

Still Stuck in traffic

Traffic congestion is considered bad from many aspects. However, according to report from the Brookings Institution, “peak hour traffic congestion plays an essential and positive role in the transportation life of the nation. Congestion-which basically consist of waiting in line- is the nation’s principal means of allocating scarce road space among competing users during periods when to many people want to use that limited space at the same time. That excess demand for roadways during peak hours is the real problem to which congestion is the most feasible solution”¹. That is right, viewing congestion as a legitimate solution to a real problem is the first step toward recognizing the reality of the situation we face. In doing so, the need for alternative modes for moving people will become clear.

In theory, there are four ways to cope with the daily peak-hour disparity between the total demand for travel and limited road space.

1. Rationing of the limited road space by charging drivers a users fee.

Many economists recommend using this pricing mechanism to allocate this scarce resource. However, the negative aspects have precluded its implementation. On a practical level, no pricing system could charge a variable toll on every major and minor city street. Since, the economically efficient price to charge is the marginal cost of the extra driver being on the road. Furthermore, adjacent streets, not covered would see increased congestion. On a political level, such a toll system would benefit higher income households while imposing a hardship on lower income households.

2. Expand the capacity of the roads.

According to the Brookings report, “a region cannot build its way out congestion once peak-hour congestion has appeared there”². In theory, increased capacity should speed up traffic. “Unfortunately, once peak-hour congestion has appeared, building new roads or expanding existing ones there does not reduce the intensity of such congestion much in the long run”³. For many people that had previously avoided the area will now use it, and developers would take advantage of the short run perceived increase in mobility. “These forms of induced demand would reduce much of the hoped for gain in capacity from building more roads”. Finally, “the reality is that there are too many people seeking to use the roads at the same time each day for this approach to work without enormous financial and environmental costs”⁴.

3. Expand the capacity of public transit.

¹ Anthony Downs; Still Stuck in Traffic, Coping with Peak-Hour traffic Congestion, Brookings Institution 2004 page 5

² Ibid page 8

³ Ibid page 102

⁴ Ibid page 8

In theory, the provision of sufficient mass transit should greatly diminish the number of private vehicles trying to use the roads during peak hour congestion. But in the United States, the share of all peak-hour trips made on transit is tiny compared with the share made by privately owned vehicles (POV's) on roads. Somewhat over three thirds of all 2000 commuter trips were POV trips, whereas only about 4.75 percent were on public transit⁵. One of the major reasons is that transit cannot efficiently serve low-density communities. Yet most of the people live in such settlements.

4. "Letting people wait in line until enough others have moved off the road so that space becomes available. That waiting constitutes traffic congestion"⁶.

"In effect, congestion is the solution to the real problem, which is, how can we ration our limited road space during peak hours when far more people want to travel on that space than it can handle simultaneously? Congestion may seem to be-and is- undesirable when compared to the mythical alternative of delay free, high-speed movements at all times. But that alternative can never be achieved in most large metropolitan areas."⁷

What causes congestion

1. Studies suggest that absolute growth in and the absolute size of the population in an area is the greatest cause of traffic congestion. "Thus, congestion is most likely to be most serious in large metropolitan areas, since they are likely to produce absolutely large amounts of growth even if they have low percentage rates of growth, and large areas experiencing growth rapid enough to generate absolutely large gains"⁸.

2. Increase in the use of automotive vehicles is the result of Americans preferring to travel in private vehicles, mainly alone, in part, because such travel usually provides convenience, comfort, privacy, flexibility in timing, and speed superior to that of mass transit. In the state of Virginia the population grew by 32 percent from 1990 to 2000, whereas, the number of cars grew by over 66 percent⁹.

3. Another equally powerful reason is the advent of the low-density suburbs. In most metropolitan areas, the fastest growing suburbs are usually those at the edges of the most heavily built up territory. "These peripheral suburbs typically have residential densities much lower than communities closer in"¹⁰. Hence, they generate more car travel per person than would higher density communities.

4. Drivers are not required to pay the full marginal social cost of driving during peak periods. Every peak-hour commuter entering a congested road not only incurs the costs of her own delay but also imposes greater delay costs on all other persons using the same

⁵ Ibid page 52

⁶ Ibid page 11

⁷ Ibid page 11

⁸ Ibid page 19

⁹ Ibid page 45

¹⁰ Ibid page 53

road at the same time. Unless society compels the drivers to pay for driving, they will continue to underestimate the collective costs of road usage.

Demographically,

millions choose to live and work based on goals other than minimizing their commute. In 1999, the association of realtors asked 2000 randomly selected households if given the choice, would they prefer a townhouse in an urban setting or a detached house in a suburban area? Eighty-three percent choose the larger farther-out suburban single family home. As a result of these preferences for suburb living, 78 percent of all commuters in America traveled, singly, in private vehicles, compared with 12 percent for car pools and 4.7 percent on public transit, requiring far for space to accommodate these cars on the road.

