increased economic value from productivity of working-age population
- NHS cost savings/efficiencies
- Reduced patient travel costs

The model

The modelling was made up of two phases to fit with local planning:

1. 30% reduction / shift in selected specialties split across 2019/20 and 2020/21 (15% change each year);
2. 30% reduction / shift in the remaining specialities split across 2021/22, 2022/23 and 2023/24 to align with the wider LTP ambition (10% change each year).

Selected specialities were identified by the STP, based on specialities where pilots for outpatient modernisation had already been proposed in the short term. These were:

- Herefordshire: Dermatology, Urology
- Worcestershire: General Surgery, Gynaecology, Urology, Cardiology, and Respiratory Medicine.

For each time period, the changes were split equally between general reductions in activity and shifts to virtual style appointments. Appointments included in the change have been selected at random, regardless of distance and location.

To ensure the appropriateness of the modelled reduction/shift, the model only included outpatient follow up appointments where no procedure had been carried out.

Model assumptions

1. To predict the number of follow-up no procedure outpatient appointments in 2019 - 2024, an average growth rate for last 5 years was used, adjusted for the number of appointments which were shifted to digital.
2. All trips to outpatient clinics were assumed to be either by car or by public transport (at random)
3. To calculate the volume of avoided COPD cases, the following assumptions were used:
    - Population of Herefordshire & Worcestershire will grow according to the ONS forecast.
    - Prevalence of COPD will grow based on the current changes in the prevalence levels.
    - Each 1 µg/m3 of NO2 increases the risk of COPD by 1.05 times (risk if fully adjusted by demography and health behaviour factors)
    - Each COPD case costs local economy, on average, £2,920 per year, which was calculated in the Phase 1.

Model assumptions (cont.)

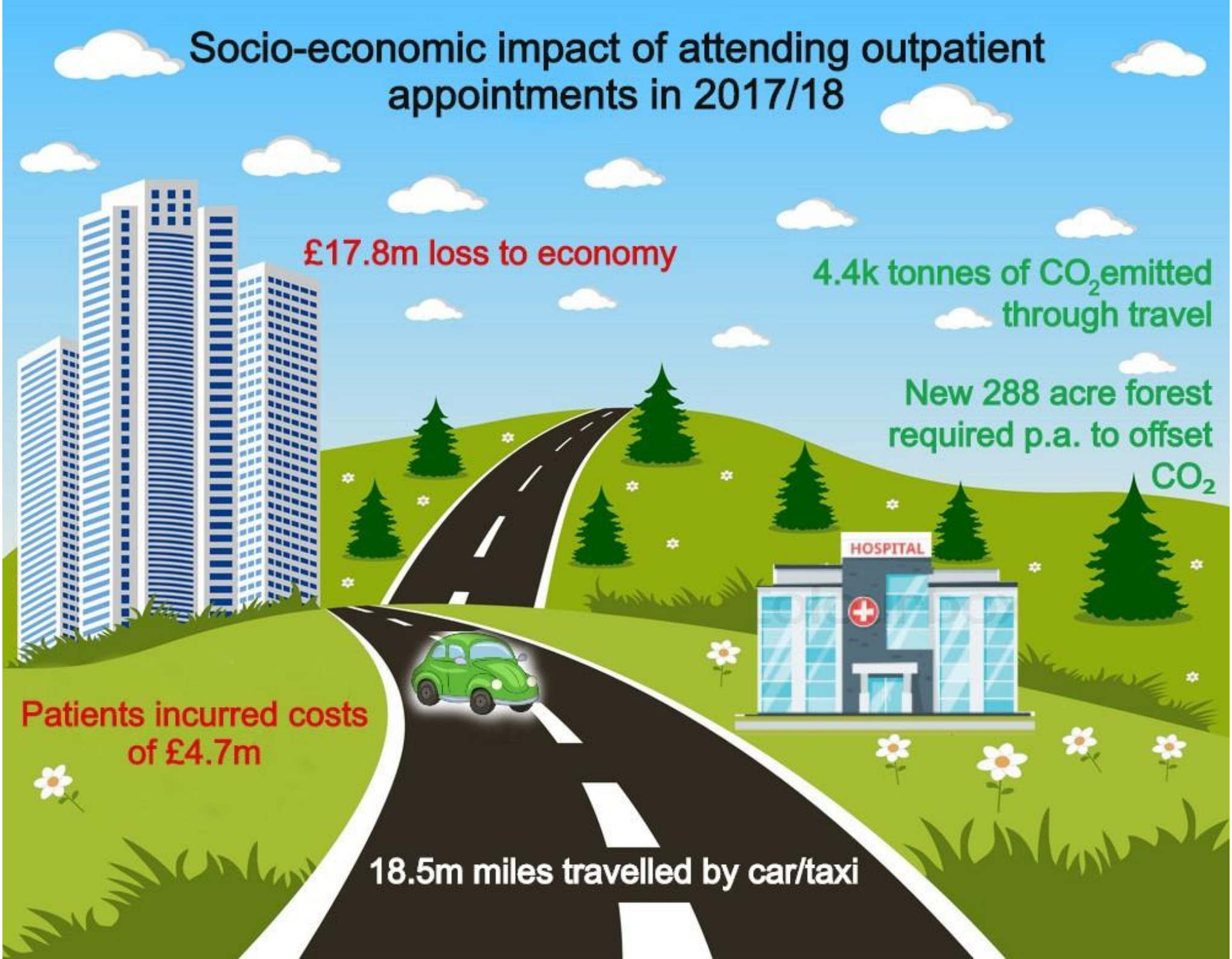
4. To calculate the environmental and economic costs, assumptions from the Phase 1 were used. Economic impacts were not uplifted for inflation.
5. The model only estimates the environmental impact of those appointments attended by car, due to the difficulties in estimating the emissions related to public transport travel. This means, in reality, the environmental impact of a reduction or a shift will be even greater.

