



CTPP Status Report

August 2007

U.S. Department of Transportation
Federal Highway Administration
Bureau of Transportation Statistics
Federal Transit Administration
In cooperation with the TRB Census Subcommittee

ACS Peer Exchange Held in May 2007

Ed Christopher, FHWA Resource Center

On May 10 and 11, 2007, thirty-seven individuals representing state DOTs, MPOs, several federal agencies, academia and consulting met in a Peer Exchange format to discuss the uses and experience with ACS data in transportation planning applications. The Peer Exchange was held in Daytona Beach immediately following the 2007 TRB Transportation Planning Applications Conference.

The full report, *Transportation Planning Capacity Building Program, Peer Workshop Report, Using ACS Data in Transportation Planning Applications*, is available at: http://www.planning.dot.gov/Peer/Daytona/daytona_2007.htm. The twenty-one presentations from the exchange are posted at: ftp://ftp.camsys.com/clientsupport/CTPPdata/Daytona_peer/

The Exchange was sponsored by the FHWA/FTA Transportation Planning Capacity Building (TPCB) Program and organized by AASHTO Standing Committee on Planning Census Data Workgroup chaired by Jonette Kreideweis (MN DOT). Attendees were from AASHTO, nine state departments of transportation, nine MPOs and COGs, three universities, the U.S. Census Bureau, US DOT, and four consultant firms.

The Exchange was organized around four keynote addresses and several sessions designed to explore issues and experiences in data applications. Keynote speakers included Alan Pisarski, Heather McDonald, Dane Ismart and Steve Polzin, who shared their experience and perspectives on working with ACS and decennial census data.

In addition, participants shared and discussed their own techniques and perspectives on how to make ACS data more useful for transportation planning. Topics included:

- Population estimates,
- Demographic indicators and trends,
- Workers and employment data,
- Journey to work data,
- Transit applications,
- New Starts analysis, and
- Geographic issues such as potential requirements for TAZ, tracts and block groups.

Participants also identified priorities for future Census Transportation Planning Products including data tabulations, training, research and technical support.

Using CTPP 2000 Data for the Trans Texas 35 Corridor Model

By Jonathan Avner, PTP, Wilbur Smith Associates, Javner@wilbursmith.com

CTPP 2000 is a valuable source of data when calibrating and validating travel demand models. The data found in CTPP has endless uses, but in travel demand modeling applications, it is commonly used for:

- Calibration of household stratification models for household size, auto ownership, workers per household and income;
- Characteristics of the journey to work (mode, time of departure, and duration); and
- Development of external – internal work flows to a region using the county to county work flows.

CTPP data are being utilized heavily in Texas, including the development of a travel demand model to support the environmental analysis of the Trans Texas Corridor (TTC). TTC is a series of “super corridors” that would supply parallel corridors of tollways, rail and utility lines. The first of two corridors being studied is TTC – 35 which would parallel I-35 from Laredo to Oklahoma. Wilbur Smith Associates (WSA) was charged with the task of developing a travel demand model that would be detailed enough to be used for refined alignment testing, but yet cover the entire corridor.

The model being developed by WSA covers the entire state of Texas, as does the existing Texas Statewide Analysis Model, but where they differ is the TTC-35 Corridor Model is a geographically-based trip purpose model. Thus, passenger trips are constrained by geographic areas into the following categories:

- Intra-Urban: Within the corridor, there are six MPO areas (San Antonio, Austin, Killeen – Temple – Belton, Waco, Dallas – Fort Worth and Sherman – Denison). For each of the MPOs, a set of trip purposes are constrained to the boundary of the urban area.
- Inter-Urban: A set of trip purposes are defined for movements between the MPO areas in the corridor.
- Non – Corridor: Trips originating outside the MPO areas that either were destined to inside one of the MPO areas or outside the corridor area.
- External: Traditional external – internal and external through trips.

