Presentation by John Niles on Transport and Telecommunications Interactions at STELLA Focus Group Meeting, Arlington, Virginia, January 15, 2002

Comments or questions? E-mail to Niles@globaltelematics.com or call 1-800-767-9493

STELLA means Sustainable Transport in Europe and Links and Liaisons with America
The Focus Group was part of Track 2 in STELLA: ICT, Innovation, and the Transport System

The following includes some supplemental material not presented in Arlington.

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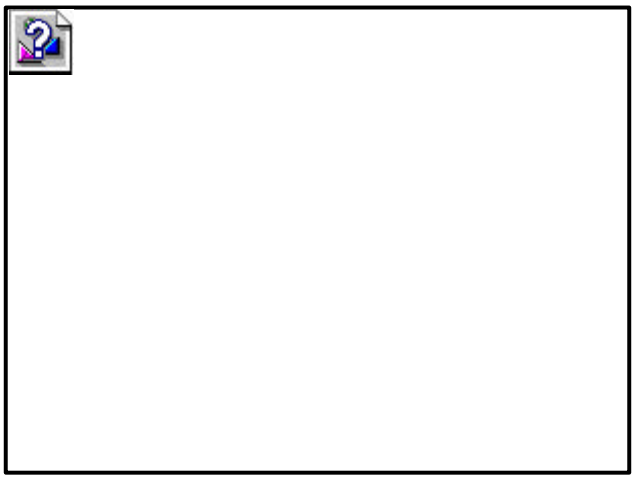
Telecommunications Substitution for Transportation

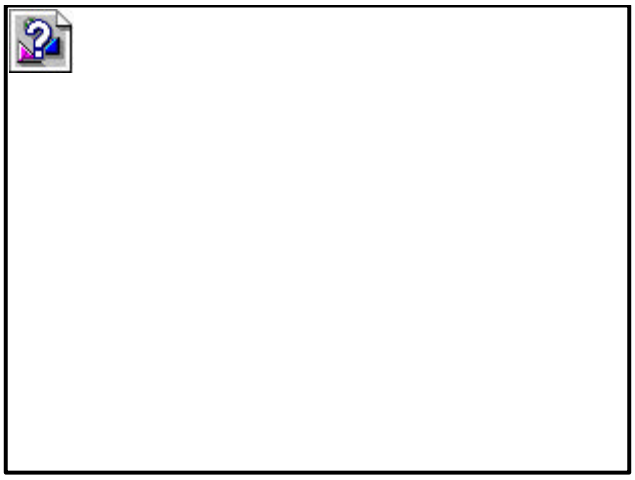
by John S. Niles, Global Telematics, Seattle, Washington

www.globaltelematics.com

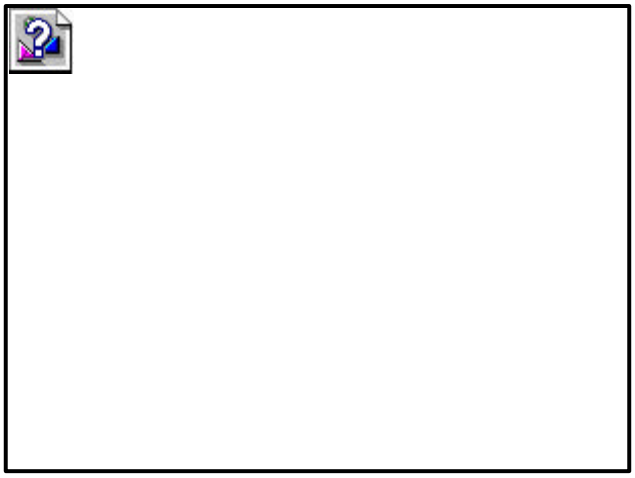
Transportation per capita is growing in the USA, and worldwide:



