

Sustainability and Human Health

Meeting the Future:
A Research Agenda for Sustainability
US EPA Office of Research and Development
Washington, 19 May 2005

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Agenda

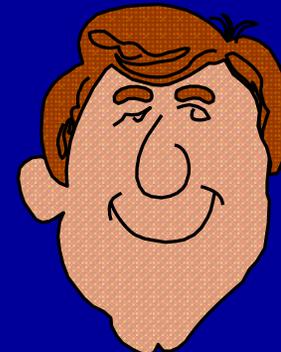
- Definition of sustainability
- Definition of health
- The role of health in sustainability research
 - Why?
 - What?
 - How?

Definitions

- **Sustainability**: meeting the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland Commission, 1987).
- **Health**: a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 1948).

Health in sustainability research: Why?

- UNCED Principle 1: “Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.”
- The moral case: transgenerational responsibility
- Conceptual links between sustainability and health



So this isn't a "frontier issue"!

Sustainability supports health

- **Ecosystem services (1)**

- Purification of air and water
- Mitigation of droughts and floods
- Generation and renewal of soils
- Detoxification and decomposition of wastes
- Pollination of crops and natural vegetation
- Dispersal of seeds
- Cycling and movement of nutrients
- Control of most agricultural pests

**Respiratory &
cardiovascular
health**

Safety

Nutrition

**Protection
from
infectious
diseases**

Sustainability supports health

- **Ecosystem services (2)**

- Maintenance of biodiversity
- Protection of coastal shores from erosion by waves
- Protection from the solar UV rays
- Partial stabilization of climate
- Moderation of weather extremes
- Beauty and intellectual stimulation that lift the human spirit

New medications

Protection from cancer, cataracts

Safety

Fulfilling lives

Sustainability supports health

Limited
population
growth



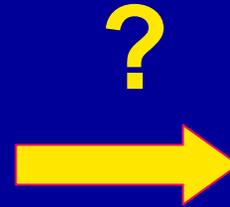
More resources
for education,
health, etc.

This is
sustainable!



Sustainability supports health

Prodigious resource
consumption,
unfettered acquisition
of stuff, and great
material wealth

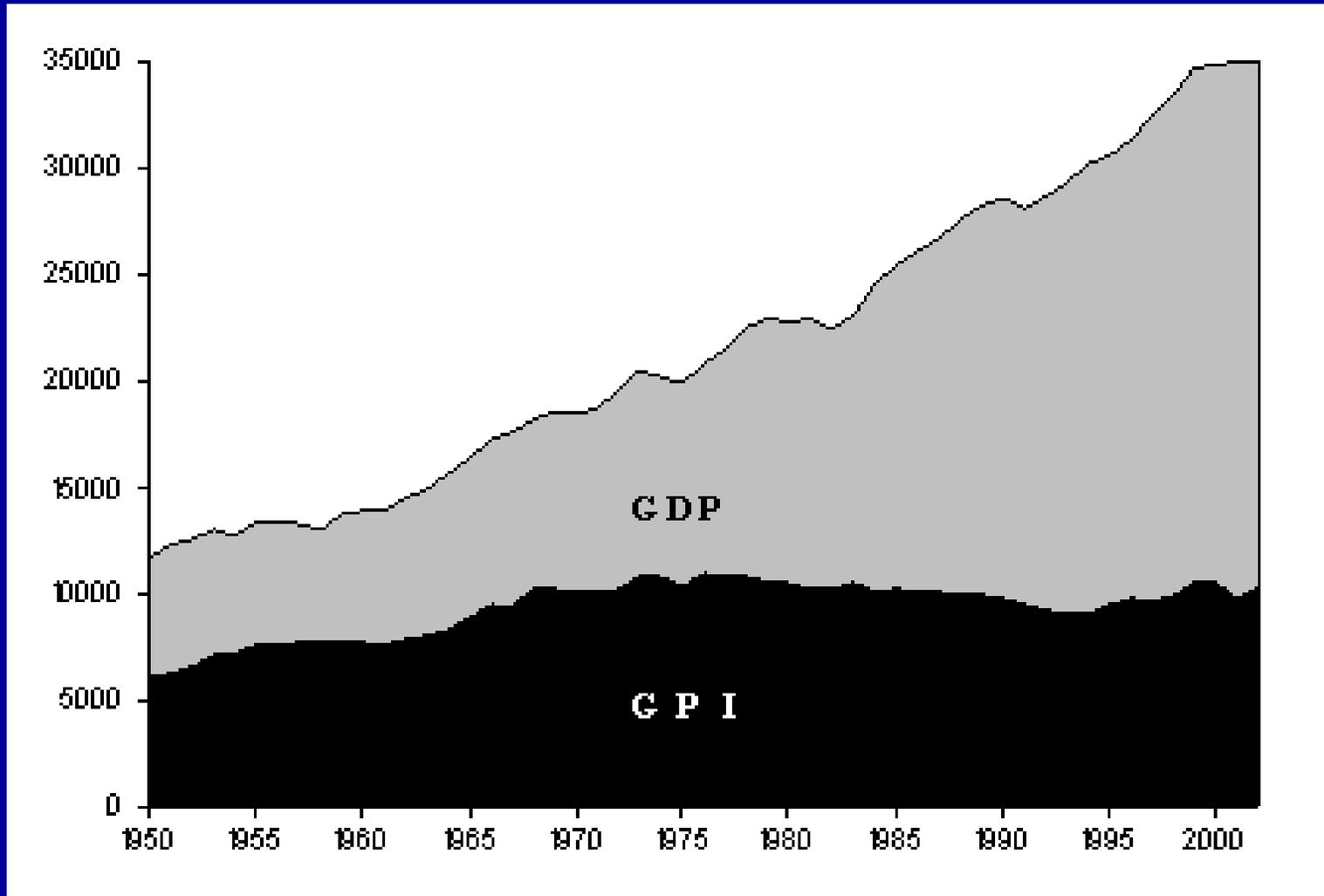


Contentment
and well-
being

This is
NOT
sustainable!



Does unsustainable consumption make us happy?