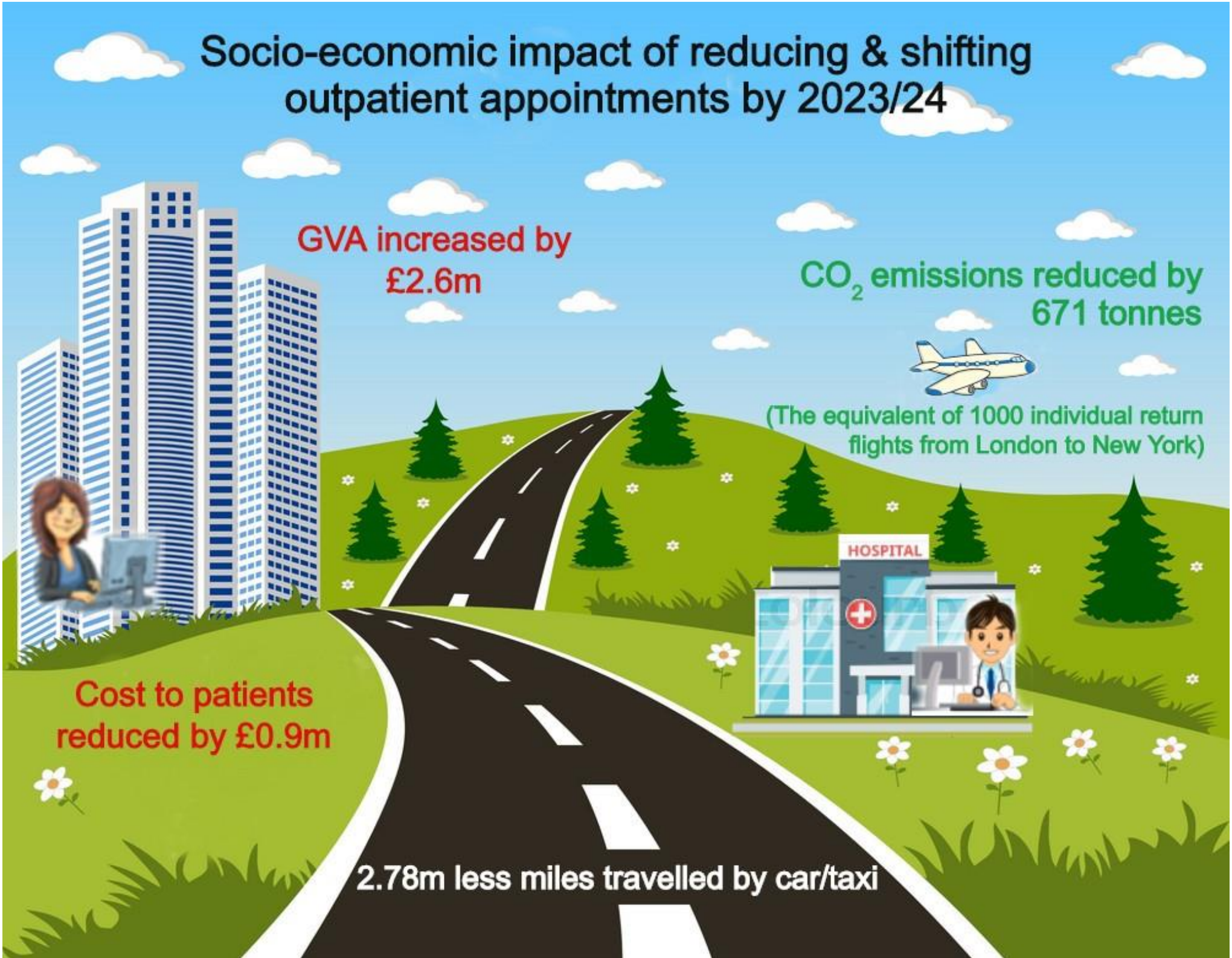
Model assumptions (cont.)