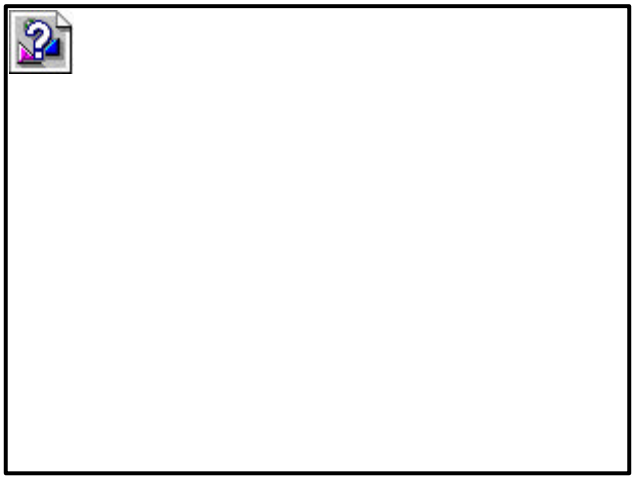
Telecommuting -- working at home or closer to home to reduce commuting travel -- is an alternative to driving in peak congestion.



Telecommuting can yield better organizational performance. For more check out this review paper we prepared for Hudson Institute on telecommuting, "Optimizing Telework, Flextime, and Officing."

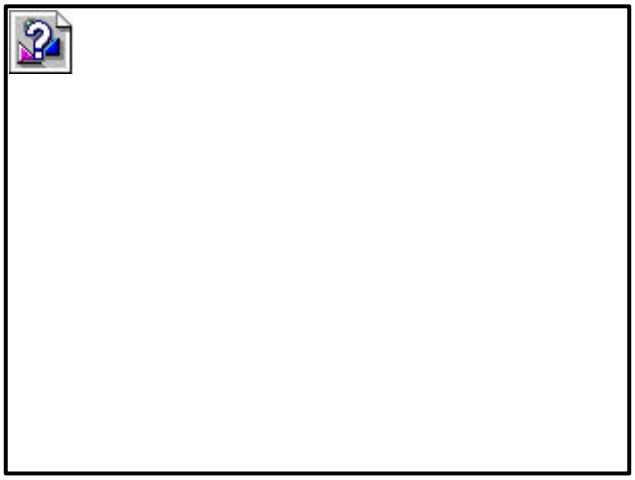


As an example of what is possible through telecommuting, the following numbers were reported from a 1996 survey by the Washington (DC) Council of Governments. There has been growth in telecommuting since this survey:

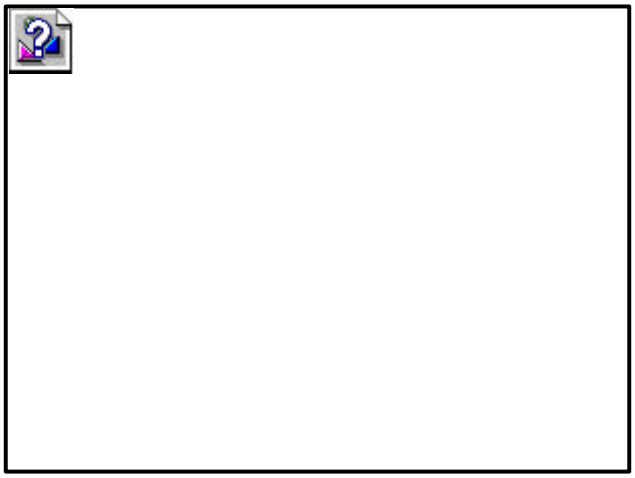


But the following is the bottom line impact of telecommuting on travel nationwide as determined by the U.S.

