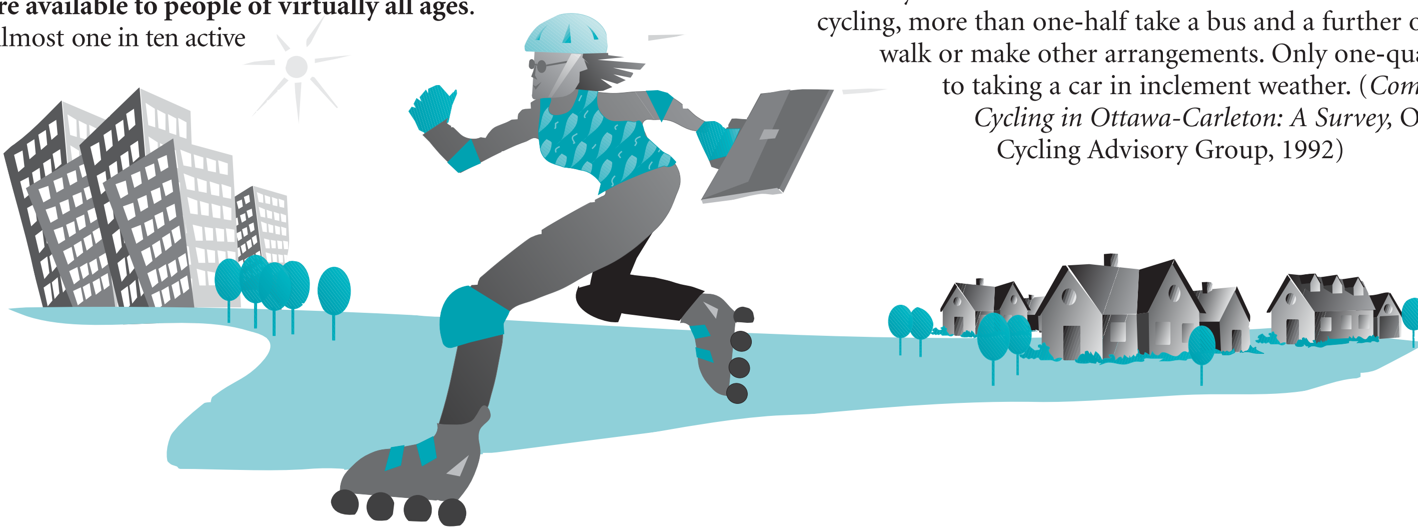
Affordability, Accessibility and Choice

MYTH: *Walking, biking, or in-line skating to work isn't worth the hassle.*

IN FACT ...

Active modes are convenient and affordable for people of all ages, and much cheaper than other modes. Well-designed active modes, integrated within the transportation system, expand the choices available to people of various ages, income levels and physical abilities.

- **The most energy efficient and least costly mode of transportation is muscle power**. (*Auto Smart Guide*, Natural Resources Canada, 1995)
- **It costs an average of $7,000 per year to own and operate a car, but only $150 annually to own and operate a bike**. (*Ontario Ministry of Transportation Bicycle Policy Review*, 1992) (At those rates, a household of four adults could be equipped with bikes *and* full express-class bus passes *year-round* for *half* the cost of operating a single car.)
- **Walking is the cheapest of all modes**; in fact, most modes of active transportation are relatively cheap — accessible to even the lowest of income levels.
- **Walking, cycling and similar forms of active travel are available to people of virtually all ages.** Almost one in ten active cycling commuters are 50 years or over. (*Commuter Cycling in Ottawa-Carleton: A Survey*, Ottawa Cycling Advisory Group, 1992)
- **Cycling is neither the enclave of the poor, nor the preserve of the rich**. In Ottawa-Carleton, 15% of commuter cyclists earned *less than $20,000* in 1991, while 20% earned *$60,000 or more.* (*Commuter Cycling in Ottawa-Carleton: A Survey*, Ottawa Cycling Advisory Group, 1992)
- **In 1992, more than half of all Canadian households had at least one adult-sized bicycle**. Of these, almost three-fifths had two or more bicycles — resulting in a national average of almost one bicycle per household. (Statistics Canada, 1992)
- **Among regular commuter cyclists in Ottawa-Carleton, more than 20% use their bike more than half the time to get to work from April through October**. In fact, 40% to 50% ride to work more than half the time in the prime cycling months from May through September. An appreciable number of commuters ride *year-round* — even in the coldest winter months. For them, appropriate clothing, adequate winter riding skills and suitable bike equipment are all that are needed to make year-round cycling viable and attractive. (*Commuter Cycling in Ottawa-Carleton: A Survey*, Ottawa Cycling Advisory Group, 1992)
- **Commuter cyclists tend to ride to work because *they want to***. In Ottawa-Carleton, for example, 95% have a driver's licence and more than half have access to a motor vehicle to get to work any time they want. When weather conditions are not favourable for cycling, more than one-half take a bus and a further one-fifth walk or make other arrangements. Only one-quarter resort to taking a car in inclement weather. (*Commuter Cycling in Ottawa-Carleton: A Survey*, Ottawa Cycling Advisory Group, 1992)



