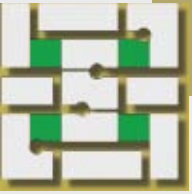


THE FUSED GRID:

AN URBAN PATTERN FOR QUALITY OF LIFE



By: Fanis Grammenos



Tools for quality of life

“In fact, zoning, subdivision regulations and building codes were originally intended to enhance the *health, safety and welfare* of the public” *



R. Unwin

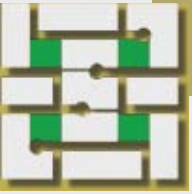
And so were the ideas of city planners in history

Hippodamus, Vitruvius, C. Sitte, E. Howard, R. Unwin, LeCorbusier, C. Stein, K. Lynch etc, etc.



C. Sitte

*Lawrence Frank, Sarah Kavage + Todd Litman 2006. *Promoting Public Health Through Smart Growth* -SGBC

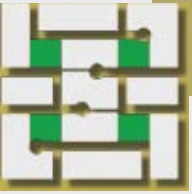


Quality of life

- Health
- Safety
- Wellbeing

..and the Fused Grid

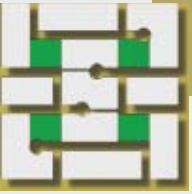
Quality of life



With competing priorities.... achieving quality becomes a...

Question of Balance





THE SEARCH FOR BALANCE

The quest for:

Quality of life

Health

Safety

Wellbeing

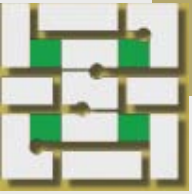
While minding:

Viability

Efficiency

Balanced books

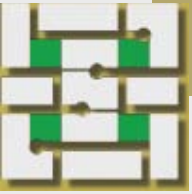
Low Impact



Health

Through Neighbourhoods that Provide

- Peace and Quiet
- Clean Air
- Restorative Environments
- for an active lifestyle



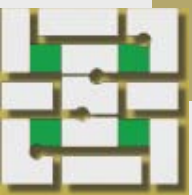
Peace and Quiet

The problem:

“Calling noise a nuisance is like calling smog an inconvenience. Noise must be considered a hazard to the health of people everywhere.”

Dr. William H. Stewart, former Surgeon General of the United States

Nuisance, inconvenience or hazard?

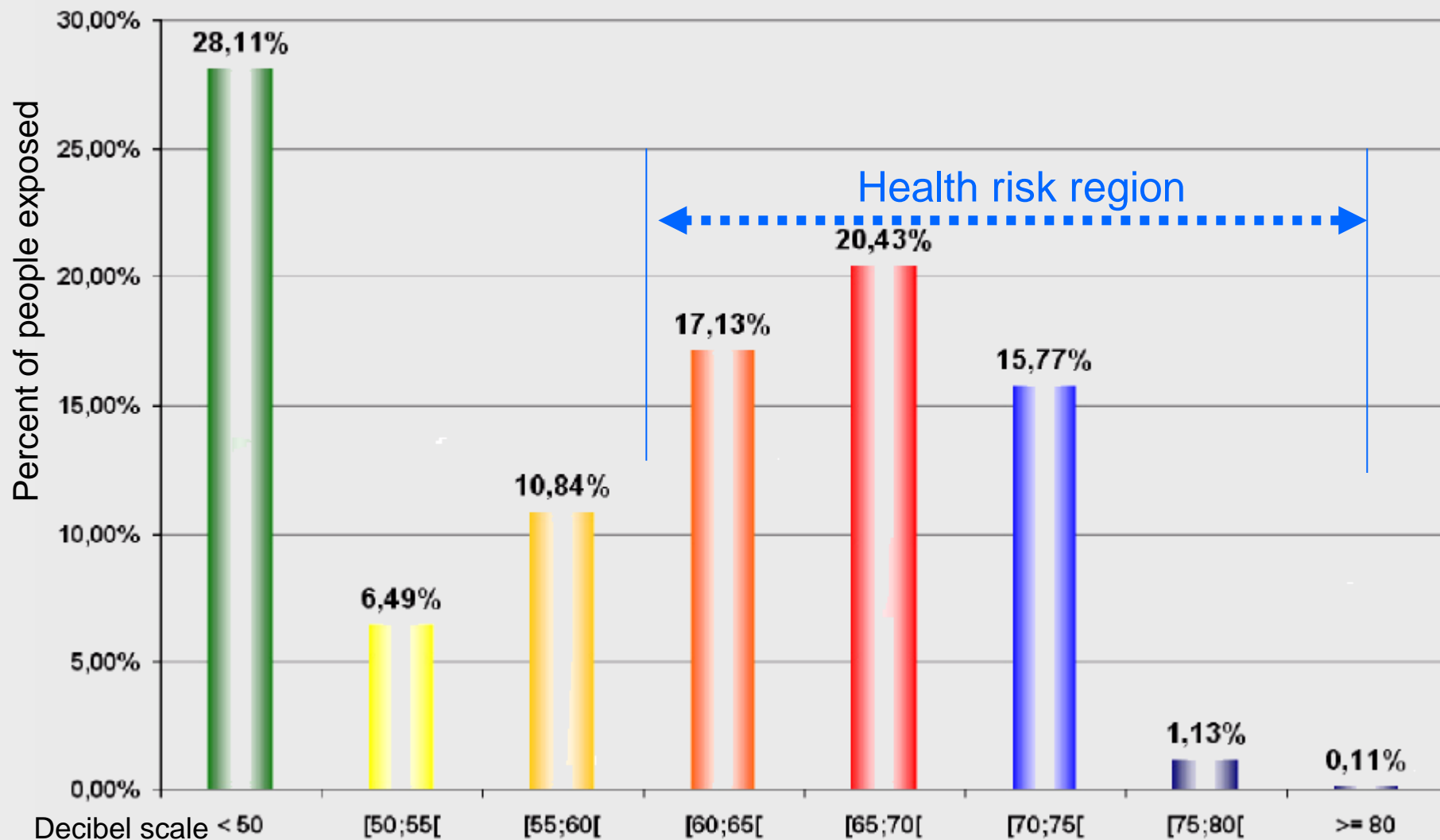


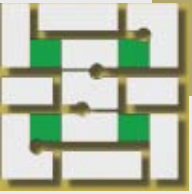
Peace and Quiet



Exposure to noise in Paris puts:

- 15 percent at high health risk
- 37 percent at moderate health risk

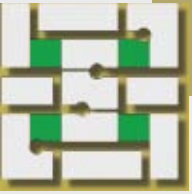




Peace and Quiet

“Low-level but chronic noise of moderate traffic can stress children and raise their blood pressure, heart rates and levels of stress hormones.”

Centre for Sustainable Transportation CHILD-FRIENDLY TRANSPORT PLANNING, 2004



Peace and Quiet

The problem:

In Canada

- 1.8 million people aged 15 and over (about 7%) are highly annoyed by traffic noise.*

In the UK

- 2 in every 100 deaths from heart disease may be caused by stress related to noise. Thousands of people in Britain may be dying from lack of peace and quiet.**

*Michaud DS et al. 2005. Noise annoyance in Canada. Health Canada

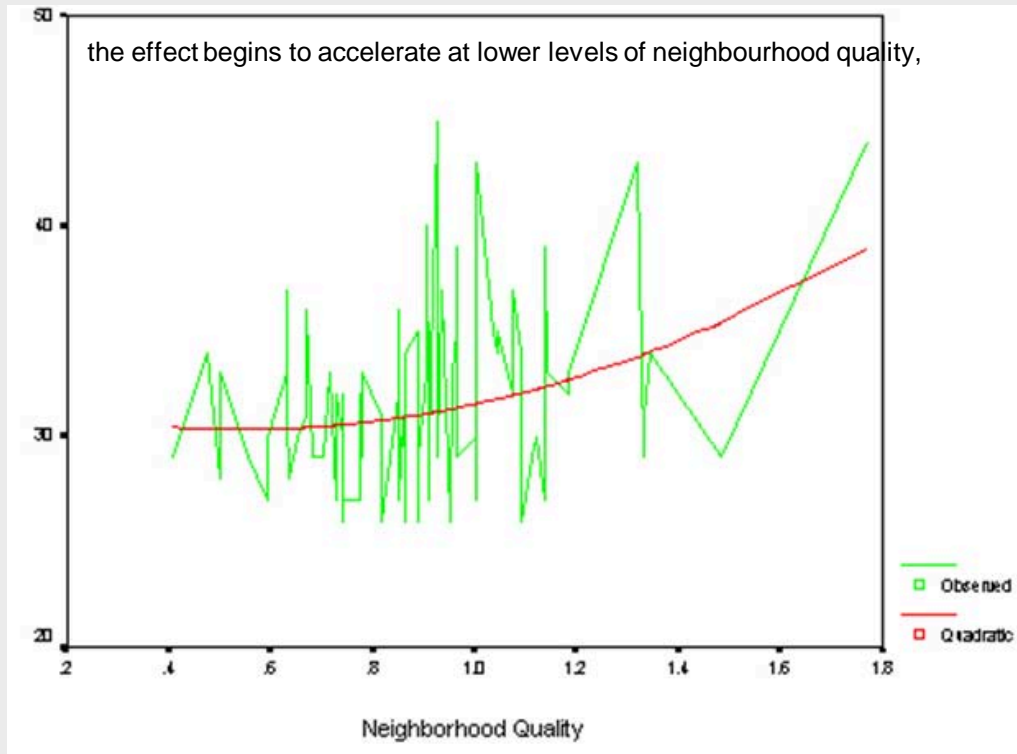
** World Health Organization study quoted in Willich SN et al 2005



Peace and Quiet

Noise and traffic affect children's behaviour

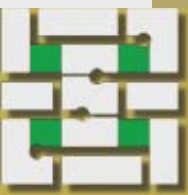
Curvilinear Relation Between Behaviour Problems and Neighbourhood Quality



The most important categories related to the first outcome measure, children's behaviour problems are: pollution, mostly based **on noise and traffic**.

Robert Gifford, 2003: housing quality and children socio-emotional health

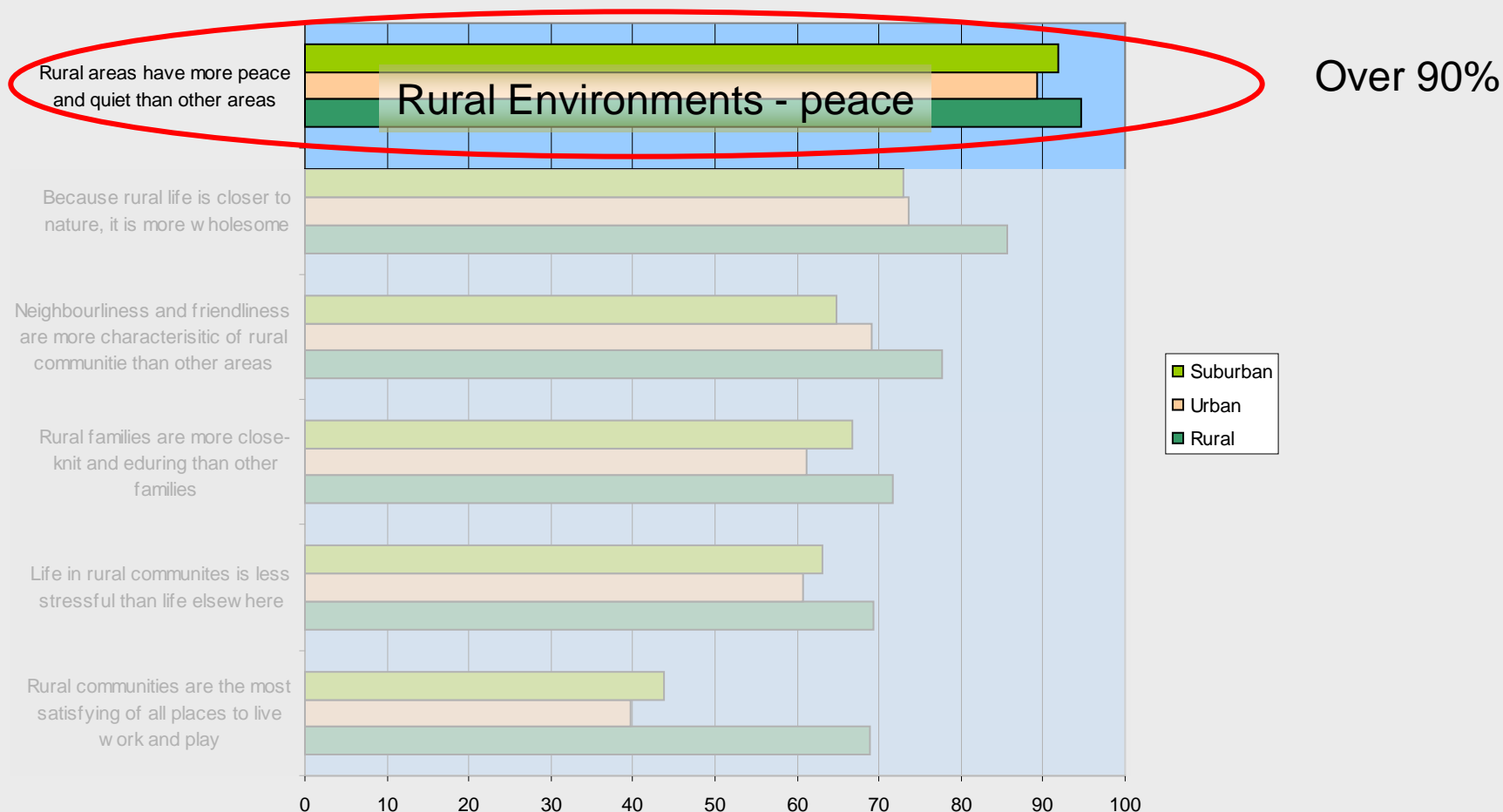
Urban Pattern Associates



Peace and Quiet

When people think.... **Tranquility**

Responses in percent from Rural, urban and suburban residents to items dealing with positive images of rural life

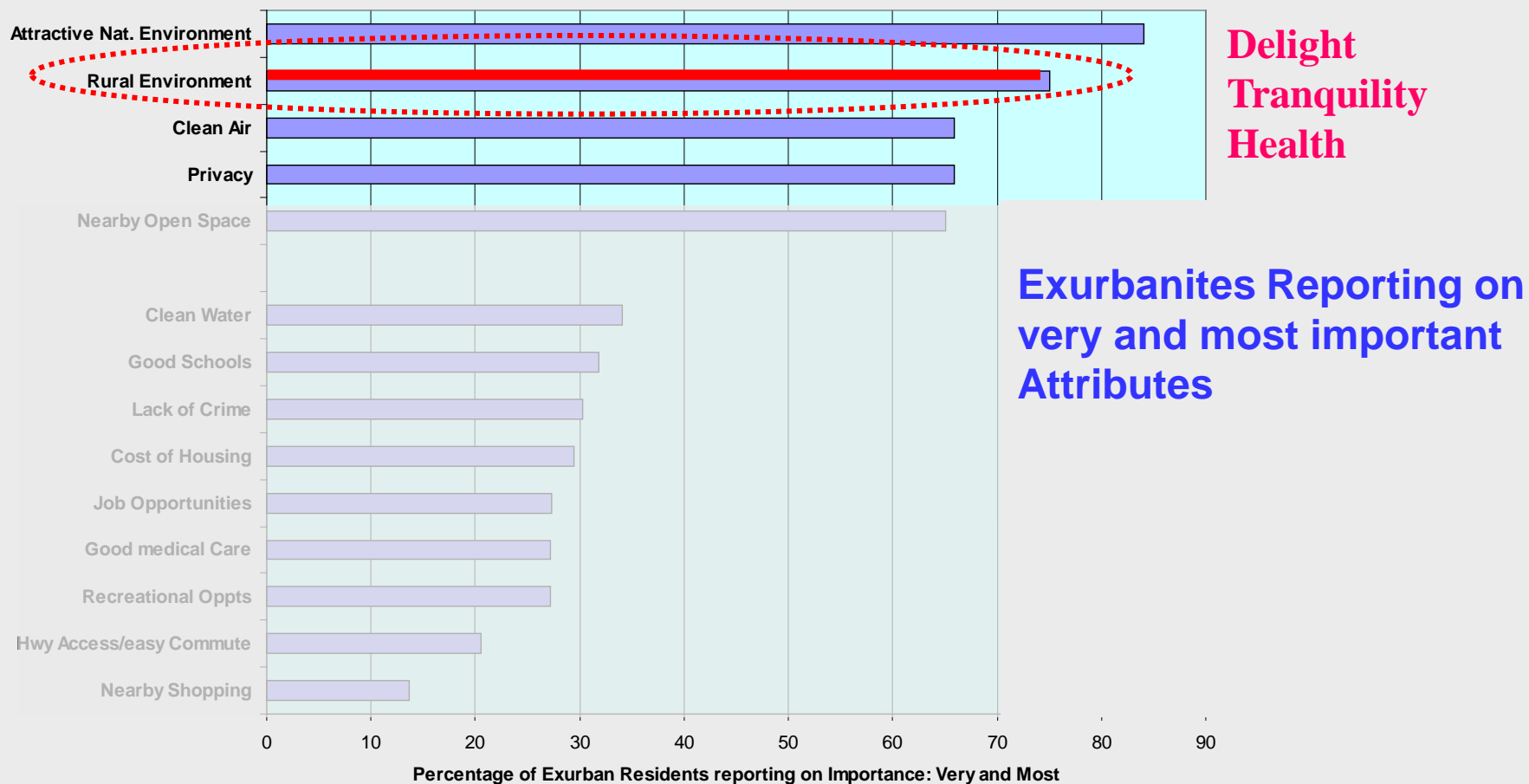


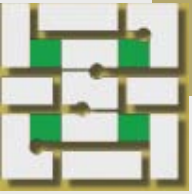


Peace and Quiet

People escape to **Tranquility**

Suburban and Exurban Comparison - Residential Environment Attributes





Peace and Quiet

Noise, a very old urban problem

1932: “Noiseless Milk” – a sleep come true

Balloon Tired Wagons Stop the Clatter of Milk Delivery



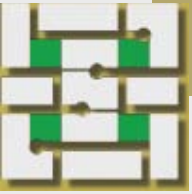
This specially-built light weight milk wagon, wearing balloon tires and drawn by horse shod with padded shoes, eliminates all clatter of milk delivery in early morning.

“**N**OISELESS milk” is now to be had in Boston. This does not mean that the milk makes no noise, but that no racket is created in the delivery of the liquid in the early hours of the morning.

What makes possible the soundless delivery are the new rubber tires with which Boston dairy concerns are equipping their specially-built wagons, one of which is shown in the photo at the left.

No clatter whatever is thus heard in the morning, when Bostonians are trying to grab their extra wink of sleep before rising time. The wagons weigh something like 200 lbs. less than regular wagons, and the tires are 550-200 balloons, carrying about 50 lbs. pressure. Horses wear rubber foot pads, which complete the muffling job.

(In Rome, Julius Caesar banned chariots at night.)



