WALKING, CYCLING AND CONGESTION

15
QUICK FACTS
FOR CITIES

flow

2020 CIVITAS

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What's the impact of walking and cycling on urban congestion?

Introduction

Are you worried that introducing walking and cycling improvements will increase congestion? If so then these FLOW quick facts are for you!

Everyone's worried about congestion, particularly local decision makers who must balance many challenges including quality of life, road safety and air quality.

We know that nearly half of European political and administrative decision makers worry about congestion when introducing walking (41%) and cycling (48%) measures.[1] But perhaps surprisingly, for those who fear congestion, there's growing evidence that walking and cycling measures can actually help reduce congestion in our cities.

In short, active travel can be part of the solution to increase capacity and improve the flow of traffic - for everyone.

How walking and cycling can help reduce congestion in our cities

[1] The FLOW Decision-Makers Baseline Survey describes the views of administrative and elected decision-makers across Europe.

FLOW Quick Facts

What happens when you remove a car lane to put in a new bicycle lane? Or you give pedestrians more time to cross a busy road? Several cities have made these improvements and measured their impacts.

These FLOW Quick Facts outline walking and cycling measures can not only improve conditions for pedestrians and cyclists, but also reduce congestion. They describe some – perhaps surprising – results about overall transport efficiency that have been achieved while improving conditions for walking and cycling.

So rather than fearing increased congestion, we hope these FLOW Quick Facts help inspire you to make bold decisions for your city streets, using walking and cycling measures to provide a win-win for your city and its residents.

And please let us know if you have more examples to share!

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New public square improves mobility and accommodates 700 more people during rush hour

MEASURE:
Pedestrianising a road segment
LOCATION:
Dublin, Ireland

College Green in Dublin is one of Ireland's most prestigious addresses, but also a particularly busy road. It is a bottleneck for people commuting to work by bike or cars as well as for visitors (mainly on foot) on the main tourist route. A total of 3800 people pass the T-junction per hour during the morning and evening rush hours. Plans were originally made to close one arm of the junction to private cars. However, modelling carried out within the FLOW project revealed that going even further to pedestrianise the arm – and hence also re-route public transport – would further improve mobility, allowing 700 more people to get through the bottleneck during peak hours. The new plan has been approved and works are scheduled to start in 2018. Complementary traffic management measures include bus priority to maintain travel time and parking management at Dublin's outer orbital ring.

SOURCE:
Dublin City Council – College Green Project 2015.

QUICK FACT **1**

Narrowing roads to reduce crossing distance for pedestrians **does not increase** congestion

MEASURE:
Reducing pedestrian crossing distances
LOCATION:
Lisbon, Portugal

The city of Lisbon has reduced crossing distances and curve radii on Alexandre Herculano Street, a very busy roadway in the central city. These measures - identified and refined with transport modelling done as part of the FLOW project - are designed to help pedestrians cross the street more easily and safely. Before the intervention, pedestrians had to cross the intersection at a speed of 0.51m/s. Since the intervention, the shorter crossing distance allows pedestrians a more leisurely speed of 0.12m/s. Pedestrians now feel safer (+18%) and less pressured by drivers to walk faster (-14%). This measure also had a traffic calming effect as drivers now approach the intersections at slower speeds. No increase in traffic congestion has been registered from the city of Lisbon.

SOURCE:
Lisbon City Council, Pedestrian Accessibility Plan Team (2017):
Estudo da Percepção do Indivíduo na Modificação do Espaço Público: Comportamentos e percepções de peões antes e após obras de requalificação na Rua Alexandre Herculano.

QUICK FACT **2**

Pedestrian improvements reduce bus travel time by

40%

MEASURE:
Wider sidewalks, adjusted traffic signal timing
LOCATION:
Strasbourg, France

There was initial fear that Strasbourg's plans to reduce motor vehicle capacity around the central Pont Kuss (Kuss Bridge) in favour of pedestrians would increase congestion. However, widening sidewalks, narrowing road space and adapting traffic signal timing has not only improved pedestrian and bicycle safety but also significantly benefited public transport. Waiting and travel time for public transport has been reduced, with the travel time of some bus lines down by 40%. The changes in the traffic signal timing also led to decreased waiting times for pedestrians: currently between 30 and 60 seconds, as compared to over 60 seconds in the past.