Environmental Conservation and Protection

MYTH: *There's not much that individuals can do to directly protect or improve the natural environment.*

IN FACT ...

Active modes are a proven means of significantly benefitting the environment and conserving resources. By definition, active transportation is *sustainable* transportation.

- **The average car pumps over twice its weight in carbon dioxide into the atmosphere each year**. About 30% of all carbon dioxide emissions in Canada are from road vehicles and mostly from personal and commercial light-duty vehicles. (*The Auto Smart Guide*, Natural Resources Canada, 1995)
- **Auto emissions contribute directly to smog, acid rain and global warming**. In Canada, cars account for 11% of the carbon dioxide, 19% of the nitrogen oxides, 37% of the carbon monoxide, and 23% of the volatile organic compounds (e.g., benzene) released each year as a result of human activity. In addition, most motor vehicles manufactured prior to 1995 are equipped with air conditioners that contain chlorofluorocarbons, a major cause of the thinning of the ozone layer. (*The Auto Smart Guide*, Natural Resources Canada, 1995)
- **The number of cars on the road has increased steadily**. And the distances we drive them, plus the frequency with which we drive them, is also steadily increasing. As a result, while carbon dioxide emissions, for example, have decreased on a per-vehicle basis, overall they are rising. (*The Auto Smart Guide*, Natural Resources Canada, 1995)
- **Environmental problems that can be lessened by active transportation** include: ozone depletion and the greenhouse effect, air pollution, photochemical smog, acid rain and noise pollution.
- **Cycling and walking are two of the cleanest and most energy-efficient forms of transportation**. For each motorized trip that is switched to cycling or walking, a 100% reduction in vehicle emissions results for that trip. Many car trips are performed within reasonable cycling (8 km) or even walking (2 km) distance. Moreover, switching short trips to cycling and walking will achieve greater proportional savings than long distance modal shifts because proportionally more pollution results from cold starts. Many analysts state that **a more balanced split between providing for automobiles, and providing services for cycling, walking and transit** is much more likely to result in less congestion and pollution than (the) current focus on automobiles alone. (*Transportation Demand Management: A Policy Challenge*, Canadian Energy Research Institute, 1994)