Source: Redefining Progress

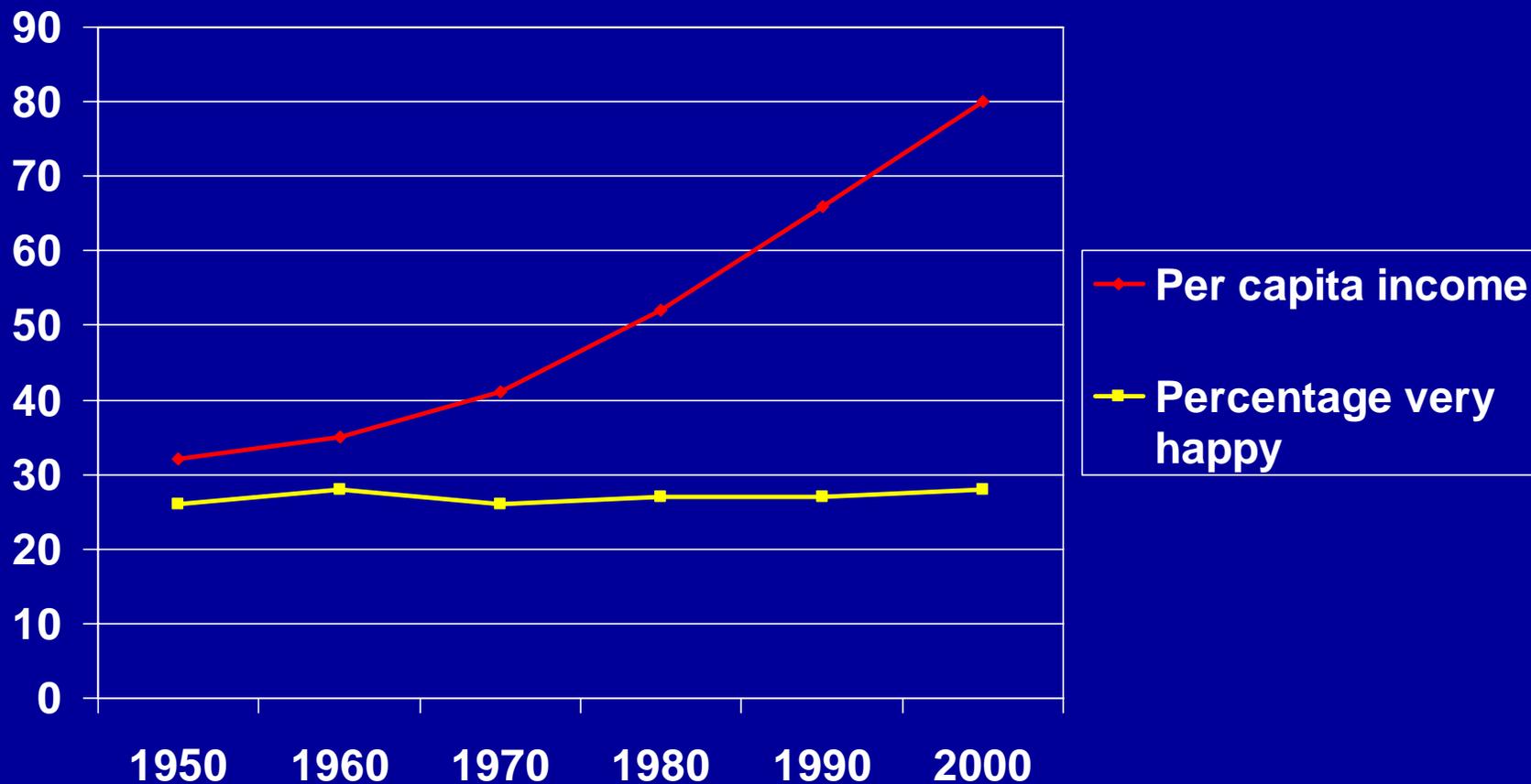
The Genuine Progress Indicator

- **Crime & Family Breakdown**
- **Household & Volunteer Work**
- **Income Distribution**
- **Resource Depletion**
- **Pollution**
- **Long-Term Environmental Damage**
- **Changes in Leisure Time**
- **Defensive Expenditures**
- **Lifespan of Consumer Durables & Public Infrastructure**
- **Dependence on Foreign Assets**

Happiness, consumption, wealth, and sustainability

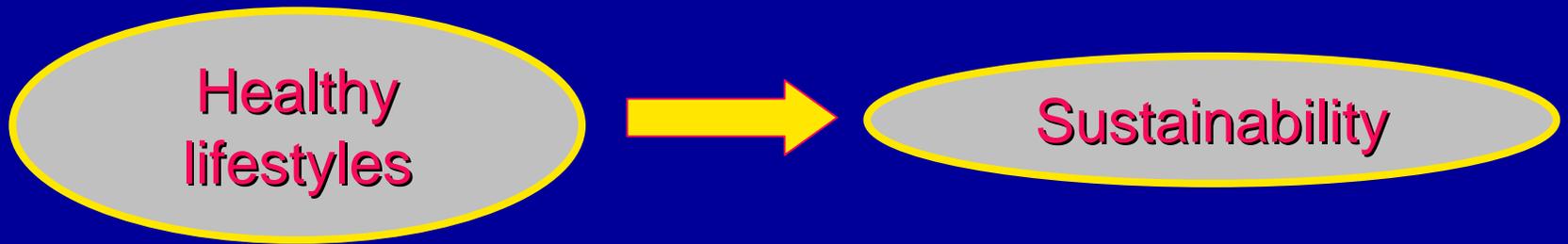
- At and near the poverty level, increased wealth predicts increased happiness (and improved health)
- Above that level, increased wealth does NOT predict increased happiness

Income and happiness in the U.S.



Source: Layard, 2005; data from Gallup and General Social Survey

Health supports sustainability



- Eating healthy (fresh fruits and vegetables, lower on the food chain, lower quantities)
- Walking and bicycling instead of driving
- Safe sexual practices

Health in sustainability research: Why?

Practical reasons

- You only get a partial answer if you only ask a partial question.
- “Selling” sustainability to the public: health helps!

Health in sustainability research: What?

- Serious sustainability research should always incorporate health impacts (unless there is a good reason not to).
- Existing Environmental Health research provides useful guidelines:
 - Methodologic rigor: measuring exposures, measuring health endpoints, controlling confounders
 - Special attention to vulnerable populations e.g. children, the elderly
 - Attention to equity issues (environmental justice)
 - Involvement of affected communities and populations

Health in sustainability research: What?

