

Health and well-being: Sustainability 2.0?

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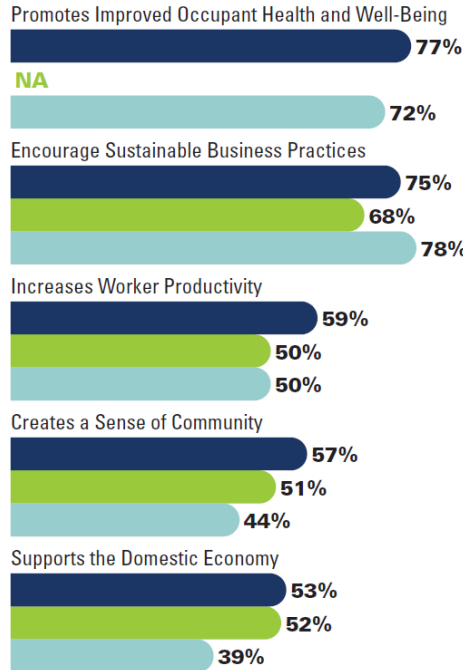
University of Cambridge

The case for integrating health & well-being into the sustainability equation

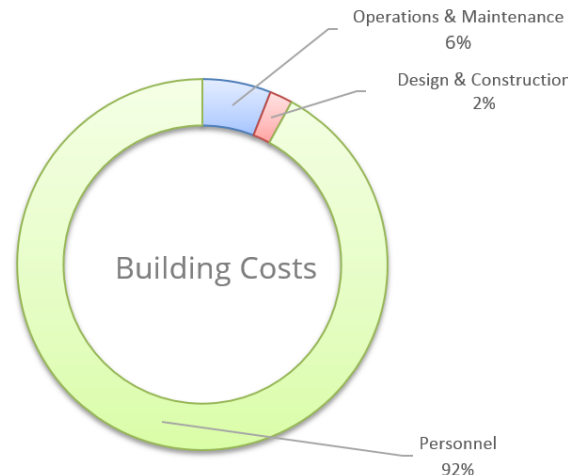
Top Social Reasons for Building Green

(By Percentage of Global Respondents Rating Each Reason as Important)

Dodge Data & Analytics, 2018



- Health & well-being aspects of sustainability are the next frontier but data and definitions are still lacking
- As of 2018, WELL had around 100 certifications globally with 750 in the pipeline. Fitwel had 95 certifications in the US with 620 pending.
- Research needs to highlight trade-offs rather than pursuing an additive approach to sustainability