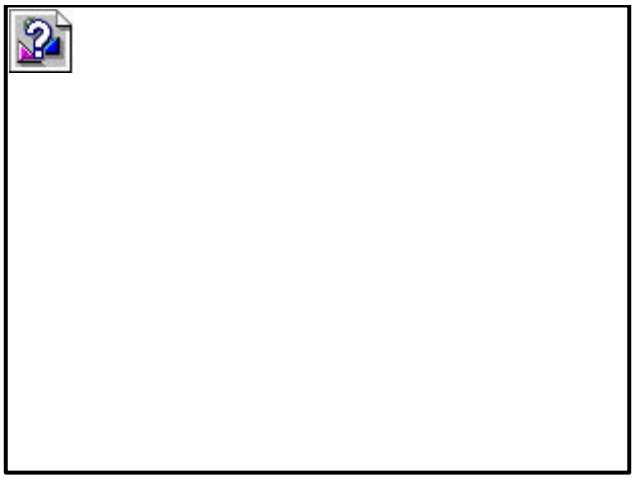
Department of Transportation in the early 1990s. There is no recent evidence that would revise the conclusion that travel savings from telecommuting are minimal in comparison to the volume of travel.



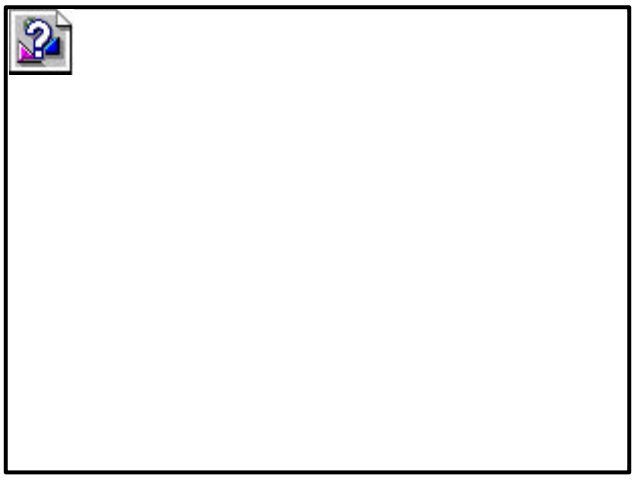
One reason for modest travel reductions with telecommuting lies in the many purposes of travel besides commuting to work. Most people on the road are not commuting, or at least not commuting without other stops. Following data are for USA:



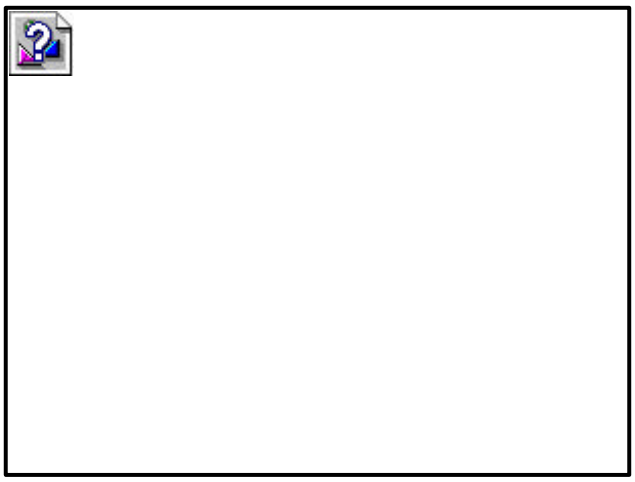
Trips are complex. The following shows how frequently Americans are making at least two stops on a trip that ends at their home.



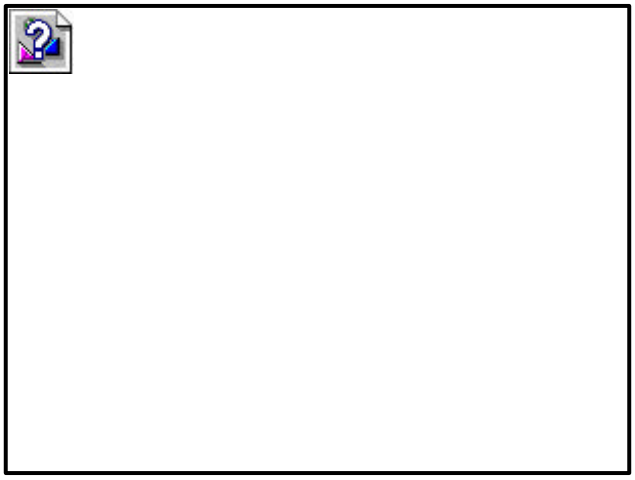
This leads one to consideration of other areas for telecom substitution of trip making. Telecommuting is a part of *telework*, which includes all of the ways that telecommunications affects the location of workers. In addition, *teleservice* is all of the ways that telecommunications affects the location of customers. For more, see the study ***Beyond Telecommuting*** that we did for U.S. Department of Energy and Lawrence Berkeley Laboratory.



