

A SYSTEMATIC REVIEW AND META-ANALYSIS PROTOCOL OF ECONOMIC MODELS AND TECHNIQUES FOR QUANTIFYING THE IMPACT OF GREEN AND BLUE SPACES IN PUBLIC HEALTH

VICTORY EZEFOR, LLINOS SPENCER, MARY LYNCH, RHIANNON EDWARDS

CENTRE FOR HEALTH ECONOMICS AND MEDICINES EVALUATION

BANGOR UNIVERSITY



Canolfan Economeg Iechyd a Gwerthuso Meddyginiaethau

CHEME

Centre for Health Economics and Medicines Evaluation

BACKGROUND

- THERE IS GROWING EVIDENCE THAT USING GREEN OR BLUE SPACES CAN IMPROVE POPULATION HEALTH (COON ET AL., 2011; NIELSEN & HANSEN, 2006).
- THE BBC IN AN ARTICLE (KINVER, 2016) REPORTED THAT OUTDOOR GREEN EXERCISE SAVED AN ESTIMATED £2.2 BILLION EACH YEAR JUST ON ADULTS.
- SUCH INITIATIVES INCLUDE PHYSICAL ACTIVITY INTERVENTIONS IN GREEN AND BLUE SPACES;
 - VARIOUS ACTIVITIES IN THE WOODS, (ACTIF WOODS WALES EVENTS, 2017),
 - RUNNING IN PARKS (PARKRUN UK - BANGOR PARKRUN, 2018),
 - SWIMMING IN LAKES (WILD SWIMMING, 2018) AND
 - WALKING IN THE MOUNTAINS (CYMDEITHAS EDWARD LLWYD SOCIETY, 2016).



Canolfan Economeg Iechyd a Gwerthuso Meddyginiaethau

CHEME

Centre for Health Economics and Medicines Evaluation

AIMS & OBJECTIVE

- ENVIRONMENTAL INITIATIVES TO IMPROVE THE PHYSICAL HEALTH, MENTAL HEALTH AND WELL-BEING ARE NOW BEING EVALUATED TO DETERMINE THE EXTENT OF THEIR IMPACT IN TERMS OF QUALITY OF LIFE AND COST TO THE PROVIDER (MCCURDY ET AL., 2010).
- THE AIM OF THIS SYSTEMATIC REVIEW IS TO INVESTIGATE PREVIOUS METHODS AND MODELS USED TO EVALUATE THE HEALTH BENEFITS OF USING GREEN OR BLUE SPACES AND THEIR COST.
- AN EVALUATION OF THE COST-EFFECTIVENESS, COST-BENEFIT, NET BENEFIT, FINANCIAL RETURN, AND RETURN ON INVESTMENT ASPECTS OF THE INTERVENTIONS USED TO VARIOUS STAKEHOLDERS INCLUDING THE NHS AND CUSTODIANS OF THE GREEN AND BLUE SPACES.
- THE TECHNIQUES PREVIOUSLY USED BY OTHER AUTHORS WILL BE DESCRIBED AND A META-ANALYSIS WILL BE CARRIED OUT IF HOMOGENOUS STUDIES ARE FOUND.

METHODOLOGY

- THE SYSTEMATIC REVIEW WILL FOLLOW THE PRISMA GUIDELINES (MOHER ET AL., 2015)
- ARTICLES TO BE REVIEWED WILL INCLUDE PEER-REVIEWED ARTICLES FROM THE PAST 30 YEARS FROM VARIOUS DATABASES WHICH WILL INCLUDE HEALTH ECONOMIC DATABASES AND MEDICAL DATABASES.
- WHAT MODELLING TECHNIQUES AND METHODS HAVE BEEN IMPLEMENTED TO INVESTIGATE THE HEALTH BENEFITS OF GREEN AND BLUE SPACE INTERVENTIONS?
- FROM RESULTS OBTAINED IN THE REVIEW, A META-ANALYSIS WILL BE CONDUCTED AND A MODEL WOULD BE DEVELOPED TO COMPARE THE OUTCOME OF THE VARIOUS LITERATURE REVIEWED.
- FROM RESULTS OBTAINED IN THE REVIEW, A META-ANALYSIS WILL BE CONDUCTED AND A MODEL WOULD BE DEVELOPED TO COMPARE THE OUTCOME OF THE VARIOUS LITERATURE REVIEWED.