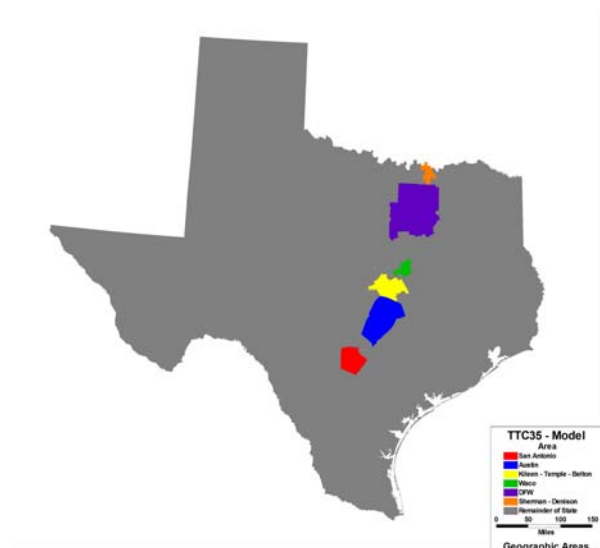


Figure 1. TTC35 Corridor Model - Geographic Areas

The first group of trips, intra-urban, is designed to replicate the regional travel demand model for each region by using as many of the calibrated parameters as possible. In order to differentiate each model, unique household stratification

models were calibrated using CTPP data. Zonal households were stratified by household size, income quartiles, and number of workers per household. The resulting stratifications allowed for two-and three-way cross classification of households for application in trip generation.

In developing the stratification models, the following CTPP Tabulations were used:

- Part 1: Table 47: Total Number of Persons
- Part 1: Table 62: Household Size by Number of Workers in Household
- Part 1: Table 64: Household Size by Household Income

For each geographic area listed above, the CTPP data was extracted from the relevant tables and used to calibrate a series of stratification curves. It was felt that unique stratification models were necessary to capture the unique characteristics of each geographical area given the differences in regional average household size and mean income. This model design was possible

due to the zonal nature and statewide nature of the CTPP 2000 CTPP. Because the CTPP 2000 includes over 15,000 zones in Texas, it was possible to develop a zonal geography for each of the MPO area creating a locally specific dataset.

In addition to the use of CTPP Part 1 tables in the stratification models, CTPP Part 3 data will be used in the validation step for work trips.

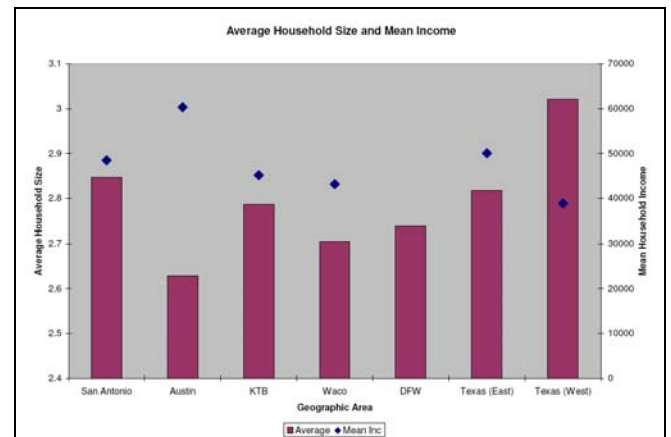


Figure 2. Average Household Size and Mean Income

Recent Transferability Developments

*Elaine Murakami, FHWA Office of Planning and
Ed Christopher, FHWA Resource Center Planning Team*

WordReference.com defines “transferability” as the quality of being capable to be moved or conveyed from one place to another. EdTheFed.com suggests transferability is the process of applying the results, research, or data from one or more areas to other similar areas. In a very practical sense, we are using the term “transferability” to describe a statistical way of combining data Census data with national travel behavior data to produce a data driven picture for a local area without the expense of conducting a local household travel survey. Regardless of how it is defined, many small and medium-sized communities are finding transferability concepts very valuable as a means to support their local travel demand models.

What is the NHTS?

The 2001/2002 National Household Travel Survey (NHTS) included a national sample of 26,083 households, with 43,734 additional households from local and state-wide add-on surveys. The survey included all days of the week (not restricted to weekdays), and all trip purposes. It has information about vehicle ownership and use, fuel economy and neighborhood characteristics. The next survey is planned to be conducted in 2008.

Earlier this summer, Oak Ridge National Laboratories completed the NHTS Transferability project for FHWA, Office of Planning. This project uses the 2001 NHTS data to estimate data for census tracts and Transportation Analysis Zones (TAZs). <http://fmip.ornl.gov/nhts> A regression model was developed for weekdays that includes person trips, vehicle trips, vehicle miles of travel (VMT), and proportion of trips by trip purpose. A web-based GIS

interface is used to select the areas of interest (Figure 1). Data can then be downloaded as spreadsheets or GIS shapefiles (Figure 2). Because the output includes detail by household size and number of vehicles, users have a lot of flexibility on how they can use these results. However, if users want totals for all households, they will need to multiply the “Number of households” by the trip rates (or VMT or PMT rates), and summarize the results for the cells.