Category	Assumption	Source
Average car on road MPG, adjusted for proportion of petrol/diesel cars	46.3	The Society of Motor Manufacturers and Traders (2018)
% Diesel Cars	40%	Department for Transport (2019)
% Petrol Cars	60%	Department for Transport (2019)
Average Diesel Price (West Midlands)	134 p/Litre	AA Fuel Price Report (May 2019)
Average Petrol Price (West Midlands)	128.6 p/Litre	AA Fuel Price Report (May 2019)
Average parking cost (West Midlands)	£2.00 per hour	DoH: NHS car-parking management: environment and sustainability (2015)
Bus fare	£4.60 (day saver), free if over working age	National Express West Midlands
Full-time Employment Rate	74% (37.2 hours/week)	ONS: Regional labour market statistics in the UK: (July 2019)
Part Time Employment Rate	27% (16.3 hours/week)	ONS: Regional labour market statistics in the UK: (July 2019)

Model assumptions (cont.)

Category	Assumption	Source
Waiting Time in Hospital	51.3 mins	NHS outpatient survey; NHS guidance on arrival times
Average GVA per hour worked (Herefordshire & Worcestershire)	£26.10/hour	ONS: Regional and sub-regional productivity in the UK: (February 2019)
Duration of Appointment	20 mins	NHS guidance on duration of appointment
Proportion of appointments taken when patient is out of work (annual leave/sickness absence/out of hours)	12%	NHS data on out of hours provision
Average Rail Cost	£5.65	Office of Rail and Road (2019)
Rail to Bus/Coach Ratio	1:4	Department for transport (2018) - WMids
Average CO2 emissions of cars in use (UK)	149.6 g/km	The Society of Motor Manufacturers and Traders (2018)
Bus/Coach Pollution	4.9% of Total Car Emissions	Department for Transport (2018)
Train Pollution	2.9% of Total Car Emissions	Department for Transport (2018)
Estimated economy-class return flight from London to New York	0.67 tonnes of CO2 per passenger	UN's civil aviation body, the International Civil Aviation Organization (ICAO)