Peace and Quiet

Solutions are not easy:

A “Smart Growth policies can help reduce total motor vehicle traffic, but **exposure [to noise] may increase** with increased land use density, bus traffic, and walking and cycling activity along high volume roads”

Applicable advice:

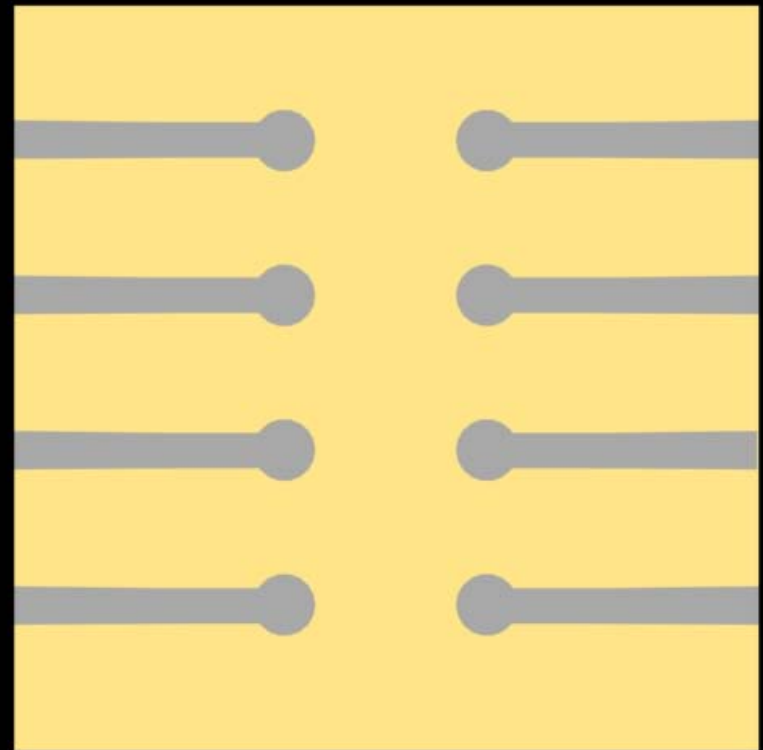
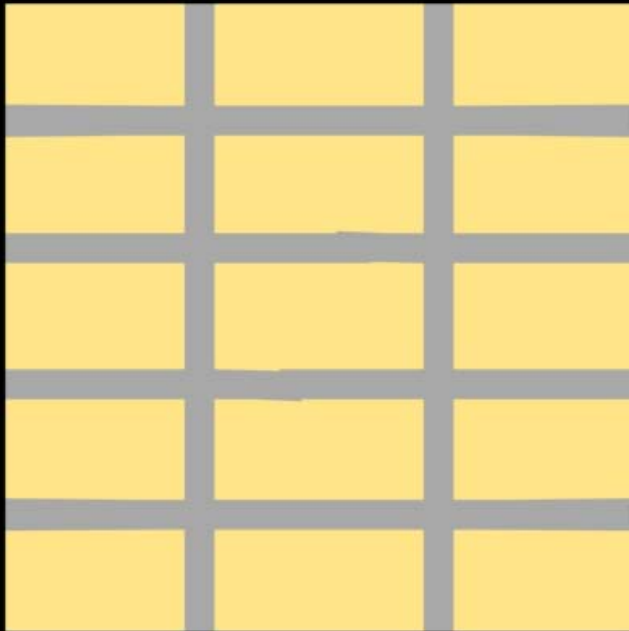
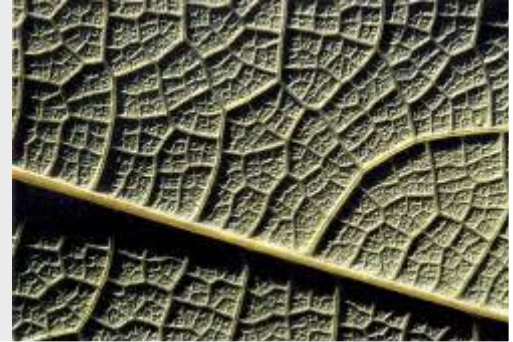
“Utilize creative roadway/pathway designs in the planning and site design processes, such as connected cul-de-sacs and **fused grids**”



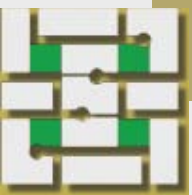
Peace and Quiet

The Fused Grid option:

- stabilizes traffic volume on local streets
- reduces speeds within neighbourhoods
- confines district traffic to regional roads
- sets the stage for shielding residential areas
- separates partly pedestrian paths from roads



Reduced volume and reduced speed



Peace and Quiet

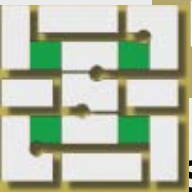
A Fused Grid Neighbourhood

Predictable, local traffic only

Assigns district traffic to the perimeter



Urban Pattern Associates

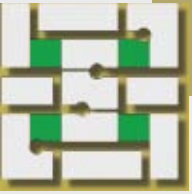


Peace and Quiet

Short lengths and turns – lower speeds

- shielding potential
- Partly separate paths
- No street crossing, possible





Health: Clean Air



Clean Air

The problem:

The outcome of air pollution - CMA report, August 2008.

1. In 2008, 21,000 Canadians will die from the effects of air pollution.

While most of these deaths will be due to chronic exposure over a number of years, 2,682 will be the result of acute short term exposure.

3. 42% of air pollution associated acute premature deaths will be as a result of cardiovascular disease.

4. In 2008, over 80% of acute premature deaths (2,156 deaths) associated with air pollution will be in those over 65 years of age.

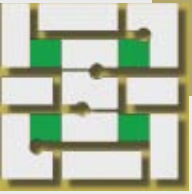
21,000 prem. deaths in 2008

2,700 deaths short exposure

42% cardiovascular
of

Hits the old: 80% of total

Canadian Medical Association, 2008. *No Breathing Room-National illness costs of air pollution.*

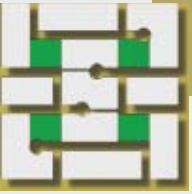


Clean Air

The problem:

There appears to be no threshold for ozone levels that are safe, and children are particularly susceptible.

Centre for Sustainable Transportation CHILD-FRIENDLY TRANSPORT PLANNING, 2004



A study on particulates in the air

Finding: Air pollution increases the risk of cardiovascular disease

Examined 66,000 women in and around 36 US cities and Found:

- ➔ • Every 10 microgram rise in particulates was matched by a 76% rise in the chances of dying from heart disease or stroke
- For women living in, rather than between, cities, the risk more than doubled
- For older women aged 50 to 79 particulates are more hazardous than previously thought.
- A total of 1,816 women suffered one or more cardiovascular event

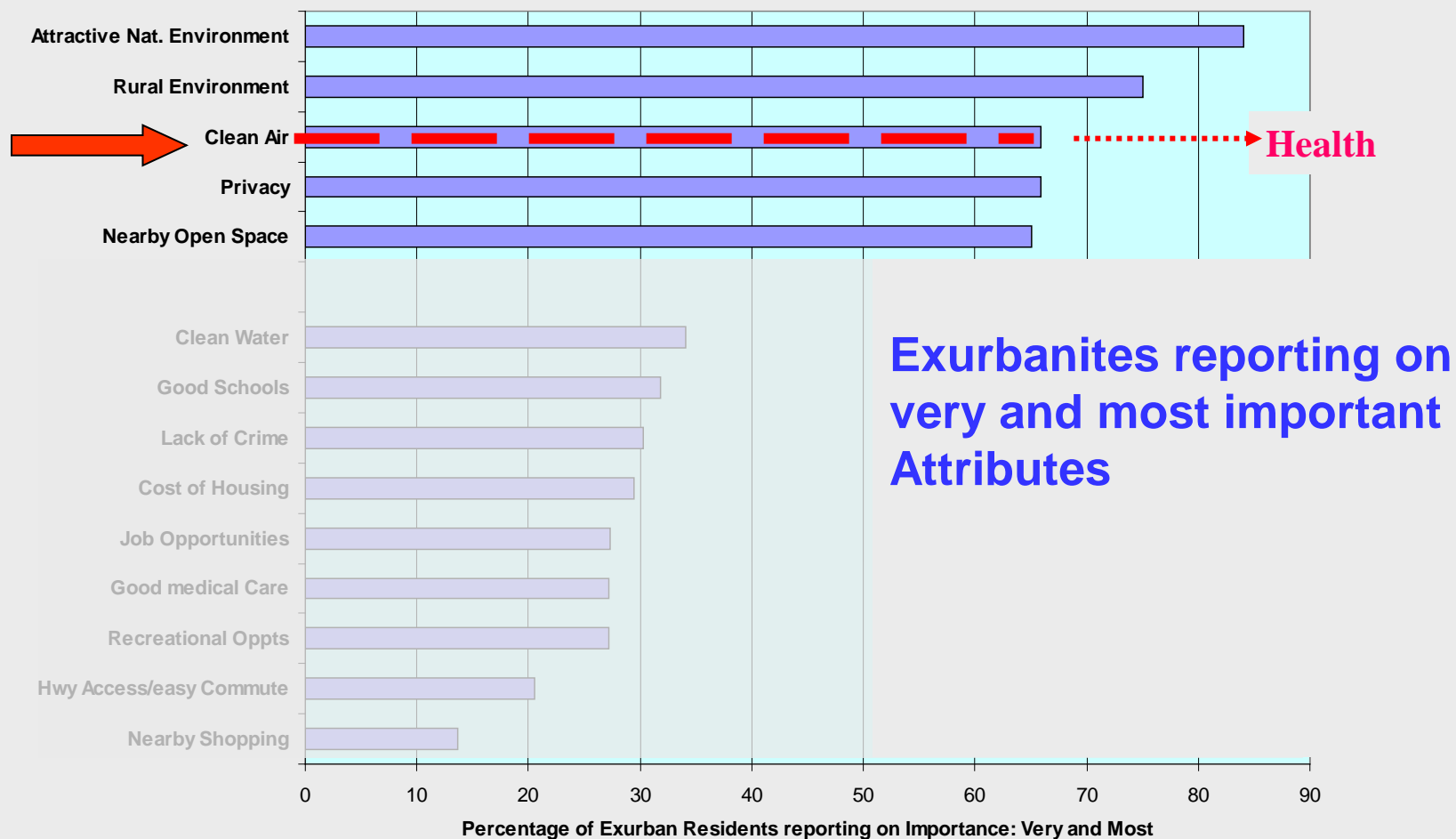
Lead Researcher: Professor Joel Kaufman, University of Washington, in Seattle

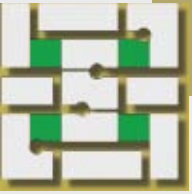


Clean Air

People seek clean air....

Suburban and Exurban Comparison - Residential Environment Attributes

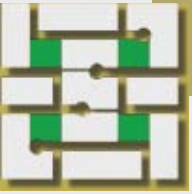




Clean Air

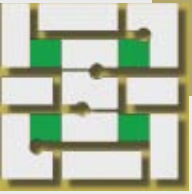
The problem:

“Children living in areas with poor air quality have been found to have reduced lung function growth that places them at risk for future respiratory illness.”



“Children who live near high-traffic areas (20,000 cars passing per day) may be six times more likely to develop childhood leukemia and other cancers”

Centre for Sustainable Transportation CHILD-FRIENDLY TRANSPORT PLANNING, 2004 ■ Quoting: Pearson R, Wachtel H, Ebi K, Distance-weighted traffic density in proximity to a home is a risk factor for leukemia and other childhood cancers, Journal of the Air & Waste Management Association, 50, 175-180, (2000).



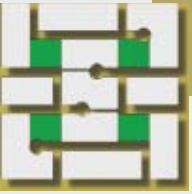
Solutions are not easy:

“When looking at the tradeoffs between more walkable land use patterns and pollutant exposure, **the walkable environments** may be the same places **where exposure to particulates is greater**”

“**Short vehicle trips** in urban conditions tend to have **high per-kilometer pollution emission rates** due to cold engine starts and congestion, so reductions in such trips tend to provide large emission reductions.”

“In general, anything that reduces per capita motor vehicle travel (particularly short cold engine start trips), makes traffic smooth, favours less polluting vehicles, and increases the physical separation between traffic and people is likely to reduce vehicle pollutant health risks.”

“Emissions per vehicle mile tend to be **minimized at moderate traffic speeds** (30 to 50 km/hr) with minimum stops”



Clean Air

In summary, findings suggest that we should:

- A** Discourage, displace short vehicle trips
- B** Plan for smooth traffic flow
- C** Plan for moderate speeds and few stops
- D** Separate people from traffic

Applicable advice:

“Utilize creative roadway/pathway designs in the planning and site design processes, such as connected cul-de-sacs and [fused grids](#)”



Clean Air

Connected cul-de-sacs

Eco-village - 1984

Village Homes, Davis, CA By Michael and Judy Corbett



This early aerial view of Village Homes shows the extensive open space, common areas, and pathways.

The highest bicycle and foot travel in CA



Clean Air



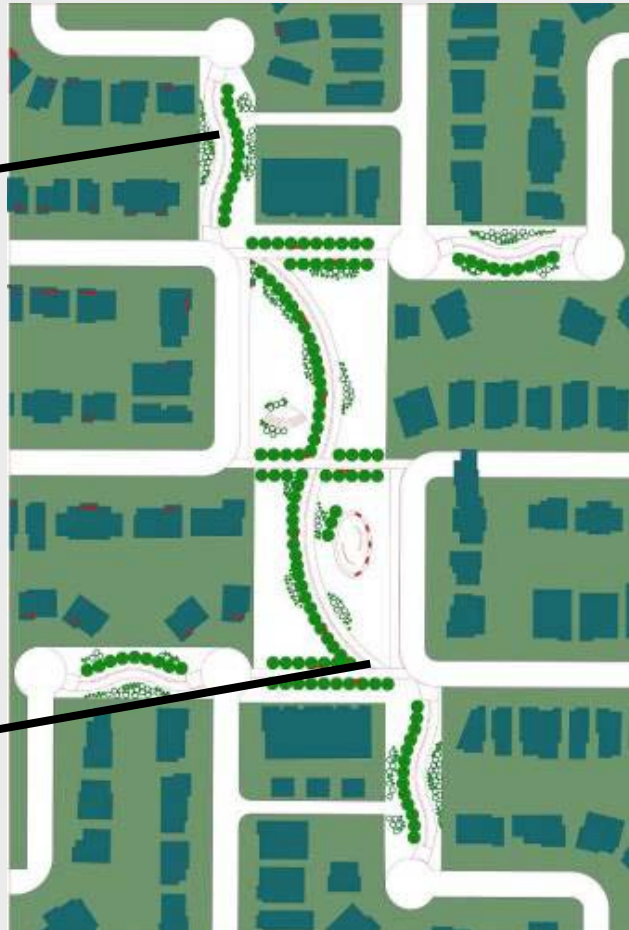
Pedestrian walkway in Denmark

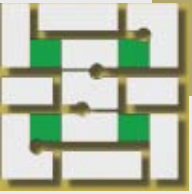


A street converted to a walkway, in Ottawa

Fused Grid:

Walking/biking paths connect streets





Health:

Restorative Environments



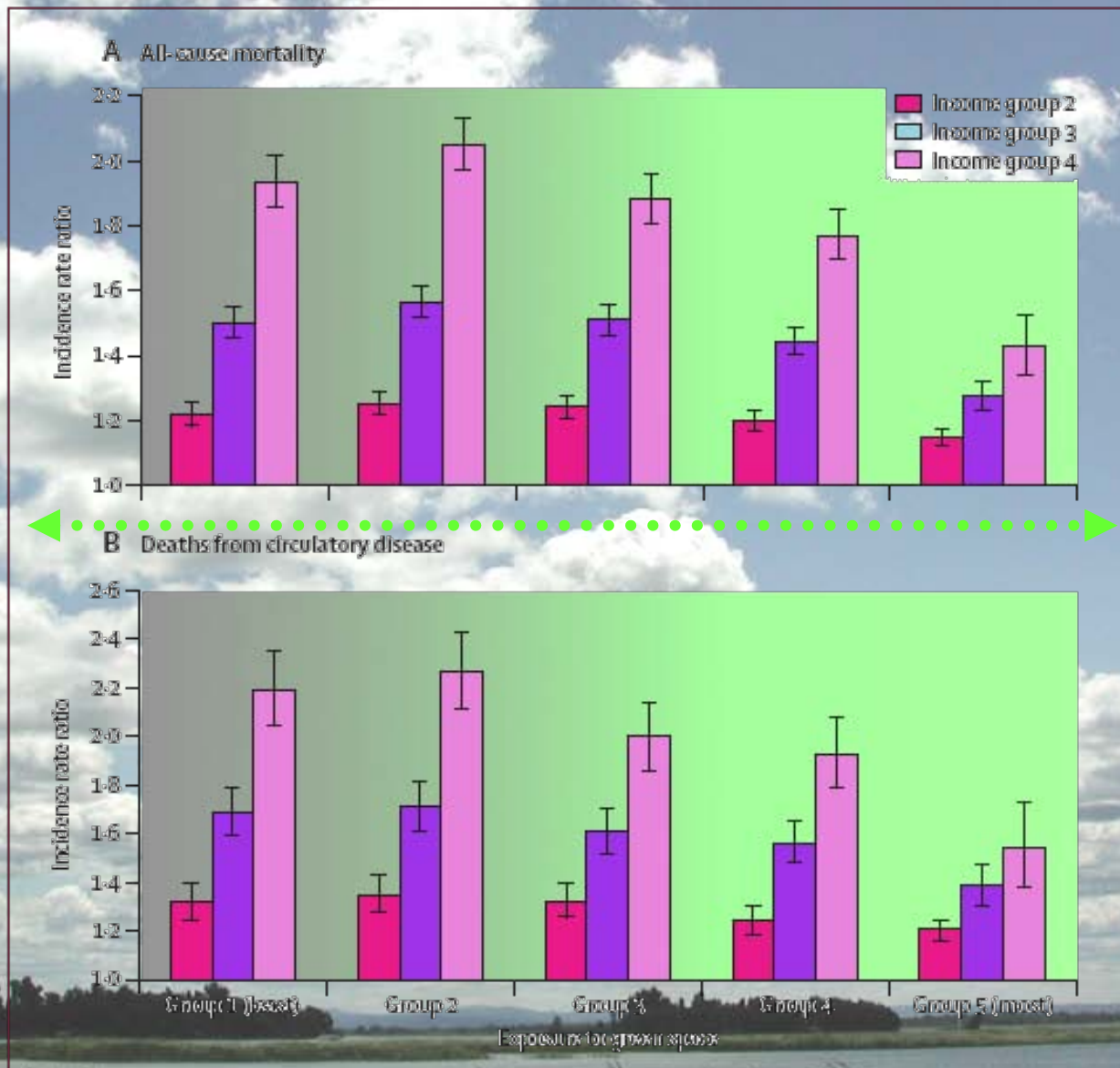
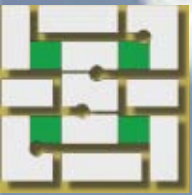


Health: Restorative Environments

People with access to nearby-natural settings have been found to be healthier than other individuals.