SOURCE:
Kretz, Tobias, F. Schubert, F. Reutenauer (2013). Using micro-simulation in the restructuring of an urban environment in favour of walking. European Transport Conference 2013. PTV Group, Karlsruhe, Germany & PTV Group, Strasbourg, France.

QUICK FACT **3**

New pedestrian plazas reduce journey times for taxis and buses by

15%

MEASURE:
Allocating more space to pedestrians
LOCATION:
New York, USA

Manhattan's world famous Broadway was a congested street with complex intersections and pedestrians overflowing from the sidewalks, particularly around the iconic Times and Herald Squares. To allocate more space for pedestrians the city rerouted traffic, simplified intersections and created pedestrian plazas in the two squares. Although motor vehicle traffic volumes increased, journey times for taxis and buses were reduced by up to 15%. The programme created a better urban environment for people to meet and interact. It also led to safer crossings and a decrease in road injuries by 63% for motorists and 35% for pedestrians.

SOURCE:
Department of Transportation (2010): Green Light for Midtown evaluation report. New York City.
Living Streets (2011): Making the Case for Investment in the Walking Environment: a review of the evidence, a report for Living Streets by the University of the West of England and Cavill Associates.

QUICK FACT **4**

Cycling improvements lead to

45%

less car traffic and faster public transport

MEASURE:
Infrastructure improvements and lower speed limits
LOCATION:
Copenhagen, Denmark

In 2006 the city of Copenhagen transformed congested Nørrebrogade street: bicycle and pedestrian paths were widened, dedicated lanes for buses were installed and speed limits were lowered from 50 km/h to 40 km/h. Car traffic decreased by 45% in the neighbourhood, the travel time for buses fell by 10%, noise levels dropped by 50%, and the number of cyclists increased by 10%. The number of traffic accidents fell by 45% within 33 months. Employment and commercial revenues increased as well with 27 new businesses opening along the street, benefitting from increased delivery efficiency. The Nørrebrogade project increased the attractiveness of the urban space and improved air quality.

SOURCE:
ICLEI (2014): The Nørrebrogade Project: revitalizing a major road corridor for enhanced public transport and urban life. ICLEI Case Stories: Urban-LEDS Series - No. 01.
Copenhagenize.com (2013): Nørrebrogade - a Car-Free(ish) Success.

QUICK FACT **5**

Cycle highway reduces time spent in congestion by **3.8** million hours

MEASURE:
Building fast crossing-free bike lanes
LOCATION:
The Netherlands

A study undertaken by Dutch consultancy Goudappel Coffeng concluded that building 675 additional kilometres of cycle highways would reduce time spent in congestion in the Netherlands by 3.8 million hours per year. A further 9.4 million hours of car travel time could be saved each year if the use of electric bicycles increased. The study used traffic modelling to examine what impact the extension of the cycle highway network would have on mode choice in the Netherlands.

SOURCE:
Goudappel Coffeng (2011): Cycle freeways - What are the benefits?

QUICK FACT **6**

Cycle highway network reduces the need for **50,000** motor vehicle journeys daily

MEASURE:
Building a 101 km cycle highway in an urban agglomeration

LOCATION:
Ruhr area, Germany

A traffic demand study in Germany's densely populated Ruhr area estimates that the cycle highway RS1 can remove up to 50,000 motorised vehicle journeys daily from area roads. Parts of the Radschnellweg Ruhr (Ruhr Cycle Highway) are still under construction. The complete 101 km long cycle highway will attract new cyclists by creating a safe and efficient cycle route and help motorists by reducing congestion. The total cost is projected at €180 million (roughly €1.8 million/km), which is significantly more cost efficient than motor vehicle road projects, which cost an average of €8.24 million/km in Germany.