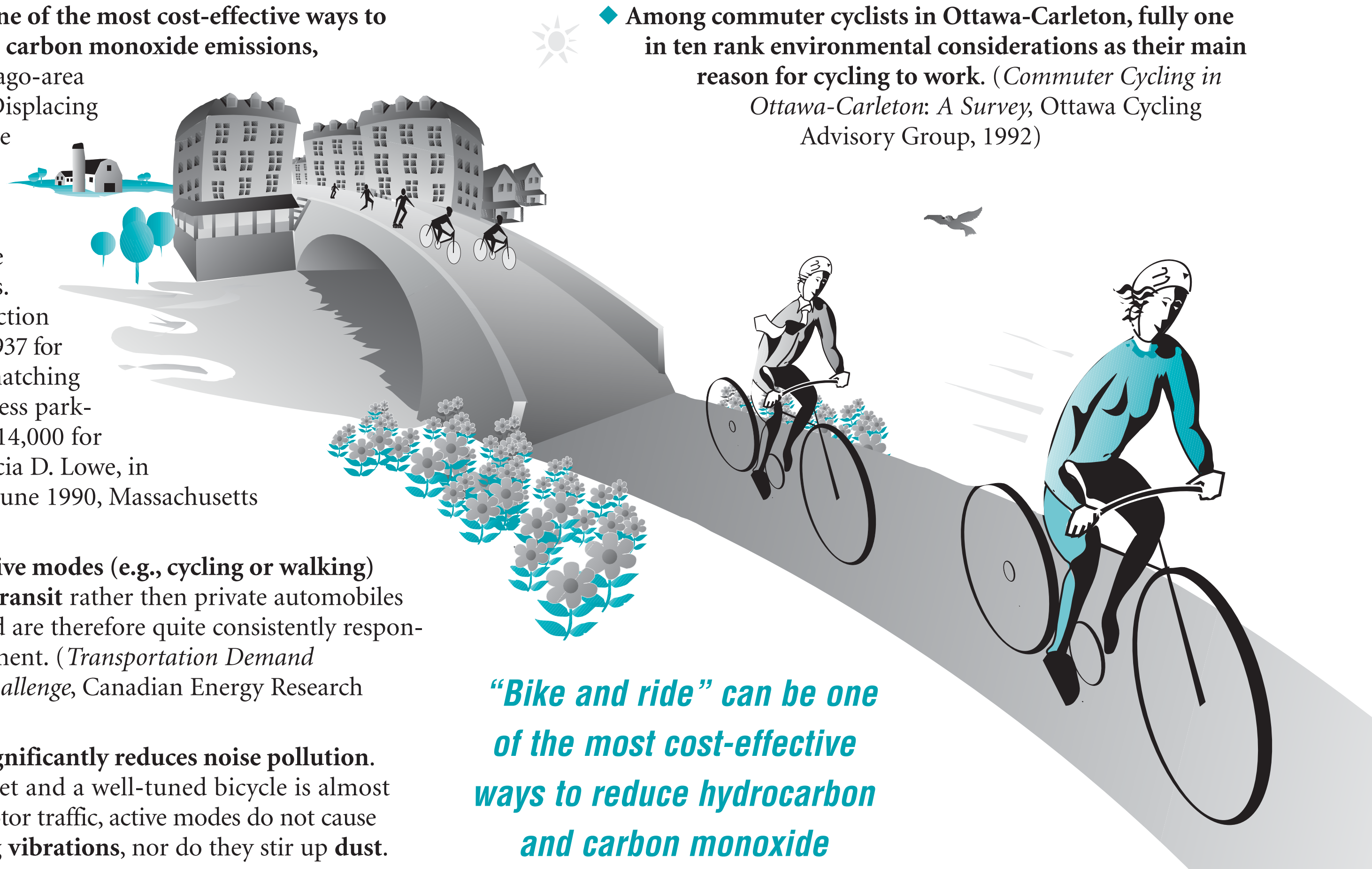
- **For each motorized trip that is switched to cycling or walking, it avoids releasing 2.6 grams of hydrocarbon, 20 grams of carbon dioxide and 1.6 grams of nitrogen oxide per passenger-mile.** (*Sectoral Task Force Report on Transportation*, Ontario Round Table on Environment and Economy, 1992)
- **"Cycling is the most (energy) efficient form of transportation." (And walking is not far behind.)** (*Ontario Ministry of Transportation Bicycle Policy Review*, 1992) Following is the average energy consumption equivalent per mile for selected modes:

Mode	Fuel Consumption (Calories) per Passenger Mile
Auto (one occupant)	1 860 fuel calories
Bus	920 fuel calories
Train	885 fuel calories
Walking	**100 calories***
Bicycle	**35 calories***

* Food equivalent

Source: *Ontario Ministry of Transportation Bicycle Policy Review*, 1992.