—R. Kaplan and S. Kaplan, *The Experience of Nature* ch. 3

Health: Restorative Environments



- 3 income levels
- 5 groups
- Increasing green

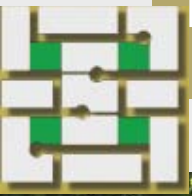
Less green

More green

Figure 2: Incidence rate ratios for All-cause mortality (A) and deaths from circulatory disease (B) in income-deprivation quintiles 2-4, stratified by means of deprivation quintile 2, plotted against exposure to green space.

Effect of exposure to natural environment on health inequalities: an observational population study
Richard Mitchell, Frank Popham: The Lancet

Restorative Environments

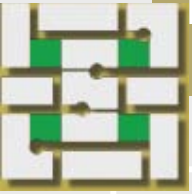


Small green could be plenty



What is so highly valued here are not greenbelts and urban parks; residents are expressing **intense satisfaction with small pieces of nature**, with the view of some trees...Rather than large open areas and mowed expanses, these participants expressed a desire for and **delight in smaller areas that have some trees and shrubs**.

—Rachel Kaplan, *Journal of Architectural and Planning Research*, 1985: 2:115-127

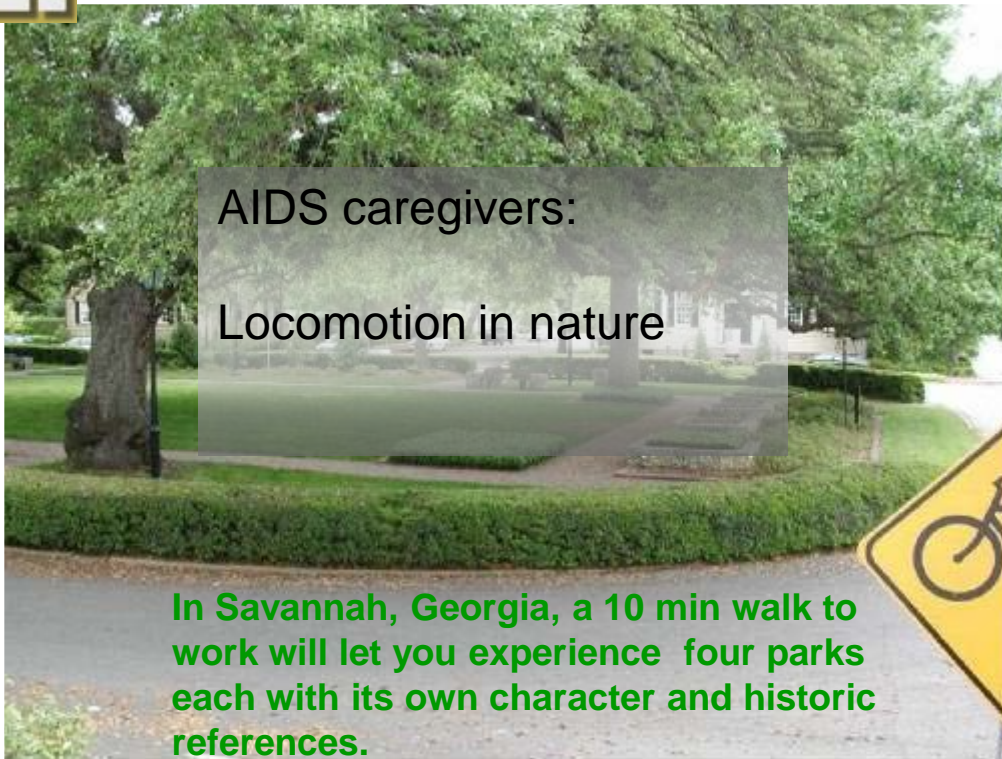
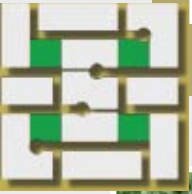


Restorative Environments

Pre-school Children. (ADD issue)

Fewer attention
problems where
play areas were in
nature setting

Restorative Environments



AIDS caregivers:

Locomotion in nature

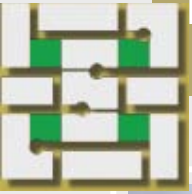
In Savannah, Georgia, a 10 min walk to work will let you experience four parks each with its own character and historic references.

Care-giver fatigue and burnout.

Canin (1991) studied AIDS care givers in the San Francisco area. Understandably such individuals are prone to fatigue and burnout. Canin examined what activities were most effective in resisting these hazards.

The results were clear cut: **locomotion in nature, whether involving walking or running or biking or canoeing, was the most effective antidote to burnout and fatigue.**

Stephen Kaplan, 2003, University of Michigan *Some Hidden Benefits of the Urban Forest*



Restorative Environments



Dealing with life-threatening illness.

Cancer patients

20 min, 3 times/week
in restorative milieu

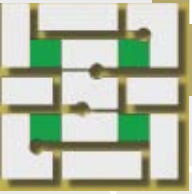


Back to work sooner

Back to full-time work

Start new projects

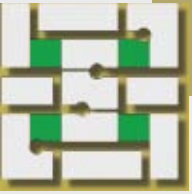
Restorative Environments



The elderly.

Ottosson and Grahn (2002) have studied the effects of nature on elderly people in nursing homes.

They report that even an hour outdoors in nature improves directed attention capacity. This effect is stronger the more impaired the individual is.

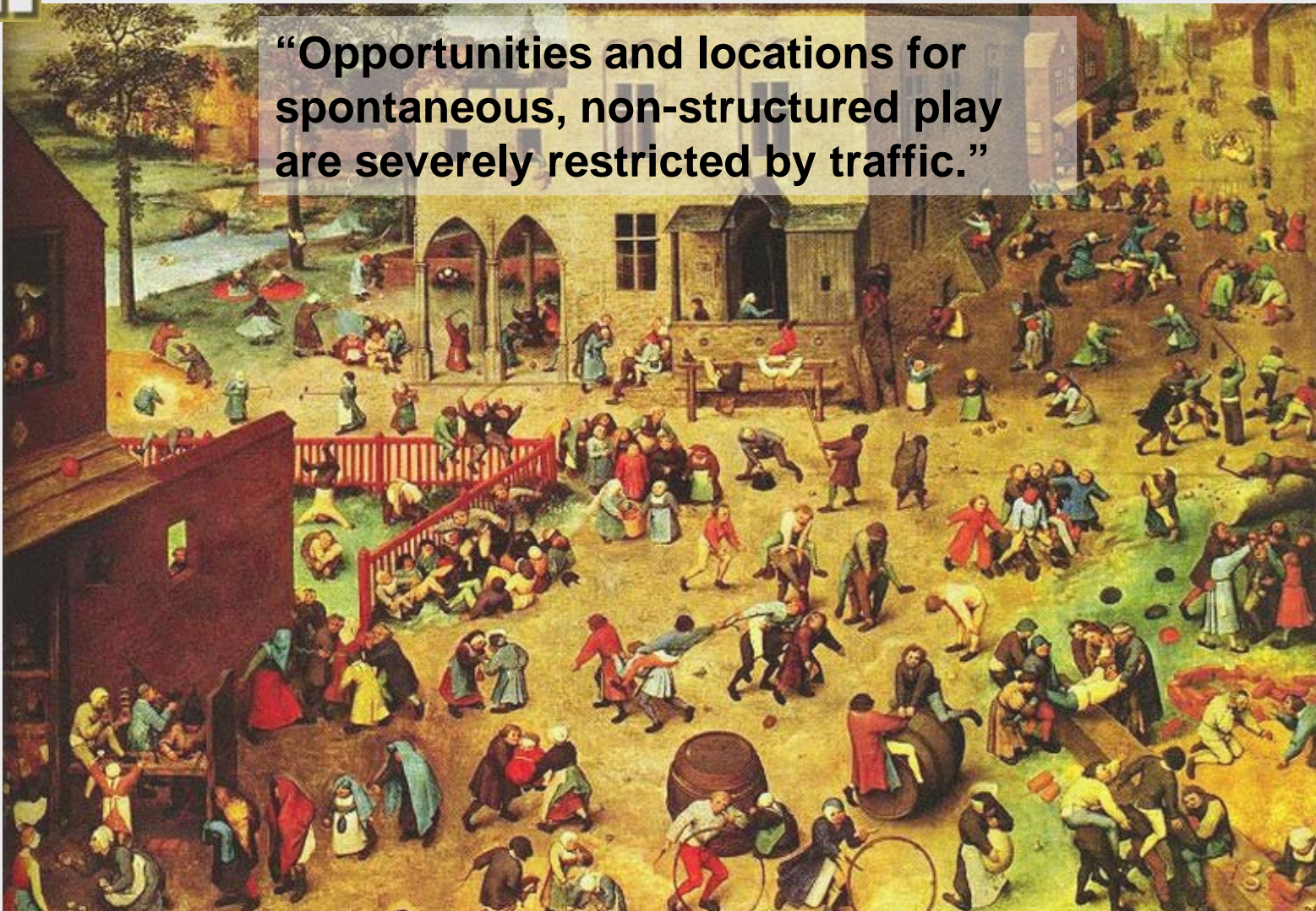


Health: Active Lifestyle



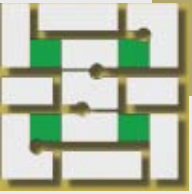
Health: Active Lifestyle

“Opportunities and locations for spontaneous, non-structured play are severely restricted by traffic.”



Centre for Sustainable Transportation CHILD-FRIENDLY TRANSPORT PLANNING, 2004

“Jeux d’ Enfants” by Bruegel the elder (1560)



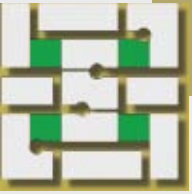
Active Lifestyle

Children are better off with nearby play-spaces



“ Two out of three Canadian children do not meet average physical activity guidelines to achieve optimum growth and development.”

*Centre for Sustainable Transportation CHILD-FRIENDLY
TRANSPORT PLANNING, 2004*

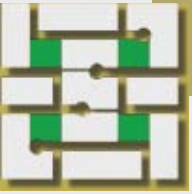


Active Lifestyle

In a Fused Grid pattern

Play space at the end of each block





Safety

Neighbourhoods that Provide

- Safe walking and biking
- Safe play areas
- Mingling opportunities



Safety: Walking and biking

The Problem

4,827 people died in 2003 while walking and an estimated 70,000 pedestrians were injured (US)

“In fact, walking is by far the most dangerous mode of travel per mile”

	Fatality rate*
Public Transit	0.75
Passenger cars & trucks	1.30
Commercial airlines**	7.30
Walking	20.1

*per 100 million miles traveled **Includes the unusual 9/11 highjack victims

From: Mean Streets – 2004. Surface Transportation Policy Project, November 2004



Safety: Walking and biking

The Problem

Pedestrian Fatalities and Injuries 1992-2001 (Canada)

In this 10-year period, there were:

- **4,162 fatalities**
- **142,000 injuries**

Of the fatalities:

- 11% were children under 15
- 31% were persons 65+

The young
and the old: 42%

Of the injuries:

- 22% were children under 15
- 11% were persons 65+


The young
and the old: 33%

Pedestrian Fatalities and Injuries, 1992-2001. Transport Canada 2004



Safety: Walking and biking

The Problem



“Traffic fatalities are the leading cause of injury death in Canada for children over the age of one year.”



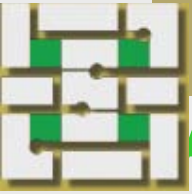
Safety: Walking and biking

Safety : risk, action and reaction in perspective

Children that are injured by hot tap-water each year	50
Children that die walking each year*	45
Children that are injured walking each year*	3,124 ?

Legislation + Technology

Normal reaction:
Kids are driven everywhere



Safety: Walking and biking

A solution: NO intersections within a neighbourhood

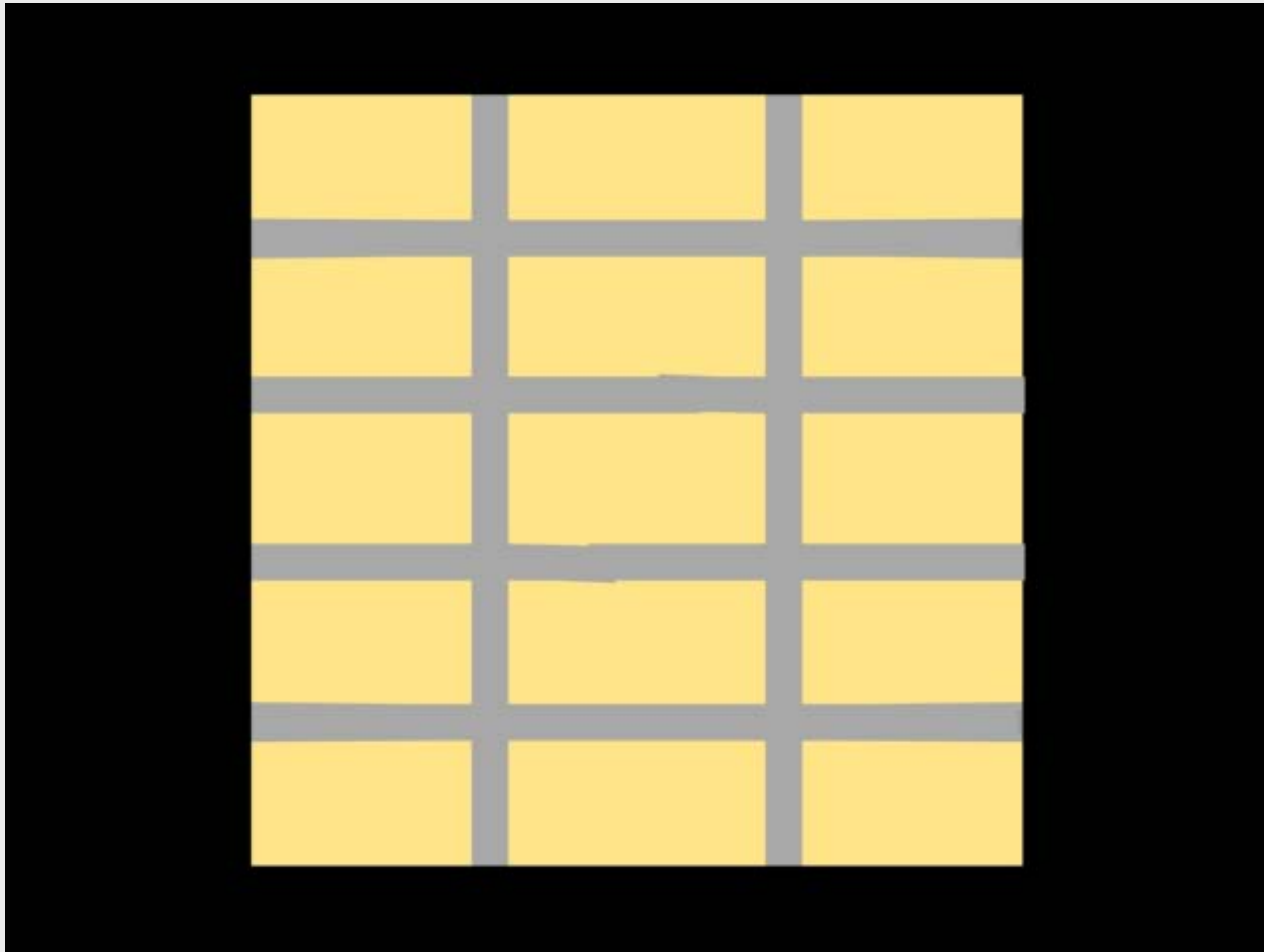
External

From

12



8



Internal

From

8



0

60% fewer hard intersections

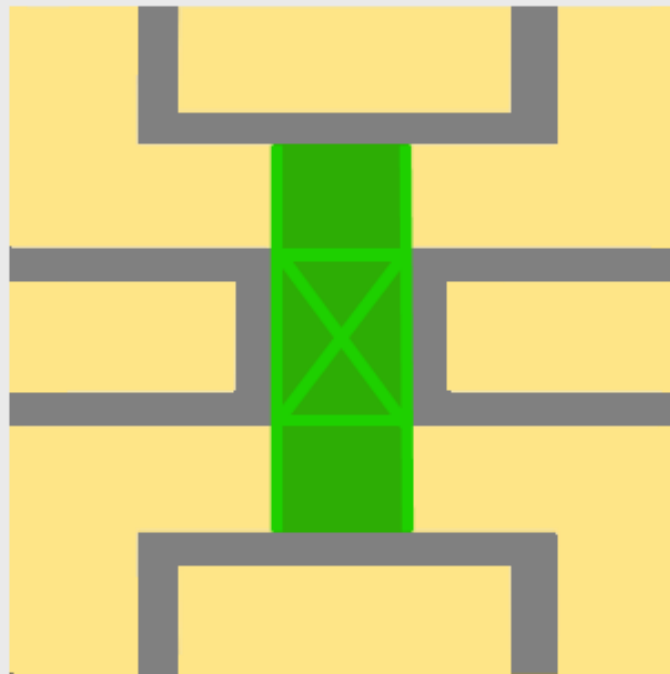
Urban Pattern Associates



Safety: Walking and biking

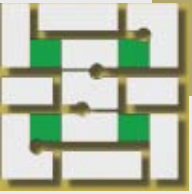
Adding Soft Intersections (Schematic)

8 perimeter intersections remain



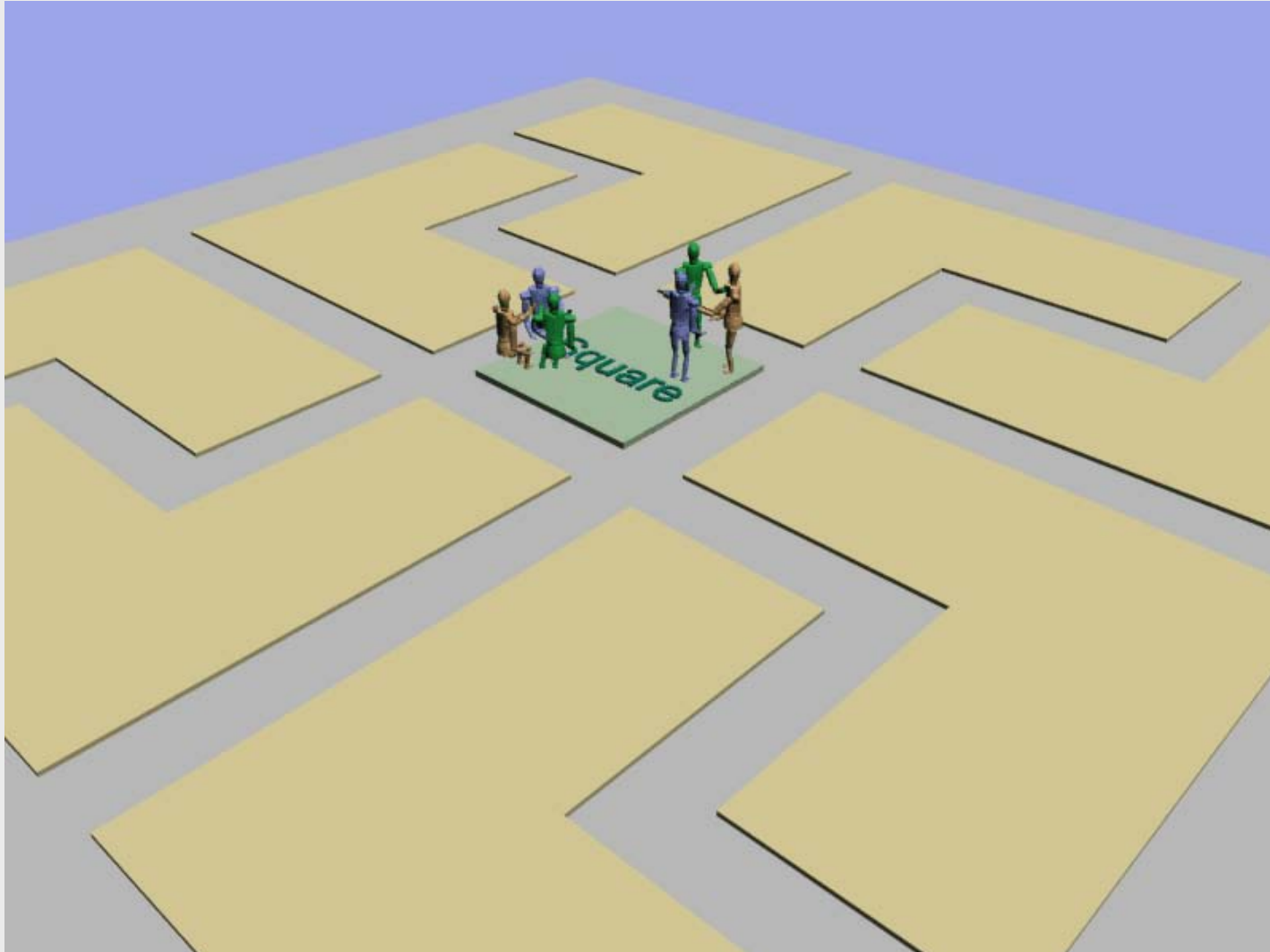
NO intersections within the neighbourhood