SOURCE:
Regionalverband Ruhr (2014): Machbarkeitsstudie Radschnellweg Ruhr RS1. Essen: RVR.
World Highways (2010). European highway construction costs evaluated.

QUICK FACT **7**

Bike share programme **eases congestion** during city works

MEASURE:
Set up bike share programme
LOCATION:
Bordeaux, France

The city of Bordeaux started a free bike sharing program in 2000 to keep the city accessible during construction of a new tramway. The programme was very successful and developed into a permanent scheme with 4,000 bicycles. In this period of dense traffic and congestion due to construction work, people took the easiest, cheapest and most practical mode of transport. While the car was used for 64% of trips before the construction began, it accounted for only 40% of trips in the city centre during the construction. Had the level of car use remained at 64% congestion would have been significantly worse. The bicycle became the mode of choice for 9% of all trips in the centre, and 4% across the entire city, compared to a share of 1-2% before the programme started. Pedestrian journeys also went up by 2% (from 22% to 24%) and public transport use increased from 9% to 10%.

SOURCE:
Belhocine, Aurelien (2015): Bicycle policies of Bordeaux Métropole, Master Thesis SciencesPo Bordeaux

QUICK FACT **8**

Bike share programme reduces congestion by 4%

MEASURE:
Setting up a bike share programme
LOCATION:
Washington DC, USA

Washington DC's Capital Bikeshare has reduced traffic congestion by 4% according to a study by Hamilton and Wichman. A follow-on study estimated that rolling out the bike share system to the entire city could reduce the cost of congestion for Washington area car commuters by approximately $57 (€52) per year, and total costs by $182 million (€166 million). 4% less traffic congestion also translates into an annual benefit of roughly $1.28 million (€1.17 million) from reductions in congestion-induced CO2 emissions. The study suggests that the increase in bike share use is a result of commuters switching from car to bike.

SOURCE:
Hamilton, Timothy, and Casey J. Wichman (2015): Bicycle Infrastructure and Traffic Congestion: Evidence from DC's Capital Bikeshare. Discussion paper 15-39. Washington, DC: RFF.
David Schrank, Bill Eisele, Tim Lomas, and Jim Bak (2015): Texas A&M Transportation Institute's 2015 urban mobility scorecard. Technical report, Texas A&M University.

QUICK FACT **9**

New bike lanes shorten automobile travel times by

35%

MEASURE:
New on-road protected bike lanes
LOCATION:
New York, USA

The average car journey on Columbus Avenue in Manhattan from 96th to 77th streets (1.6 km) was about 4½ minutes, as measured by the New York City Department of Transportation. After on-road protected bike lanes were installed in 2011, it now takes only 3 minutes to travel the same segment. Less road space for automobiles did not result in more delay. On the contrary protected bike lanes benefitted all modes of transport and shortened travel times for motorists by 35%, even as total motor vehicle volume on the road remained constant. This is the result of smart traffic engineering, in this case adding exclusive turn lanes so cars waiting to turn left don't block lanes and drivers can see cyclists beside them.

SOURCE:
Peters, Adele (2014): New York City's Protected Bike Lanes Have Actually Sped Up Its Car Traffic, Fast Company.

QUICK FACT **10**

Car-free zone leads to almost **30%** fewer inner-city cars

MEASURE:
New pedestrian area
LOCATION:
Paris, France

Parc Rives de Seine is a new eight hectare car-free space for walking, cycling and leisure, and a UNESCO World Heritage site in the centre of Paris. Until recently, the area was a congested expressway along the river with heavy motorised traffic. Six months after the quayside was pedestrianised, Paris registered 1,349 fewer cars (28.8%) each day in its city centre (February 2017 as compared to 2016). The phenomenon of "disappearing" traffic is known as traffic evaporation and is explained by Braess' paradox, which states that the complete removal of congested routes can reduce traffic volumes because individuals change their itineraries, schedules, frequency of travel or mode choice.

SOURCE:
City of Paris (2017): Moins de véhicules et moins de pollution depuis la piétonnisation de la rive droite.