Socio-economic impact of attending outpatient appointments in 2017/18
£17.8m loss to economy
4.4k tonnes of CO_2 emitted through travel
New 288 acre forest required p.a. to offset CO_2
HOSPITAL
Patients incurred costs of £4.7m
18.5m miles travelled by car/taxi


Socio-economic impact of reducing & shifting outpatient appointments by 2023/24
GVA increased by £2.6m
CO_2 emissions reduced by 671 tonnes
(The equivalent of 1000 individual return flights from London to New York)
HOSPITAL
Cost to patients reduced by £0.9m
2.78m less miles travelled by car/taxi

Detailed results

	19/20	20/21	21/22	22/23	23/24	Total
Appointments reduced / shifted (50/50)	5,694	5,153	62,442	59,632	56,949	**189,869**
Distance travelled reduction (car miles)	100,477	102,675	873,139	843,901	868,013	**2,788,205**
CO2 reduction (tonnes)	24.19	24.71	210.17	203.13	208.94	**671.14**
Driving cost reduction	£12,900	£13,182	£112,100	£108,346	£111,442	**£357,971**
Public transport cost reduction	£11,025	£10,644	£97,357	£140,030	£128,684	**£387,739**
GVA increase	£81,872	£81,010	£778,398	£955,298	£704,310	**£2,600,888**
Parking cost / parking income reduction	£4,374	£4,334	£43,697	£55,026	£42,021	**£149,452**
Total	**£110,170**	**£109,170**	**£1,031,553**	**£1,258,700**	**£986,458**	**£3,496,051**

30% ▲ selected specialties

30% ▲ all other specialties

Following this reduction, if outpatient pollution levels remain the same for another 10 years, this will have avoided **869 COPD** cases. This is the equivalent of a **£2,537,857 saving.**

Additional commentary

The analysis provides an analytical framework for assessing the socio-economic impact of transforming outpatient services as well as making them more accessible to patients who are in employment.

It does not represent a complete business case for a service change but does estimate that considerable gains could be made – particularly in terms of productivity, which could be of significant benefit to the local economy, and the environment, which will contribute to a positive health impact overtime.

Whilst it can be seen that there are socio-economic benefits to the local system, and outpatient provider capacity could be reallocated, it should be noted that outpatient providers may also be impacted by the stranded costs of the reduction in outpatient activity, as well as reductions in parking income (where applicable).

Before video consultations are implemented, a Privacy Impact Assessment should be conducted. NHS Digital guidance on the subject can be found here: https://digital.nhs.uk/data-and-information/looking-after-information/data-security-and-information-governance/information-governance-alliance-iga/information-governance-resources/information-governance-and-technology-resources

Realising the benefits of providing increased support to informal carers

Phase one results: Value of informal care

In addition to public sector investment in health and care services, local citizens provide care for their friends, relatives and neighbours. That care can be allocated an economic value, in addition to its direct value to those who give and receive it. We have estimated the annual value of informal care across the STP in two ways:

£668.6m p.a.

The opportunity cost of the **leisure time** foregone by informal carers.

£1,432.9m p.a.

The cost of replacing informal care with **funded home care**.

The home care estimate is comparable to total NHS spend in the STP. Tables on the following slide provide a breakdown of these values by geography and employment status.

The initiative

Rationale

Informal caring responsibilities borne by those who are employed or who are economically inactive but would like to return to work can be detrimental to the health and wellbeing of those carers, leading to increased absence from work.

Intervention

The initiative is concerned with providing additional information and support services for informal carers of working age. This support would be an initial one hour face to face meeting at a GP practice with a family support worker. This could include; providing initial information about how to provide effective and productive care, learning how to cope with their caring responsibilities and highlighting where they can access help. There would then be a number of follow-up sessions with content based on needs of the informal carer.