10 soft intersections



Safety: Walking and biking

One solution: NO intersections within a neighbourhood



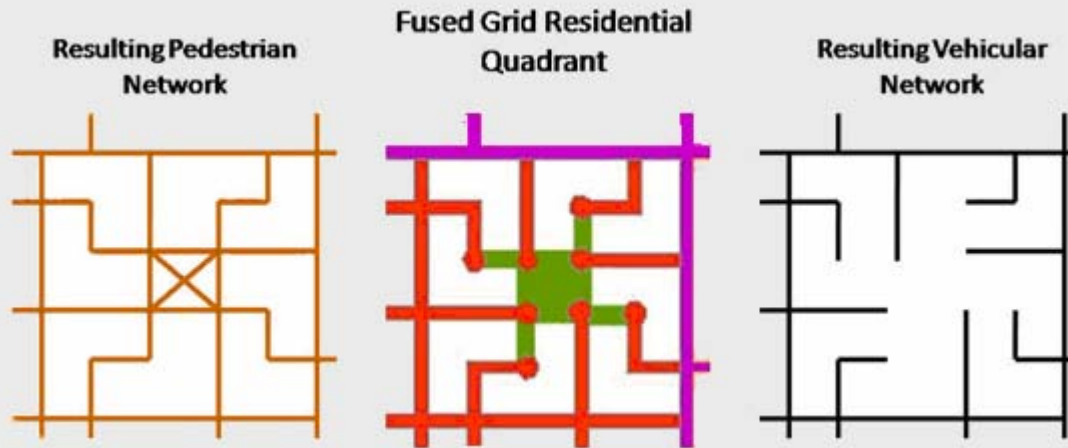
Initially four cross intersections and then NONE



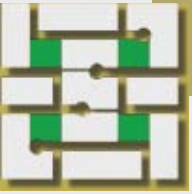
Safety: Walking and biking

The Fused Grid Option

Transforming the wheel-grid into a foot grid



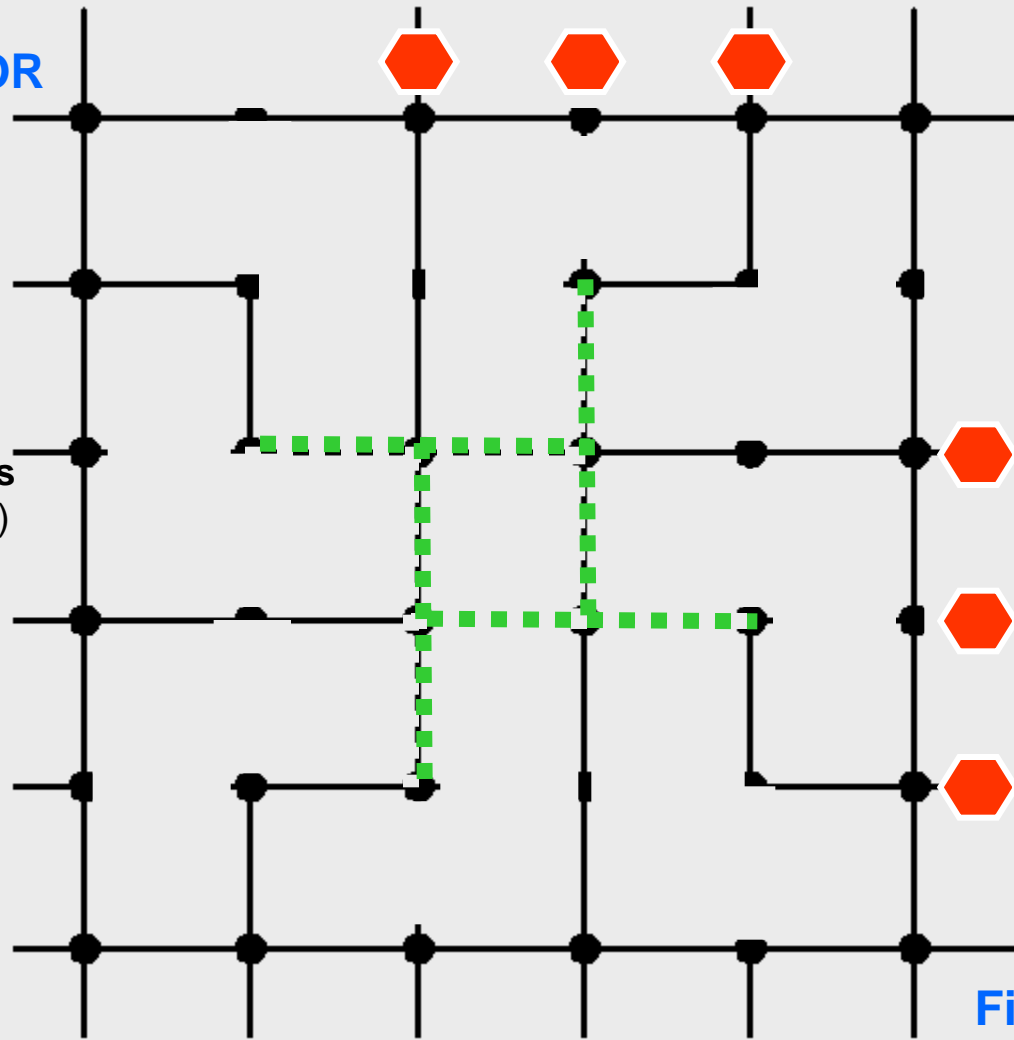
30% of street length for pedestrians only



Safety: Walking and biking

Start: Portland, OR

- Starting with
- **40 asphalt segments**
(inside the perimeter)
 - All cross-junctions



From all 40 asphalt
to
16 asphalt segments
and
8 foot segments
30% Reclaimed

Finish: Fused Grid

← 1/4 mile (400 m) →

Transforming the wheel-grid into a foot grid

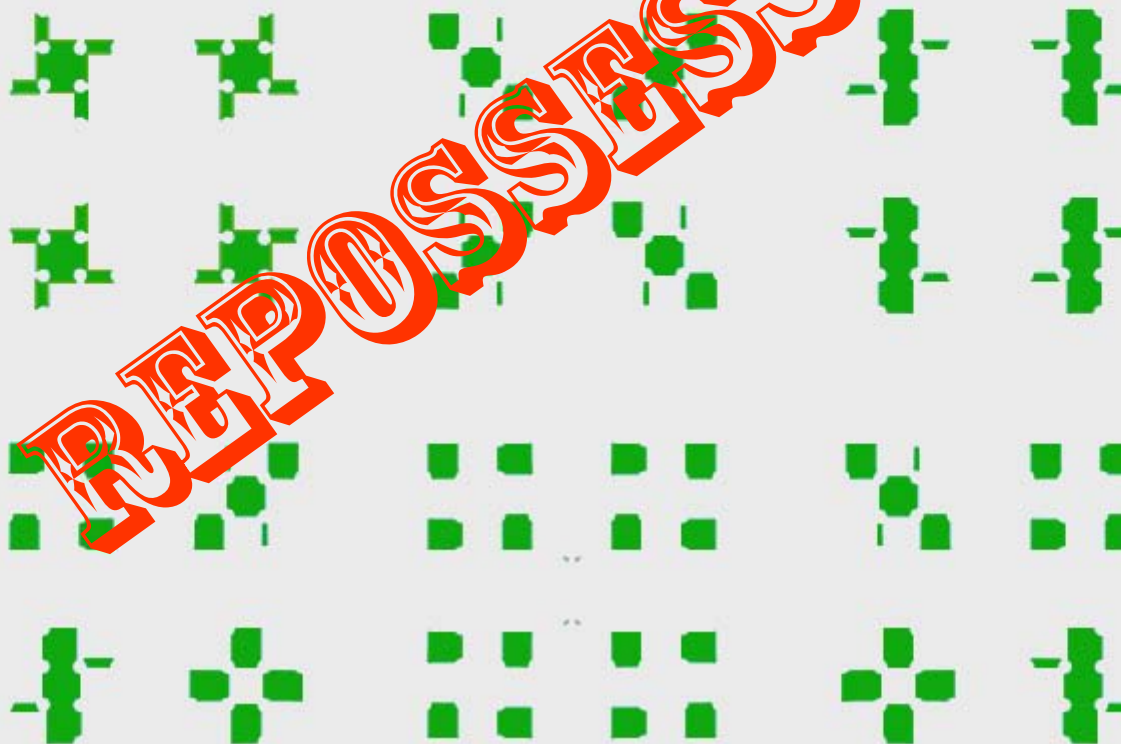


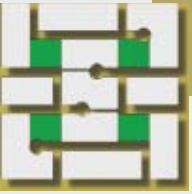
Safety: Walking and biking

Transforming the wheel-grid into a foot grid



What happened to the 24 asphalt segments?





Safety: Walking and biking

Connector through open space

Open space and **exclusive** pedestrian connector in an Ottawa suburb (recently built)

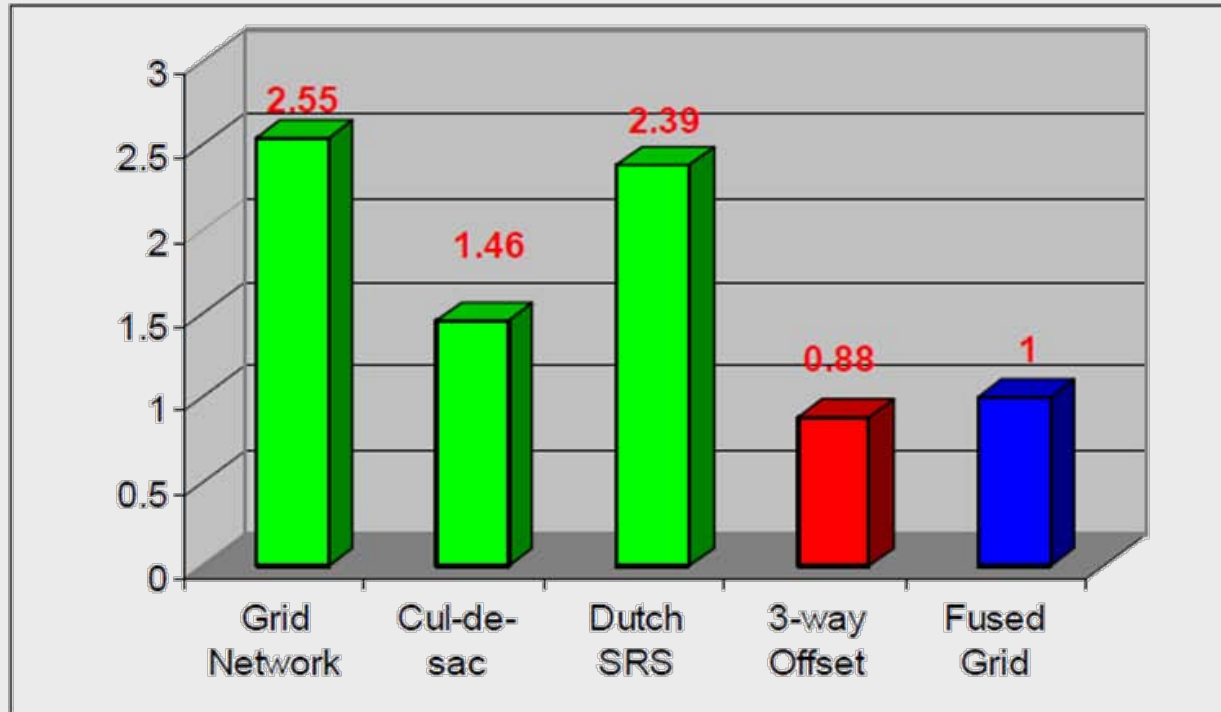


Safety: All collisions



International Road Federation

256 hectare module



t-Statistics
($t_{8, 90\%} = 1.86$)

2.57

1.88

2.41

1.15

--

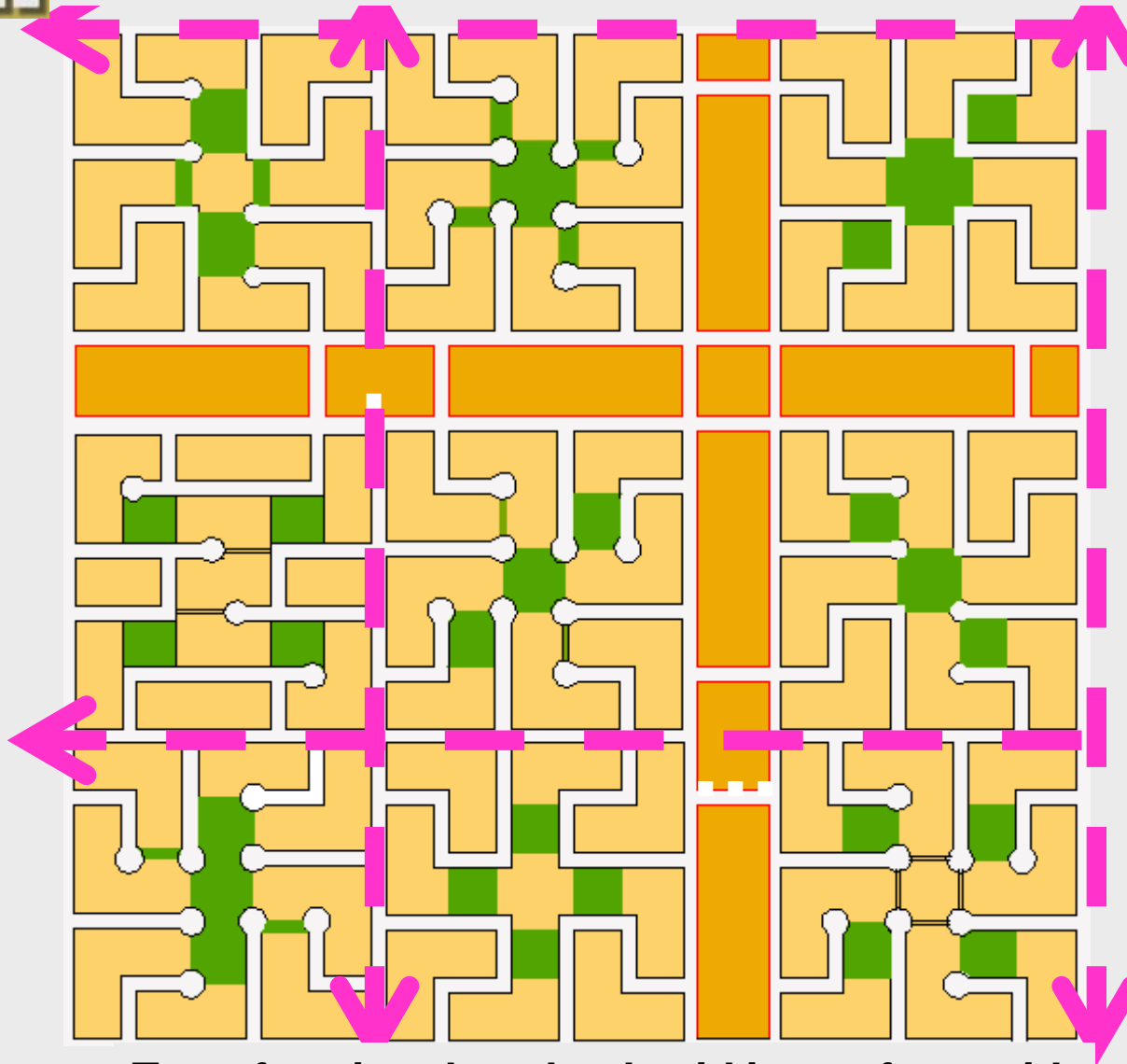
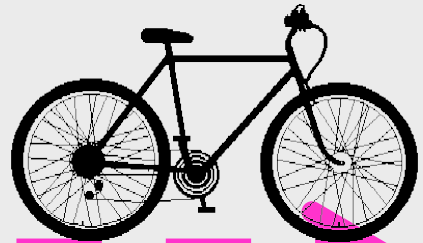
19

Presented at the International Road Federation Conference www.irf2010.com

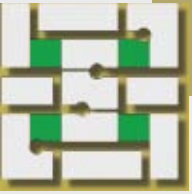
*The difference between the Fused Grid and 3-Way Offset was insignificant according to the t-Statistic at 90% level

Safety: Walking and biking

What about bikes ?