“A central reason is the low density, spatially spread out residential development predominant in most parts of US metropolitan areas. The forms of public transport dominant in America – buses, light rail, and heavy rail can efficiently serve only areas settled at relatively density. Public transit needs to gather significant number of passengers together at its point of origin destination or both, and that is done when densities are high at those points. One study concluded that buses need 4200 persons per square mile or higher to be efficient and fixed rail requires higher densities”¹¹.

Studies suggest that the medium distance commuters (read Alexandrians) **value their time** most highly because long distance commuters have made residential location decision that attach less importance to longer travel times than many who prefer to live closer to work. Alexandria is at the crossroads of considerable through traffic from the surrounding jurisdictions, and as they grow so will the congestion on Alexandria streets. Suggesting that Alexandria residents will be the ones most frustrated by regional growth.

"Policymakers primary method of combating congestion has been to build more roads. But as funds for additional roads have come harder to come by, many urban officials have confined their activities to "studying" ways to reduce congestion."¹²

Before pursuing such strategies, it is important to understand that traffic flows follow four principles that are usually ignored.

1. Triple convergence

Most drivers seek the least congested means of getting to their destination. Many drivers discover the best routes and a convergence towards those streets until they are congested. Eventually, equilibrium is reached when the streets offer no speed advantage over other roads or transit methods, assuming they are available. Assume now that an improvement takes place that enhances the throughput capacity of the road. Initially, the cars will move faster, but after a while (**long run**), the traffic volume will rise until the vehicles are again moving at a crawl.

¹¹ Ibid page 52

¹² Page 87 Alternate Route by Clifford Winston and Chad Shirley

This is because drivers who previously used alternative roads will switch to the improved street and many drivers who previously staggered their commute will stop doing so. Finally, some will find it advantageous to switch from public transit modes to driving because it is now faster. These three types of convergence cause more and more drivers to use the improved road until the traffic moves at a crawl.

The same is true for increased transit capacity. If a new rail system is opened, it will attract some peak hour commuters out of automobiles. “Nevertheless, as soon as drivers realize the road permits faster travel, they will converge until conditions again reach a crawl”¹³.

2. Regional Growth

Residents feeling the effects of fast growing regions are especially eager to limit traffic congestion in order to prevent any further loss of time in their own commute. However, traffic congestion is extremely difficult to relieve if the growth has been caused by factors other than good transportation facilities. Since growth is the perceived cause of the congestion, then why not limit the growth. A given community can ban all expansion within its boundaries, but that would not prevent nearby communities from increasing their density over time. I.e. the regional growth, a main cause of the congested streets, is impervious to local public policy.

Creating More Transit Capacity

“Public transit has certain fundamental characteristics that directly affect its ability to cope with peak hour traffic congestion”¹⁴. Whatever the form, it does require a relatively high level of density at either their points of origin, destination, or both. Unfortunately, the residential patterns dominant in the suburbs involve relatively low densities especially in the areas where a significant amount of the through traffic originates. Furthermore, buses comprise a significant percentage of the transit, use the same roads as the cars and have frequent stops, which add to the congestion.

Commuting on transit are usually more time consuming than a trip in a car. This is because transit has certain inherent characteristics. These include having to get to the stop, waiting at the stop, stopping several stops, sometimes transferring, and getting from the final stop to the final destination. “Consequently, in 2000, the average commuting trip in the United States required 47.7 minutes versus only 24.1 minutes for such trips by private vehicles driven by single occupants and 28.6 minutes for trips in carpools”¹⁵.

“Expanding transit capacity rarely reduces existing roadway traffic congestion that has reached high levels of intensity”¹⁶. Because of the principle of triple convergence the

¹³ Anthony Downs; Still Stuck in Traffic, Coping with Peak-Hour traffic Congestion, Brookings Institution 2004 page 85

¹⁴ Ibid page 117

¹⁵ Ibid page 120

¹⁶ Ibid page 120

initial increase in speed on the road caused by the diversion to the transit will not last. In the short run, drivers who had formerly been traveling on other routes or other times or on other modes will replace drivers who initially switched to the mass transit. In the long run, more firms and people are encouraged to move to the region by the increased building activity and transportation network. Consequently, the induced demand soaks up the excess transportation capacity and as a result, the traffic is again congested.

So why do transit?

The expansion of transit gives the residents of Alexandria alternative modes of travel. Significant, since a reduction in the intensity of the peak hour traffic congestion is not a realistic long-term aspiration according to the Brookings Institution. Therefore, Alexandria needs to insure the long-term mobility of its residents while maintaining the quality of life. By emphasizing long-term investments in dedicated transit movements and not the through traffic goes along way towards ensuring that.

Sources:

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