Canolfan Economeg Iechyd a Gwerthuso Meddyginiaethau

HEME

Centre for Health Economics and Medicines Evaluation

INCLUSION & EXCLUSION CRITERIA

- ALL LITERATURE MUST BE RELEVANT TO:
 - NATURAL/SIMULATED NATURAL ENVIRONMENT WHICH INCLUDES GREEN, BLUE AND NATURAL OUTDOOR SPACES
 - THE RELEVANCE OF THE FIRST CRITERIA SHOULD AS A FUNCTION OF THE IMPACT OF ECONOMICS ON GREEN AND BLUE SPACES
 - PUBLIC HEALTH AND WELL BEING
 - TO ANALYSE THESE THREE VARIABLES (GABS, ECONOMICS AND PUBLIC HEALTH) WE WILL SELECT PAPERS THAT MODEL OR APPLY ECONOMIC TECHNIQUES TO SYNTHESIS ITS RESULT.



Canolfan Economeg Iechyd a Gwerthuso Meddyginiaethau

CHEME

Centre for Health Economics and Medicines Evaluation

ANALYSIS

- WE WILL INTEGRATE OUR FINDINGS BY COMPARING EACH MODEL AND TECHNIQUE APPLIED IN THE SELECTED LITERATURE. IN SYNTHESISING THE DATA FROM THE REVIEWED LITERATURE
 - WE ARE PARTICULARLY INTERESTED IN WHICH SECTOR OF THE POPULATION (GENDER AND AGE) BENEFITS MORE FROM GABS AND
 - WHICH POPULATION SECTOR TAKES ADVANTAGE OF GABS.
- WE ALSO CONDUCT A SUBGROUP ANALYSIS INVESTIGATING WHICH CATEGORY OF CLASSIFICATION (LEISURE, MEDICAL OR SPORTS) IS MOSTLY USED IN GABS.
- INVESTIGATE IF GREEN OR BLUE SPACE HAS MORE IMPACT.
- WITH THIS, WE SEEK TO PROPOSE AN ECONOMIC MODEL THAT WOULD ADEQUATELY CAPTURE THE IMPACT GABS AS AN INTERVENTION.