Transforming the wheel-grid into a foot-grid

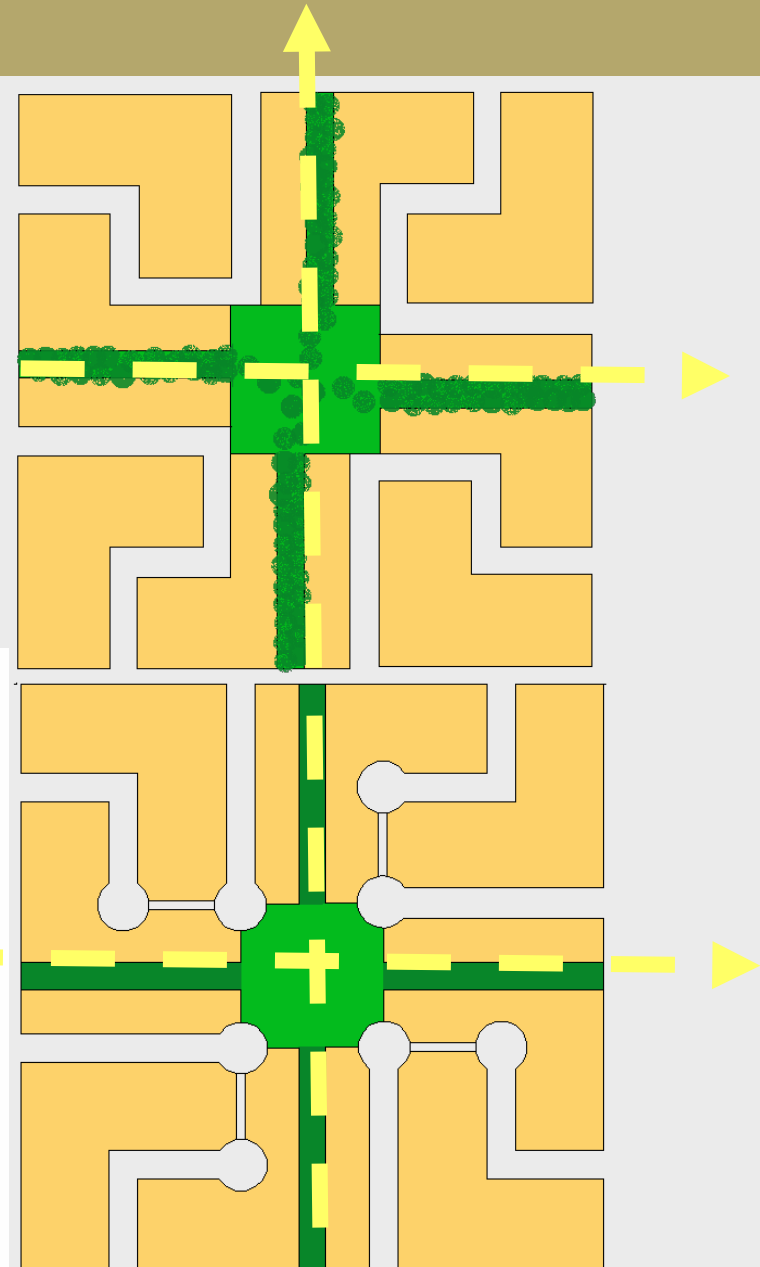
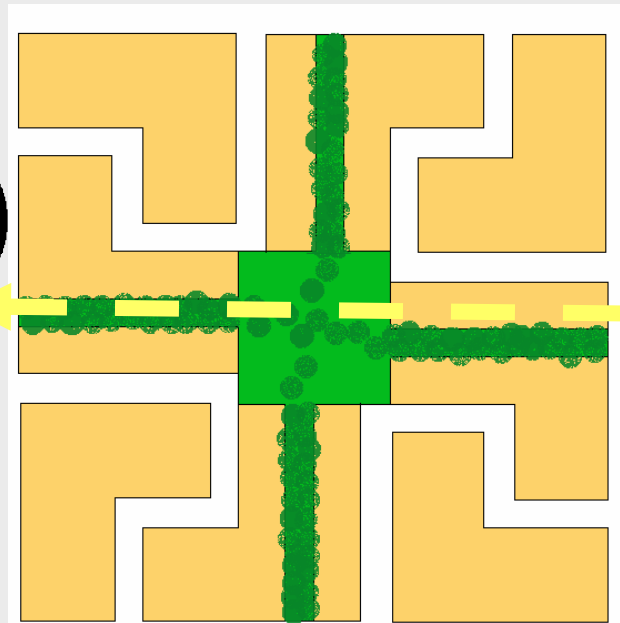
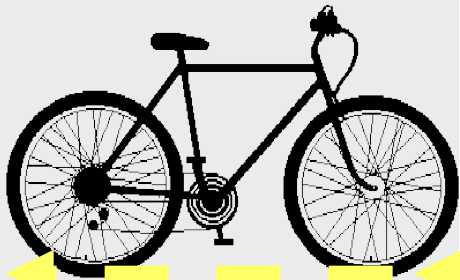


Safety: Walking and biking

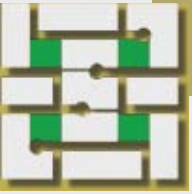
Another possibility for bikes and pedestrians:

Separate from traffic entirely

Back lanes as Greenways
For foot and bike travel

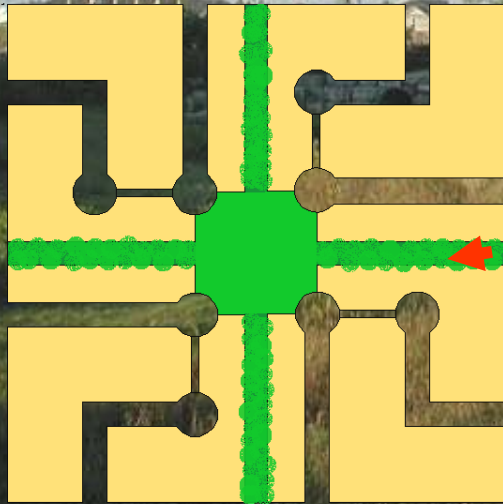


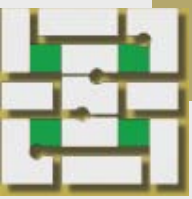
Transforming the wheel-grid into a foot-grid



Safety: Walking and biking

Back lanes as Greenways for foot and bike travel

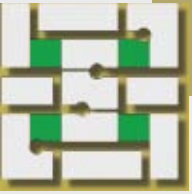




Safety: Walking and bicycling

Not this!



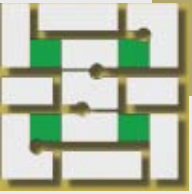


Safety: Walking and biking

OR THIS!

Bikes on the margins of the network

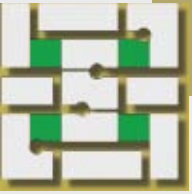




Safety: Walking and biking

BUT THIS!

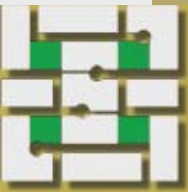




Wellbeing

Through Neighbourhoods that Provide

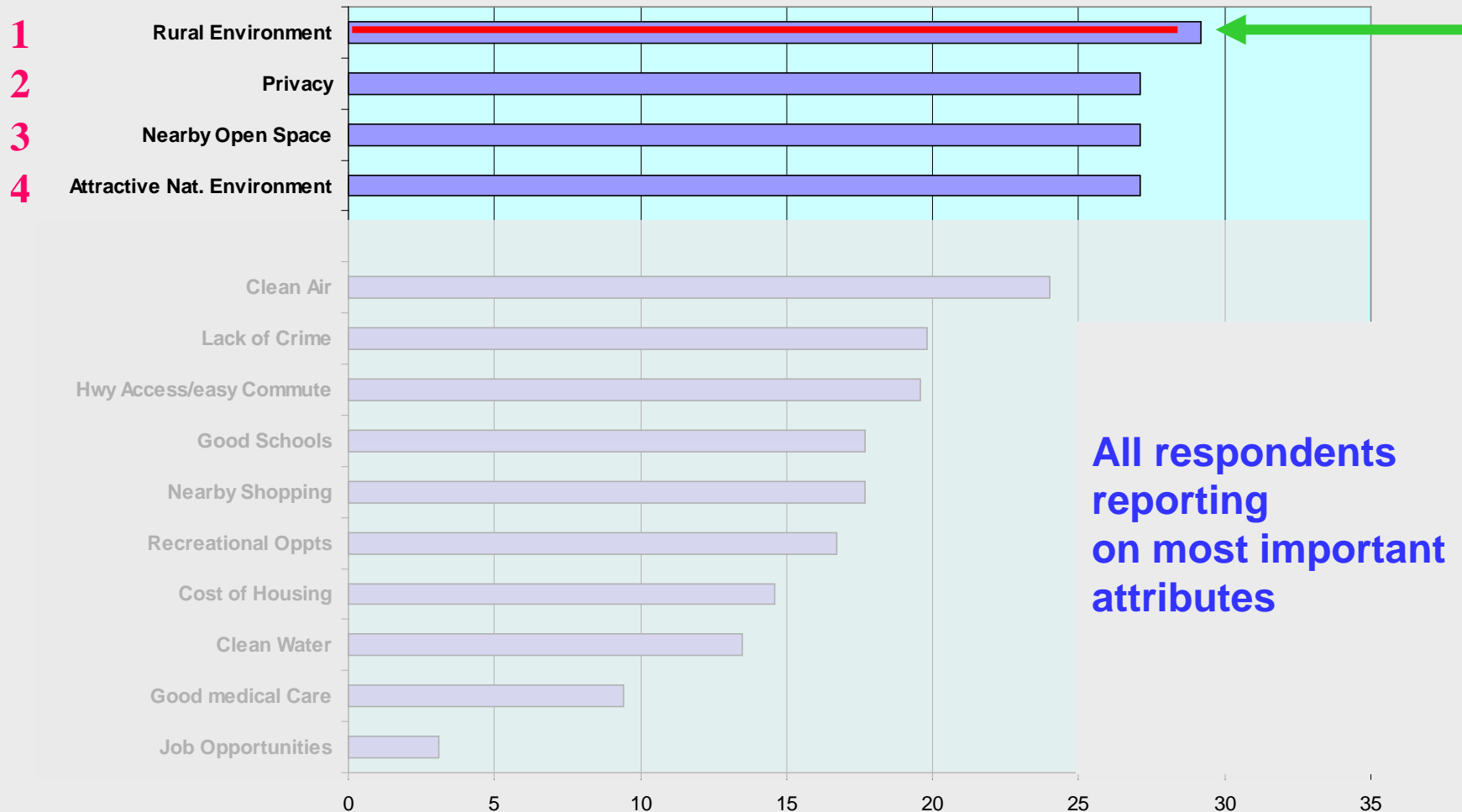
- Tranquility
- Sociability
- Security
- Comfort
- Delight



Wellbeing

Tranquility

Summary of Survey Results - Importance of Residential Environment Attributes





Wellbeing

Tranquility: A Fused Grid neighbourhood



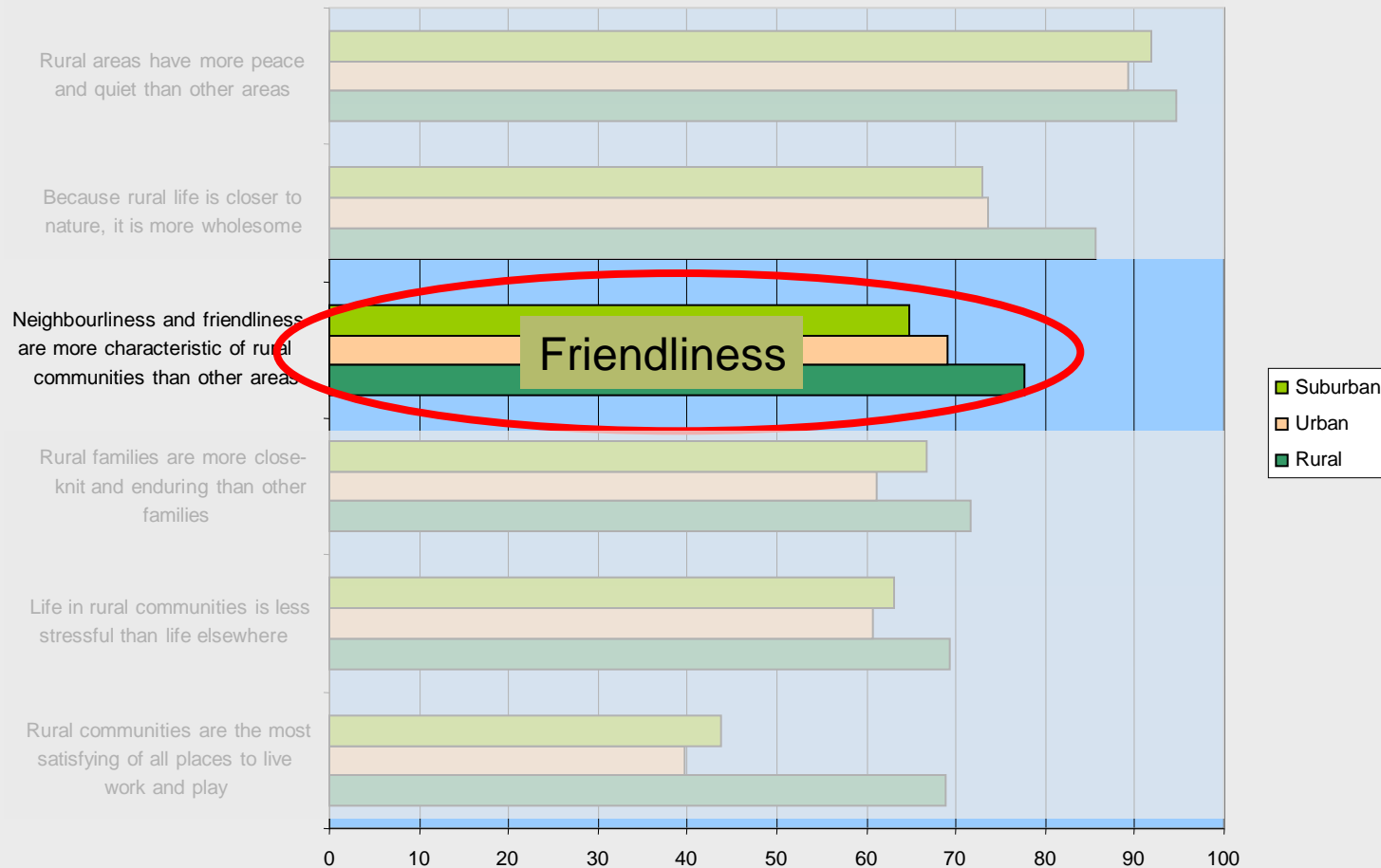
Urban Pattern Associates

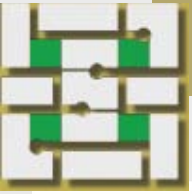


Wellbeing: Sociability

People seek... other people

Responses in percent from Rural, urban and suburban residents to items dealing with positive images of rural life





Wellbeing

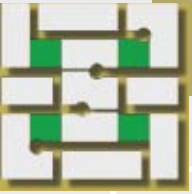
Sociability and skills



Park space weaved throughout neighborhood, offers smaller open spaces to more residents and provides a linked path system.

“Research suggests that the formation of neighbourhood social ties (NSTs) may substantially **depend on the informal social contact which occurs in neighbourhood common spaces**, and that in inner-city neighbourhoods where common spaces are often barren no-man's lands, the presence of trees and grass supports common space use and informal social contact among neighbours”

Fertile Ground for Community: Inner-City Neighborhood Common Spaces
Frances E. Kuo, William C. Sullivan, Rebekah Levine Coley and Liesette Brunson



Wellbeing

Sociability and skills

Socializing

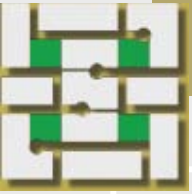


Relations among neighbours grow primarily in the course of repeated visual contacts and **through short-duration outdoor talks and greetings.**—

S. Pauleit, et al, *as above*

Individuals who had more intimates in the neighbourhood, knew their nearby neighbours, and had more frequent contact with their nearby neighbours, **reported greater neighbourhood attachment and greater neighbourhood satisfaction.**—S. Pauleit, et al, *Built*

Environment 29:2



Wellbeing

Sociability and skills

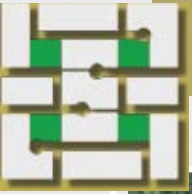


“The nearby natural environment plays a far more significant role in the **well-being of children** residing in poor urban environments than has previously been recognized.”

Nancy M. Wells Effects of "Greenness" on Children's Cognitive Functioning

“Results indicate that children function better than usual after activities in green settings and that **the "greener" a child's play area, the less severe his or her attention deficit symptoms** Thus, contact with nature may support attentional functioning in a population of children who desperately need attentional support. “

Coping with add :The Surprising Connection to Green Play Settings Andrea Faber Taylor, Frances E. Kuo and William C. Sullivan



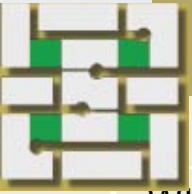
Security: Absence of fear



Community and safety.

....nearby vegetation plays an important role in fostering social interaction.

Social interaction in such settings, in turn, led not only to stronger neighbourhood social ties, but also to a greater sense of safety and adjustment.



Wellbeing

Comfort and delight

When asked which outdoor activities residents enjoyed in general...the following responses were given:

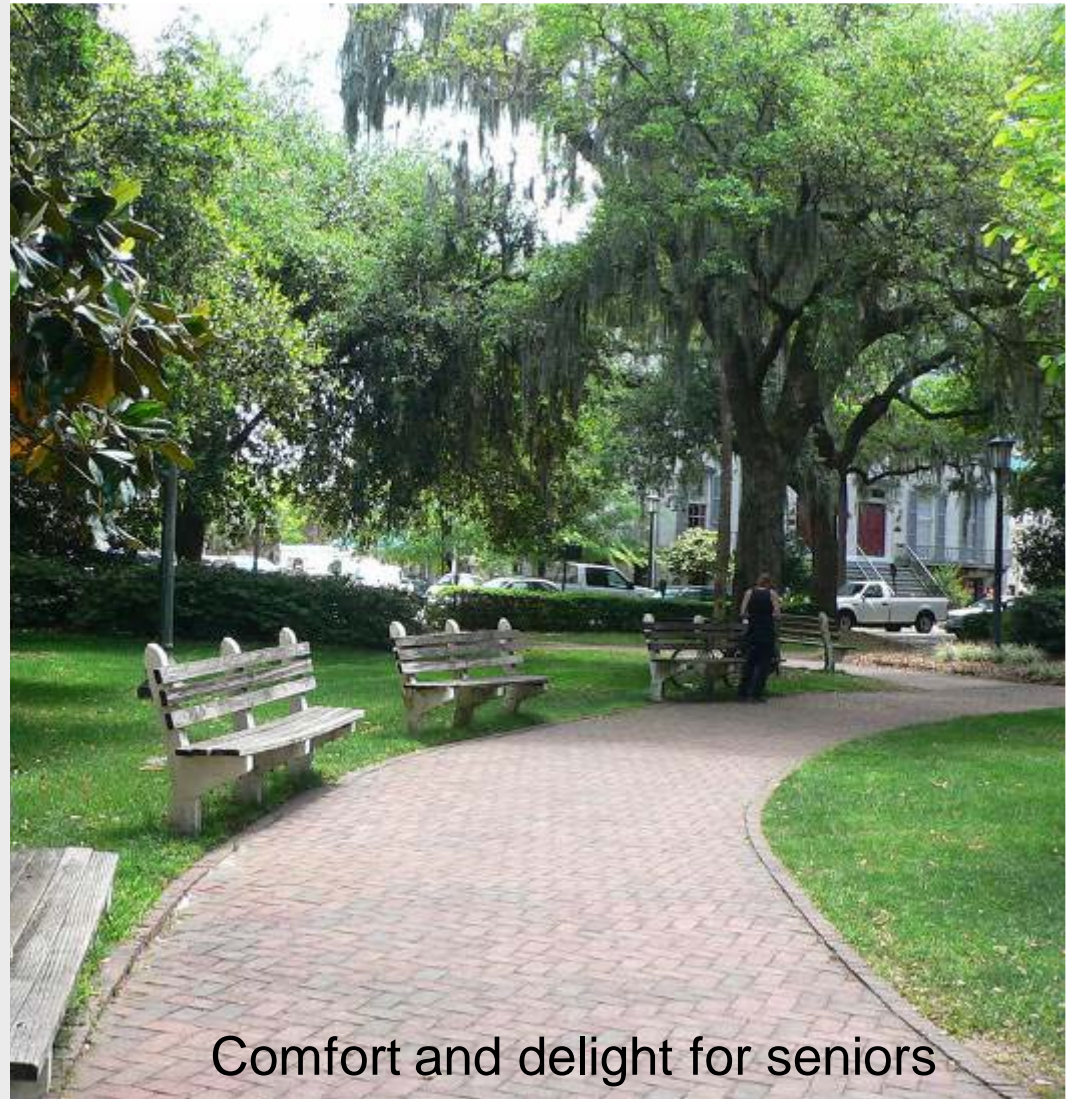
walking, 85%;

enjoying nature, 62%;

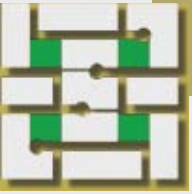
talking with friends, 62%;

looking at plants, 46%.