Impacts

- Increased productivity
- Reduced workforce turnover
- Reduced benefits payments.

The model

The analysis covers two groups of informal carers:

- those in employment
- those not in employment but who would like to return to the labour market.

Impacting each of these groups will positively benefit the local economy.

Re-employing out of work individuals and filling hard to fill vacancies* (HtFV) could increase the level of output in the H&W, as more people will be employed and producing goods or providing services. This filling of HtFV makes up a significant proportion of the economic benefit of the model.

HtFV are defined as vacancies where an employer cannot find applicants with the skills, qualifications or experience to do the required job. This means that the job goes unfilled, and production is lost. Skill-shortage vacancies have proved persistent for a number of occupations over time. For example, recruitment to Machine Operative roles in Construction and Professional roles in the Manufacturing, Business Services, Transport and Communications, and Health and Social Work sectors.

The model assumes that 10% of the informal carer population (identified in phase one of the project) is reached by the intervention to support viability.

* According to UK Employer Skills Survey, Hard to Fill vacancies are those open vacancies which are hard to fill based on the managerial judgement

Model assumptions

Overall number of informal carers was derived from Phase 1 and is accounted for 81,522 people in the region. The other baseline assumptions are following:

Category	Assumption	Source
Percentage of informal carers feeling depressed	7% of working carers; 14% for unemployed carers	Eurocarers: The impact of caregiving on informal carers' mental and physical health
Average duration of absence for caring responsibilities	2 days per year	ACAS
Average number of days lost due to mental health issue	25.8	Labour Force Survey
Cost of 1 day worked in Herefordshire and Worcestershire	£113.28	Nomis – official labour market statistics
Cost to replace an employee	16% of annual salary for low salary employed 20% of annual salary for middle salary employed	Center for American Progress
Value of labour market re-entry	£28,210	Nomis – official labour market statistics
Number of Hard to fill vacancies (HtFV)	3,007	Employer Skill Survey 2017
Value of carers allowance	£64.60 per week	CarersUK
Value of job seeker allowance (JSA)	£57.9 per week (under 25 years old), £73,1 per week (others)	Gov.uk
Number of people claiming JSA	4,034 (including 545 under 25 years old and 3,489 over 25 years old)	ONS

Model assumptions (cont.)

The assumptions about the costs and results of the intervention are presented below

Category	Assumption	Source
1 hour of Family Support worker	£31	Personal Social Services Research Unit (PSSRU 2018)
Number of sessions	3 sessions per year	Assumption based on the intervention design
Duration of session	1 hour	Assumption based on the intervention design
% of carers reached	10%	Assumption based on the intervention design
Waiting time for service	11.3 minutes	GP waiting times
Travel time to service	Travel times to GP practice: from 8 to 10 min based on Local Authority	GP travel times
Impact of support on rate of absence due to caring	20%	Assumptions based on Survey of Carers in Households 2009/10
Impact of support on retention of employed workers	2%	Assumptions based on Survey of Carers in Households 2009/10
Impact of support on rate of absence due to stress and anxiety	10%	Assumptions based on Survey of Carers in Households 2009/10
Impact of support on unemployed and inactive workers	3% of workers re-enter the labour market	Assumptions based on Survey of Carers in Households 2009/10

Model assumptions – sensitivity analysis

	low cost - low impact scenario	base case scenario	high cost - high impact scenario
Percentage of employed carers with stress or anxiety issues	5%	7%	10%
Average duration of absence for common mental health issues (days)	15.8	25.8	35.8
Days missed due to caring responsibilities	1.5	2	5
Travel time to service (min)			
Bromsgrove	6	9	12
Malvern Hills	7	10	13
Redditch	6	9	12
Worcester	5	8	11
Wychavon	7	10	13
Wyre Forest	6	9	12
Herefordshire	7	10	13
Waiting time for service (min)	6.3	11.3	16.3
Impact of support on retention of employed workers	1%	2%	3%
Impact of support on rate of absence due to caring	10%	20%	30%
Impact of support on rate of absence due to stress and anxiety	5%	10%	15%
Impact of support on unemployed and inactive workers	2%	3%	4%
Number of sessions	1	3	5
Duration of session	0.5	1.0	1.5