In general, the NHTS data are not recommended for areas smaller than a Census region. Extrapolating NHTS data from all the small areas risks the creation of unreliable and bogus estimates. However, the Transferability Project used modeling techniques to estimate household travel propensity (e.g., daily trips) for small geographic areas with a pre-determined level of statistical certainty. The NHTS add-on samples were used to validate the national model at the census tract level.

Another transferability activity that is underway is a “new” National Cooperative Research Project (NCHRP 8-61) to update the default travel demand parameters found in NCHRP 365 to reflect current travel characteristics and to provide guidance on travel demand forecasting procedures and their application for solving common transportation problems. NCHRP 365 was published in the mid-1990’s. Since then, new data sources data have become available and there have been improvements to the travel demand analysis processes.

The new project, NCHRP 8-61 is titled “Travel Demand Forecasting: Parameters and Techniques”. Cambridge Systematics has been chosen to do the research. Tom

Rossi (trossi@camsys.com) is the project manager and Tom Kane, the Executive Director of the Des Moines MPO is chairing the panel overseeing the work. The project is scheduled to be completed in 24 months,

by late 2009. For more information on this effort see <http://www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=937>

Figure 1. Web-based GIS Interface

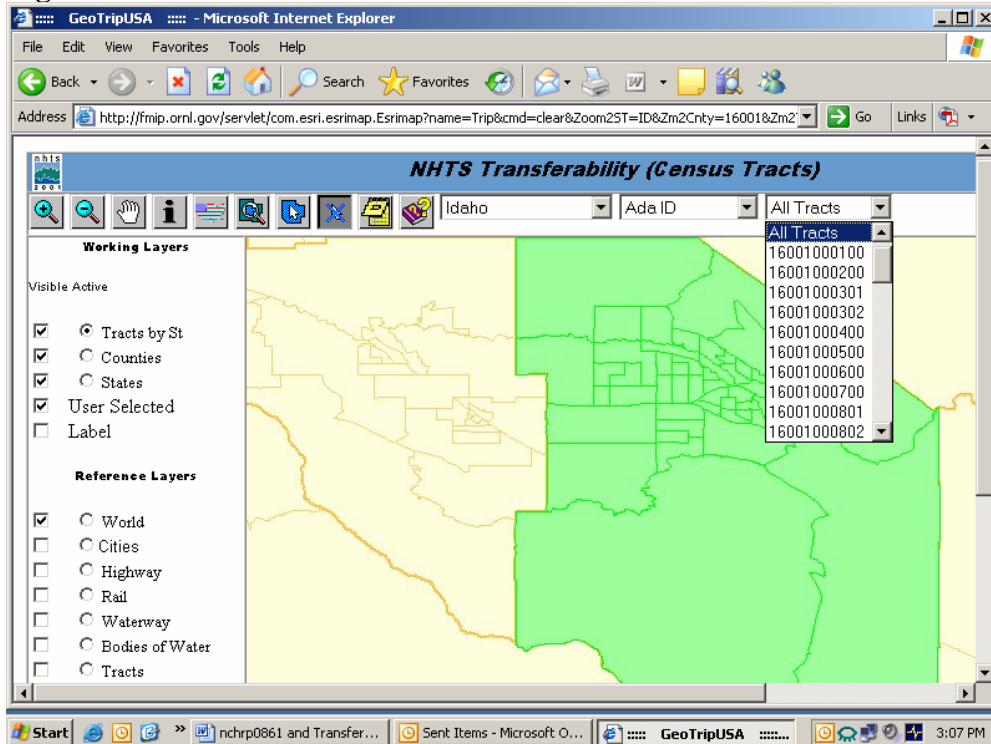


Figure 2. Example Output

Microsoft Excel - Skagit WA.xls

h:\elaine misc\NHTS2001\ORNL Transferability\Skagit WA.xls

A32 53057950900

Person Trip Rates (Person													
Household Size (N													
Tract ID	1 Person					2 Persons					3 Pe		
	Vehicle Ownership (Number of Vehicles)					Vehicle Ownership (Number of Vehicles)					Vehicle Ownership		
	0	1	2	3	4 +	0	1	2	3	4 +	0	1	2
6 53057951100	3.08	3.77	4.6	5.42	6.24	6.56	6.86	7.16	7.46	7.76	10.04	10.34	10.64
7 53057951200	3.65	4.42	5.24	6.06	6.89	7.13	7.43	7.73	8.03	8.32	10.61	10.91	11.21
8 53057951000	3.43	4.15	4.97	5.79	6.62	6.91	7.21	7.51	7.81	8.1	10.39	10.69	10.99
9 53057950300	4	4.33	5.23	6.4	7.58	7.36	7.69	8.02	8.35	8.68	10.72	11.05	11.38
10 53057950200	4.2	4.53	5.52	6.7	7.88	7.56	7.89	8.22	8.55	8.88	10.91	11.24	11.57
11 53057950400	4.13	4.29	5.36	6.46	7.56	7.87	8.04	8.2	8.37	8.53	11.62	11.78	11.94
