ACTIVE LIVING RESEARCH

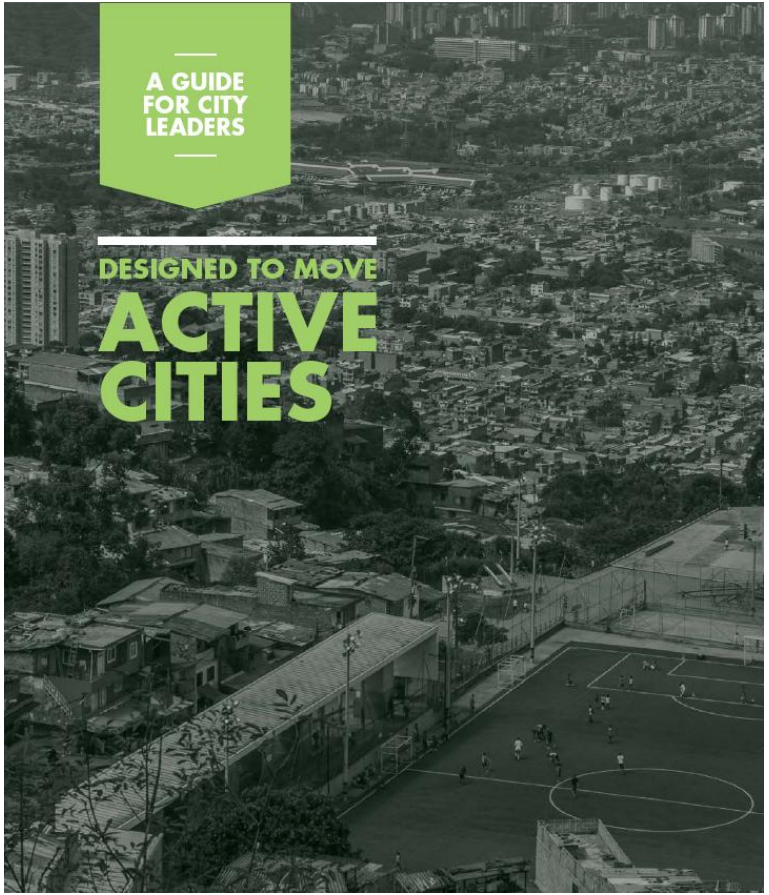
Promoting activity-friendly communities.

Making the Case for Active Cities

The Co-Benefits of Designing for Active Living

Active Cities

- A follow-up to Nike's "Designed to Move" report
- Focused on how cities can be designed to help people reintegrate physical activity into daily life
- Physical activity is likely not a priority for decision makers such as mayors who have to address many topics
- Making the Case findings serve as 1st chapter