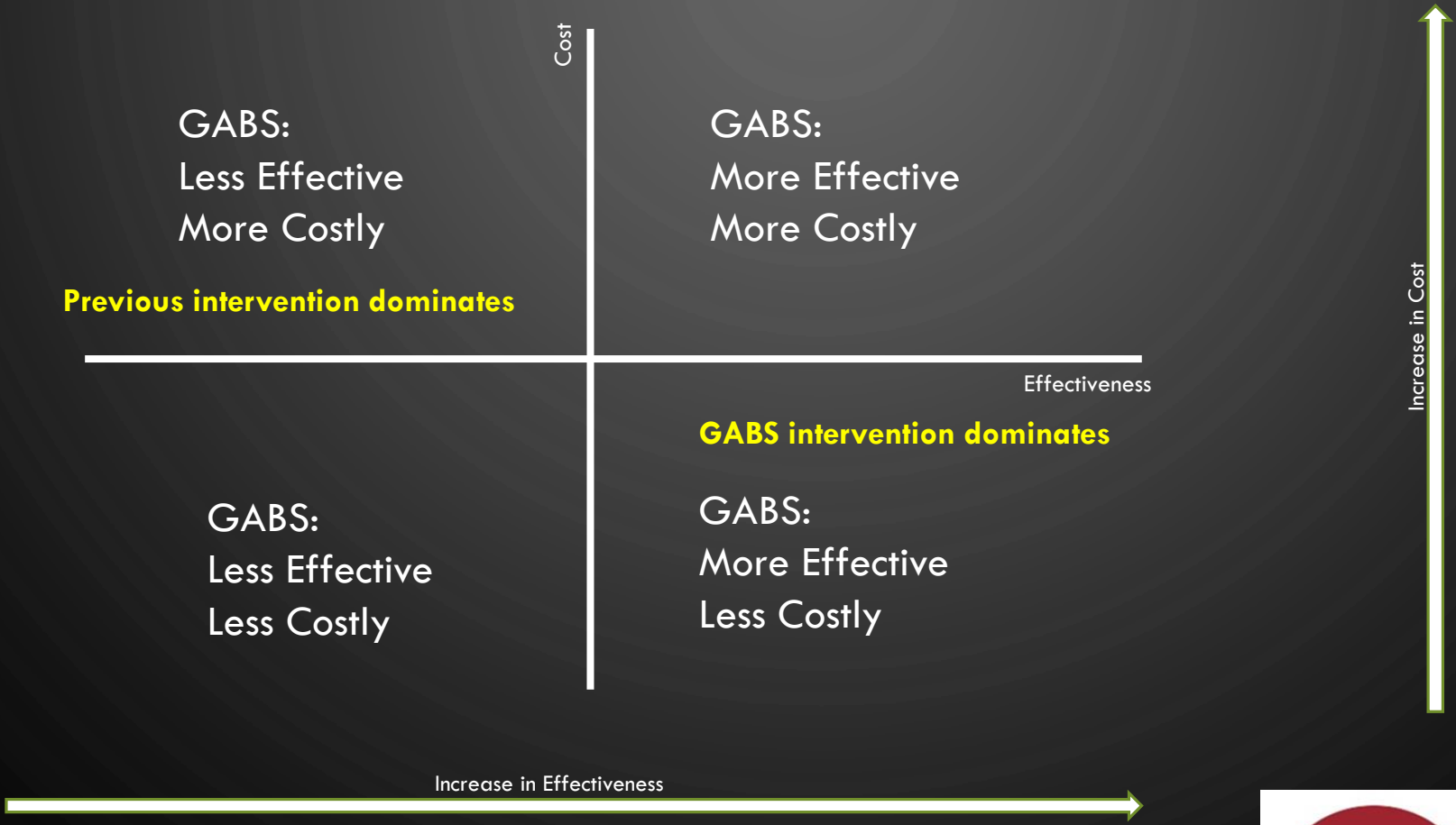


Canolfan Economeg Iechyd a Gwerthuso Meddyginiaethau

CHEME

Centre for Health Economics and Medicines Evaluation

ANALYSIS



REFERENCE

- ACTIF WOODS WALES EVENTS - COEDLLEOL ACTIF WOODS WALES COEDLLEOL ACTIF WOODS WALES. (N.D.). RETRIEVED JULY 6, 2018, FROM [HTTPS://WWW.COEDLLEOL.ORG.UK/ACTIF-WOODS-WALES/ACTIF-WOODS-WALES-EVENTS/](https://www.coedlleol.org.uk/actif-woods-wales/actif-woods-wales-events/)
- BANGOR PARKRUN | BANGOR PARKRUN. (N.D.). RETRIEVED JULY 16, 2018, FROM [HTTP://WWW.PARKRUN.ORG.UK/BANGOR/](http://www.parkrun.org.uk/bangor/)
- COON, J. T., BODDY, K., STEIN, K., WHEAR, R., BARTON, J., & DEPLEDGE, M. (2011). DOES PARTICIPATING IN PHYSICAL ACTIVITY IN OUTDOOR NATURAL ENVIRONMENTS HAVE A GREATER EFFECT ON PHYSICAL AND MENTAL WELLBEING THAN PHYSICAL ACTIVITY INDOORS? A SYSTEMATIC REVIEW. *JOURNAL OF EPIDEMIOLOGY AND COMMUNITY HEALTH*, 65, A38–A38.
- KINVER, M. (2016, SEPTEMBER 20). GREEN SPACES' £2.2BN HEALTH BENEFITS. *BBC NEWS*. RETRIEVED FROM [HTTPS://WWW.BBC.COM/NEWS/SCIENCE-ENVIRONMENT-37403915](https://www.bbc.com/news/science-environment-37403915)
- MCCURDY, L. E., WINTERBOTTOM, K. E., MEHTA, S. S., & ROBERTS, J. R. (2010). USING NATURE AND OUTDOOR ACTIVITY TO IMPROVE CHILDREN'S HEALTH. *CURRENT PROBLEMS IN PEDIATRIC AND ADOLESCENT HEALTH CARE*, 40(5), 102–117.
- MOHER, D., SHAMSEER, L., CLARKE, M., GHERSI, D., LIBERATI, A., PETTICREW, M., ... STEWART, L. A. (2015). PREFERRED REPORTING ITEMS FOR SYSTEMATIC REVIEW AND META-ANALYSIS PROTOCOLS (PRISMA-P) 2015 STATEMENT. *SYSTEMATIC REVIEWS*, 4(1), 1.
- NIELSEN, T. S., & HANSEN, K. B. (2006). NEARBY NATURE AND GREEN AREAS ENCOURAGE OUTDOOR ACTIVITIES AND DECREASE MENTAL STRESS. *CAB REVIEWS: PERSPECTIVES IN AGRICULTURE, VETERINARY SCIENCE, NUTRITION AND NATURAL RESOURCES*, 1(059).
- WILD SWIMMING - OUTDOORS IN RIVERS, LAKES AND THE SEA. (N.D.). RETRIEVED JULY 16, 2018, FROM [HTTP://WWW.WILD SWIMMING.CO.UK/](http://www.wildswimming.co.uk/)



Canolfan Economeg Iechyd a Gwerthuso Meddyginiaethau

CHEME

Centre for Health Economics and Medicines Evaluation