The research agenda:

- **Evaluating existing practices** for both environmental impact and health impact
- **Developing and testing new practices** with both low environmental impact and low health impact
- **Social marketing** to gain acceptance of new practices
- **Policy approaches** to gain acceptance of new practices

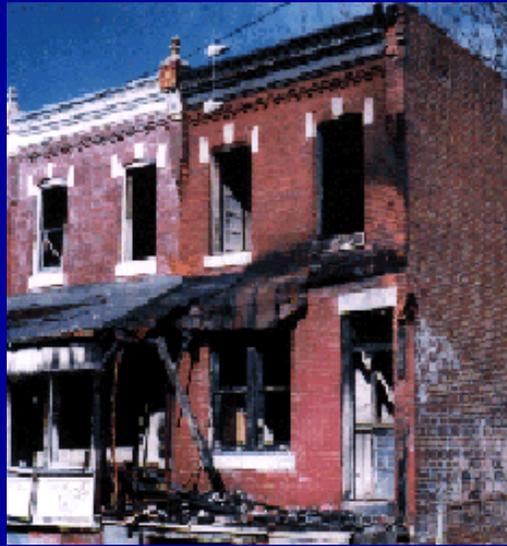
Domains of sustainability research

<p>Ecosystems and agriculture (Great Lakes)</p>	<ul style="list-style-type: none">• Human uptake of POPs• Drinking water safety• Pesticide exposure
<p>Industry and material flow (alternative solvents)</p>	<ul style="list-style-type: none">• Developmental and nervous toxicity of solvents
<p>Healthy communities / built environment (brownfields)</p>	<ul style="list-style-type: none">• Physical activity levels• Air pollution exposure