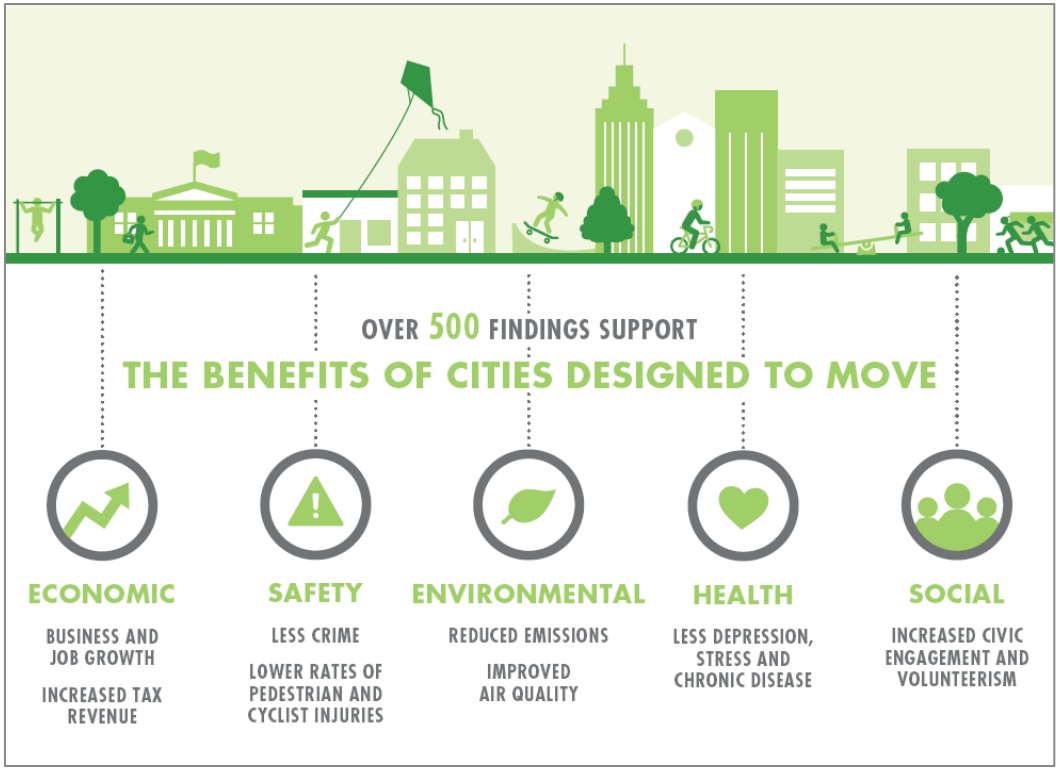
Settings

- These settings must be considered in the design of Active Cities
- What are the key modifiable features of these settings that have evidence of association with physical activity?
- A short list of features was identified for each setting, and co-benefits of those features were searched

Outcome / Co-Benefit	Description
Physical health	Chronic diseases, obesity
Mental health	Depression, anxiety, other disorders
Social benefits	Neighborhood/social cohesion, human capital
Environmental benefits	Carbon dioxide emission, pollutants
Injury prevention	Crime, violence, car crashes
Economic benefits	Land value, governmental infrastructure costs, real estate profitability, productivity/job performance, health care costs, economic performance of cities
Other	Automobile congestion, findings related to disparities, polls showing public support or opposition to an environmental feature

Making the case

- 221 sources were identified, yielding 521 relevant findings
  - 418 findings from higher-quality sources contributed to quasi-quantitative scoring
- All findings are detailed in tables and scored for quality
- Summary tables/matrices were developed to summarize the strength of available evidence



Summary of scores & color codes for each level of evidence

Level of Evidence	Range of Scores	Color Code
Strong evidence of positive effect	15 and above (+)	
Good evidence of positive effect	10-14 (+)	
Moderate evidence of positive effect	4-9 (+)	
Insufficient evidence	3.5 (-) to 3.5 (+)	
Moderate evidence of negative or null effect	4-9 (-)	
Good evidence of negative or null effect	10-14 (-)	
Strong evidence of negative or null effect	15 and above (-)	

Open spaces / Parks / Trails summary scores

Table 8: Open Spaces / Parks / Trails Summary Scores						
Built Environment Attribute	**Physical Health**	**Mental Health**	**Social Benefits**	**Environmental Sustainability**	**Safety / Injury Prevention**	**Economic Benefits**
Presence, proximity	54+ 3.5(0)	88.5+	26.5+ 4(0)	16+ 4(0)	11+	7.5+ 4(0)
Design features	3.5+		7.5+			
Trails						11.5+
Physical activity programs/ promotion		4.5+	4+	4+	4+	
Incivilities					3.5+	
Public gardens			4.5+		4.5+	

69 entries. Of 36 cells, 3 had strong evidence of co-benefits, 3 had good evidence, and 7 had moderate evidence

Open spaces / Parks / Trails findings

- Park presence/proximity had good to strong evidence of all co-benefits, except economic.
- Physical activity programs and promotions had moderate evidence for 4 co-benefits.
- Public gardens had moderate evidence of social and injury prevention benefits.
- Trails had good evidence of economic benefits.
- There are many gaps in research on co-benefits of all parks and trails features, except park proximity and physical activity programs and promotion.
- Current evidence supports a conclusion that having a park nearby with substantial programs and promotion produces a wide range of health and environmental benefits beyond physical activity.