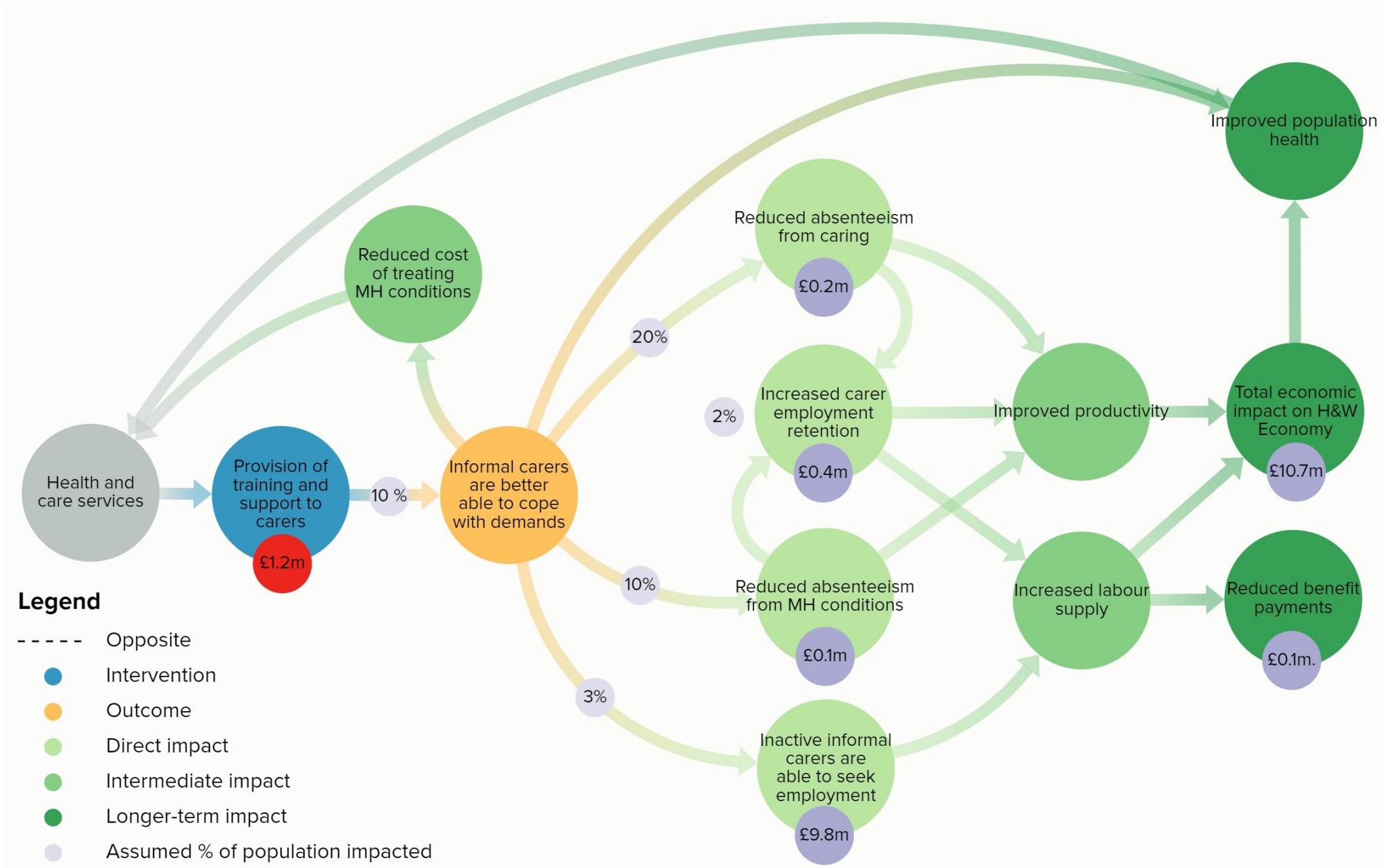
Results: base case scenario

The model and its assumptions estimate that an **investment of £1.2 million** from health and organisations in additional support to just 10% of informal carers could **generate an economic benefit of over £10.7 million**. This is made up of four main economic benefits of the intervention:

- **Out of work participants finding and maintaining employment**. These individuals are assumed to fill HtFV, so could contribute additional output to the local economy. This is equal to **£9.8m** and makes up the largest proportion of the benefit.
- **Employed individuals being supported to stay in employment**, when in the absence of the intervention they would have ended their employment to provide informal care. This is estimated to be worth **£0.4m**.
- **Employed carers spend less time absent from work** due to the support and guidance they receive. This is estimated to be **£0.3m**, with most of this due to a reduction in the absence required to provide informal care.
- The **benefits paid to people who are out of work are reduced**. This has been estimated to be **£0.1m**. The change in benefit payments is not a local economic benefit, but an interesting impact of the intervention.

It should be noted that in reality, it may not be possible to fill all these HtFVs with informal carers. This will decrease the economic impact of the initiative.

Results: base case scenario



Sensitivity analysis results

To consider possible effects of the intervention, one-way sensitivity analysis was conducted. Two additional scenarios were considered: implementing low cost intervention (1 session instead of 3) and high cost intervention (5 sessions instead of 3). Some baseline assumptions were also varied. It was assumed that lower cost intervention will result in low impacts and higher cost intervention will result in higher impacts. Detailed assumptions are presented in the 'Model assumptions' part of the report,

	low cost - low impact scenario	base case scenario	high cost - high impact scenario
Reduced absenteeism from Mental health conditions (£m)	0.04	0.10	0.29
Reduced absenteeism from caring (£m)	0.08	0.22	0.81
Additional GVA produced (£m)	6.55	9.82	13.10
Increased career employment retention (£m)	0.22	0.43	0.65
Reduced benefit payments (£m)	0.08	0.12	0.16
Cost of provision-staff time (£m)	0.13	0.76	1.90
Cost of time spent at service – employed (£m)	0.05	0.28	0.68
Cost of time spent at service – unemployed (£m)	0.03	0.15	0.37
Total cost to STP (£m)	**0.21**	**1.19**	**2.95**
Total impact on H&W economy (£m)	**6.98**	**10.72**	**15.06**

Additional commentary

Compared to the costs of provision, there are significant economic benefits that could result from this intervention. These are:

- employed individuals being supported to stay in employment,
- employed carers spending less time absent from work, and
- economically inactive carers finding and maintaining employment.

Though not modelled here, the intervention could also have long term benefits for the NHS and the quality of life of carers and the cared for (e.g. the physical health of informal carers). Additionally, employment has a beneficial effect on health and wellbeing, which would provide additional long-term benefits to the NHS.

Next steps

Next steps?

What we suggest:

- Use this study and its findings to engage with stakeholders and socialise this way of thinking so that it can start to influence future decision-making for the overall benefit of society.
- Start to build the case for moving towards carbon neutrality by a date to be agreed
- Each of these high level indicative model's are scoping exercises of potential ways forward but do not represent a complete business case for service change. . If the results are appealing, more robust business cases should be developed prior to implementation.
- If selected for implementation, the impact of the initiative(s) should be evaluated and lessons learned for future work.

Further analysis:

- Car-borne OP traffic in terms of accidents; noise pollution and knock on effects etc.
- Environmental impacts of other service configurations that may benefit from transformation e.g. GP appointments
- Impact of introduction of environmentally friendly travel schemes e.g. electric / hybrid vehicles

The Strategy Unit.

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