

20mph Limits Save Time and Improve Traffic Flow

People wrongly assume that 20mph limits delay journey times. Yet, average city speeds are generally well below 20mph owing to congestion and queues. And traffic flows more freely at 20mph than 30mph: drivers make better use of road space by packing closer and junctions work more efficiently and at a higher capacity as it's easier to merge. Because drivers feel safer, some leave their cars at home, further reducing congestion. 20mph limits mean quicker journeys.

20's Plenty



Where People Live

Optimal speeds for maximum urban traffic flow have been mathematically modelled and 20mph is more efficient than 30mph.

- Drivers cut their spacing as braking distances contract. Shorter gaps mean more vehicles can use the available road space, reducing standing traffic.
- Filtering at junctions becomes easier too. It is far easier for motorists to pull into traffic travelling at 20mph than at 30mph. So junctions work more efficiently and queues reduce.
- Motor traffic volumes decrease since slower speeds encourage active, sustainable and shared travel. Walking and cycling levels rose by up to 12% after Bristol's 20mph limitⁱ.
- Buses operate more efficiently. The reduced length of queues means that bus journey times decrease, and become more reliable. Buses become a more attractive alternative to the car.

Smoother driving with less wasteful braking and acceleration cut fuel use by 12% in Germany after 30kmph (18.6 mph) limits were implementedⁱⁱ. Air quality also improves since moving traffic emits less pollution than when standing still with engines on. The Department for Transport's speed / flow plots are in the COBA (Cost Benefit Analysis) manual - Vol 13 of the Design Manual for Roads and Bridgesⁱⁱⁱ. This computer programme shows that urban traffic flow improves at lower speeds – see plot overleaf:

Other traffic models support this analysis. Professor Mike Smith a highly experienced professional mathematician has modeled a system that progressively reduces the limit the closer you get to a city centre. By linking traffic lights in sequence along main routes into the city, it is possible to time lights so that motorists who travel at the prevailing speed limit benefit from a green wave of traffic lights. They can get to the city centre smoothly, without an endless cycle of starting, stopping and queuing

The FREEFLOW^{iv} project by the University of York, City of York Council and others, studied how traffic data and models could ease congestion, cut queues and improve flow. Slough experimented with this successfully in the 1950s on a single arterial road.

Shared Space also enjoys claims of shorter tailbacks and congestion. The concept relies on cutting traffic speeds to around 20mph or less for 'eye contact'. Traffic experts Ben Hamilton Baillie and Phil Jones state "*tailbacks of traffic during peak periods have also reduced. It seems that the ambiguous junction provides improved capacity for traffic and fewer delays than traffic signal control systems.*"^v Whilst shared space is too costly and time consuming in engineering changes to implement wide scale, community wide 20mph limits are affordable at £1,400 p km or £2-£3.50 per head of population.

20's Plenty for Us campaigns for signed default 20mph limits for residential roads. Including arterials, as Islington are doing, also benefits traffic flow. 20mph limits for both main and side streets is more cost effective than just residential roads as casualties are most prevalent on through roads and implementation costs fall when less signage is required. 20mph then becomes fully consistent across a community, the policy is better understood and could expect higher compliance. Emergency vehicles are exempt from 20mph limits and no humps are required, only 'light touch' police enforcement.

20mph limits reduce casualties by 22% and make journey times more consistent by cutting traffic jams and improving traffic flow. They are also popular. Over 7.5million people's authorities are committed to 20mph residential limits in the UK.

This efficient traffic flow evidence further strengthens the urgent call for whole community 20mph speed limits. Wide 20mph limits help everyone to get around quicker, cheaper, cleaner and more safely. 20mph is best practice and saves time.