Intangible benefits of green buildings

OUTSIDE VIEWS

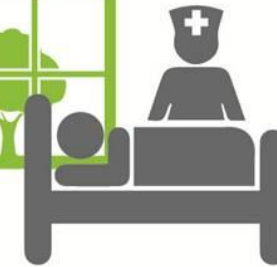
Mental Function
& Memory

10-25%
BETTER



Call
Processing

6-12%
FASTER



Hospital
Stays

8.5%
SHORTER

DAYLIGHT



Students achieve

5-14%
HIGHER TEST SCORES

and learn **20-26%**
FASTER

Workers are **18%**
MORE PRODUCTIVE



15-40%
INCREASE
in Retail Sales

SYSTEMS

Productivity Increases by

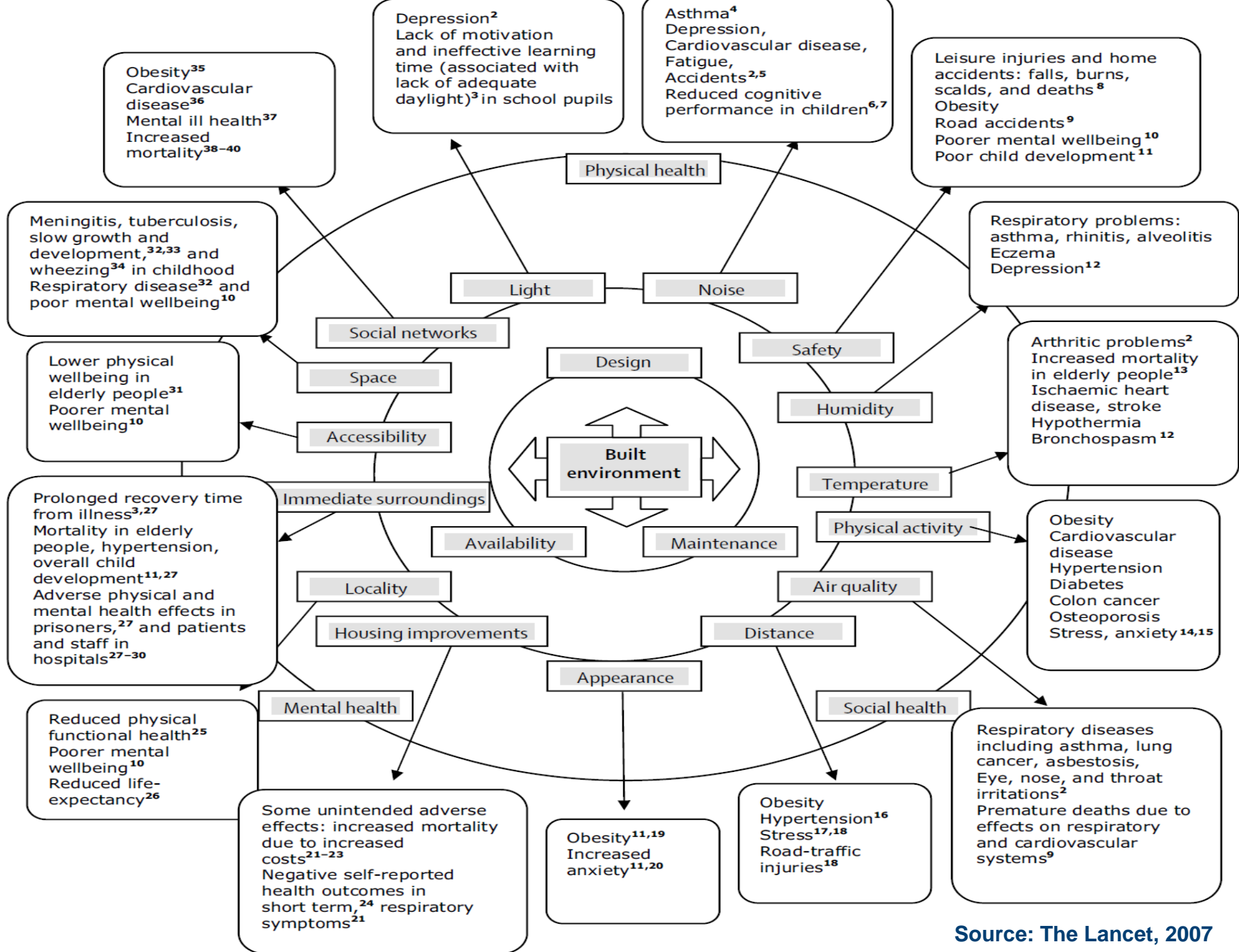
23%
from better lighting



11%
from better ventilation

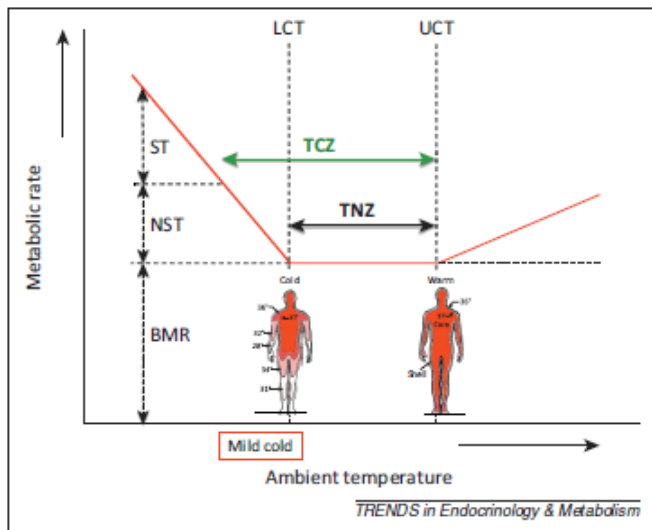


3%
from individual temperature control



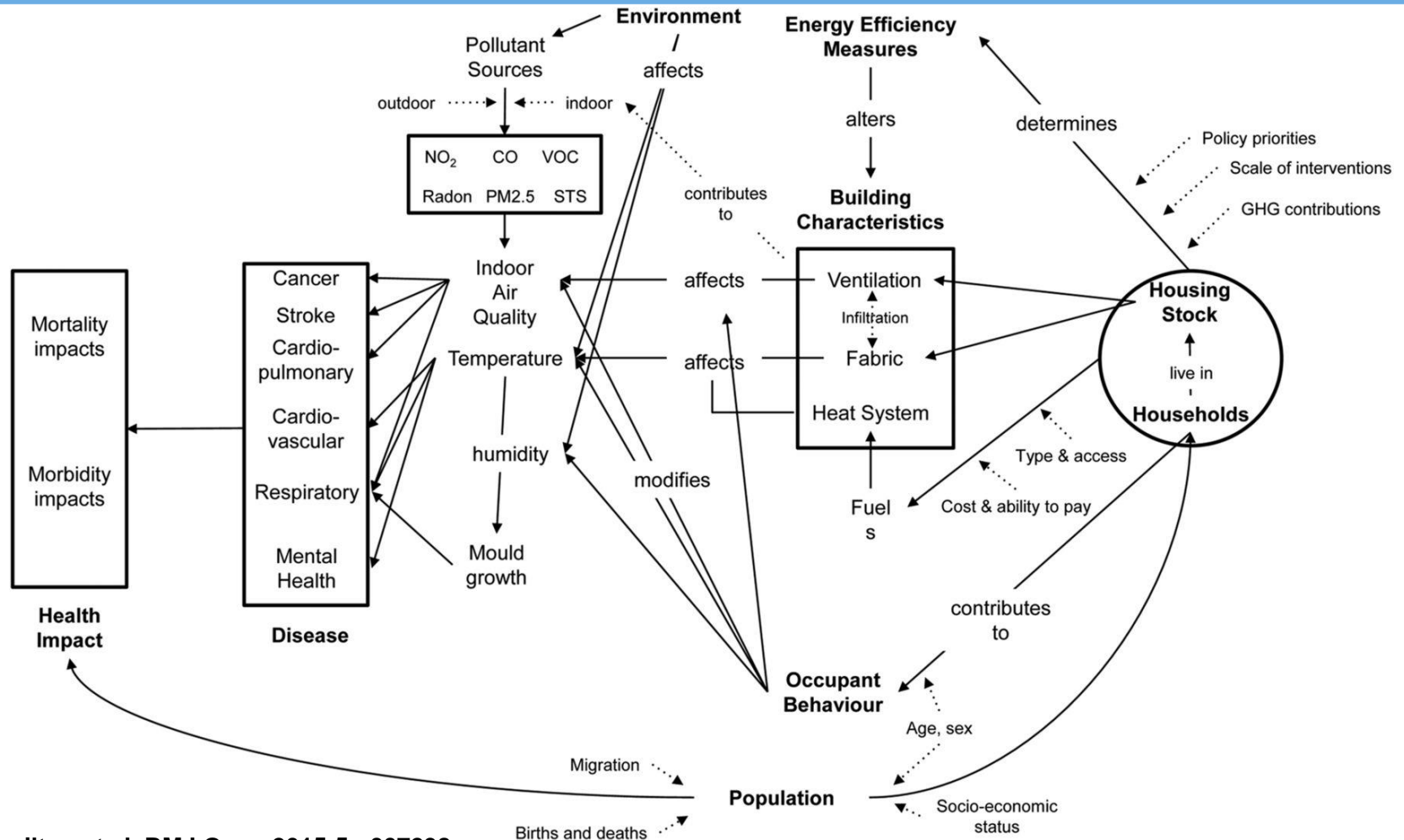
Some not so straightforward empirical evidence

- Energy efficiency and obesity: van Marken Lichtenbelt et al (2014).
Cold exposure and energy expenditure:



- Thermo-neutral zone (TNZ) basal energy expenditure
- Thermal comfort zone (TCZ)
- Nonshivering thermogenesis (NST)
- Shivering thermogenesis (ST) take place.
- Lower & Upper critical temperature (LCT, UCT) > increased energy expenditure

Connecting energy efficiency and health effects



Ian Hamilton et al. BMJ Open 2015;5:e007298

Some research options

- Fundamental research studies on indoor environment parameters on productivity and cognitive functions in collaboration with medical and public health experts
- Before and after improvements study in a hedonic framework
- Monetising (WTP) health/well-being metrics, thermal comfort, productivity,
- Based on WTP, ranking of payback periods for individual measures/packages