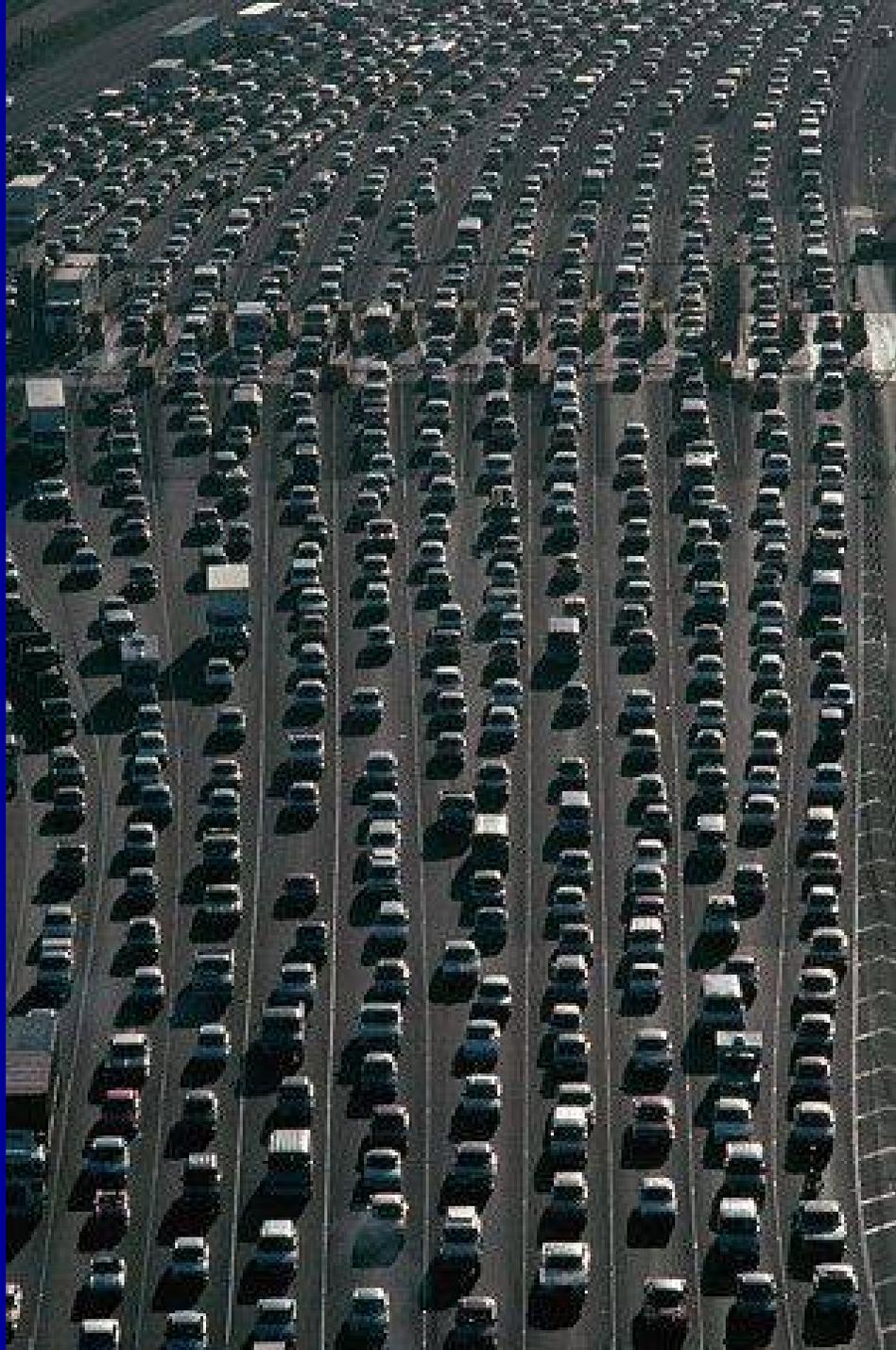
Urban sprawl







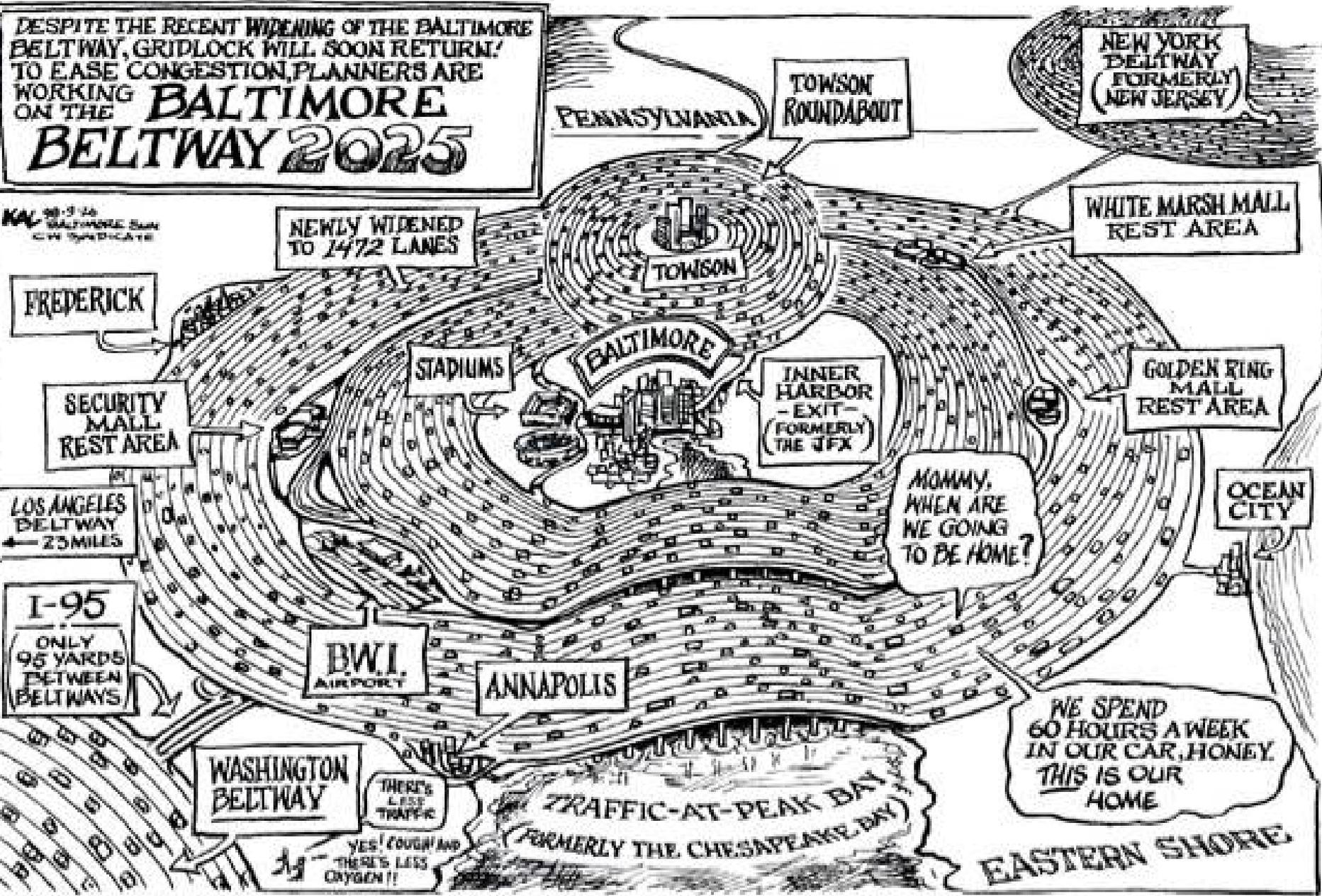




DESPITE THE RECENT WIDENING OF THE BALTIMORE BELTWAY, GRIDLOCK WILL SOON RETURN! TO EASE CONGESTION, PLANNERS ARE WORKING ON THE

BALTIMORE BELTWAY 2025

KAL 98-3 16 BALTIMORE Sun CW 3/4/98



NEW YORK BELTWAY (FORMERLY NEW JERSEY)

TOWSON ROUNDABOUT

WHITE MARSH MALL REST AREA

GOLDEN RING MALL REST AREA

OCEAN CITY

WE SPEND 60 HOURS A WEEK IN OUR CAR, HONEY. THIS IS OUR HOME

EASTERN SHORE

PENNSYLVANIA

NEWLY WIDENED TO 1472 LANES

FREDERICK

SECURITY MALL REST AREA

LOS ANGELES BELTWAY 23 MILES

I-95 ONLY 95 YARDS BETWEEN BELTWAYS

WASHINGTON BELTWAY

THERE'S LESS TRAFFIC

YES! COUGH AND THERE'S LESS TRAFFIC!!

ANNAPOLIS

BWI AIRPORT

TRAFFIC-AT-PEAK DAY FORMERLY THE CHESAPEAKE BAY

INNER HARBOR - EXIT - FORMERLY THE JFX

BALTIMORE

TOWSON

MOMMY, WHEN ARE WE GOING TO BE HOME?