12 53057950700	3.67	3.88	4.98	6.08	7.18	7.41	7.58	7.75	7.91	8.08	11.16	11.33	11.5
13 53057950600	3.63	3.84	4.94	6.04	7.14	7.38	7.54	7.71	7.87	8.04	11.12	11.29	11.46
14 53057952000	4.13	4.46	5.25	6.43	7.61	7.49	7.82	8.15	8.48	8.81	10.84	11.17	11.5
15 53057952100	3.53	4.35	5.17	6	6.82	6.98	7.28	7.58	7.88	8.18	10.46	10.76	11.06
16 53057951900	4.29	4.45	5.48	6.58	7.68	8.03	8.2	8.36	8.53	8.69	11.78	11.94	12.1
17 53057950500	3.77	3.94	4.96	6.06	7.16	7.52	7.69	7.85	8.02	8.18	11.27	11.43	11.59
18 53057950100	3.2	3.5	4.27	5.1	5.92	6.68	6.98	7.27	7.57	7.87	10.16	10.46	10.76
19 53057952700	3.9	4.66	5.49	6.31	7.14	7.38	7.68	7.98	8.28	8.58	10.86	11.16	11.46
20 53057952600	4.04	4.41	5.51	6.61	7.71	7.79	7.95	8.12	8.29	8.45	11.53	11.7	11.87
21 53057952500	3.63	4.08	5.18	6.28	7.38	7.38	7.54	7.71	7.87	8.12	11.12	11.29	11.46
22 53057952200	3.75	4.11	5.21	6.31	7.41	7.5	7.67	7.83	8	8.16	11.25	11.41	11.57
23 53057951800	3.69	4.09	5.19	6.29	7.39	7.44	7.6	7.77	7.93	8.13	11.18	11.35	11.51
24 53057952300	3.82	4.26	5.36	6.46	7.56	7.57	7.73	7.9	8.06	8.3	11.31	11.48	11.64

Ready Sum=277.17

Questioning Confidentiality Rules

By Ed Christopher, FHWA Resource Center Planning Team

In March 2007, the Committee on National Statistics (CNStat) of the National Research Council released the prepublication copy of its report on “Using the American Community Survey: Benefits and Challenges.”

<http://books.nap.edu/openbook.php?isbn=0309106729>

The report stemmed from a U.S. Census Bureau request for CNStat to form a panel to assess the usability of the ACS data. The report advises users on making the transition from the long-form sample to the ACS. It identifies areas for research and development by the Census Bureau so that the ACS can realize its full potential to improve the nation’s information on people and communities. Although the report contains 29 recommendations, one in particular is of great interest to the transportation community since it affects confidentiality and disclosure. Recommendation 4-9 states:

“The Census Bureau should undertake research to develop confidentiality protection rules and procedures for tabulations from the American Community Survey that recognize

the protection afforded to respondents by pooling the data over many months.

Wherever possible, the Census Bureau should prefer confidentiality protection procedures that preserve the ability to aggregate smaller geographic areas into larger, user-defined areas.”