Urban design / Land use summary scores

Table 9: Urban Design / Land Use Summary Scores

Built Environment Attribute	Physical Health	Mental Health	Social Benefits	Environmental Sustainability	Safety / Injury Prevention	Economic Benefits
Residential density	19+ 21.5(0) 7.5-		13.5+ 14.5(0)	88+ 21(0) 3.5-	4.5(0) 7.5-	15+ 3.5(0)
Mixed land use	28+ 17(0) 4-	4.5+ 4-	33+ 11(0)	95+ 21(0)	4.5(0) 11-	22.5+ 3.5(0) 4-
Streetscale pedestrian design	7.5+		7.5+	7.5+		7+
Greenery	20.5+ 3.5(0)	26.5+	12+	39.5+		12+
Accessibility & Street connectivity	30+ 12(0) 7.5-		14.5+ 3.5(0)	35.5+ 3.5(0)	4.5(0)	12.5+ 3.5(0)

202 entries. Of 30 cells, 8 had strong evidence of co-benefits, 5 had good evidence, and 6 had moderate evidence of positive effects. 5 cells with negative effects.

Urban design / Land use findings

- Mixed use, greenery, street scale design, and connectivity had evidence of 4 to 5 co-benefits.
- All urban design features had strong evidence of green/environmental benefits, except evidence was good for streetscale design.
- All urban design features had evidence of economic benefits, and the evidence was strong for mixed use.
- Only greenery had strong evidence of mental health benefits. None had evidence of injury prevention benefits.
- Residential density had the most complex pattern with good evidence of negative health effects, strong evidence of environmental sustainability, and good evidence of economic benefits.
- In general, we found very strong evidence of multiple health, environmental, and economic benefits of most of the urban design features. Creating walkable communities (dense, mixed use, connected streets), with substantial greenery, and pedestrian-friendly street designs can help meet multiple goals of city decision-makers. Finding ways to reduce apparent negative health effects of high density remains a challenge to city planners and politicians.

Transportation systems summary scores

Table 10: Transportation Systems Summary Scores						
Built Environment Attribute	**Physical Health**	**Mental Health**	**Social Benefits**	**Environmental Sustainability**	**Safety / Injury Prevention**	**Economic Benefits**
Pedestrian / Bicycle facilities		3+	7+	10.5+ 3.5(0)	27.5+ 4(0)	22.5+ 3.5(0)
Crosswalk markings					6(0) 4-	
Traffic calming	3.5+	3.5(0)	3+	3+ 3-	23+	3+
Public Transportation	3.5-			28.5+ 17.5(0)		20+ 4-
Traffic speed/ Volume	3.5+		3+	14+	7+	7+
Safe routes to school			3+	3.5+	9.5+ 4(0)	
Ciclovia / Play streets			7+			3.5+
Managed parking				10.5+		

81 entries. Of 48 cells, 5 had strong evidence of co-benefits, 2 had good evidence, and 6 had moderate evidence of positive effects. 1 cells with negative effects.

Transportation systems findings

- Pedestrian and bicycle facilities had the best evidence of multiple co-benefits, followed by lower traffic speed and volume.
- Strong evidence of co-benefits was most evident in the injury prevention and economic domains.
- Traffic calming had strong evidence of injury prevention benefits.
- Public transport had strong evidence of economic benefits and mixed evidence of environmental benefits.
- Many cells had inadequate evidence. Even in well-studied topics, there was little study of health consequences of transportation decisions.
- Environmental strategies to promote active transportation, provide public transportation, and protect pedestrians and bicyclists from automobile traffic had good to strong evidence of multiple benefits, particularly in the areas of economics, injury prevention, and environmental protection. Physical and mental health and social benefit consequences of transportation systems are poorly studied.

Schools summary scores

Table 11: Schools Summary Scores						
Built Environment Attribute	**Physical Health**	**Mental Health**	**Social Benefits**	**Environmental Sustainability**	**Safety / Injury Prevention**	**Economic Benefits**
School siting	3.5+	4.5+		21.5+	3-	4+
Recreation facilities	16+ 3.5(0)	16.5+	3.5+			3.5+
Shared use agreements			7.5+		4+	7.5+

27 entries. Of 18 cells, 2 had strong evidence of co-benefits, 1 had good evidence, and 5 had moderate evidence of positive effects.