STADIUMS



THE SOFT-MONEY
CRACKDOWN

E-GOVERNMENT:
THE NEW GENERATION

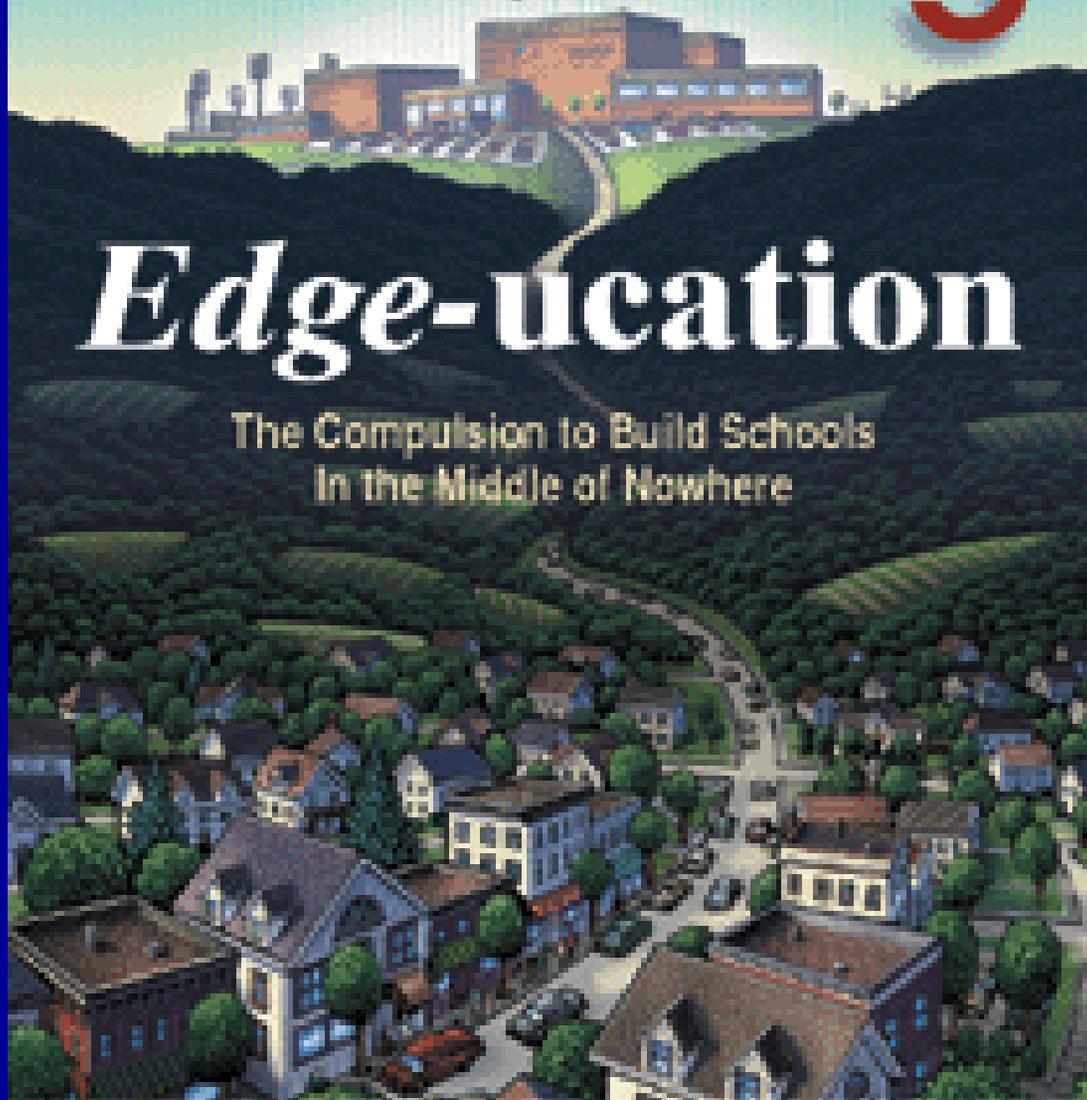
TUITION BREAKS FOR
ILLEGAL IMMIGRANTS

Governing

The Magazine of States and Localities

Edge-ucation

The Compulsion to Build Schools
In the Middle of Nowhere





Hubbard Lake Elementary School, Hubbard Lake, Michigan.
"Outstanding in Its Field"



Clean Quality
CLEANER
Dry Cleaning Service

Food Shop
FOOD STORE
N. Kato



How might sprawl affect health?

Related to spatial distribution

- concentration of poverty

Related to automobile dependency

- ↑ air pollution
- climate change contribution
- ↑ traffic-related injuries

Related to land use

- ↓ physical activity
- ↓ water quantity and quality
- ↑ heat island effect

Related to social processes

- mental health impact
- ↓ social capital

In what domains do health and sustainability intersect?

The (partial) U.S. Cabinet

AGRICULTURE		HUD	
COMMERCE		INTERIOR	
EDUCATION		LABOR	
ENERGY		STATE	
HHS		TRANSPORTATION	

Agriculture

Agricultural methods that

- are close to market (to minimize transport impacts on the environment)
- use methods that control erosion and minimize water use
- use non-chemical methods of pest control
- produce healthy, affordable food

Commerce

Manufacturing methods that

- minimize resource inputs
- minimize energy use
- minimize waste streams
- minimize worker exposure to hazards
- minimize community exposure to hazards

Transportation

Transportation systems that

- reduce travel demand
- shift travel from SOVs to HOVs, transit, and non-motorized travel
- encourage walking and bicycling
- reduce travel-related injuries and fatalities
- reduce transportation-related fuel consumption
- encourage less polluting vehicles

Interior

Park and wilderness policies that

- conserve land (including habitats, source waters, and other natural assets)
- encourage active outdoor recreation
- connect people with green nature

Energy

Energy policies that

- reduce energy demand
- encourage non-polluting and renewable energy sources
- reduce fossil fuel consumption
- reduce air pollutant emissions
- reduce carbon dioxide emissions

Health in sustainability research: How?

- Epidemiology
- Indicators
- Health Impact Assessment
- Social marketing

Epidemiology

- The study of the distribution and determinants of health in populations
- “documentation” versus “discovery”
- Routine data collection (tracking) versus purposeful, *ad hoc* data collection
- The National Children’s Study

Indicators

- An indicator is a quantitative or qualitative variable that can be measured and that, when observed periodically, demonstrates trends.
- Examples:
 - GNP
 - Population
 - Fuel gauge on your car
- Many communities use sustainability indicators



A typology of sustainability indicators

Domain-based

- Environment
- Economy
- Society

Goal-based

- Carrying Capacity
- Basic Human Needs
- Social Well-Being
- Economic Prosperity
- Participation in Governance

Sectoral

- Housing
- Welfare
- Recreation
- Transportation
- Environment
- Economic Development

Issue-based

- Urban Sprawl
- Solid Waste Management
- Crime and Safety
- Job Creation
- Industrial Pollution

Causal Conditions

- Air Quality
- Unemployment
- Human Health

Stresses

- Automobile Use
- Inadequate Education
- Air Quality

Responses

- High Occupancy Vehicle Lanes
- Special Training Programs
- Pollution Warnings

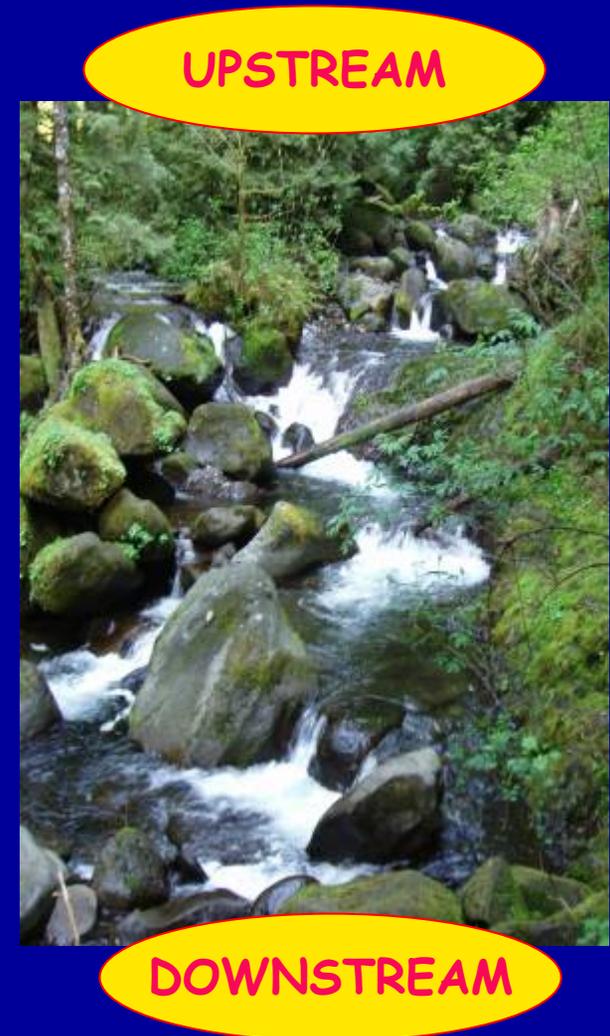
Characteristics of effective indicators

- **Relevant:** they show you something about the system that you need to know.
- **Easy to understand**, even by non-experts.
- **Reliable:** you can trust the information that the indicator is providing.
- Based on **accessible data**.