Teleshopping -- online shopping using the Internet -- falls under the teleservice category. Shopping is the most important single travel purpose after commuting to work.



But stores and malls are fighting back against online shopping with bigger, more specialized stores where shoppers can touch the merchandise and take it home for a low price. Malls are entertainment centers as well. Modern stores are all powered by advanced telecommunications for inventory control and quick checkouts.



Superstores and other retail destinations are widely scattered in the modern metropolis as shown on the following map of chain grocery store locations (click for larger version) in the Seattle-Tacoma region of Washington State. This dispersion of destinations -- linked to telecommunications development in several ways -- creates obstacles for "transit-oriented development" becoming a solution for increasing transit mode share in a region. This issue is recently covered in a report by Nelson and Niles, *A New Planning Template for Transit-Oriented Development* from Mineta Transportation Institute, 2001.

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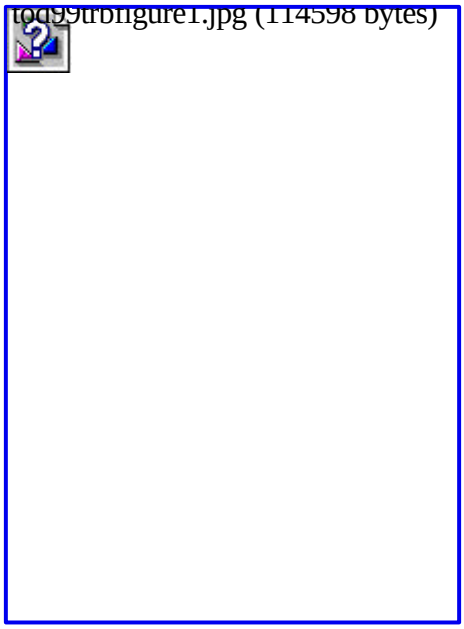

Service delivery for education, health, banking and other services does offer some additional opportunity for trip substitution:

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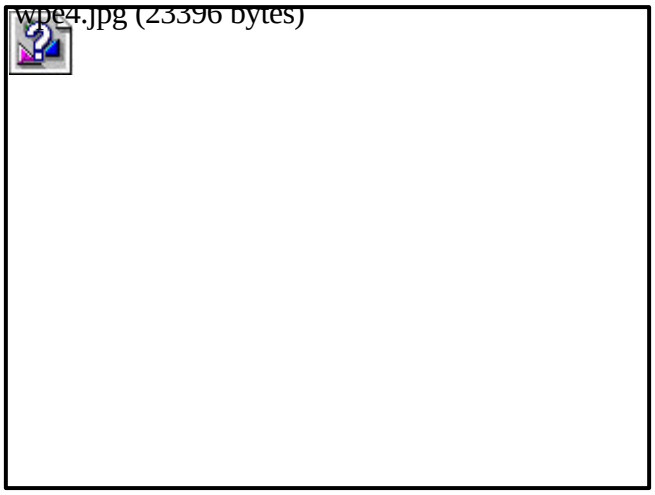
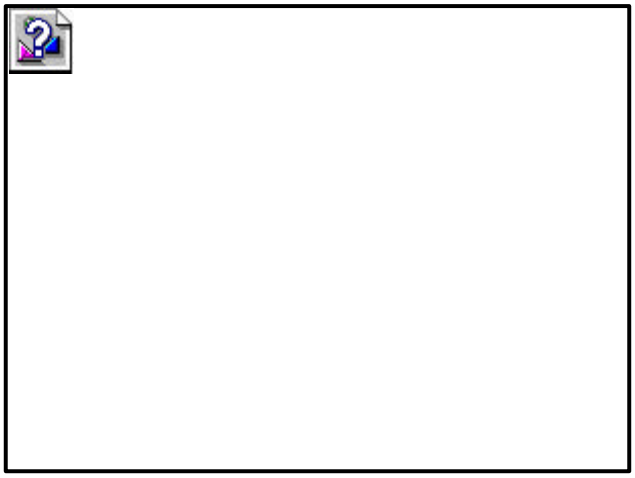
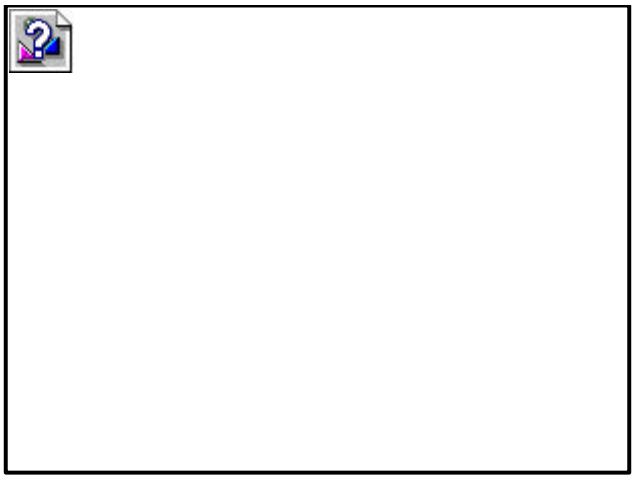


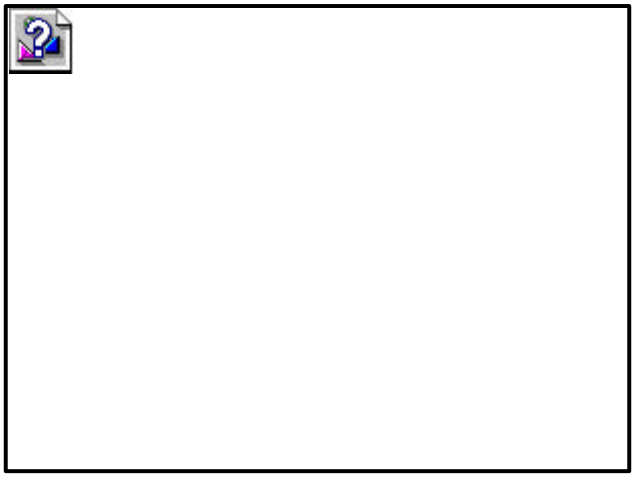
Here is a complete list of how telecom does provide for trip substitution. An explanation of these categories is provided in a report I did for Discovery Institute, *Technology & Transportation: The Dynamic Relationship* (2001):



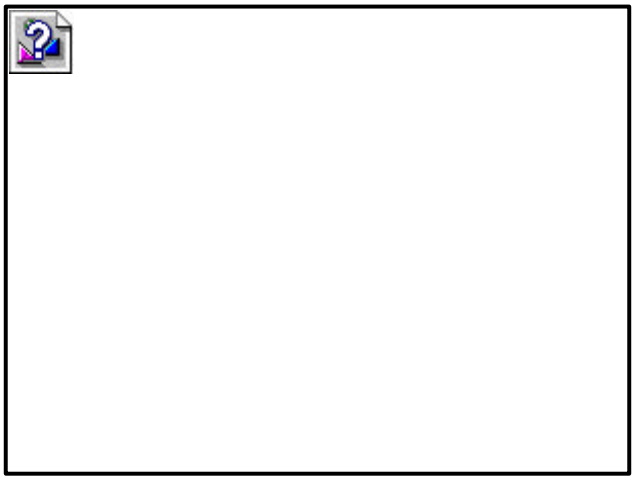
However, there are fundamental limits in how much substitution is possible, because of the many important distinctions between going to a different place and communicating with that place. Transportation provides proximity, and telecom provides remote interaction. There are many points of difference, for example in organizational work:



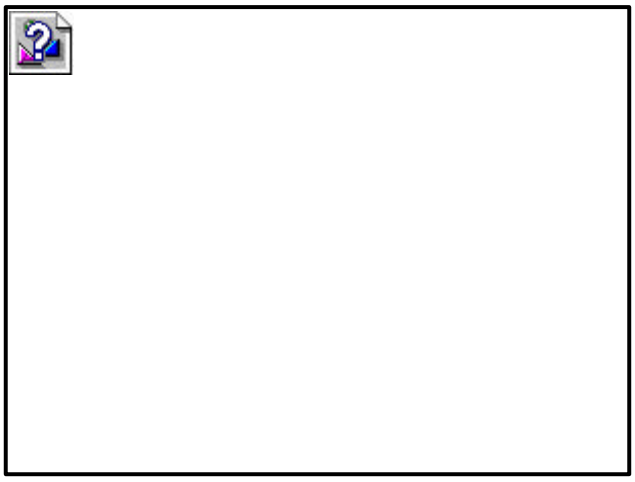
See Niles' essay Telecommunications' Big Idea for an elaboration of the following list of difference between proximity and communications:



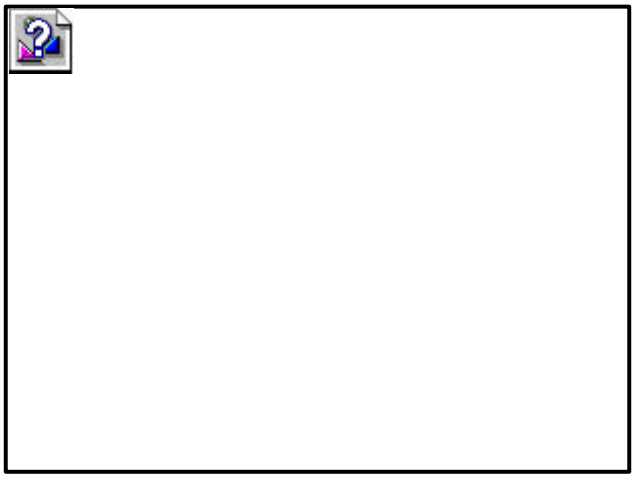
Don't let anybody kid you -- sometimes you've got to be there. I first proposed the following "law" at the 1996 annual meeting of the International Telework Association:



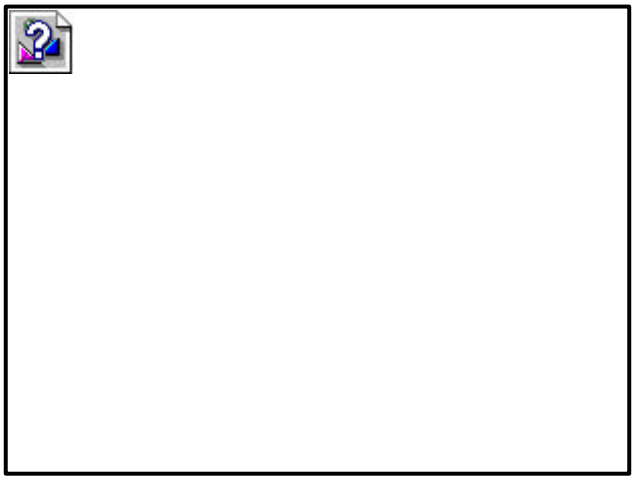
Transportation specialists are tempted to make analogies between telecom and transport, even in some cases calling telecom a "mode of transportation."