—Charlene A. Browne, *The role of nature for the promotion of well-being in the elderly*



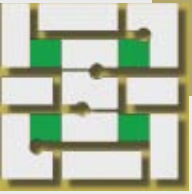
Comfort and delight for seniors



How to make a Fused Grid

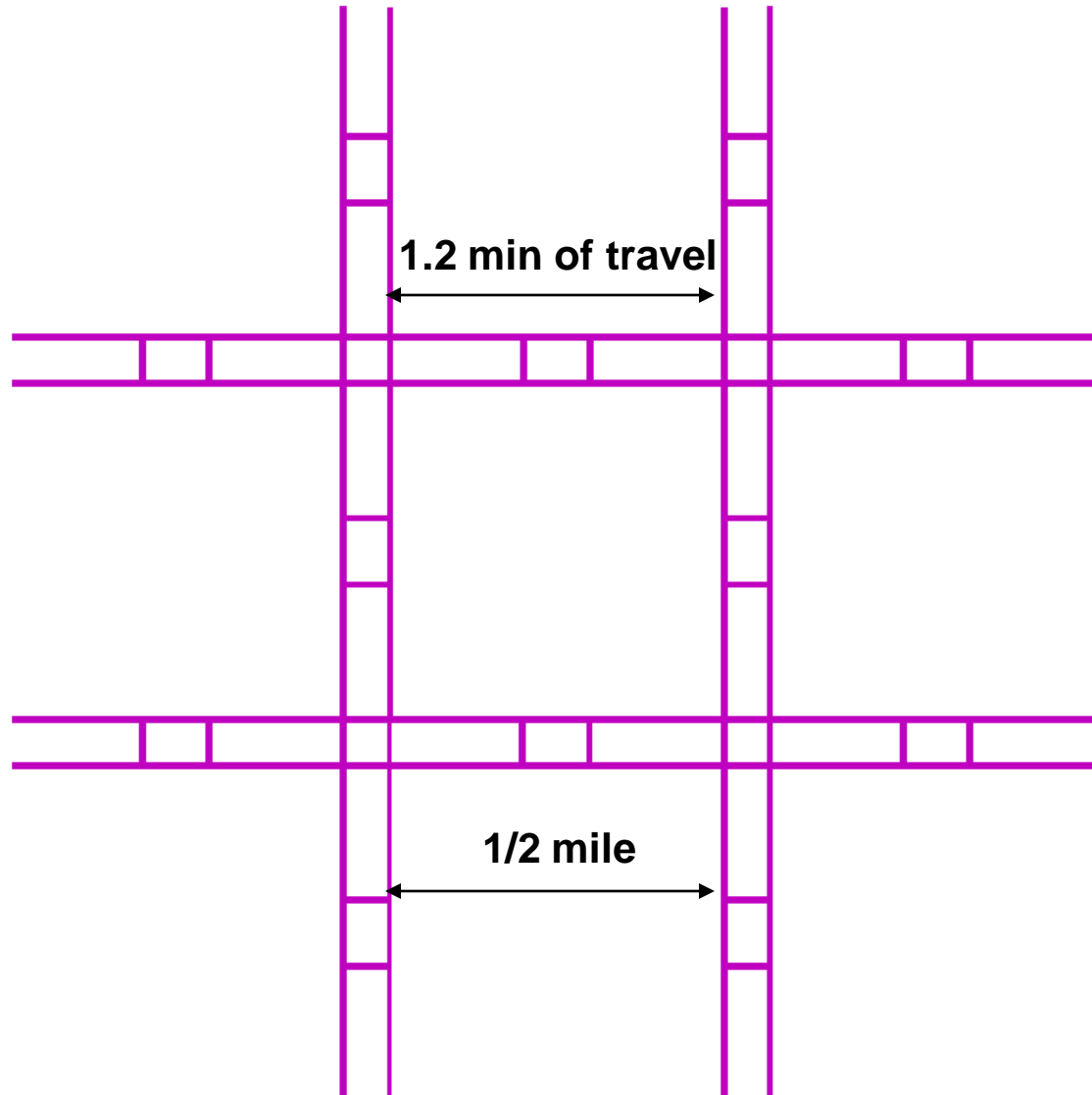
The Fused Grid – a contemporary urban pattern

In 4 steps

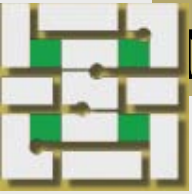


Traditional Continuous Grid - New Scale (transit)

ONE

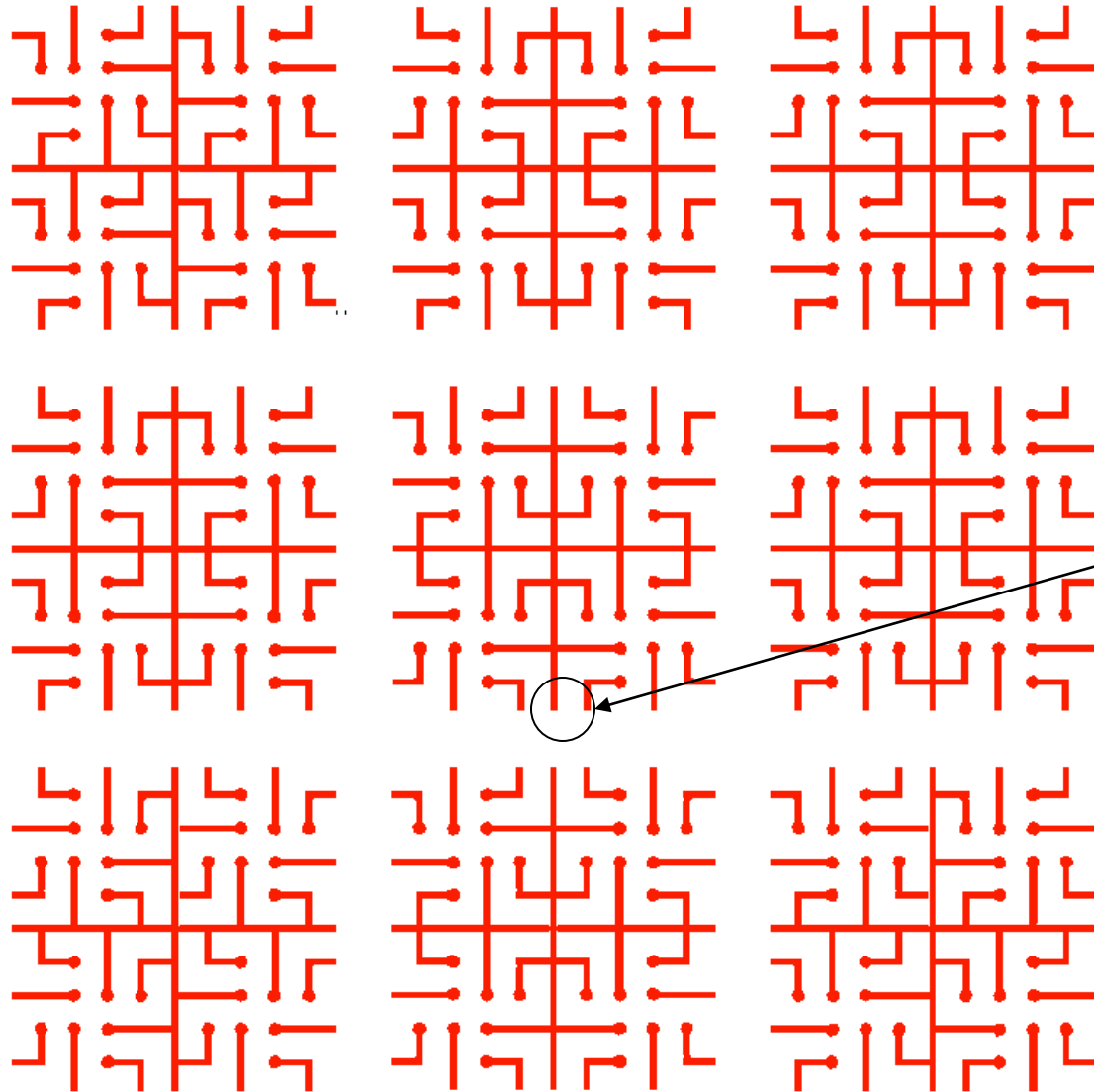


The Fused Grid model

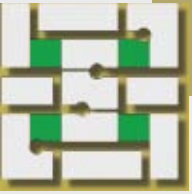


New Discontinuous Grid -Traditional scale (pedestrian)

TWO

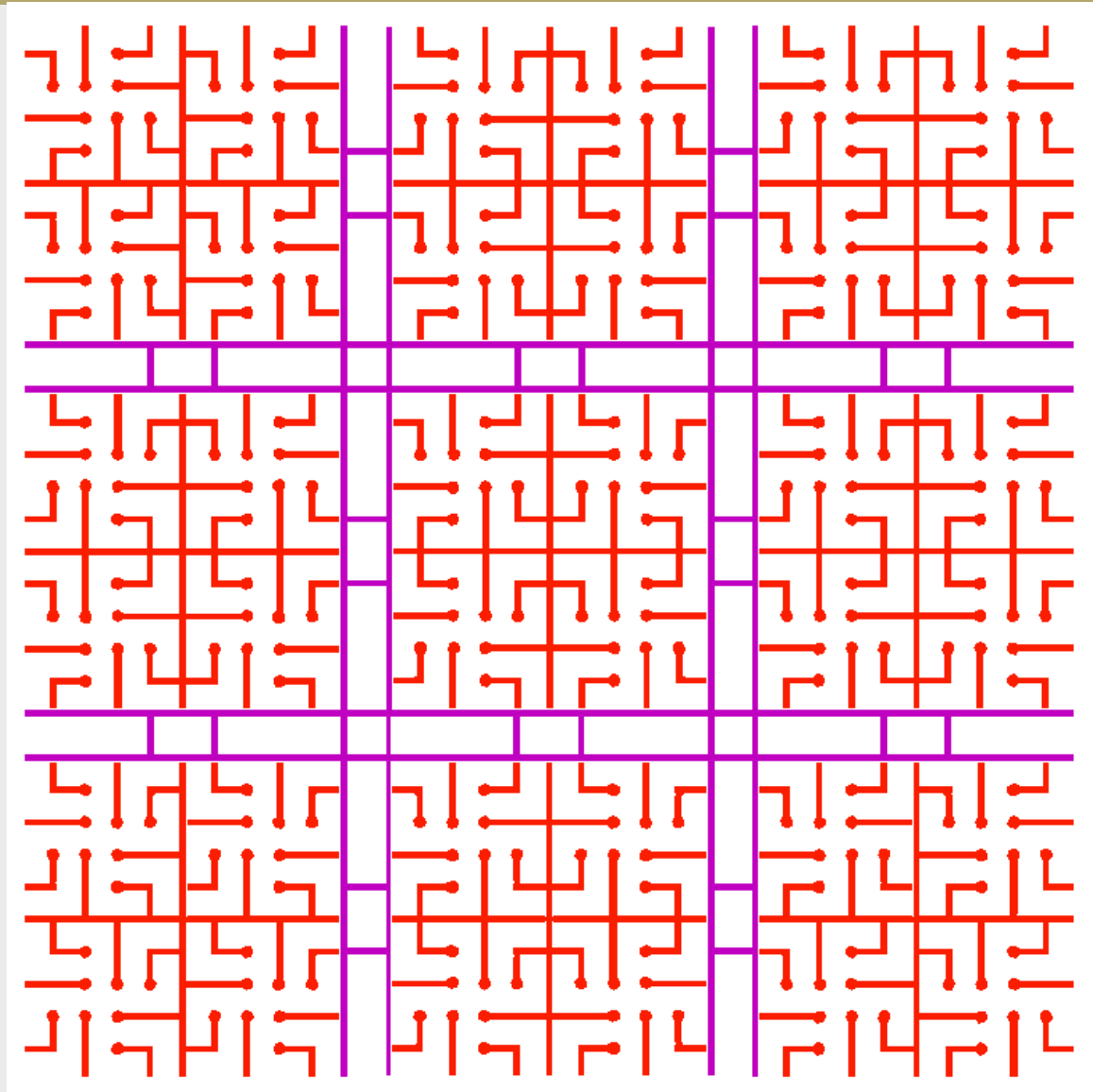


260 feet or
1.2 min of walk

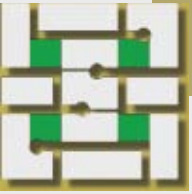


Fused Grid - Two locomotion types, Two scales,

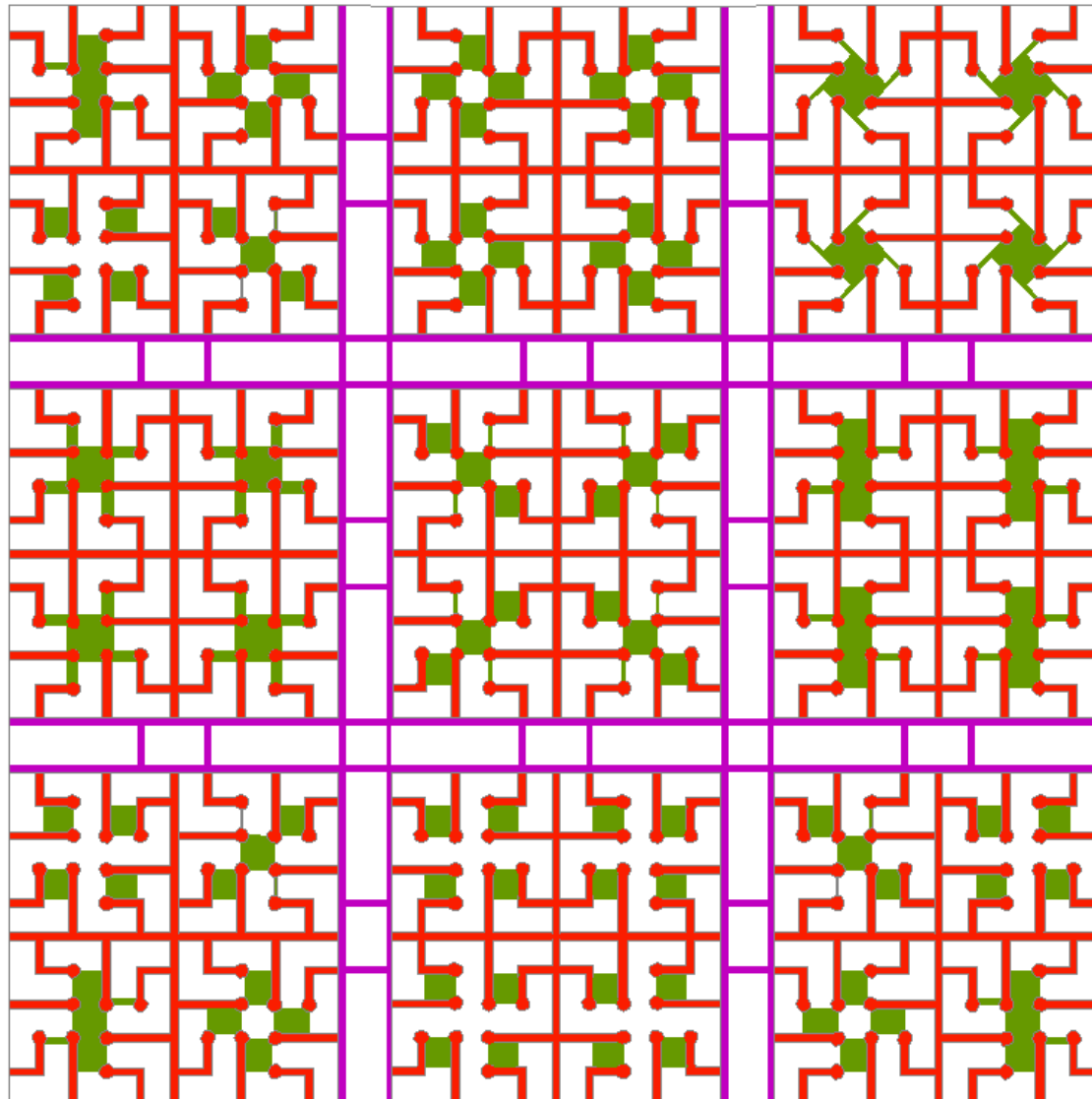
THREE



Fused Grid with Connectors : Replicable Quadrants

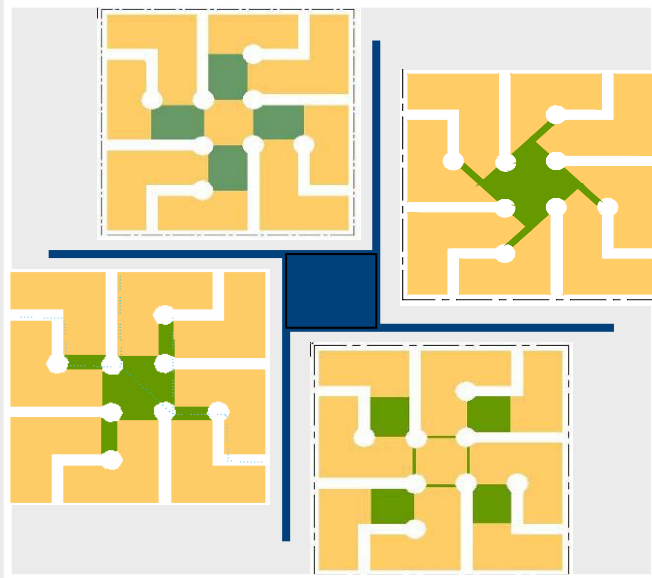
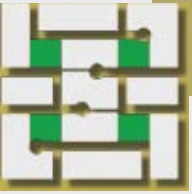