ⁱ Cycling City project and Active Bristol / Monitoring by Bristol City Council

<http://www.betterbybike.info/sites/default/files/attachments/Cycling%20City%20end%20of%20project%20report.pdf>

ⁱⁱ An illustrated guide to traffic calming. by Dr Carmen Hass-Klau (1990)

ⁱⁱⁱ Link to a copy of the COBA 2002 manual – Traffic Flow plots are in Chapter 9: http://www.leics.gov.uk/part_5.pdf

^{iv} http://www.freeflowuk.net/index.php?option=com_content&view=article&id=73&Itemid=59

^v Improving traffic behaviour and safety through urban design. Proceedings of Institute of Civil Engineering. Ben Hamilton Baillie, Phil Jones May 2005
<http://www.icevirtuallibrary.com/content/article/10.1680/cien.2005.158.5.39>

20's Plenty for Us campaigns for 20mph speed limits without physical calming as the default in urban and residential areas

We welcome comments and feedback. www.20splentyforus.org.uk Please contact us at :-

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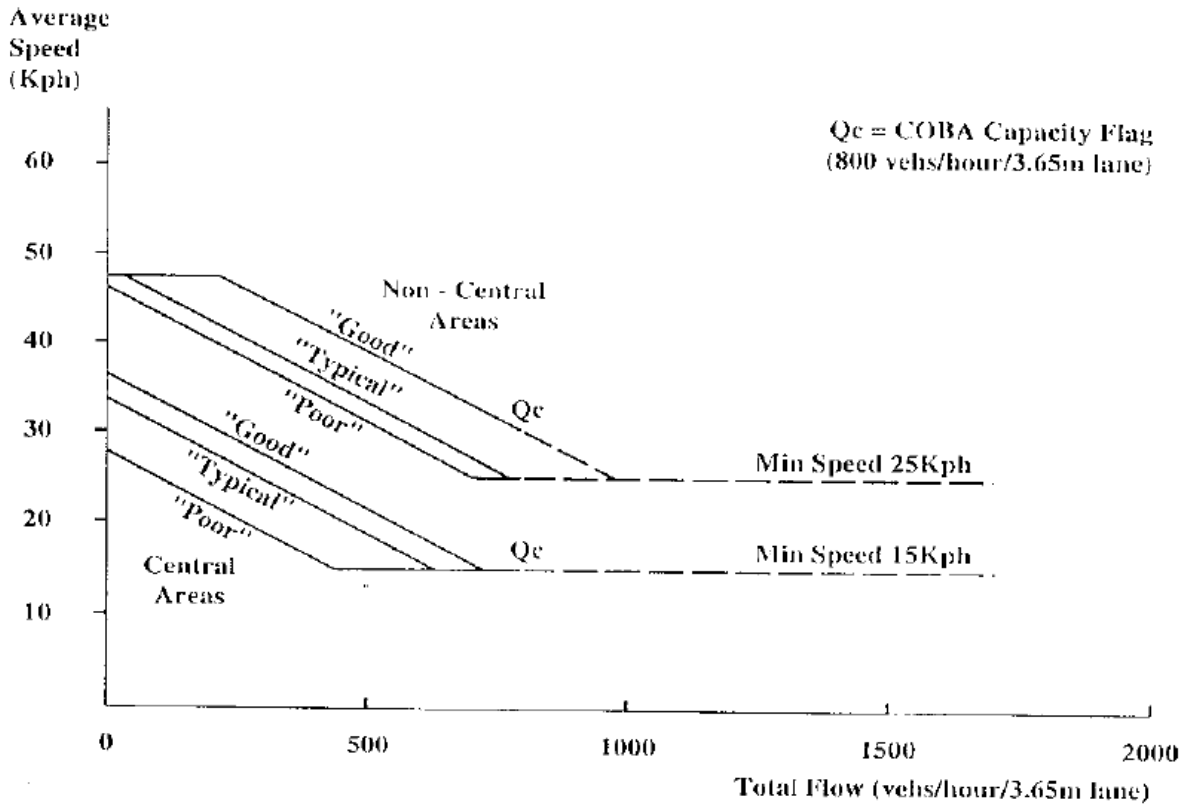
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Typical Urban / Speed Flow Relationships



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Figure 9/3: Typical Urban Speed/Flow Relationships