FOR CROWDS

That place is so crowded, nobody goes there anymore. —Yogi Berra

ON COMMUTING
MALCOLM GETZ

WITH CROWDING

As movement slows to a stop, we sense a lose of control.

FIVE TRAVEL MODES

Walk
Bike
Car
Bus
Train

MODE #1: WALKING

Low dollar cost, but slow.
People live near work.

COLONIAL WILLIAMSBURG

The blacksmith worked near home.
This sidewalk is so crowded
Walkers move slowly.

Mode #2: Biking
Modest dollar cost, 3+ times faster than walking. Bikes allow longer trips than walking.

Biking in Denmark

This bikeway is so crowded
Bikers move slowly.

Mode #3: Car
High dollar cost. Faster. Longer trips.

This road is so crowded
Cars move slowly.
**ADD LANES?**

More trips, more people.
Congestion unchanged.

**ADD TRANSIT?**

More trips, more people.
No reduction in congestion.
Cars and transit are as substitutable as tea and coffee.

**ATLANTA’S MARTA**

$50 billion, 48 miles of RR: No effect on congestion.

**MINUTES TO WORK**

Time to work grows with area population.

**SPEED & FLOW**

Arrows show the pressure of more cars entering.

**KEEP SPEED ABOVE 40MPH**

Everyone can go there.
Radio Frequency ID

Gantry registers road use at 70mph.

91 Express Lanes

Tolled lanes on the left, free lanes on the right.

Three Digital Tools

Replace motor fuel tax with time-and-place fees.

2. EZ Pass: Radio transponder with gantries.
3. Netherlands: GPS on each vehicle.

Pix of Plates

London, 2003
Stockholm, 2006
Mayor Bloomberg, 2008

London Tolled Zone

Fee is £10 per day.
DUTCH GPS

GPS, hard disk, and cellphone. All roads charged by time-and-place.

The Dutch adopted the plan, but haven’t implemented it.

MANAGE CROWDS WITH DIGITAL TOOLS

Road-use fees reduce congestion.

MODE #4: BUS

Three doors and low floor.

Shared costs, half the speed of a car. Serves dense area: Many people going from A to B.

THIS BUS IS SO CROWDED

Boarding delays trips.

The trip will be slow.

DIGITAL BUS FARES

Time-and-location specific fares

Faster boarding, discount off-peak and short trips.

BUSWAY IN BOGOTÁ

Express, limited-stop, and local bus service
Bus Cost 1.5 Times Uber

Uber offers point-point service.

UberPool Offers Vans

Bridj

Point-to-point private bus service in Boston and DC. Bridj identifies trips from telephone and other data. Solicits riders via Internet for cross-town trips.

Few stops, no transfers, point-to-point.

Mode #5: Train

Two $billion per mile in subway.

Expensive
Few miles.
Many transfers.

Few Rail Miles

Commuting by rail often involves transfers.

The transfer nuisance drives away 15 percent of riders.

This Train Is So Crowded

The train will move slowly.
SEVEN STEPS

1. Add express lanes to urban interstates.

Washington Metro
Katy Tollway, Houston, Texas

SEVEN STEPS

2. Require a digital license system.

Likely leaders:
California,
New York,
Texas

Use GPS.

Set a federal standard for inter-operability.

SEVEN STEPS

3. Deploy road use fees in congested arteries.

A GPS system works for a congested zone.

SEVEN STEPS

Road use fees keep traffic flowing.

Twice as many cars move per hour.

SEVEN STEPS

4. Promote digitally managed vans & buses.

Washington Metro
Better for point-to-point service at low density.

SEVEN STEPS

5. Use dynamic digital signaling.

Sensors monitor traffic and adjust the timing of lights.
Seven Steps

6. Dynamic pricing for parking

Sensors monitor openings, digital pricing

Seven Steps

7. Dynamic pricing of electricity

Low-cost late night recharge

Conclusion

We can make congestion rare.

Washington Metro

With digital tools, travel need not be crowded.

Malcolm Getz