Source: Sustainable Measures

Sustainability indicators

- Typical:
 - Number of public gardens
 - Renewable energy use
 - Motor oil recycling
 - Tons of waste landfilled
- Health-related indicators
 - Commuting on foot or bicycle
 - Air quality / asthma hospitalizations
 - Pesticide residues on food or in blood



Sustainability indicators and public health

- Public health and sustainability paradigms are very compatible
- The process of identifying indicators is very familiar to public health
- Need to exploit available data sources fully
- Need to develop new data sources (connections to “health tracking”)

Health Impact Assessment

“a combination of procedures, methods and tools by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population”

European Centre for Health Policy. *Gothenburg Consensus Paper: Health Impact Assessment: Main Concepts and Suggested Approach*. Brussels: WHO Regional Office for Europe, 1999.

Health Impact Assessment

- Generally non-regulatory
- Involves affected community
- Attention to equity issues

Health Impact Assessment: Steps

- **Screening:** Is this project suitable for HIA?
- **Scoping:** Set terms of reference for the HIA
 - limited vs extensive
 - population and health outcomes to be studied
- **Appraisal:** Assess the health impacts.
- **Recommendations** to decision-makers
- **Monitoring and evaluation**

Making the case: improving health through transport

Summary

Why 'transport and health'?

It is clear that transport and health are inextricably linked. Transport has major health impacts – through accidents, levels of physical activity undertaken, effects on air pollution, and access to a range of services. The organisation of health services can add to or alleviate all these impacts, as well as making it more or less difficult for patients, relatives and staff to travel to and between healthcare settings. The provision of transport services (including issues such as car parking) have major cost implications, as does addressing the health issues associated with transport.

Transport issues are an integral element in meeting a range of NHS aims, including those set out in national service frameworks and other policy documents, and in the NHS environmental standards.

There are significant inequalities in the impact of transport on the health of individuals and communities, both directly (eg through the social distribution of child pedestrian deaths); and indirectly (eg through the influence of planning decisions to accommodate car access).

Transport planning is a major role of local government, and health service involvement and partnership is an important element in this. NHS involvement in the full range of transport planning issues will help local partners to meet their own targets, including local public service agreement (PSA) targets, and can be an important part of local partnership working through local strategic partnerships and other mechanisms.

This document sets out:

- Impacts of transport – the evidence page 2
 - Physical activity
 - Injuries
 - Air pollution
 - Access to services
 - Social networks and community severance
 - Health inequalities
 - Economic costs
- Policy drivers page 3
- Taking action page 4
 - Introducing patient and staff travel plans
 - Implementing a physical activity strategy
 - Contributing resources/support to local transport programmes
 - Contributing to local accessibility planning
 - Assessing the health impact of local transport plans/schemes

Who is it for?

This publication is aimed at those interested in developing health and transport policies; those involved in partnership work with local authorities; those with responsibilities for NHS estates; and those developing work where transport play a significant part. These may include:

- National service framework leads for coronary disease, cancer and diabetes
- Those developing physical activity strategies
- Those developing accidental injury strategies
- Estate managers
- Directors of public health
- Local authority transport planners.

Health Impact Assessment Report On proposal to substitute chopped tyres for some of the coal as fuel in cement kiln

Andrew Cook, Specialist Registrar in Public Health Medicine,
Department of Public Health Medicine, Solihull Primary Care Trust

John Kemm, Honorary Senior Clinical Lecturer,
HARU, Department of Public Health and Epidemiology, University of Birmingham

Acknowledgements

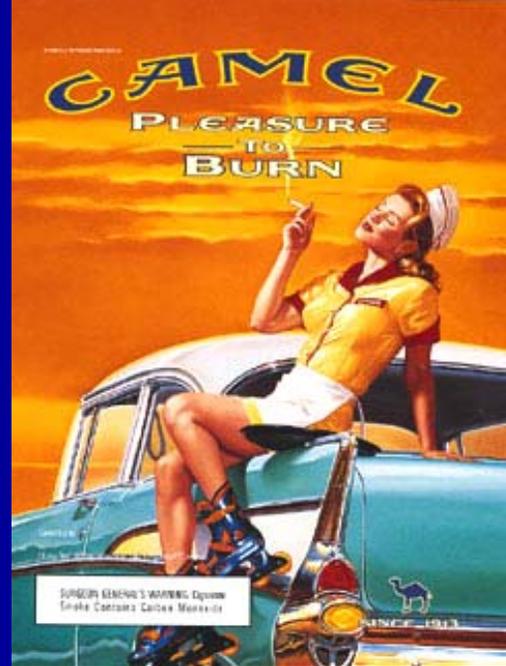
It is a pleasure to thank all of the people (listed in appendix 4) who have given generously of their time to help us in our researches for this report.

Key sources on Health Impact Assessment

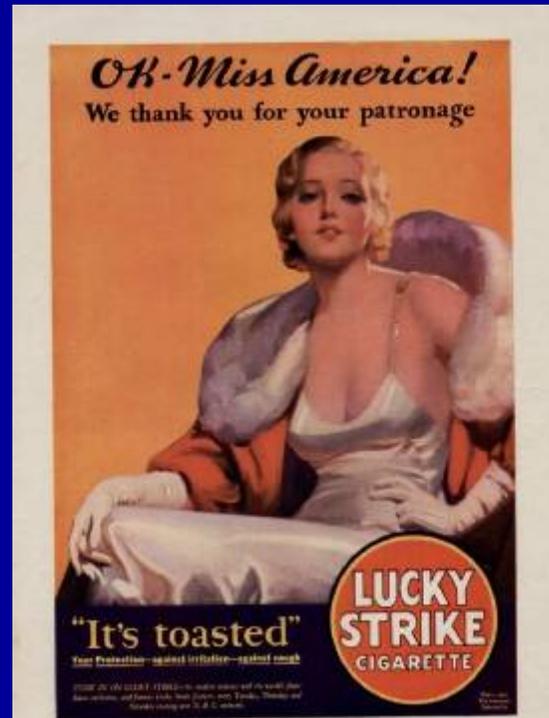
- HIA Research Unit (HIARU), Department of Public Health & Epidemiology, University of Birmingham:
<http://www.pcpoh.bham.ac.uk/publichealth/hiaru/>
- World Health Organization HIA site:
<http://www.who.int/hia/en>
- NHS Health Development Agency HIA Gateway:
<http://www.hiagateway.org.uk/>
- International HIA Consortium, University of Liverpool: <http://www.ihia.org.uk/>