This is a point that many of us in the transportation community have been making for quite some time. Because of the continuous design of the ACS and the fact that people continually change things like their incomes, work locations, home locations, commuting times and modes, or housing demographics, the threat of identifying an individual in the ACS data should be declining over time. As a result, many believe that the risk to disclosure and the accompanying data protection rules should be less stringent than those applied to the Census 2000 data. As it stands now, it looks like the Census Bureau wants to use the same disclosure rules it used in 2000 with a few additional ones added on for good measure. Needless to say there is some concern amongst the CTPP community.

Recent TRB Publications of Relevance to CTPP

By Nanda Srinivasan, Cambridge Systematics Inc.

The Transportation Research Board recently released two publications that show the utility of CTPP in local planning applications.

Special Report 288 “Metropolitan Travel Forecasting: Current Practice and Future Direction”

<http://onlinepubs.trb.org/onlinepubs/sr/sr288.pdf>

The report provides

- (1) Description of the current state of practice in metropolitan travel forecasting;
- (2) Evaluation of the current state of practice, including any deficiencies; and
- (3) Recommendations for improvement.

The report was prepared using a survey of MPOs, and the findings of the survey are posted at:

<http://onlinepubs.trb.org/onlinepubs/reports/VHB-2007-Final.pdf>

The report provides evidence that CTPP is heavily relied in the first three stages of the 4-step forecasting process. About 36 percent of the MPOs surveyed used CTPP data in their

trip generation stage, and about 7 percent used PUMS data. Almost half the MPOs in low and medium growth areas rely on the CTPP data for validating their trip distribution. Almost half of all the MPOs used CTPP data for mode choice modeling.

NCHRP 8-36, Task 63: Making the North American Industry Classification System (NAICS) Work for Transportation

http://statewideplanning.org/_resources/88_Task-63.pdf

This report examines discrepancies in Census 2000 reporting of workers in the industry category “Management of Companies and Enterprises.” Because of the change from SIC from NAICS in reporting data on industry, the Census 2000 numbers on workers in “Management of Companies and Enterprises” do not agree with other establishment based data, including the County Business Patterns. The report suggests using industry in conjunction with occupation and class of worker as a “work-around” to resolve the issue.

LEHD OnTheMap: Request for your assistance to review and evaluate

Elaine Murakami, FHWA Office of Planning

The Longitudinal Employment and Household Dynamics (LEHD) OnTheMap project at the U.S. Census Bureau is a potential source for flow data between home and work.

The main data inputs are:

- Quarterly Census of Employment and Wages (QCEW) formerly called ES-202
- Multiple Worksite Reports (MWR)
- Unemployment Insurance (UI) files
- Federal administrative records (StARS). Residence location is most often from IRS 1040 forms.

The assignment of individual workers to specific worksites is based on a model using data from Minnesota. In Minnesota, State law requires that individual Social Security Numbers (SSNs) are tied to a specific worksite, rather than only to the business establishment.

One of the limitations of the ACS is that the annual sample is small, therefore, small area flows for CTPP require a five-year accumulation of ACS records. These results will have larger sample errors compared to decennial census “long form” results, and will be period estimates (for the 5-year period) rather than a point estimate (April 1 of the decennial year).

It is important to understand the universe of workers currently included in LEHD OnTheMap. Because it uses administrative records, the universe is “covered” wage workers, that is workers who are covered by Unemployment Insurance. It is not a sample, therefore the number of flow pairs is high compared to the ACS sample. Currently LEHD OnTheMap does not include self-

employed (about 10 percent of total workers), but efforts are being made to add self-employed and federal employees. The LEHD OnTheMap offers to provide updated data as frequently as every year at block level geography.

FHWA recommends that you conduct a thorough evaluation of the data before you use it for any transportation application, especially as it is a new product.

Step 1: Understand how the data are synthesized.

For a brief description of the data synthesis process, please see my document <http://www.fhwa.dot.gov/planning/census/lehdonthemap.htm>

Step 2: Examine the data at the LEHD “OnTheMap” website

<http://lehd.did.census.gov/led/> , and get a copy of the data from the Cornell Virtual Data Center.

<http://vrdc.ciser.cornell.edu/news/?p=249>
Because the data are synthetic, there are 3 implicates created for the home-to-work flow. John Abowd at Cornell recommends that users use all 3 implicates for the best results.

Step 3: Evaluate the data.

The Census Bureau takes what is supplied by each State’s Employment office for the QCEW and MWR. The 2004 data are just being released.