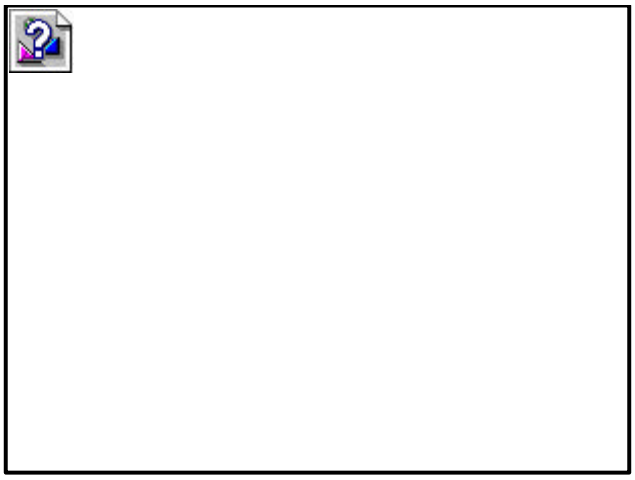
But telecom and transport are fundamentally different, and it is not analytically or pedagogically useful to call telecommunications a mode of transportation:



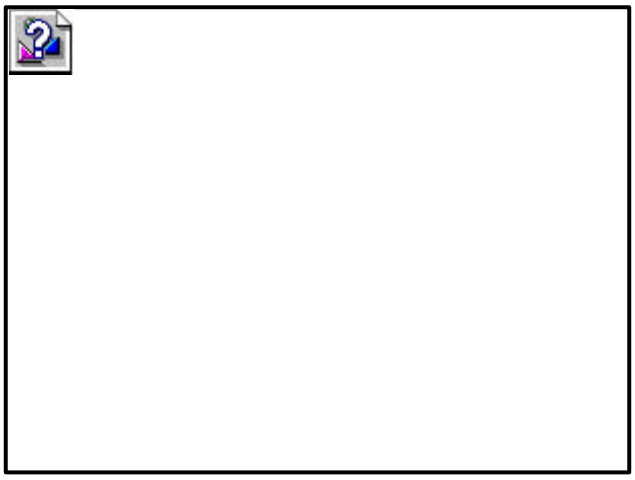
Telecommunications is even more complex than it seems.



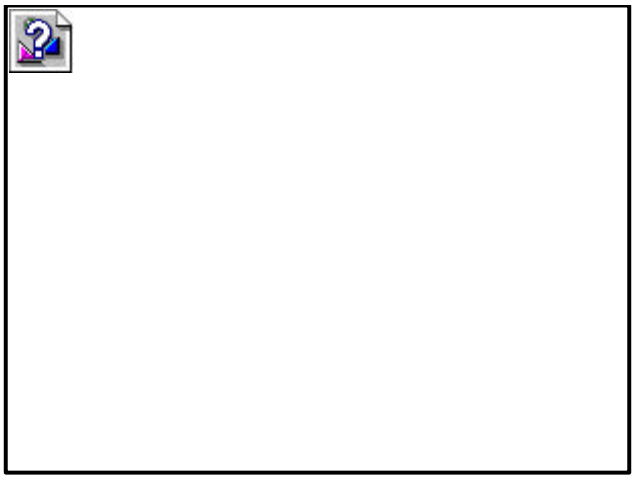
Wrapping up, the impacts of telecom on travel are many:



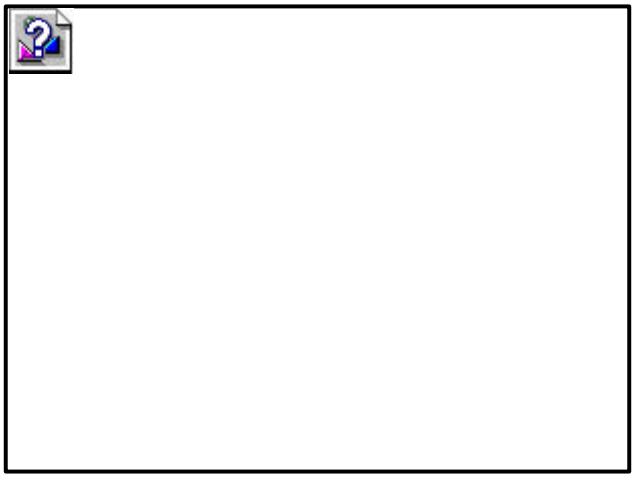
Following is the typical problem faced by government-chartered Metropolitan Planning Organizations (MPOs) in every large U.S. metropolitan area: steady growth of travel volume, and very little impact from the official transportation plan that makes road and public transit improvements. Progressive MPOs are studying telecommunications as a key influence on travel in the 21st century.