- **The 6% of Ontario individuals who use the bicycle as their primary means of transportation save an estimated 156 million litres of oil per year**. Assuming an average daily trip length of 15 km, they also save 14 tons of volatile organic compounds, 416 tons of carbon monoxide and 8.5 tons of nitrogen oxides *each day*. Those who use other active modes, such as walking and in-line skating add to these impressive environmental benefits. (*Ontario Ministry of Transportation Bicycle Policy Review*, 1992)
- **In Chicago, secure cycle parking at mass transit is 13 times more cost effective at reducing hydrocarbon emissions than car pooling.** (*Transportation Demand Management: A Policy Challenge*, Canadian Energy Research Institute, 1994)
- **"Bike and ride" can be one of the most cost-effective ways to reduce hydrocarbon and carbon monoxide emissions,** according to a 1980 Chicago-area transportation analysis. Displacing enough car trips to reduce hydrocardon emissions by one ton, would involve a public cost of only $311 for secure cycle parking at transit stations. To achieve a similar reduction in car trips would cost $3,937 for commuter rail-car pool matching services, $96,415 for express park-and-ride services, and $214,000 for feeder bus services. (Marcia D. Lowe, in *Technology Review*, May/June 1990, Massachusetts Institute of Technology)
- **Commuters who use active modes (e.g., cycling or walking) tend to resort to public transit** rather then private automobiles in inclement weather, and are therefore quite consistently responsible toward the environment. (*Transportation Demand Management: A Policy Challenge*, Canadian Energy Research Institute, 1994)
- **Active transportation significantly reduces noise pollution**. Walking is extremely quiet and a well-tuned bicycle is almost perfectly silent. Unlike motor traffic, active modes do not cause unpleasant and damaging **vibrations**, nor do they stir up **dust**.
- **Road widening improvements to accommodate bicyclists and pedestrians can result in a decrease in the rate of normal roadway edge degradation**, thus increasing road longevity and saving money in maintenance costs. (*The National Bicycling and Walking Study: Transportation Choices for a Changing America, Final Report*, U.S. Department of Transportation, Federal Highway Administration, 1994)
- **A small bicycle assembly plant and repair shop can run on about $200 worth of tools**, and 100 bicycles can be manufactured for the energy and materials it takes to build a medium-sized car. (Marcia D. Lowe, in *Technology Review*, May/June 1990, Massachusetts Institute of Technology)
- **Among commuter cyclists in Ottawa-Carleton, fully one in ten rank environmental considerations as their main reason for cycling to work**. (*Commuter Cycling in Ottawa-Carleton: A Survey*, Ottawa Cycling Advisory Group, 1992)



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Personal Health and Well-Being

MYTH: *Whether one drives or walks to work isn't going to make much difference to one's personal health status or prospects.*

IN FACT …

Working active transportation into a daily or weekly commuting and workplace routine can be the greatest single source of regular, low to moderate-intensity activity that is proven to enhance personal health, fitness and quality of life.

- **Results from various epidemiological surveys suggest that adequate amounts of regular exercise will maintain or improve fitness, preserve good health, and enhance the quality of life relative to sedentary individuals.** To the extent that physical activity is inadequate, physical fitness is reduced, the quality of life deteriorates, hypertensive-metabolic-atherosclerotic disease becomes more prevalent, and the risk of premature death is increased. (Second International Consensus Symposium on Physical Activity, Fitness and Health, Toronto, 1992)
- **Scientific evidence is accumulating that physical inactivity is a major risk factor for cardiovascular disease**. Moderate levels of physical activity offer health benefits that can be maintained when performed on a regular basis. It is recommended that all people increase their regular physical activity to a level appropriate to their capacities, needs and interests. It is recommended that all children and adults set a long-term goal to accumulate at least 30 minutes or more of moderate-intensity activity on most, or preferably all, days of the week. (National Institutes of Health, Consensus Development Conference Statement, December 1995)
- **The health benefits to be gained from a physically active lifestyle are real, well documented, and far outweigh injury risks** arising from participating in some sports. Much disability in the population, particularly from the effects of aging, can be directly attributed to physical inactivity. (U.K. Health Education Authority, Mabledon Place, London, 1994)
- **The overall health impact of regular and moderate aerobic activity is very favourable**. There is now strong evidence that such exercise is helpful — both in **preventing many forms of disease** and in **speeding the recovery process**. An even stronger reason for encouraging regular physical activity is **enhancement of the quality of life**. The benefits range from an immediate elevation of mood to a prolongation of independent living in old age. (Roy J. Shephard, MD, Ph.D., DPE, University of Toronto)
- **Physical activity can reduce by 50% the risk of developing colon cancer**. (*Journal of National Cancer Institute*, 1991)
- **Physical activity performed regularly can reduce by 50% the relative risk of contracting non-insulin dependent diabetes.** (*Journal of American Medical Association*, 1992)
- **Regular participation in physical activity can increase a person's average life expectancy by as much as two years.** (Ralph S. Paffenbarger Jr., MD, 1986)
- **Regular physical activity, when properly undertaken, can be effective in preventing and limiting the disabling effects of heart disease and stroke**. (Heart and Stroke Foundation of Canada, 1993)
- **Fourteen to seventeen million adult Canadians could prevent early death** if they did at least small amounts of physical activity every day. (Canadian Fitness and Lifestyle Research Institute, 1995)
- **Physical activity appears to relieve symptoms of depression and anxiety** and improves mood. Regular physical activity may reduce the risk of developing depression. (*A Report of the Surgeon General: Physical Activity and Health*, U.S. Department of Health and Human Services, 1996)
- **The health benefits of cycling outweigh the road casualties by a massive factor of 20:1**. Therefore, the promotion of cycling will improve the health of the nation and lower the nation's health care costs. (Dr. Mayer Hillman, *Cycling — Towards Health and Safety*, British Medical Association, 1992)
- **Every adult should accumulate 30 minutes or more of moderate intensity physical activity over the course of most days of the week.** Incorporating more activity into daily routine is an effective way to improve health. (Workshop on Physical Activity and Public Health, U.S. Centres for Disease Control and Prevention, American College of Sports Medicine, President's Council on Physical Fitness and Sports, July 1993)