FOUR

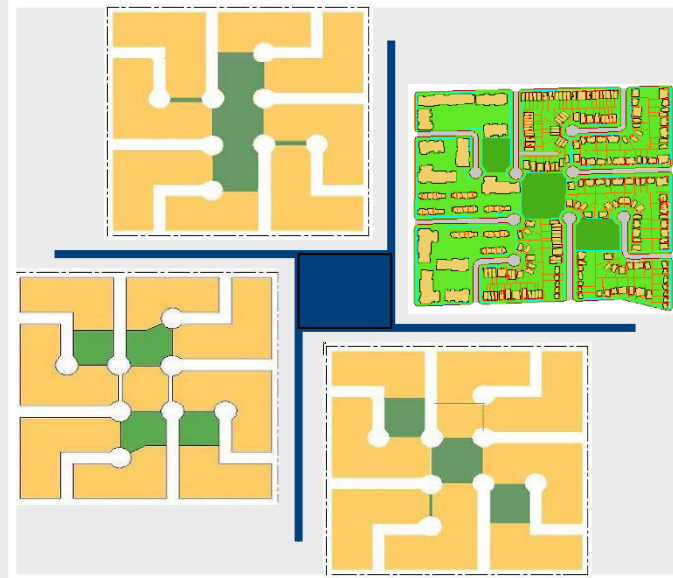


Priority on pedestrian movement

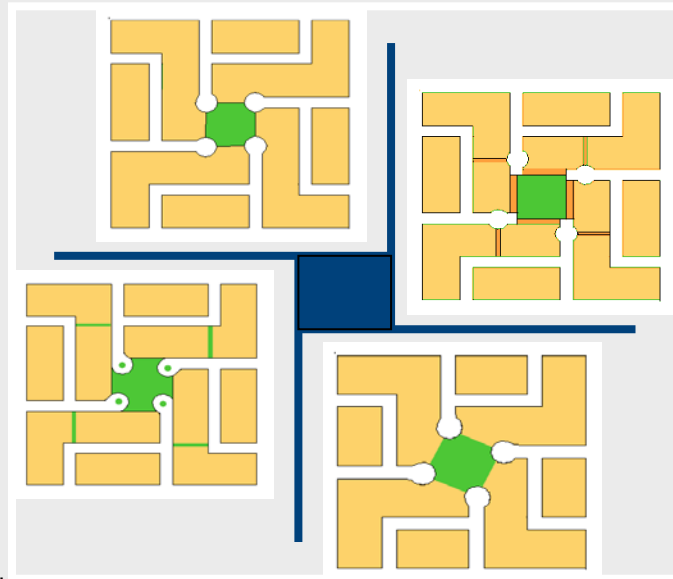
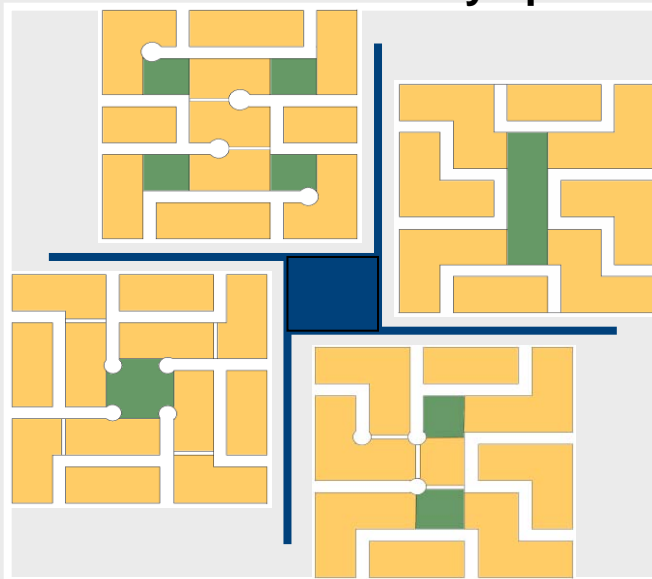
Replicable Quadrants

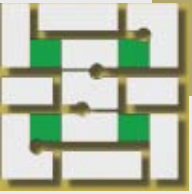


Many options



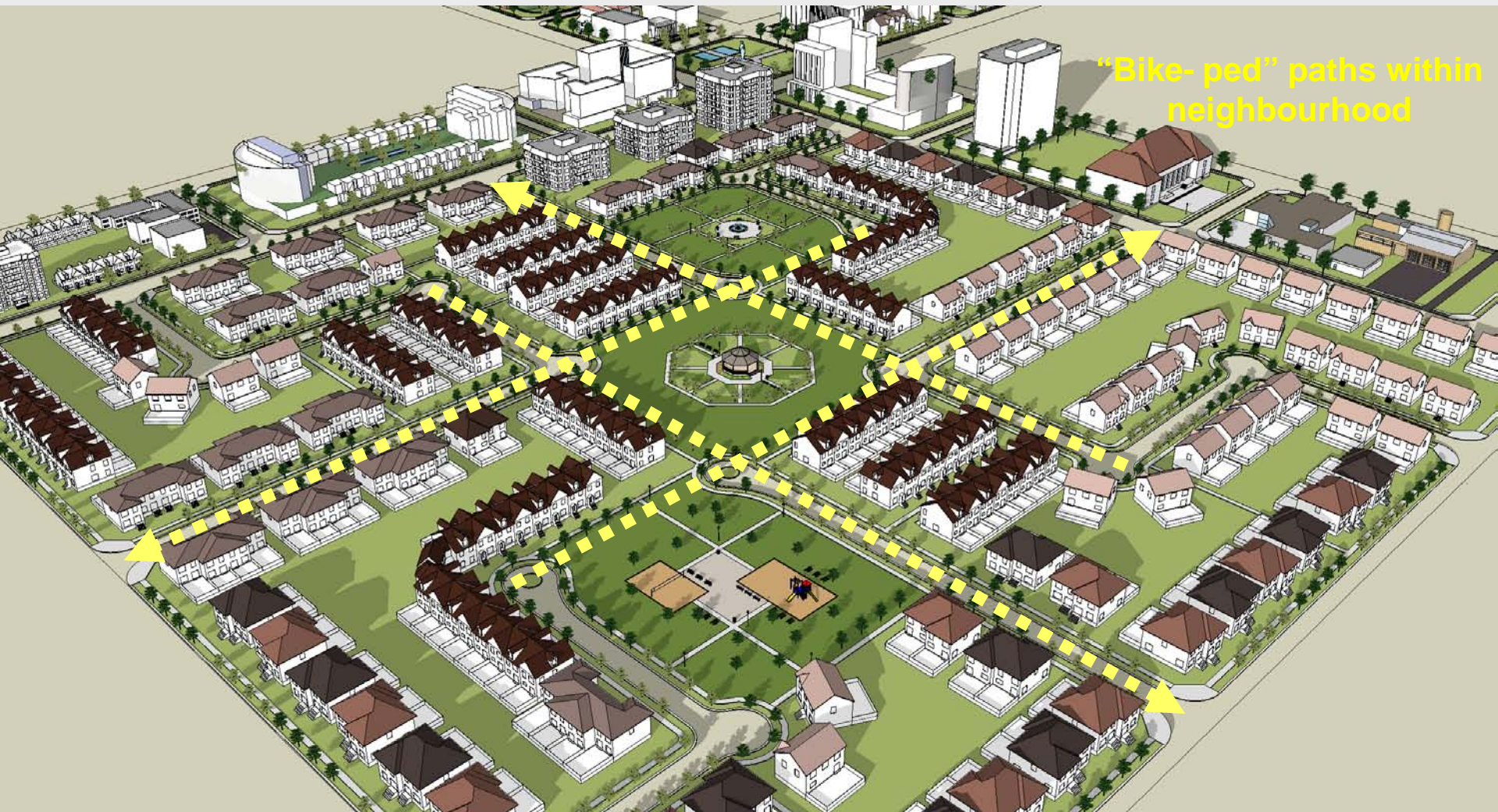
And variations

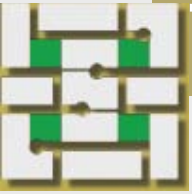




Fused Grid with Connectors : As it might evolve

Moderate density (30 upha) – tranquil open spaces





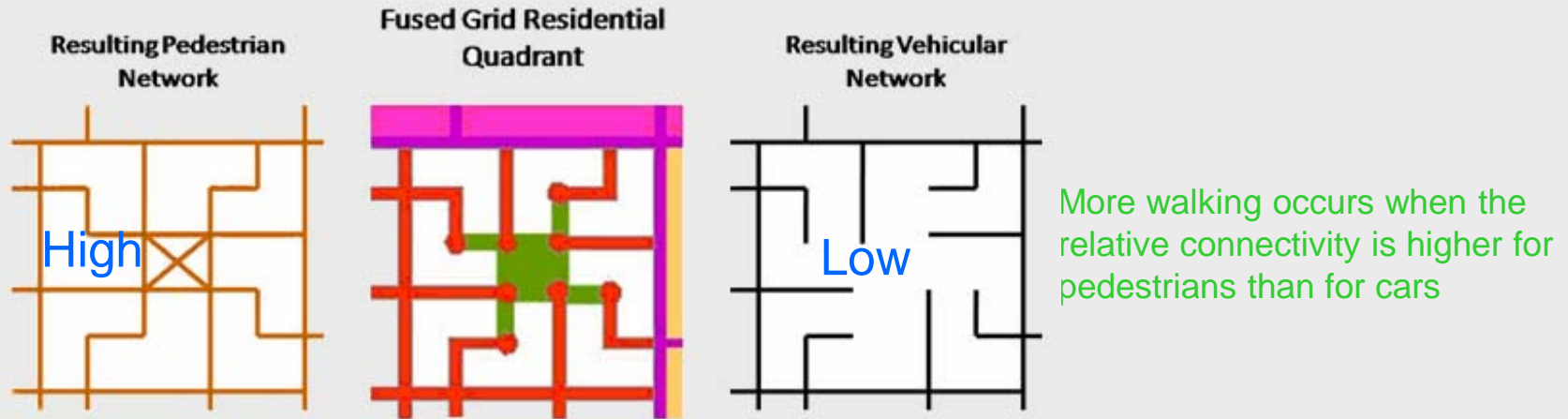
The Fused Grid – a contemporary urban pattern

Will it work?



Will it work for: physical activity?

Street connectivity and walking activity:



A Fused Grid increases home-based walking trips by 11.3%.

A Fused Grid is associated with a 25.9% increase in the odds residents will meet the recommended level of physical activity through local walking.

A 10% increase in relative pedestrian continuity (network density) associates with a 9.5% increase in odds of walking.

A Fused Grid's 10% increase in relative connectivity for pedestrians is associated with a 23% decrease in vehicles miles of local travel.

11.3 %

25.9%

9.5%

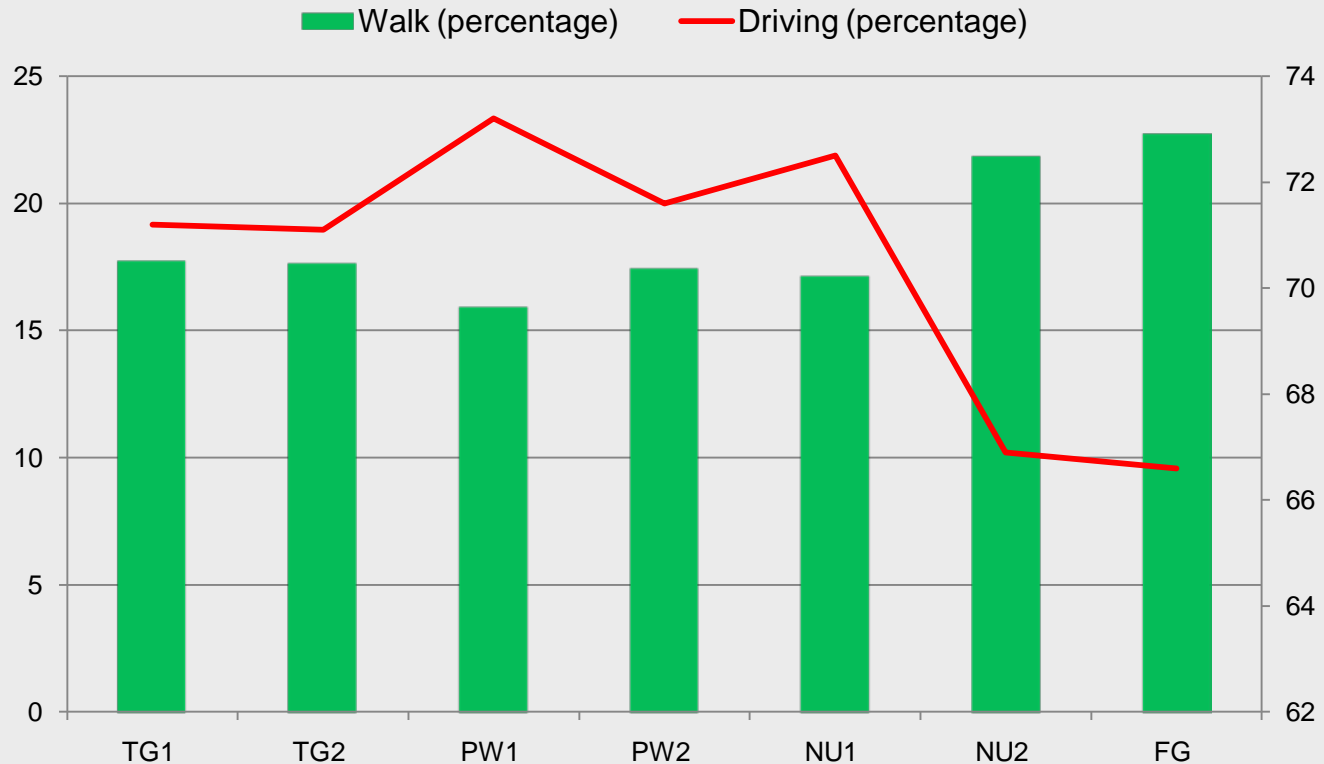
23%

More walking
Less driving



Will it work for: physical activity?

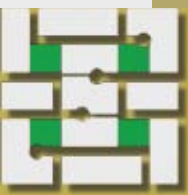
Walking and Driving



TG1, TG2 = Traditional Grid 1, 2
PW1, PW2 = Conventional Suburban 1, 2
NU1, NU2 = New Urbanism 1, 2
FG = Fused Grid

Xiongbing Jin , 2010. : Modelling the Influence of Neighbourhood Design on Daily Trip Patterns in Urban Neighbourhoods

Urban Pattern Associates



Will it work for: physical activity?

PREDICTING THE ODDS OF WALKING AT LEAST ONCE OVER 2-DAYS

Youth Age Range	5-8 95%CI	9-11 95%CI	12-15 95%CI	16-20 95%CI
	N=847	N=632	N=867	N=815
Intersection Highest Tertile (vs lowest)	NS	NS	*	*
Density Highest Tertile (vs lowest)	NS	**	***	NS
Mixed Land Use (vs No mix)	NS	NS	***	*
At least 1 Commercial land use (Vs 0)	NS	NS	***	NS
At least 1 recreational/open space land use (vs. 0)	***	*	***	**

NS = Not signif.
* p=95%
** p=99%
*** p=99.9

Conclusions. Access to recreation or open space was the **most important** urban form variable related to walking for all age groups. Children aged 12 to 15 years old may be particularly influenced by urban form. (Am J Health Promot 2007;21)

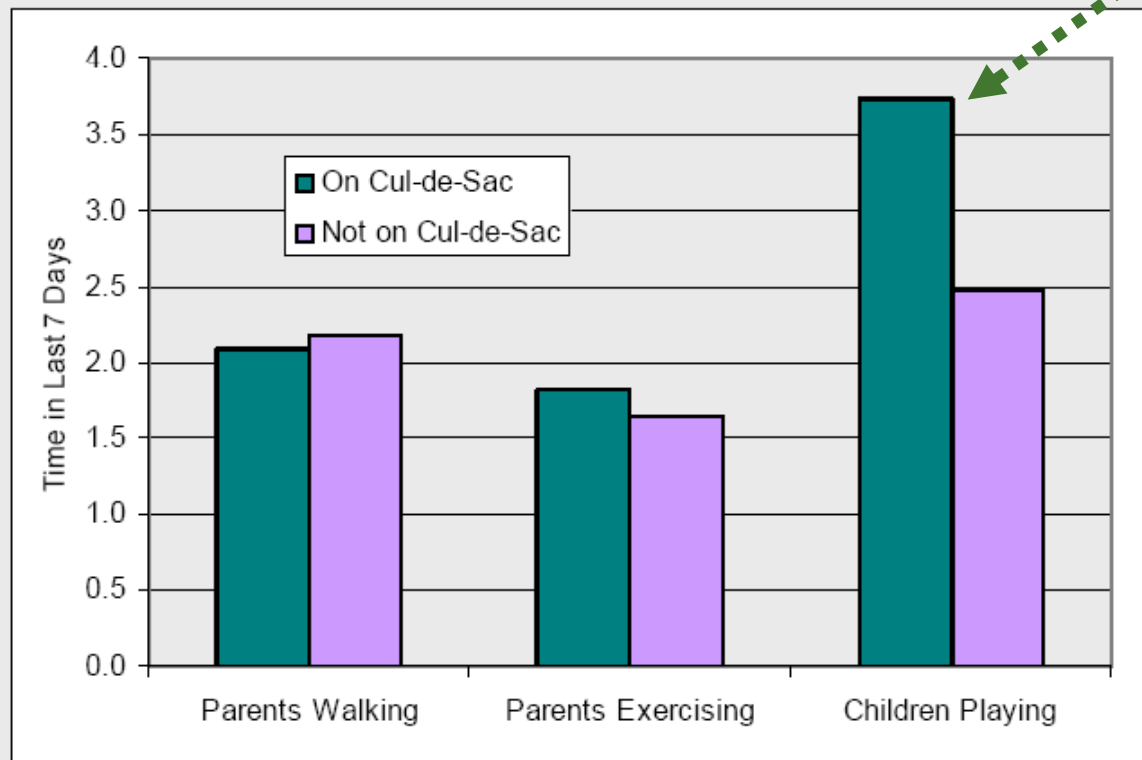
"Urban Form Relationships with Walk Trip Frequency and Distance among Youth"
Lawrence Frank, PhD, Jacqueline Kerr, PhD, Jim Chapman, James Sallis, PhD,



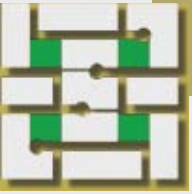
Will it work for: physical activity?

Children play more on cul-de-sacs

Cul-de-sacs and Exercise



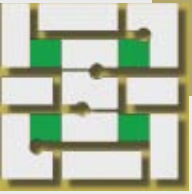
50% higher



Will it work for: Peace, quiet and safety?