Social Marketing





1936





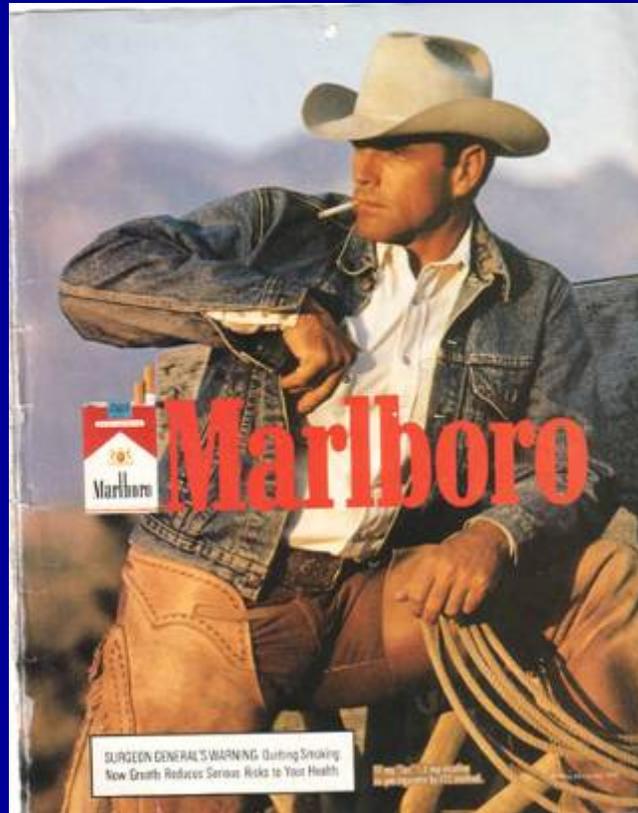
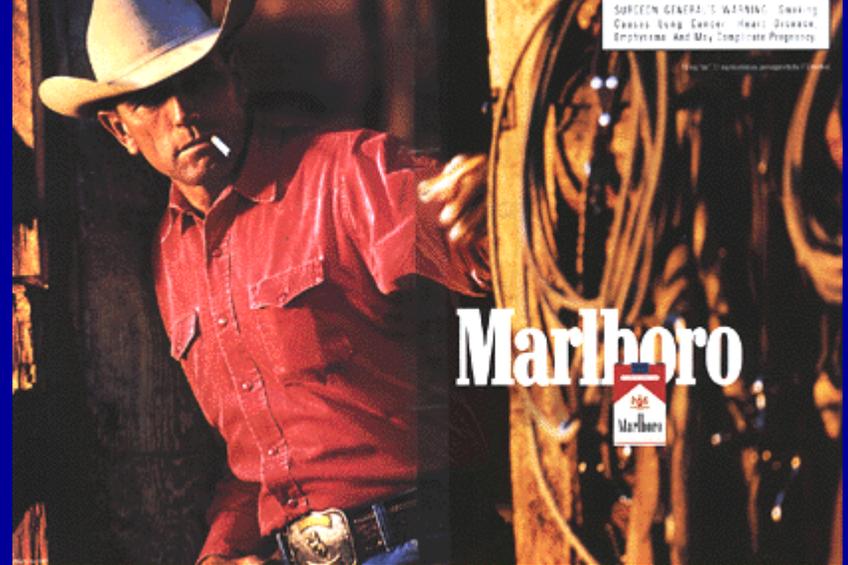
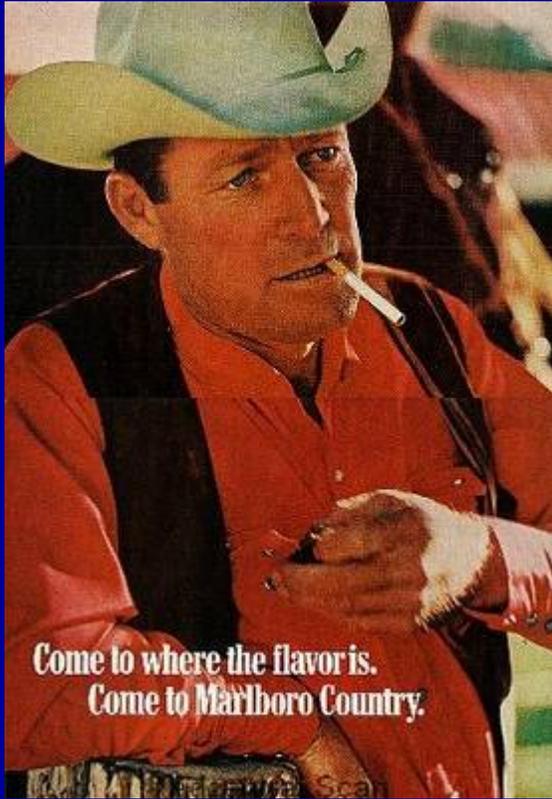
- somehow
I just like to
give you a light

*They
Satisfy*

Chesterfield

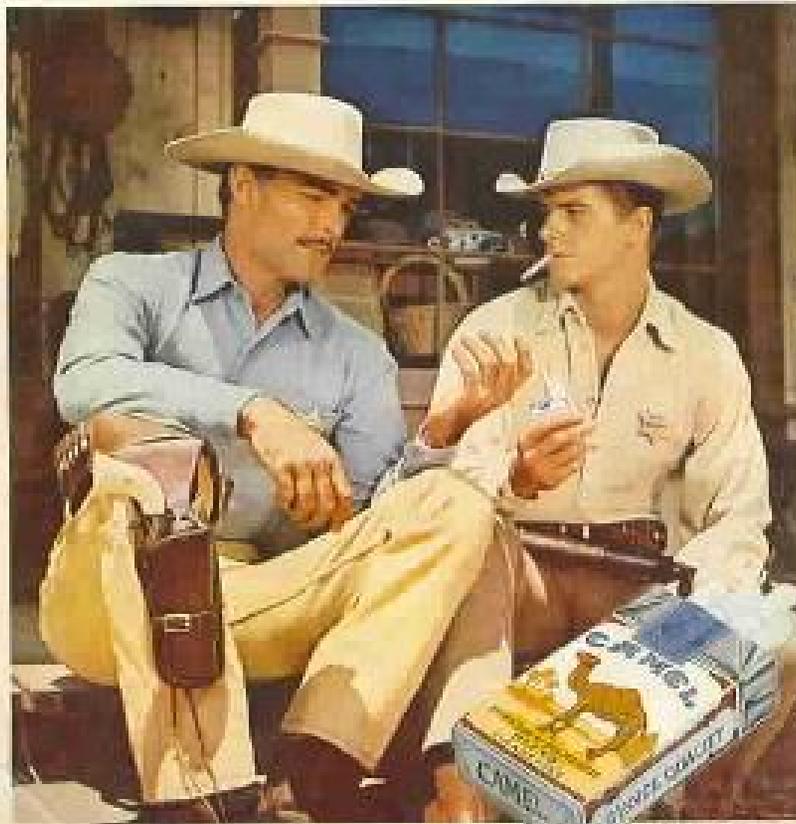
the cigarette that's MILDER • the cigarette that TASTES BETTER.