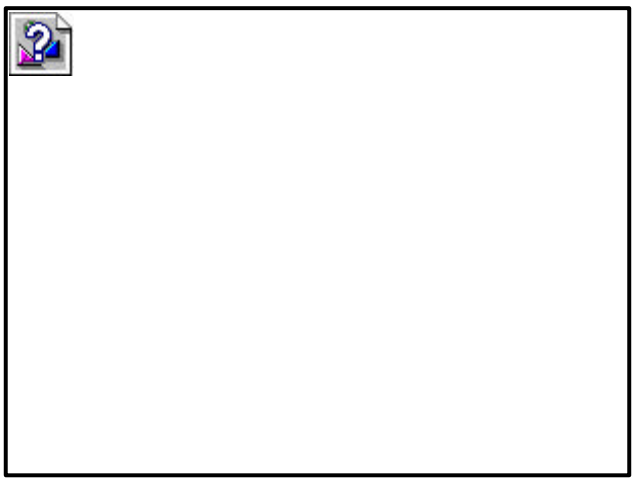
Global Telematics and partners have developed a strategy for metropolitan area planners to gain travel savings from telecommunications. The key is focusing on applications that replace trips that people don't like to make, like going to the Department of Motor Vehicles for license renewal. For more, see the Telecommunications Strategy for Southern California Association of Governments.



Travel has many characteristics, and telecom influences all of them.



The following is an expansion of a model first proposed by travel behavior researcher Ilan Salomon. As Patricia Mokhtarian has concluded, complementarity dominates. As society matures, all forms of communications and travel are expanding, even while some purposes (traveling to the blacksmith) and forms (telegraphs and canal boats) decline or disappear. This graphic is from ***Beyond Telecommuting***.



The interaction of telecommunications upon travel, traffic congestion, and land use is extremely complex and

represents a broad research challenge. An initial mapping of forces is shown in the following diagram (click to expand):

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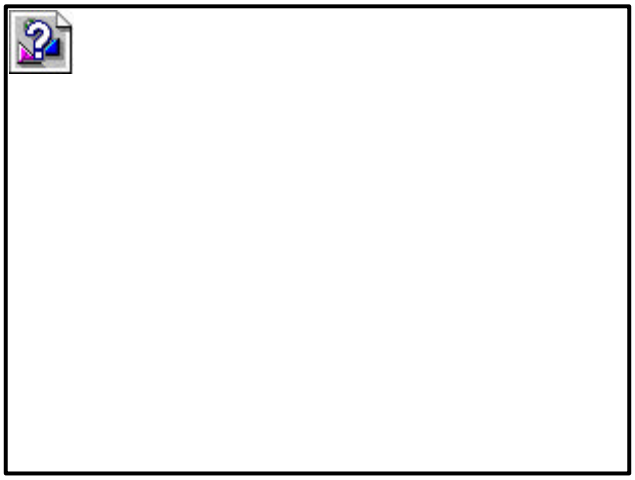

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Note: The above includes excerpts from over a decade of work by Global Telematics. For the development of ideas integrated above, Global Telematics appreciates research funding support from U.S. Department of Energy, Lawrence Berkeley Laboratory at University of California, Integrated Transport Research, Southern California Association of Governments, Ellen Williams & Associates, Technology Futures, State of Idaho, Puget Sound Regional Council, Center for the New West, Hudson Institute, Discovery Institute, and Mineta Transportation Institute at San Jose State University. None of the ideas presented above, however, are meant to represent conclusions or policies of these organizations.

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