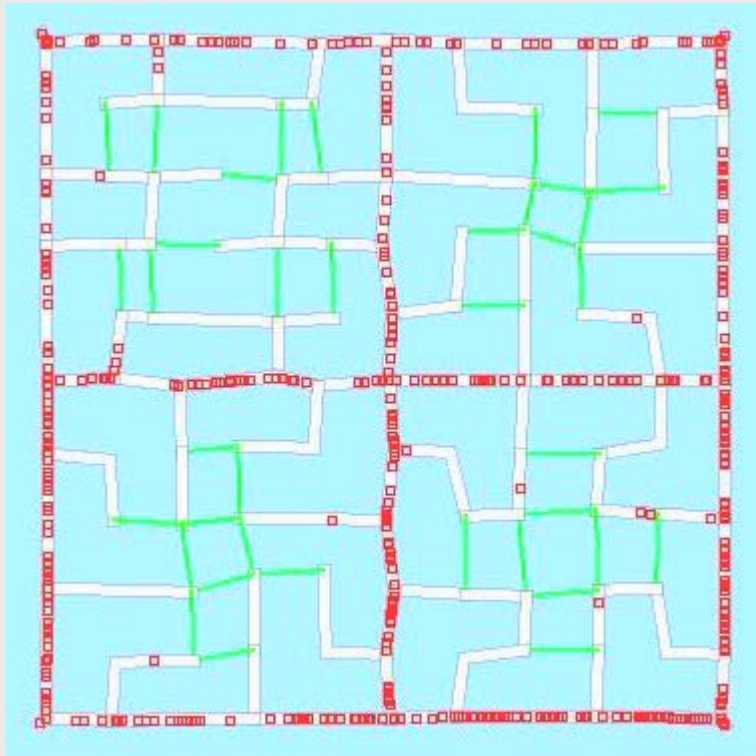
More density, no increase in proportion of VKTs on local streets



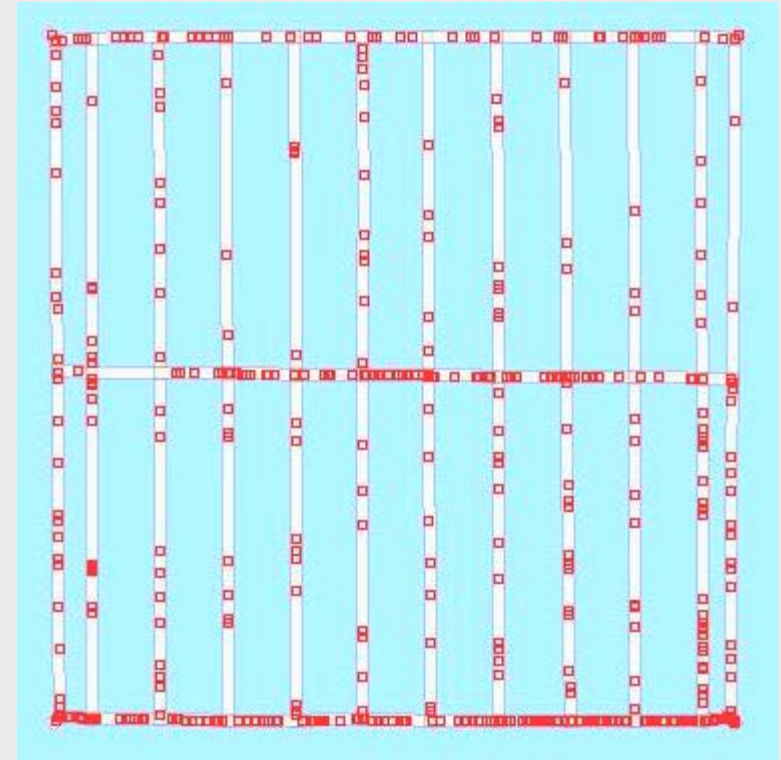


Will it work for: Peace, quiet and safety?

Pollution exposure locations – traffic frequency



Fused Grid



Conventional grid



Will it work for: Peace, quiet and safety?

Traffic in Five Oaks, Dayton after modifications*

Traffic measurements	
Cut-through	Minus 67%
Overall volume	Minus 36%
Accidents	Minus 40%
Resident perceptions	
Less traffic	73%
No change	13%

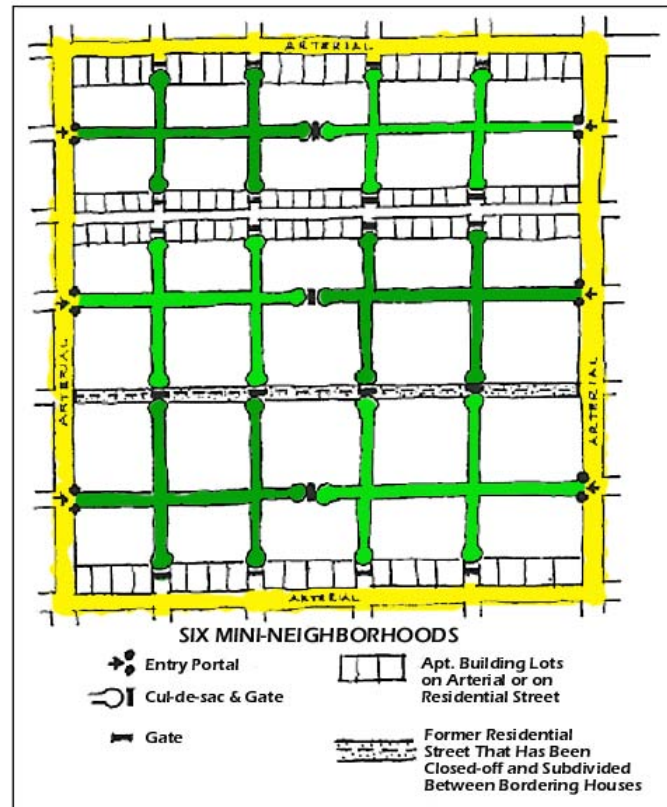


**Creating Defensible Space* by Oscar Newman Institute for Community Design Analysis, 1996.
U.S. Department of Housing and Urban Development Office of Policy Development and Research



Will it work for reducing crime

Crime in Five Oaks, Dayton after modifications*



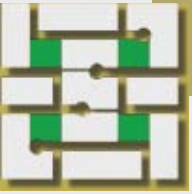
Police report

Overall crime	- 26%
Violent crime	- 50%
Robbery, assault etc.	Five-year Low
In Dayton Overall	Up 1%

Resident perceptions

Less crime	53%
No change	36%
Feel safer	45%
just as safe	43%

**Creating Defensible Space* by Oscar Newman Institute for Community Design Analysis, 1996.
U.S. Department of Housing and Urban Development Office of Policy Development and Research



Does it pay?

Does it pay?



A comparison of three networks

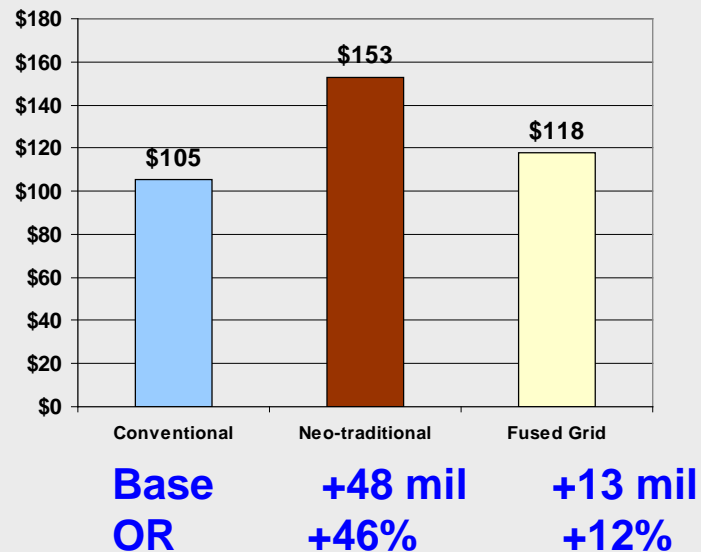


Does it pay?

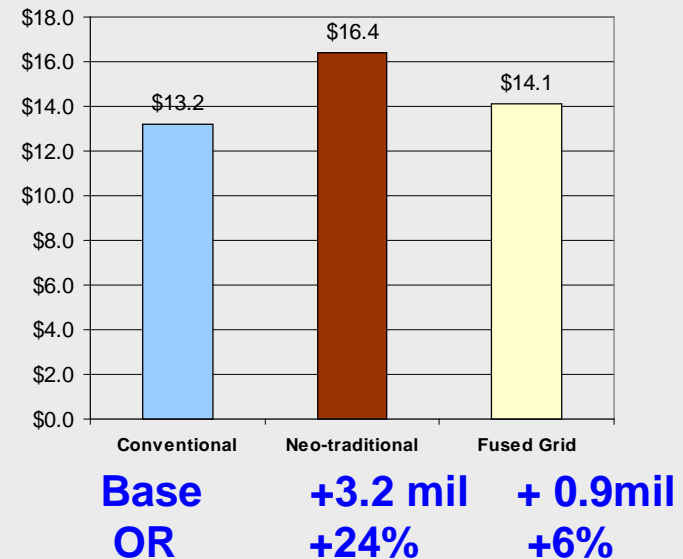
Infrastructure

Summary of infrastructure costs (initial and lifecycle)*

Initial Capital Costs (millions)



Annual Lifecycle Costs(millions)

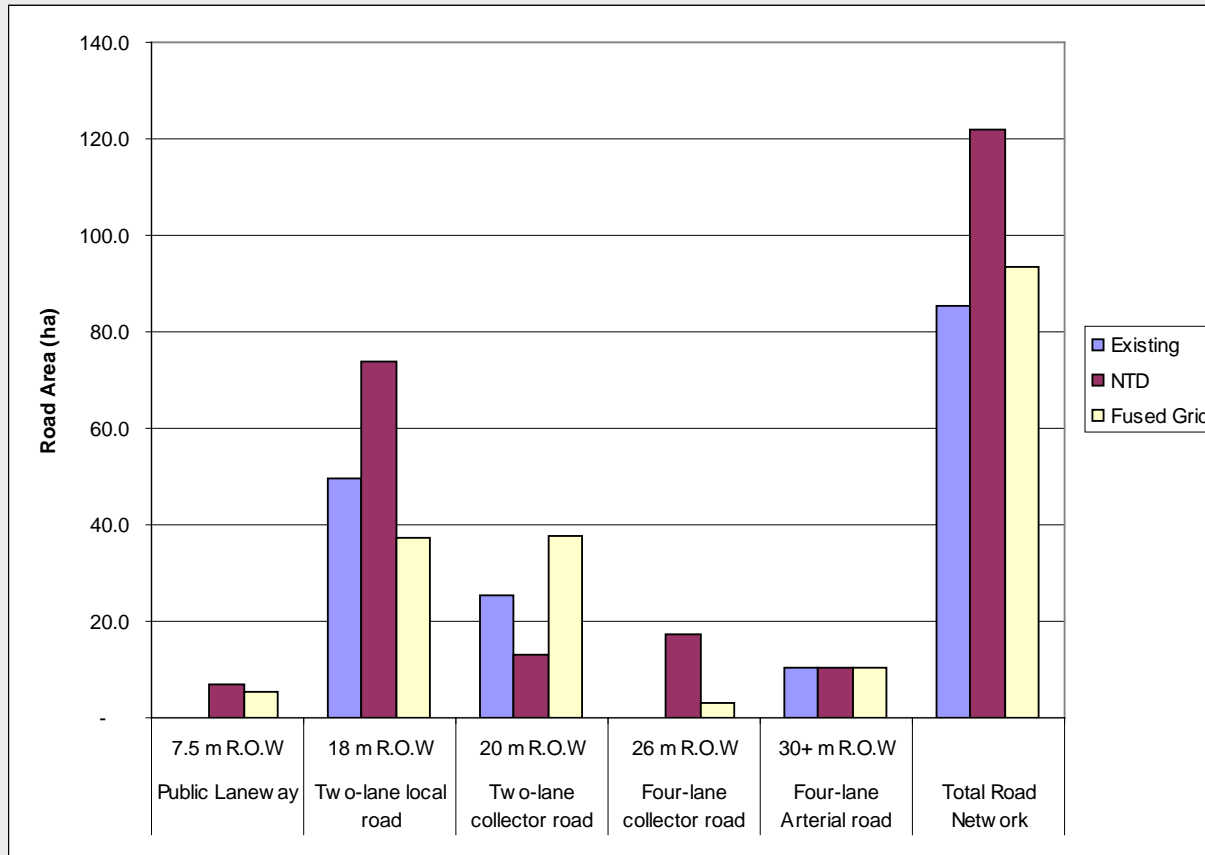


* Excluding soft infrastructure elements and arterials which are identical



Does it pay?

Land Requirements for Roads





Does it pay?

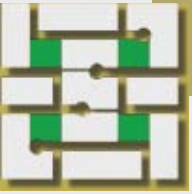
Lot yields, income

Edmonton Developer Budget Calculations

	Fused Grid	Common Grid	Vs FG	Common Grid +lanes	Vs FG
Developable lot area	66% *	61%	-7%	55%	-19%
Land dedication	11%	10%	-13%	10%	-13%
Roads	23%	29%	+20%	35%	+34%
Lots	302	281	-7%	277	-9%
Income	Base	- \$2,627,000		- \$3,127,000	
Not counting Road costs	!				

*

A similar 10% increase in developable lot area from the common grid



Does it pay?

Parks

A City view of parks

1. **The City MUST provide parks** as a Municipal Service
2. **Parks are a Cost Center** –Subject to Economies of Scale

Result: Fewer, big parks

A developer view of parks

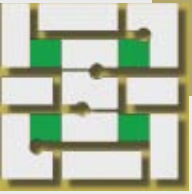
1. **Cost Center**– Exacted by Government OR
2. **Profit Center**– Paid for by Customers

Result: More, smaller parks

Presented By :William Gietema, Jr. Arcadia Realty Dallas, Texas

MIT Center For Real Estate: Valuing Open Space: Land Economics and Neighborhood Parks
By Andrew Miller, 2007

Urban Pattern Associates



Does it pay?

Parks as a profit center

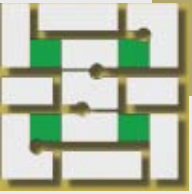
A development example:

Open Space Value Added

Total Lots	648	
Total Premium Lots	624	
% Premium Lots	96%	
Total Value Increase	16%	(developer gain)
Estim. Value Added Tax Base	\$20-24 Million (munic. gain)	

Presented By :William Gietema, Jr. Arcadia Realty Dallas, Texas

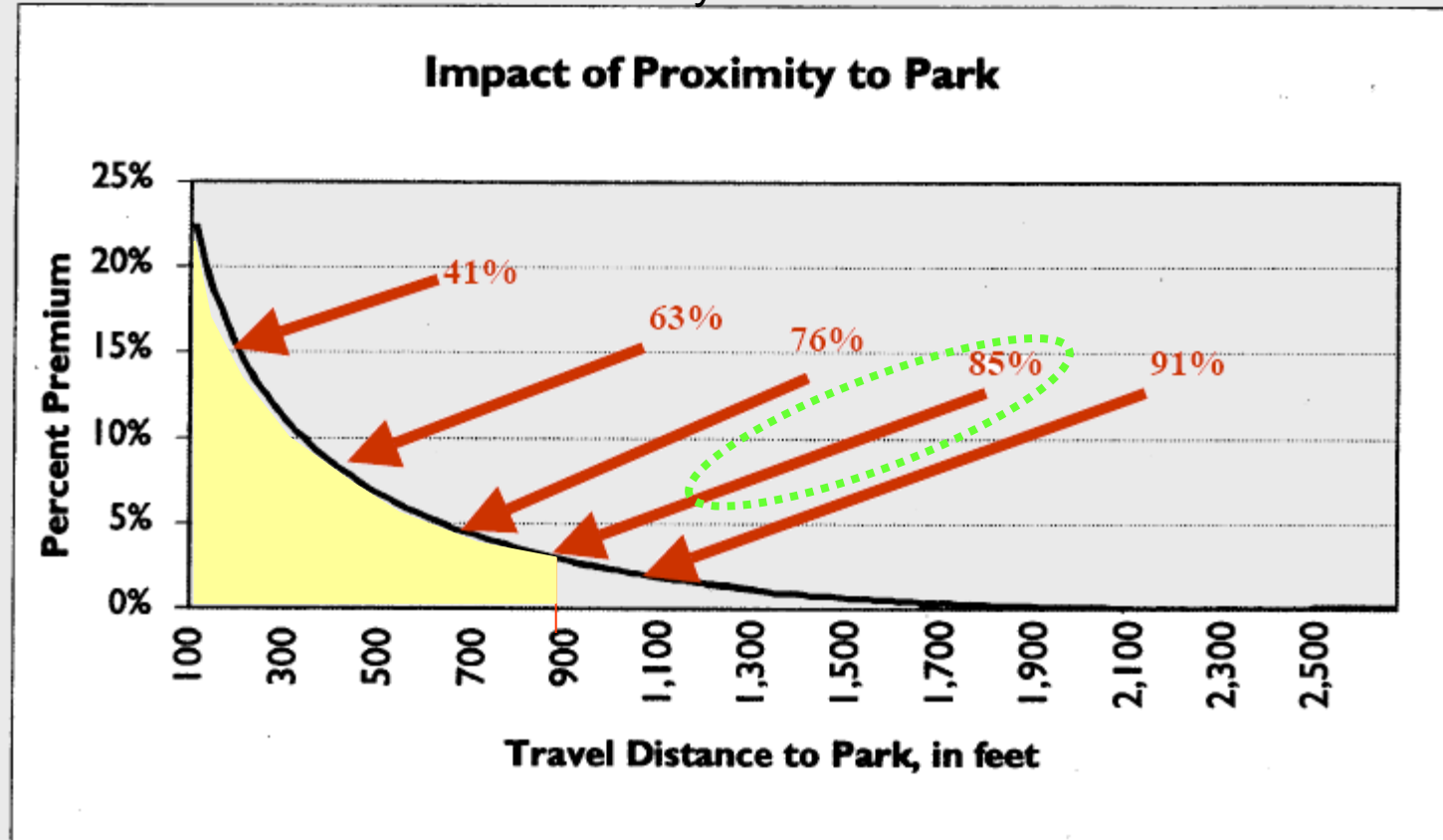
MIT Center For Real Estate:Valuing Open Space: Land Economics and Neighborhood Parks
By Andrew Miller, 2007



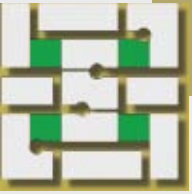
Does it pay?

Parks as a profit center

Park Proximity Price Premium



Dispersed small parks garner maximum price premium



Summing up



Summing up

The Fused Grid

Health:

Quieter, cleaner air, more walking, playing and detente

Safety:

Lower traffic, lower speeds, fewer crossings

Wellbeing:

Nearby nature, delight, detente, more socializing

Cost-effectiveness:

High yields, Low infrastructure cost

Environment:

More permeable, greener

Budgets:

Low lifecycle costs, lower taxes

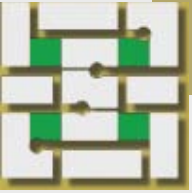
Overall Summary: Combining the best from both traditions

Fusing structure, connectivity, tranquility, safety and economy



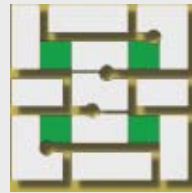
Drawing adapted from : *Canadian Geographic*, July 2005

Thank you



Fanis Grammenos

Urban Pattern Associates



Contact:

fanis.grammenos@gmail.com

Credits:

Doug Pollard - ideas and slides

Karen Gregory - slides and comments

Barry Craig – 3D Neighbourhoods

Jason Grammenos - animations