© 1997 B&W T Co. All rights reserved.



Have a real cigarette – have a **CAMEL**

Nobody beats Camel to the draw for rich tobacco flavor and easy-going mildness. "My kind of cigarette – no fails or fancy stuff," says "Lawman" star John Russell Coster Peter Brown goes along: "Tastes good, smokes mild." Today more people smoke Camels than any other brand. The best tobacco makes the best smoke.



Look in Camel's exciting new "LAWMAN" on ABC-TV

A photograph showing the silhouettes of two cowboys on horseback, facing away from the camera. They are standing in a field with wooden fences on either side. The background is a bright, orange and yellow sunset sky. The text "I miss my lung, Bob." is overlaid in white, bold, serif font across the center of the image.

I miss my lung, Bob.

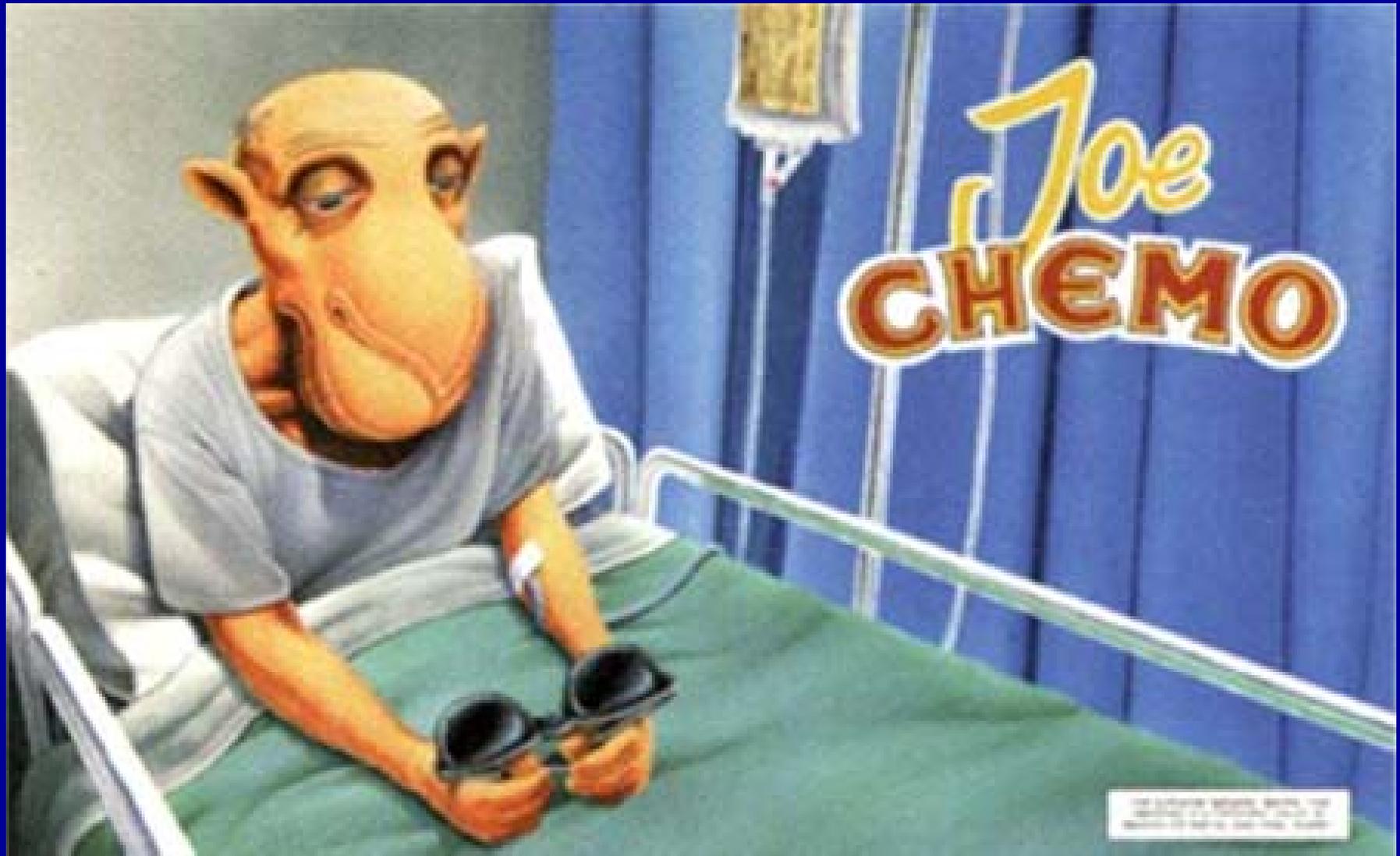
California Department of Health Services,
Funded by the Tobacco Tax Initiative.



FOREVER

KOOL

1666



Impotent



The logo consists of a central red circle containing the text 'LUCKY STROKE' in bold black letters. This red circle is surrounded by a white ring, which is further enclosed by a thick blue ring. The entire logo is centered on a white square background, which is itself centered on a blue background.

**LUCKY
STROKE**

“CALIFORNIA SAYS ITS LONG ANTI-TOBACCO CAMPAIGN HAS PAID OFF”

USA Today, January 26 2005

From 1988 to the present:

- Adult smoking prevalence fell from 23% to 16%
- High school smoking prevalence fell from 22% to 13%
- Lung cancer incidence fell from 73.6 to 57.9 /100,000/year

Elements of Social Marketing

- Understanding the competition
- Understanding target markets
- Creating mutually beneficial exchanges
- Segmenting markets and targeting based on anticipated return

Maibach E. Recreating communities to support active living: A new role for social marketing. *Am J Health Promot* 2003;18:114-19.

Summary

- Health is central to sustainability
 - Conceptual
 - Practical
- Health research needs to be integrated into sustainability research
 - Multiple domains
- Promising methods and approaches
 - Epidemiology
 - Indicators
 - Health Impact Assessment
 - Social marketing



Thank
you!