Schools findings

- Siting schools near the homes of students had strong evidence of environmental sustainability and moderate evidence of mental health and economic benefits.
- Having recreation facilities at schools had strong evidence of mental health and good evidence of physical health benefits.
- Shared use agreements had moderate evidence of social benefits, injury prevention, and economic benefits.
- The co-benefits of school environment features were poorly studied for most outcomes.

Workplaces / Buildings summary scores

Table 12: Workplaces / Buildings Summary Scores						
Built Environment Attribute	Physical Health	Mental Health	Social Benefits	Environmental Sustainability	Safety / Injury Prevention	Economic Benefits
Building siting	4+					
Mixed land use around worksite				4+		4+
Building site design	16+	11.5+				3.5+
Building design	19.5+	3.5+ 4-		12.5+		12+
Worksite physical activity policies and programs	8.5+	3.5+		4+		25+
Workplace furniture design	7+ 3.5(0)					3.5+ 3.5(0)

39 entries. Of 36 cells, 3 had strong evidence of co-benefits, 3 had good evidence, and 5 had moderate evidence of positive benefits.

Workplaces / Buildings findings

- Building site design features (mainly outdoor) had strong evidence of physical and good evidence of mental health benefits.
- Features of the building design had strong evidence physical health and good evidence of environmental sustainability and economic benefits.
- Physical activity programs and policies had strong evidence of economic benefits.
- 5 cells had evidence of moderate evidence.
- For workplace and building features, the best evidence was for physical health and economic benefits.

Summary table by sector – Summing across features

Table 13: Quantitative Estimates of Co-Benefits by Setting						
Built Environment Attribute	**Physical Health**	**Mental Health**	**Social Benefits**	**Environmental Sustainability**	**Safety / Injury Prevention**	**Economic Benefits**
Open spaces / Parks / Trails	57.5+ 3.5(0)	93+	42.5+ 4(0)	20+ 4(0)	23+	19+ 4(0)
Urban design / Land use	105+ 54(0) 19-	31+ 4-	80.5+ 29(0)	265.5+ 45.5(0) 3.5-	13.5(0) 18.5-	69+ 10.5(0) 4-
Transportation systems	7+ 3.5-	3+ 3.5(0)	23+	70+ 21(0) 3-	67+ 14(0) 4-	56+ 3.5(0) 4-
Schools	19.5+ 3.5(0)	21+	11+	21.5+	4+ 3-	15+
Workplaces / Buildings	55+ 3.5(0)	18.5+ 4-		20.5+		48+ 3.5(0)

Key findings

- Each setting had strong evidence of at least 3 of the 6 co-benefits, and parks and trails had strong evidence of all 6 co-benefits. Thus, for each setting there are multiple features that can be designed to both facilitate physical activity and produce co-benefits.
- Of particular relevance to mayors and other government leaders responsible for balancing budgets, activity-friendly environments had strong evidence of economic benefits. A broad range of economic benefits was documented, such as increased home value, greater retail activity, reduced health care costs, and improved productivity.
- Activity-friendly design in all settings had strong evidence of environmental co-benefits based on reduced pollution and carbon emissions.
- There were many gaps in evidence of co-benefits in the schools and workplace settings.
- Another major gap was evidence of the health consequences of environments that support active travel.
- There was little evidence of negative consequences of activity-friendly environments. However, in the urban design setting there was some evidence of negative physical health and injury outcomes, mainly related to high residential density. However, the overall pattern of results indicated overwhelmingly positive effects for numerous important outcomes from activity-friendly environment designs.

What's next?

- Paper published on MTC report:
  - Sallis, J.F., Spoon, C., et al. (2015). Co-benefits of designing communities for active living: An exploration of literature. **International Journal of Behavioral Nutrition and Physical Activity**. http://www.ijbnpa.org/content/12/1/30
- Active Cities report released May-June 2015, with worldwide distribution
- Communicate findings to mayors, in collaboration with stakeholders in key countries
- Aim to speed up implementation by working with national organizations to integrate Active Cities principles into their work

Download “Making the Case” report at:
http://activelivingresearch.org/making-case-designing-active-cities