When the 2002/2003 data were released in 2006, FHWA asked State DOTs and MPOs to voluntarily review the data as time permitted.

This voluntary LIMITED examination identified several problems:

- School districts often linked to district headquarters office, rather than a specific school. (Colorado)
- State employees most often linked to an office in the State Capitol. (Illinois)
- Specific instances where average distance of home-to-work exceeds 25 miles where CTPP2000 found about 12 miles (more consistent with regional survey and model results). (California)

There are many reasons why the geographic location of workplaces and residence locations may be incorrect. These include:

1. Incomplete or inaccurate addresses in the original data files: both workplace files and residence files.
2. Incomplete lists of worksites for businesses with multiple sites. Nearly 50 percent of States now require firms to report Multiple Worksites. Because over 40 percent of workers work for firms with multiple sites, the completeness and accuracy of the Multiple Worksite Reports is critical to the imputation step of assigning individual workers (SSN) to a specific work location.
3. Incomplete geographic referencing files that result in the inability to geocode to a lat/long. Some records may be geocoded to a county or place

centroid when block level geocoding is not achieved.

4. Data synthesis models may be creating unlikely home-to-work pairs.

Geocoding problems and incomplete referencing files are not unique to the OnTheMap program. Certainly, some records from the decennial Census "long form" and the American Community Survey have incomplete workplace addresses; therefore, many workplace locations are imputed at the block level (about 25% in Census 2000).

Step 4. Keep track of problems and successes and convey them to your State Employment Security Department, and also report to the LEHD Program.

You can post an email to the LEHD-LTD listserv lehd-ltd@lists.census.gov. If you are a registered member of the onthemap listserv, you can post an email to the LEHD-onthemap listserv: lehd-onthemap@lists.census.gov.

I hope that you can invest some time and resources to evaluate this data and convey the results of your evaluation to the CTPP community! In the long run, the potential value is high, but this could take a concerted effort to improve the data input files, and to evaluate how well the models are synthesizing home-to-work pairs. Research on methods to combine ACS with LEHD OnTheMap for higher quality reliable data is needed.

CTPP Hotline – 202-366-5000

ctpp@dot.gov

CTPP Listserve: <http://www.chrispy.net/mailman/listinfo/ctpp-news>

CTPP Website: <http://www.dot.gov/ctpp>

TRB Sub-committee on census data: <http://www.trbcensus.com>

FHWA Website for Census issues: <http://www.fhwa.dot.gov/planning/census>

CTPP 2000 Profiles: <http://www.transportation.org/ctpp>

1990 and 2000 CTPP downloadable via Transtats: <http://transtats.bts.gov/>

FHWA

Elaine Murakami

PH: 206-220-4460

FAX: 206-220-7959

Email: elaine.murakami@fhwa.dot.gov

Nanda Srinivasan

PH: 202-366-5021

FAX: 202-366-7742

Email: nanda.srinivasan@dot.gov

Ed Christopher (Urban Data Committee Chair)

PH: 708-283-3534

FAX: 708-283-3501

Email: edc@berwyned.com

FTA

Nazrul Islam

PH: 202-366-4435

FAX: 202-493-2478

Email: nazrul.islam@dot.gov

BTS

Pheny Smith

PH: 202-366-2817

FAX: 202-366-3370

Email: pheny.smith@dot.gov

AASHTO

Janet Oakley

PH: 202-624-3698

FAX: 202-624-5806

Email: joakley@ashto.org

Ron McCready

PH: 202-624-5807

FAX: 202-624-5806

Email: rmccready@ashto.org

Census Bureau: Housing and Household Economic Statistics Division

Celia Boertlein

PH: 301-763-2454

Fax: 301-457-2481

Email: Celia.G.Boertlein@census.gov

TRB Committees

Ed Christopher (Urban Data Committee Chair)

See under FHWA

Bob Sicko (Census Subcommittee Chair)

Mirai Associates

CTPP Listserve

The CTPP Listserve serves as a web-forum for posting questions, and sharing information on Census and ACS. Currently, over 700 users are subscribed to the listserv.

To subscribe, please register by filling a form posted at:

<http://www.chrispy.net/mailman/listinfo/ctpp-news>

On the form, you can indicate if you want e-mails to be batched in a daily digest. The website also includes an archive of past e-mails posted to the listserv.