- **Adults should be encouraged to increase habitual activity gradually**, aiming to carry out daily at least 30 minutes of physical activity of moderate intensity, e.g., brisk walking and stair climbing. More strenuous activities such as slow jogging, cycling, field and court sports and swimming could provide additional benefit. (World Health Organization/International Federation of Sports Medicine Statement on Physical Activity for Health, Geneva, 1994)

- "The good news is that recent research (has) confirmed that **many health benefits (can) be achieved from relatively modest levels of regular activity** — simple actions which could easily be incorporated into one's everyday life ... a concept we in Canada call, 'active living'. I have no hesitation in emphasizing that **the promotion of a physically active lifestyle is a vitally important public health strategy."** (Russ Kisby, President, ParticipACTION, Quebec, 1994)

- It is recommended that health promotion programs emphasize the **value, pleasure and necessity of life-long physical activity**, and provide the education, incentives and skills to all population groups, including the elderly, to **build physical activity into daily life**. (*The Victoria Declaration on Heart Health*, International Heart Health Conference, Victoria, British Columbia, 1992)

- **If we can motivate people to increase their exercise patterns, a number of other lifestyle behaviours also change for the better**. (H. Arthur Quinney, Ph.D., University of Alberta)

- **In addition to obvious physical health benefits**, cycling, like walking, is a particularly **sociable activity** and means of travel; it allows face-to-face contact with people and easy discovery and exploration of natural and cultural amenities throughout the community. Thus, it helps enrich **community interaction** and thereby promotes a **sense of belonging and social cohesiveness**.

- **At the same level of intensity, a 20-minute bicycle ride has roughly the same health and fitness benefits as 20 minutes of running**. In that period a typical cyclist can travel two to three times the distance of a runner — thereby offering greater flexibility and diversity, and greater scope for integrating exercise with daily errands or commuting. Moreover, cycling is a particularly attractive *low-impact* form of sport/fitness.

- **A 1991 survey of 1 786 commuter cyclists in Ottawa-Carleton** showed that almost two-thirds (63%) ranked **health and fitness** as their prime reason for cycling to work. (*Commuter Cycling in Ottawa-Carleton: A Survey*, Ottawa Cycling Advisory Group, 1992)

- **Exposure to automobile pollution** while walking or riding in mixed traffic is a concern to non-motorists. However, a U.S. study has revealed that **bicycle commuters actually have *lower* levels of carbon monoxide than motorists** during "pollution alert" (i.e., high pollution) days. (*Ontario Ministry of Transportation Bicycle Policy Review*, 1992)

- **A decrease in motor vehicle use may improve the safety of existing bicyclists and pedestrians**. Motorists who are novice bicyclists may be more sympathetic to the presence of non-motorists. Increases in non-motorized travel may give rise to demand for further measures to enhance bicyclist and pedestrian safety. Motorists may also be more likely to anticipate the presence of bicyclists on the roadway, and more accustomed to sharing the roadway with bicyclists. (*The National Bicycling and Walking Study: Transportation Choices for a Changing America, Final Report*, U.S. Department of Transportation, 1994)

- **Roadway improvements to increase the safety of bicylists and pedestrians can also enhance safety for *motorists*.** As an example, the addition of four-foot wide paved shoulders on rural, two-lane roads has been shown to reduce run-off road, head-on, and sideswipe motor vehicle crashes by 29%, while eight-foot wide shoulders yielded a 49% reduction. (C.V. Zegeer and F.M. Council, "Safety Effects of Cross-Section Design," in V.A. McLean, *Compendium of Safety Effects of Highway Design Features*, Federal Highway Administration, 1991)

If we can motivate people to increase their exercise patterns, a number of other lifestyle behaviours also change for the better.