QUICK FACT **11**

Neighbourhood access restrictions lead to **10,000** fewer motor vehicle journeys a day

MEASURE:
Access restrictions and road closures

LOCATION:
London, UK

London's Walthamstow borough introduced the Mini Holland Programme to reduce traffic in residential areas. The effort to create Dutch levels of cycling infrastructure included closing selected neighbourhood roads to reduce traffic and encourage cycling as the default mode for local trips. Segregated cycle lanes were added to main roads in the area. This led to a more cycle-permeable area and prevented traffic from cutting through residential areas. Results show traffic levels on 12 key roads fell by 56% with 10,000 fewer car journeys a day. While there was a slight traffic increase on two roads bordering the area, there has been an overall traffic reduction of 16% since the programme started.

SOURCE:
Ross Lydall (2016): 'Mini Holland' scheme in Walthamstow hailed as major success as traffic falls by half. Evening Standard.

QUICK FACT **12**

One million daily journeys could be walked in less than 10 minutes

LOCATION:
London, UK

A recent analysis of travel survey data established that Londoners make nearly 2.4 million journeys daily by motorised modes (car, motorcycle, taxi or public transport) that could be walked all the way. 40% of these trips would take most people less than 10 minutes to walk. The research identified another 1.2 million motorised journeys that could be walked part of the way (such as driving or taking the bus to/from a rail station). While it may be necessary to make investments in walking infrastructure to achieve these results, the London research indicates excellent potential to reduce the number of motor vehicle journeys (and thus congestion).

SOURCE:
Transport for London (2017): Analysis of Walking Potential.

QUICK FACT **13**

6.47 million daily journeys made by motorised modes could be cycled in less than 20 minutes

LOCATION:
London, UK

London's 2017 analysis of cycling potential found that out of 13 million journeys made by motorised modes, 8.17 million (62%) could potentially be cycled in their entirety. Of the 8.17 million potentially cyclable trips, 6.47 million would take less than 20 minutes for most people to cycle. These 6.47 million journeys do include the 2.4 million that could be walked all the way as mentioned above. More than half are shorter than 3 km and are currently made by car. Only 6% of the potentially cyclable journeys are actually made by bike. Fully exploiting this huge potential for cycling and walking could help significantly to reduce congestion – and emissions – throughout the transport network.

SOURCE:
Transport for London (2017): Analysis of Cycling Potential.

QUICK FACT **14**

School Streets programme keeps over **4,000 cars** off the road during peak period

MEASURE:
Access restrictions (pedestrianisation, limited traffic zones)
LOCATION:
Bolzano, Italy

The School Streets initiative was introduced in 1986 to help increase safety and transport autonomy for children attending primary schools in Bolzano, Italy. The programme creates a time restriction for automobile access to specific streets around a school for a short period (e.g. 15 minutes) during peak times for children arriving and departing from school. This effectively prevents parents from dropping off and picking up children by car at the school gates. There are approximately 6,000 primary school children in Bolzano, which has an 80% non-car mode share of all trips within the city. To illustrate how much congestion the School Streets initiative prevents – if the 6,000 children were driven to school, there would be at least 4,800 additional trips on the road network in the peak hour. This is equivalent to 8% of the total daily volume of motor vehicle trips.

SOURCE:
Transport Learning (2012): D6.1. – Materials for the site visits in Graz (AT) and Bolzano (IT).
Comune di Bolzano (2009): Piano Urbano Della Mobilita 2020 Mobilitätsplan.

QUICK FACT **15**

ABOUT FLOW

FLOW is a CIVITAS Horizon 2020 project, running from May 2015 to April 2018. FLOW has developed a multimodal analysis methodology to assess the impact of walking and cycling measures on transport network performance and congestion. FLOW's ideas are being tested in its partner cities of Budapest, Dublin, Gdynia, Lisbon, Munich and Sofia.
http://h2020-flow.eu

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The FLOW Quick Facts are also available as PowerPoint slides for presentations via www.h2020-flow.eu

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